



TAPPAN ZEE BRIDGE/I-287
ENVIRONMENTAL REVIEW

***New York State Department of Transportation
New York State Thruway Authority
Metropolitan Transportation Authority/Metro-North Railroad***

TAPPAN ZEE BRIDGE / I - 287

ENVIRONMENTAL REVIEW

PRELIMINARY FINANCIAL STUDIES

PHASE I REPORT



NOVEMBER 19, 2008



**Metro-North
Railroad**



**New York State
Department of Transportation**



**Thruway
Authority**

November 2008

Message from Tappan Zee Bridge / I-287 Corridor Project Team:

Astrid C. Glynn, Commissioner of Transportation
Michael Fleischer, Executive Director, New York State Thruway Authority
Howard Permut, President, Metropolitan Transportation Authority/Metro-North Railroad

The challenge of defining a solution for the Tappan Zee Bridge / I-287 Corridor that optimizes long term benefits is tremendous. We must consider the future transportation needs of those traveling through the corridor, the environmental and quality of life concerns for those living in the region, and the implications for all of the citizens of New York State and its neighbors. These issues are being addressed through the on-going Environmental Impact Statement process.

It is no less challenging to determine what may be required to finance any possible solution. The scale and complexity of the various project alternatives translates into construction cost estimates that could far exceed the traditional financing capacities of State and Federal transportation agencies.

With this Preliminary Financial Studies Phase I Report, we begin to wrestle with the large and complex issues associated with financing this project. The introductory part of the Phase 1 report is the "Preliminary Financial Assessment Summary," which represents a first step toward understanding the potential challenges ahead for funding any of the alternatives under review. The primary goal of this analysis is to establish baseline, order of magnitude estimates for financing the current project alternatives using traditional public financing sources.

The bulk of the report is composed of case studies of comparable mega-projects from across the country and around the world. While every mega-project is unique, the case studies provide extremely valuable insights. The report also includes three papers on certain technical considerations that any financial solution will need to accommodate: "Federal Requirements for Financial Plans," required "Third-Party Approvals," and implications of "Thruway Authority Bond Resolutions and Covenants."

There are no answers in this report - only a roadmap of the financial challenges ahead. The report provides an illustrative calculation of the difficulties in financing a project of this magnitude. The conclusions are deliberately simple and are not, and should not be construed to be, recommendations of any sort. This one hypothetical approach, which we call a “Base Case,” demonstrates that traditional methods and means of project delivery may not be an effective or reasonable choice for a project of this magnitude. It illustrates, instead, the value of early planning and funding; staging of project delivery as funding is made available; leveraging and maximizing the traditional sources of financing; as well as openly exploring innovative sources of potential funding.

In terms of understanding how to finance this project, this report is simply the starting point. Much more financial and policy analysis remains. We will continue our efforts and continue to share our results with the public, guided by a financial advisor to the project that we will have on board within a few months.

I – 287 / Tappan Zee Corridor Environmental Review Preliminary Financial Studies Overview

In parallel to the EIS process, the project team has been exploring transportation mega-project finance, as well as estimating baseline financial requirements for project alternatives being studied. These financial studies are part of early financial planning efforts aimed at completing the Major Projects Finance Plan required by Section 1904(a) of SAFETEA-LU.

Preliminary Financial Assessment

Baseline financial projections are discussed in a Preliminary Financial Assessment Summary. This summary is called a “Base Case” as it is based on a limited number of assumptions for traditional public financing. While it assesses the long-term financing possibilities for the project alternatives being studied, it is not a comprehensive financing analysis for this project. Rather, it provides a starting point for understanding the complex financing challenges ahead.

- Preliminary Financial Assessment Summary

Project Case Studies

The aim of these studies is to understand how mega-projects have been financed recently in and outside the United States; and how lessons learned from financing these projects might apply to the Tappan Zee Bridge/I-287 Project. Projects studied represent a mix of similar modal components, or employ financing strategies that could be useful in financing this project.

A Case Study Synthesis was prepared that summarizes key aspects of each case study.

- Case Studies – Synthesis

The individual projects studied include:

- Chicago Skyway
- Hudson-Bergen Light Rail System
- Indiana Toll Road Concession Lease
- Oresund Bridge
- Pocahontas Parkway
- Port of Miami Tunnel
- San Francisco Oakland Bay Bridge East Span
- Southeast Transportation Expansion Project (TRES)
- Tacoma Narrows Bridge
- Tsing Ma Bridge
- Woodrow Wilson Bridge

Other Studies

Other papers have been prepared that discuss key aspects of the financing process that lie ahead. They include:

- Review of Current Federal Requirements for Financial Plans for Major Highway Infrastructure Projects.

This paper discusses the FHWA Major Project guidance, and the relationship of financial planning to other project planning processes.

- Assessment of Third-Party Approvals Required to Implement the Project.

This paper describes various government approvals and related matters that would be required to implement public and private project finance and delivery mechanisms.

- Analysis of Bond Resolutions and Covenants Associated with the Tappan Zee Bridge Project.

This paper documents key aspects of the Thruway Authority's existing bonding program.

Several Project Appendices are included, providing further information, or illustrating documentation required for project implementation.

- Exhibit A-1 – FHWA Design-Build Rule (2002)
- Exhibit A-2 – Proposed Revisions (2006) to FHWA Design-Build Rule
- Exhibit B – FHWA NYSDOT SAFETEA-LU Agreement
- Exhibit C – NCTA Section 129 Agreement
- Exhibit D – SAFETEA-LU Interstate Tolling Programs
- Exhibit E – 10-27-05 Memorandum to Delaware DOT
- Exhibit F – Use of 63-20 Corporations in Infrastructure Financing
- Exhibit G – 2006 Budget Bills Part K and L
- Exhibit H – Illinois Local Government Facility Lease Act
- Exhibit I – Indiana privatization Agreement Labor Provisions

Next Steps

This initial effort has provided the project team with the basic insights necessary to begin the process of defining the specific finance mechanism to be employed to fund this critical major investment project. To that end, the team has taken steps to engage a Financial Advisor to assist the agencies in the formulation of an appropriate plan. This work will begin in the fall, and continue concurrent with the development of the DEIS. Periodic progress reports will be made available as the plan is developed.

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**TAPPAN ZEE BRIDGE/I-287
FINANCIAL PLAN STUDY**

**PRELIMINARY FINANCIAL ASSESSMENT
SUMMARY**



New York State
Department of Transportation



Metro-North
Railroad



Thruway
Authority

INTRODUCTION

This paper provides key preliminary financing information and conclusions, for all project alternatives under study, excluding the no-build option.

The paper highlights the relatively small amount of funding that may be available for the project through traditional means. By assessing the implications of one funding approach as a “base case” scenario for all alternatives, we begin to focus decision-making on the challenge of creating and implementing additional and alternative financing sources that will support construction of the preferred project alternative.

It is clear that options to finance this project with currently authorized revenues and programs are limited. New ways of financing mega-projects at the State and national levels are essential, if not inevitable.

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PART I – FINANCE STUDY AND PRELIMINARY FINANCIAL ASSESSMENT

ALTERNATIVES COST RECAP BY MODE

The preliminary finance analysis began with analyzing the alternatives and estimates provided by design consultants in May 2007. These estimates represented the capital costs of the project, at the projected mid-point of the construction phase (2012).

TABLE 1
Summary of Tappan Zee/I-287 Capital Costs by Mode
 Cost in 2012 \$ Millions
 (Cost Estimate, May 2007)

	Alternative	Hwy	Transit	Total
1	No Build – Minimal Near Term Maintenance Required	\$900	0	\$900
2	Bridge Rehabilitation in kind, with TDM/TSM measures	3,300	0	3,300
3	Full Corridor BRT, New Bridge & Highway Improvements	6,450	1,250	7,700
4A	Full Corridor CRT, New Bridge & Highway Improvements	6,340	15,440	21,780
4B	Rockland to Manhattan CRT with LRT in Westchester, New Bridge & Highway Improvements	6,340	11,980	18,320
4C	Rockland to Manhattan CRT with BRT in Westchester, New Bridge & Highway Improvements	6,340	9,620	15,960

As the financial analysis has progressed over time, the designs for these alternatives have been similarly refined. By looking closer at the implementation requirements of a “Full Corridor BRT” concept, Alternative 3 became two variants. Like the original Alternative 3, Alternative 3A incorporates a bus transit system on the existing streets in local Westchester communities; while Alternative 3B is intended to have isolated lanes to provide a full “rapid transit” capacity across Westchester. And a new option, Alternative 4D, has been developed to modify Alternative 4C and provide for full-corridor Bus Rapid Transit, in addition to Rockland to Manhattan commuter rail service (see Table 2).

In January 2008, the decision was made to progress the project under a two-tiered environmental process. Tier 1 will result in the selection of a transit mode for the project, and the configuration of a “transit-ready bridge”, plus highway improvements through the corridor. While design and construction of the bridge and highways is progressing, the transit components will be developed and evaluated, consistent with the Tier 2 environmental process. Design and construction of the transit infrastructure will commence after the Tier 2 Transit environmental process is completed.

At this time, the financial analyses focus on providing preliminary estimates of financial requirements for project elements expected to start construction by 2011. Cost estimates have been updated based on more recent assessments.

The alternatives being studied are listed below and include the full-build possibilities plus the options for initially constructing a “transit-ready bridge” with highway improvements.

TABLE 2
Summary of Tappan Zee/I-287 Capital Costs by Mode
 Cost in 2012 \$ Millions
 (Cost Estimate, May 2008)

	Alternative	Bridge	Highways	Transit	Total
1	No Build – Minimal Near Term Maintenance Required	\$900	0	0	\$900
2	Bridge Rehabilitation in kind, with TDM/TSM measures	2,890	510	0	3,400
3A	Full Corridor BRT, Westchester Local, New Bridge & Highway Improvements	5,180	1,950	897	8,027
3B	Full Corridor BRT, Westchester Express, New Bridge & Highway Improvements	5,180	1,950	2,548	9,678
4A	Full Corridor CRT, New Bridge & Highway Improvements	5,180	1,800	15,111	22,091
4B	Rockland to Manhattan CRT with LRT in Westchester, New Bridge & Highway Improvements	5,180	1,800	10,372	17,352
4C	Rockland to Manhattan CRT with BRT in Westchester, New Bridge & Highway Improvements	5,180	1,800	8,775	15,755
4D	Full-Corridor BRT with Rockland to Manhattan CRT , New Bridge & Highway Improvements	5,180	1,950	8,869	15,999

	Transit-ready Bridge & Highway Improvements	Transit Ready Bridge	Highways	Initial Total *
4D	Bridge designed for BRT and CRT	\$6,400	\$1,950	\$8,350 **
3A, B	Bridge designed for BRT	5,180	1,950	7,130
4A, B,C	Bridge designed for BRT and CRT	6,400	1,800	8,200

* Transit funding to be analyzed at a later date

** \$9,300 with BRT

PHASE I FINANCING STUDY

The preliminary financial assessment that follows is part of a more extensive study that documents the basic process and financial requirements for this “mega-project.” In addition to the financial assessments, the Phase I study also included:

- Case studies on how twelve mega-projects with similar attributes were financed
- Documenting technical aspects of the current Thruway Bond covenants
- Review of FHWA requirements for Major Projects Finance Plans
- Inventory of agreements and authorizations (including legislation) that may be required under certain financing scenarios

PURPOSE OF PRELIMINARY FINANCIAL ASSESSMENT

The goal of the Preliminary Financial Assessment was to establish baseline, order of magnitude estimates for financing the current project alternatives using traditional public finance sources. Key findings include preliminary estimates of how much additional revenue might be required to supplement those traditional sources (“the gaps”).

This information sets the stage for next steps (see Part II) and more intensive, targeted work as the field of alternatives is narrowed.

The assessment also lays out an array of financial strategies that could be pursued to finance any of these project alternatives if chosen (see Part III).

PRELIMINARY FINANCIAL ASSESSMENT APPROACH

Under the direction of the financial workgroup, consultants developed a BASE CASE model to provide an initial perspective of the fiscal challenges ahead. It utilized a limited set of assumptions to provide a first look at baseline cash flows that could result from a combination of traditional financial resources and public bond financing.

This model serves a valuable purpose, providing an initial perspective of the fiscal scale of this project. The BASE CASE is not a proposed funding approach, nor a recommendation of any kind; it is meant to provide a starting point for moving forward with a detailed analysis and recommendations for possible fiscal solutions.

The workgroup directed the consultants to use historical information to support reasonable estimates of traditional resources that could be available for this project. One starting assumption was to assess potential traditional toll revenues from the bridge itself.

The approach taken was to contrast two sets of assumptions – one with lower, more conservative assumptions; and a second with higher, more optimistic assumptions – in order to develop a reasonable range of outcomes. While numerous other combinations of assumptions could be analyzed between (or outside of) the two basic parameters, the establishment of the range meets the purpose of the Preliminary Financial Assessment by

developing a baseline financial picture that will inform project decision-makers, and sets the stage for further detailed work.

These analyses did not anticipate that any funding would be available from the core capital programs of the three partner agencies – NYSDOT, MTA and the Thruway Authority – since core infrastructure programs are already forecasted to consume all currently authorized resources for the foreseeable future.

RANGE OF RESOURCES AVAILABLE

In developing a BASE CASE funding scenario for all alternatives, the ranges of assumptions used for preliminary cash flow modeling are shown in Table 3.

The assumptions regarding Federal aid are based on patterns of historical Federal participation in major projects in New York State and throughout the nation. These levels were chosen to assess the magnitude of potential funding gaps under traditional Federal/local partnerships. They should not be construed to represent a likely target for funding advocacy on this project or a sufficient level of Federal participation. On the contrary, the unique characteristics of this project and its regional, multi-state importance argue for a new paradigm of Federal partnership that extends beyond traditional structures.

**TABLE 3
BASE CASE RANGE OF RESOURCE ASSUMPTIONS**

	Low / Conservative	High / Optimistic
Federal Highway	\$200 million total, consisting of two \$100 million earmarks over two federal authorization periods	
Federal Transit	No Federal transit “new starts” contribution	Federal transit at 1/3 of transit cost; support grant anticipation bonds (\$331 million to \$5.570 billion total)
Tappan Zee Toll Increases (see Table 4)	Tolls on the Tappan Zee Bridge doubled after construction, no inflation applied thereafter	Tolls on the Tappan Zee Bridge tripled after construction, then apply cost of living increases each yr
Tolls Collected, Base Year 2016	\$100 million	\$137 million

Estimated Federal Highway Resources

- The \$200 million Federal highways earmark estimate is based on the assumption that this project could obtain earmarks in each of the next two Federal transportation acts, each equal to the largest earmarks provided to any one project in previous acts. Our benchmark example is the \$100 million provided in SAFETEA-LU for the Cross Harbor Freight Movement Project. The next highest SAFETEA-LU earmark was \$20 million, provided to Pennsylvania to build Route 15.

Estimated Federal Transit Resources

Early in this study, two complex considerations concerning transit funding were recognized:

The first is that most of the design alternatives for the project will result in transit services across the bridge and throughout the corridor. In light of the existing bond covenants for the Thruway Authority, an eventual financing plan for this project will need to include mechanisms that allow for transit investments in this corridor.

Another consideration is that the lead time for securing FTA funding would make it difficult to receive FTA funding in time to progress one comprehensive project letting by the target year of 2011. Thus, the decision to progress the project in a two tier process appropriately reflects the need for additional years of development for the full transit component and associated funding.

Both of these financing considerations for the transit portion of the project will be analyzed in depth during the next phase of studies.

For this Preliminary Financial Assessment, all alternatives were first analyzed in terms of the full highway plus transit costs. After the decision to continue with a two tier approach, the same analysis was applied to the first phase – or only to the “Transit-Ready Bridge and Highway Improvements.” At this time, no additional analysis has yet been applied to the subsequent transit work.

For the BASE CASE scenario to all alternatives, these assumptions were applied:

- Low. “No transit contribution” is chosen as the low range of transit aid.
 - The Federal aid mechanism currently available for projects of this size is the New Starts program, a highly competitive program under which candidate projects are ranked according to their projected ridership and mobility benefits. It is possible that, despite the significant benefits the transit alternatives will provide to the region, other projects around the nation may be ranked higher. (See Part III of this paper for discussion of a Federal strategy to pursue new Federal mechanisms that better meet the needs of this unique project)

- Total funding nationally for this program is limited, and existing projects in the funding queue (including Second Avenue Subway) could consume funding available through 2016.
- **High.** The higher, more optimistic Federal transit contribution (through New Starts) chosen is “1/3 of transit cost.”
 - The estimate is similar to the funding levels received by the MTA for East Side Access and the first phase of Second Avenue Subway.
 - Transit funds are assumed to be provided after the construction period, due to competing demands nationally. For modeling purposes, this funding is not part of the construction financing, but is integrated into repayment of project debt.
 - Higher amounts may potentially be available if new transit programs are initiated through reauthorization.

Tappan Zee Bridge Toll Estimates

- Bridge toll estimates assume that a toll surcharge could be applied to the current Tappan Zee bridge tolls. Toll increases are assumed to start after construction, once the improved facility is open and functioning.
- The estimate does not specifically take into account the Thruway’s enacted toll increases, which would have a de minimis impact on the order of magnitude results. The estimates are rough proxies for how much might be gained by doubling or tripling current tolls.
- The analysis relies on calculating the level of bonds that could be supported by future toll revenue streams (50-year amortization).
- Directing additional tolls to this project will require careful legal and financial analysis of the resulting impact on the Thruway Authority, especially because current Tappan Zee tolls support the operation of the bridge and also subsidize the rest of the Thruway system.
- Changes to the Thruway’s authorizing statutes, bond covenants and outstanding debt are likely to be required, in order to separate Tappan Zee revenues from the rest of the Thruway.

**TABLE 4
BASE CASE - TAPPAN ZEE BRIDGE TOLL SUMMARY**

	Low Range	High Range
Tolls Collected, Base Year 2016	\$100 m/yr, then flat	\$137 m/yr, then inflated

Construction Bonds leveraged by tolls over 50 years	\$1.3 billion	\$2.4 billion
Total Tolls Collected over 50 years	\$5 billion	\$11 billion

OTHER KEY ASSUMPTIONS

- Construction is projected to start in late 2011, and end by 2016.
- The preliminary analysis models the financing for the project from a holistic perspective. That is, a unified public debt finance mechanism is assumed for all project costs, whether the costs are attributable to bridge or transit components of the project. No attempt is made to simulate specific MTA credit structures for the transit financing or Thruway credits for the bridge financing. Rather, a generic public finance model is used that produces a reliable bottom-line outcome that can reasonably be expected, regardless of the public governance structure for the constructed facilities.
- Borrowing to finance the project would be amortized over 50 years. Under some circumstances, legislation would be needed to authorize such a term.
- Only public financing scenarios were modeled, relying on tax-exempt debt in addition to those funding sources shown in Table 3. Public/Private options (concessions) are discussed in Part III as a means to address the funding gaps estimated in this baseline preliminary assessment.

PRELIMINARY FINANCIAL CONCLUSIONS

Based on the preliminary resource estimates assumed, BASE CASE financial projections have been established as an illustrative calculation of the whole challenge of financing a project of this magnitude. As additional analyses are undertaken, each component of the estimate will be refined and conclusions will continue to change. Toll estimates will be refined based on vehicle class, pricing alternatives, projected traffic levels and other travel patterns. Similarly, re-estimates of Federal aid, interest rates, inflation, debt capacity and other factors will alter these conclusions until the optimal financing mechanisms are formulated.

Preliminary conclusions are grouped into two categories:

- Near-term financing available, or required, to pay for capital costs (2011-2015)
- Long-term estimate of resources available, or required, to repay principal and interest, for 50 years, post-construction (2016-2065)

BASE CASE: Total Cost to Finance

Under the approach used for the preliminary analysis, the amount necessary to finance each alternative is greater than the consultants' 2012 mid-point estimates of capital costs. Additional costs would be incurred during construction, adding another 40 percent to the base capital cost estimates. These cost increases reflect the BASE CASE assumptions that:

- Costs would continue to inflate from the mid-point to the end of construction.
- Debt service, including interest payments, would not begin until construction is complete and revenue collection has begun. Therefore, interest incurred (but not paid) during the construction period will increase the principal amount borrowed.
- Borrowing funds would incur debt issuance charges.

TABLE 5
BASE CASE - TOTAL COST TO FINANCE
\$ in billions

	Alternative	Capital 2012 Est.	Additional Costs	Capital Total Cost
2	Bridge Rehabilitation in kind, with TDM/TSM measures	\$3.4 B	+ 1.3	\$4.7 B
3A	Full Corridor BRT, Westchester Local, New Bridge & Highway Improvements	8.0 B	+ 3.5	11.5 B
3B	Full Corridor BRT, Westchester Express, New Bridge & Highway Improvements	9.7 B	+ 4.2	13.9 B
4A	Full Corridor CRT, New Bridge & Highway Improvements	22.1 B	+ 9.7	31.8 B
4B	Rockland to Manhattan CRT with LRT in Westchester, New Bridge & Highway Improvements	17.4 B	+ 7.6	25.0 B
4C	Rockland to Manhattan CRT with BRT in Westchester, New Bridge & Highway Improvements	15.8 B	+ 6.9	22.7 B
4D	Full-Corridor BRT with Rockland to Manhattan CRT , New Bridge & Highway Improvements	16.0 B	+ 7.0	23.0 B

	Transit-ready Bridge & Highway Improvements	Capital 2012 Est.	Additional Costs	Capital Total Cost
4D	Bridge designed for BRT and CRT	\$8.4 B	+ 3.6	\$12.0 B
3A,B	Bridge designed for BRT	7.1 B	+ 3.1	10.2 B
4A,B,C	Bridge designed for BRT and CRT	8.2 B	+ 3.6	11.8 B

BASE CASE: Gap in Financing Capacity

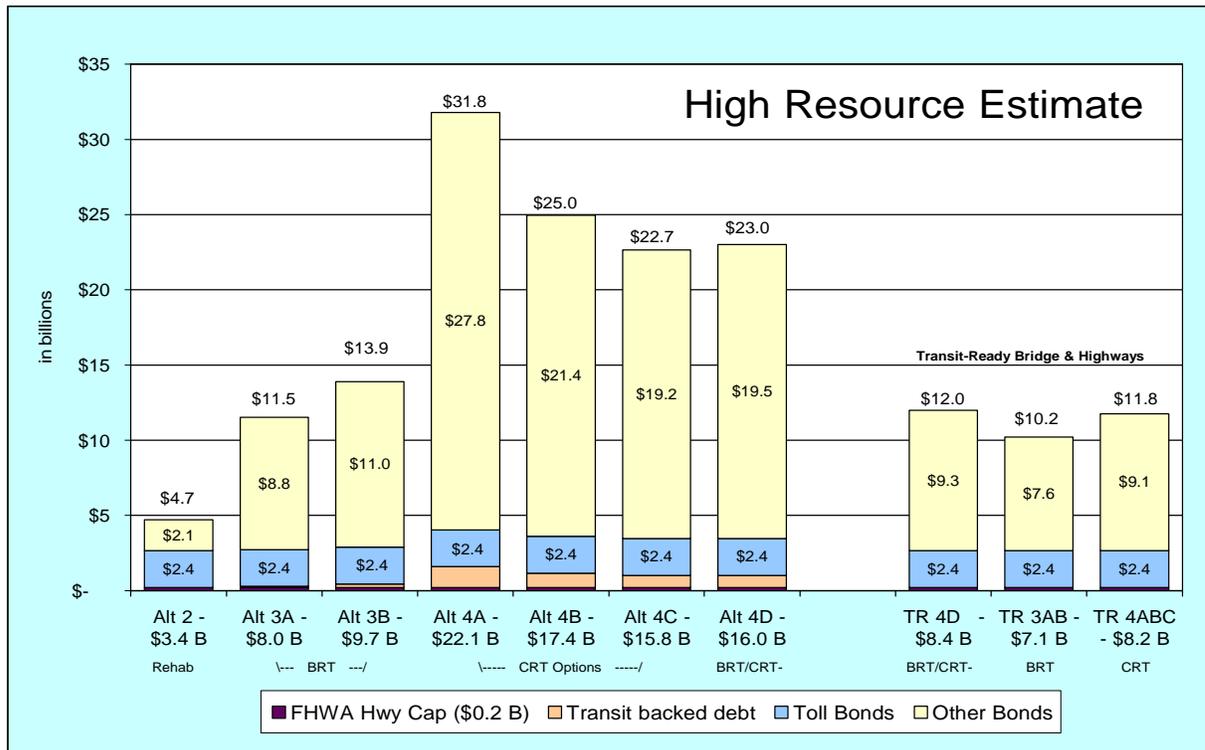
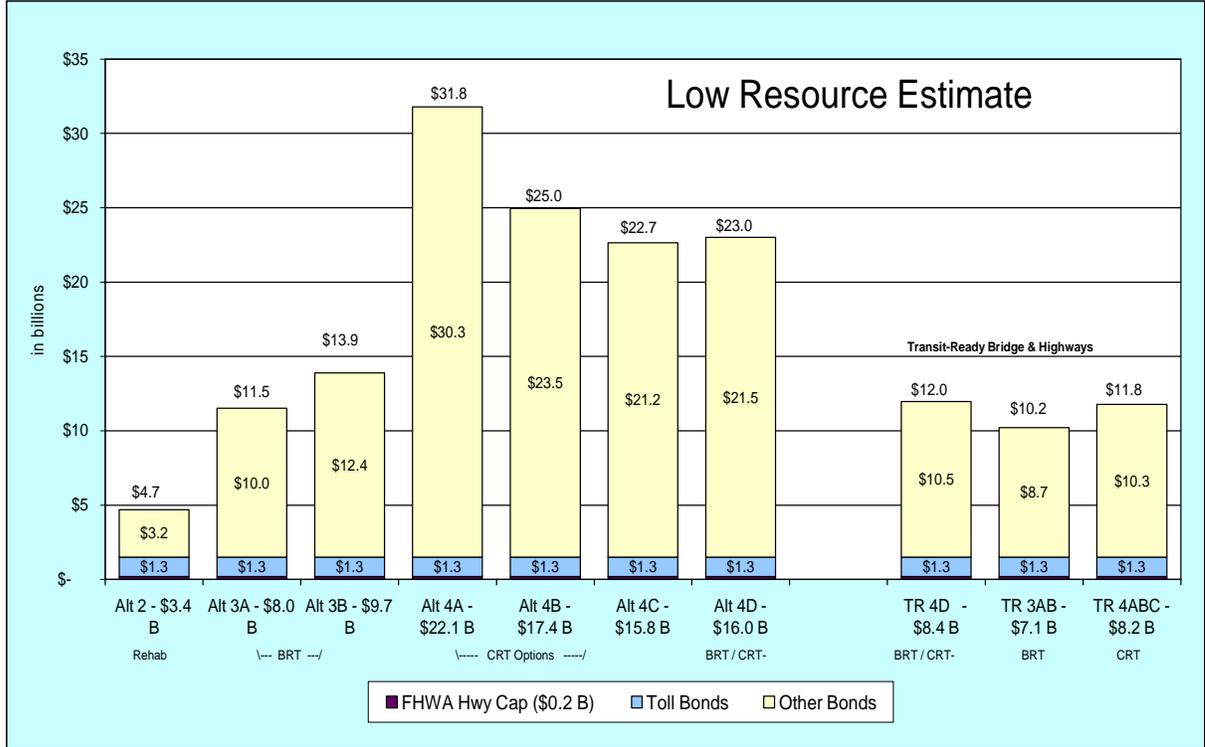
For the purposes of this illustration, the cumulative capacity of the available resources modeled (Federal highway, Federal transit and Tappan Zee Bridge tolls) falls significantly short of the amount needed to meet the total costs to finance in every scenario examined. Against total capital costs to be financed that range between \$4.7 billion and \$31.8 billion, the finance capacity of available resources ranges only between \$1.5 and \$4.0 billion.

- Federal highway aid: Assumed to provide only \$200 million of finance capacity (available as pay-as-you-go funding).
- Transit-backed Debt: Federal transit aid is assumed to provide a range of \$0 to \$1.4 billion of bond finance capacity. Although cash flow is assumed to lag beyond the construction period, the preliminary analysis assumes that Federal transit funds could be used to support bonds.
- Toll Bonds: Bridge tolls are assumed to provide a range of \$1.3 billion to \$2.4 billion of bond finance capacity.
- Other Bonds: Other bonds will be required to complete financing, leveraging revenue sources that are not yet identified.

The following charts compare the financing capacity of the available resources modeled, to the total costs to finance the alternatives examined.

BASE CASE - GAP IN FINANCING CAPACITY

FHWA funds not visible, at \$200 million

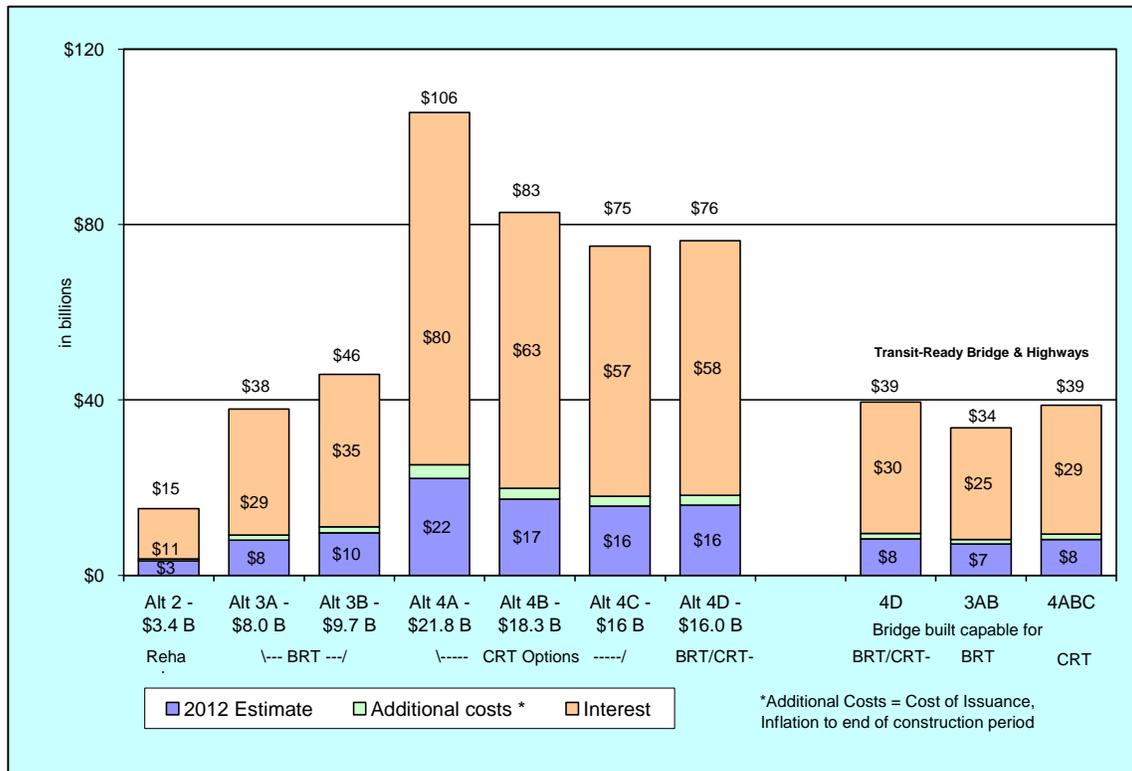


BASE CASE: Cash Needs to Finance over 50 Years

Under the traditional public finance structures modeled, and for the purpose of illustration, the cost of debt increases overall project cash needs by 4 to 5 times, over the mid-point 2012 capital estimate.

Repayment of interest is the most significant component of the overall cash need. The following chart also includes costs of issuing bonds, capitalizing interest during the construction period, and inflation from 2012 (construction midpoint), through the end of construction.

BASE CASE - CASH NEEDS TO FINANCE OVER 50 YEARS



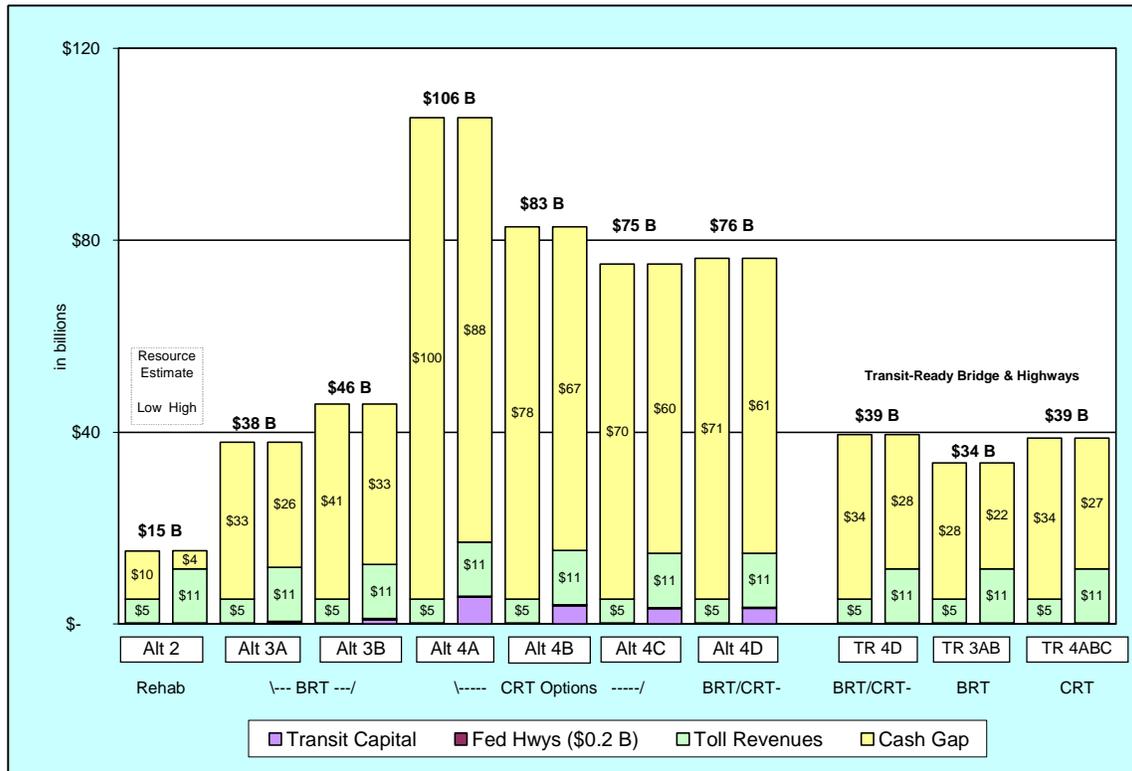
BASE CASE: Cash Gap through Financing Period

The following chart shows the range of additional revenues needed over 50 years to finance the alternatives, taking into account the low and high ranges of reasonably expected resources and the resulting gap in financing capacity.

- The lowest resource assumptions (left-hand bar for each alternative) produce 50-year funding shortfalls of \$10 billion to \$100 billion.
- The highest resource assumptions (right-hand bar for each alternative) show 50-year funding shortfalls of \$4 to \$88 billion.

BASE CASE - CUMULATIVE CASH GAP THROUGH FINANCING PERIOD

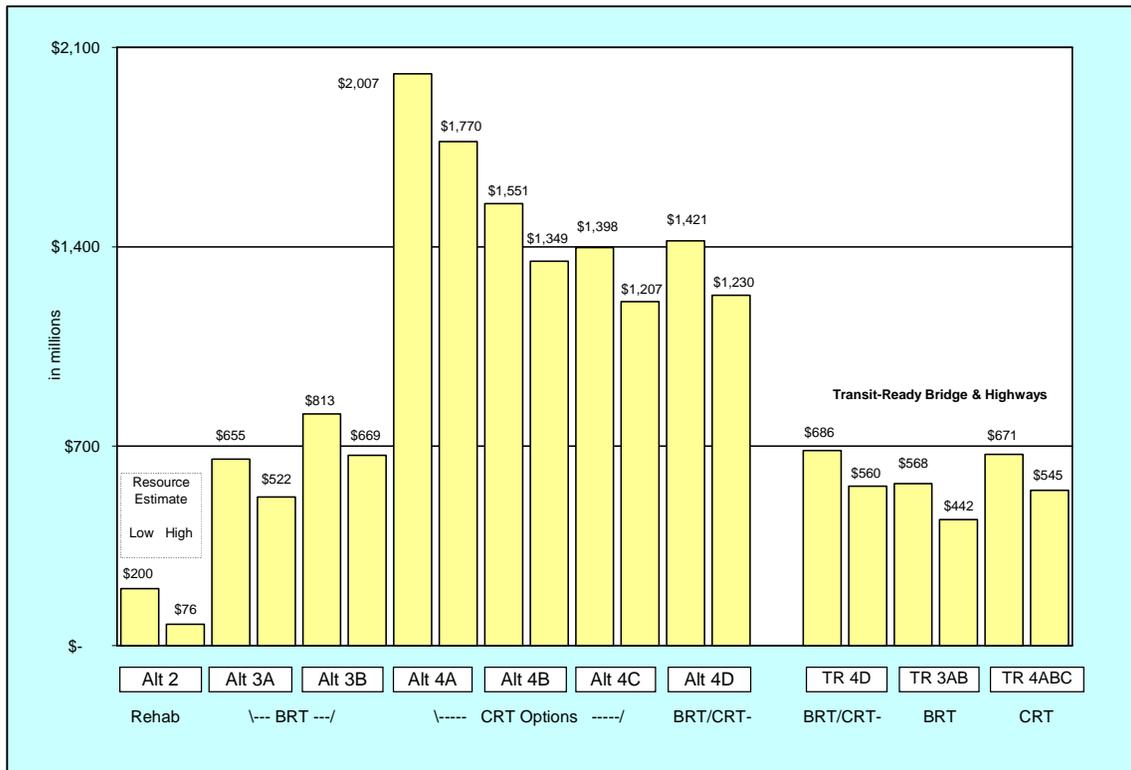
FHWA funds not visible, at \$200 million



BASE CASE: Average Annual Cash Gap

The chart below shows the same 50-year cash gaps converted to the average annual revenue requirements. For example, after applying the range of funds assumed to be available, it would cost another \$76 to \$200 million a year for fifty years, to rehabilitate the bridge. For the most costly alternative, 4a, annual additional revenues required would range from \$1.8 to \$2.0 billion per year.

BASE CASE - AVERAGE ANNUAL CASH GAP THROUGH FINANCING PERIOD



PART II – NEXT STEPS

Ultimately, the completion of the finance study will culminate in a federally-required Major Project Finance Plan. Although selection of a preferred local alternative is necessary to complete that principal task, additional financial feasibility work can continue in the interim on issues that are neutral to the choice of alternatives.

That work includes:

- Developing a schedule for the financial steps that need to occur to produce a Major Projects Finance Plan in accordance with the overall project timeline. This schedule will address timing issues such as the State and Federal budget cycles, legislative sessions, procurement timeframes, etc.
- Working on the State's strategy for approaching New York's congressional delegation on Federal funding issues, including earmarks, advocacy for new programs (such as funding for regionally significant projects), changes to existing Federal guidelines that could assist the project, etc .
- Analyzing strategies described in Part III of this paper.
- Continuing to pursue creative financing ideas through various means, including consulting with specialized financial advisors, as needed.
- Further refining cash flow models that will be used once an alternative has been selected, including further differentiation between highway and transit resources and funding shares.

PART III – PRELIMINARY FINANCING STRATEGIES

The objective of this section of the report is to begin the process of identifying options for further study and implementation that will address the “base case” funding gaps estimated in Part I. The effort to come up with a workable financing package will proceed from this point in time – not in phases – but on a continuum, until the project is ready for construction, with financing in place.

In the interest of efficiency, portions of the financial work have been, and will continue to be, deferred until the project alternative is chosen and more refined estimates are available. Further scope definition is essential, given the range of transit costs, and limited interchangeability of fund sources between modes.

However, in the absence of a preferred alternative, valuable work can continue towards evaluating the financial, statutory, institutional and political implications of options that may be necessary to finance a project of this magnitude.

Realistically, this project may require a “package” of financing mechanisms, and will not be funded via a single approach. Thus, a wide array of options must continue to be examined.

The following briefly describes some of the financing strategies that have been identified for exploration thus far:

1. Project Phasing
2. Increased Pay-as-you-go Construction Funding
3. Savings Resulting from Toll Increases at Start of Construction
4. Avoiding Inflation
5. Design-Build Approach
6. Concession Structures
7. Other Governance and Financing Options
8. Explore other New York State Thruway Tolling Options
 - Use of tolls from wider geographic areas
 - Various toll scenarios
9. Federal Aid Reauthorization Opportunities, including Federal Tax Credit Bonds
10. Federal Innovative Financing Tools
 - Private Activity Bonds (PABs)
 - TIFIA (Transportation Infrastructure Finance and Innovation Act of 1998)
11. Other New York State Tolling Opportunities
12. Local and Regional Tax Options
13. Existing State Financing Options
 - Dedicated Trust Funds – Highway and Transit
 - General Obligation Bond Acts
 - State Personal Income Tax Bonds
 - State Infrastructure Bank

Synthesis of Case Study Findings Most Pertinent to the Tappan Zee Bridge Project

Prepared for the:

**New York State Department of
Transportation**

Metro-North Railroad

New York State Thruway Authority



New York State
Department of Transportation



Metro-North
Railroad



New York State
Thruway
Authority

SUMMARY

As part of the preliminary effort to develop a financial plan for the Tappan Zee Bridge (TZB)/I-287 Corridor project, a select group of surface transportation projects were documented in the form of case studies. Selected projects either involved some form of public-private partnership (PPP) to expedite delivery and financing, or were a bridge project similar in context and complexity to the TZB. Each case study discussed the following details of each project: background and description, legal rationale and financial plan, delivery approach and partnership arrangement, issues and strategies to address them, results to date, lessons learned, implications for the TZB project, and conclusions. Case studies were selected from three groups: state-sponsored projects, Federally supported projects, and international projects. This report focuses on the findings of the 12 case studies that are most pertinent to the TZB project to help guide project sponsors in preparing for project development, financing, and implementation.

The insights derived from the various case studies prepared for this project can help guide project sponsor decisions regarding how to proceed to subsequent phases of the project development process. The inclusion of these studies does not presume any decision to employ these options. These case studies were selected and developed as a means to inform the Financial Study team about the experiences of others who faced similar challenges.

The following lists the 14 most pertinent case study findings derived from the contents of this report for TZB project sponsors to consider in their deliberations on the type of project, delivery approach, and financing to use to advance this project:

1. The TZB project requires several features to promptly move forward:
 - Broad base of political, public, and user support for this multimodal project
 - Significant financial resources to draw upon and leverage with Federal, state, and local initiatives that would enhance the financial feasibility of the project
 - Favorable statutory framework to apply Public Private Partnership project delivery approaches (if that approach is chosen)
2. Successful mega-project sponsors consolidate transportation improvement goals, various interest groups, multiple modes, and diverse funding sources and financing approaches into a highly integrated infrastructure delivery package, requiring:
 - Informed leadership at all levels of government
 - Public confidence in the sponsoring transportation agencies to work cooperatively
 - Environmental streamlining within National Environmental Policy Act (NEPA) requirements
 - Competitive service delivery market able to complete project within budget and schedule
3. The nature and role of public transit features in the TZB project are important considerations for the sponsoring agencies given the emphasis by the U.S. Department of Transportation (USDOT) on more holistic approaches to congestion relief that cut across traditional modal boundaries. Multimodal projects require modal agencies at all levels of government to work in a cooperative partnership throughout project planning and delivery phases.
4. Consideration of PPPs for the TZB project must take into account strategies for operation, maintenance, and capital replacement of portions or the entirety of the New York Thruway system and the metropolitan transportation system around New York City.
5. Risk analysis identifies the range in possible traffic, revenue, and capital and operating costs, enabling decision-makers to make more informed choices on whether or not to proceed with a project.
6. There are project roles that the public sector is better suited to manage, such as environmental clearance, permitting, property acquisition, and public outreach. Other project functions and risks

may be managed and more cost-effectively delivered by the private sector, such as design, construction, operations, and preservation. The key is to balance the risks and responsibilities to match the abilities of each partner.

7. Comprehensive due diligence and careful structuring of the procurement process will increase the potential to obtain multiple cost-effective bids from qualified private sector teams including:
 - Risk analysis and risk-sharing mechanisms
 - Value for Money (VfM) analyses to determine appropriate contract length
 - Project documents given to prospective bidders to determine whether to bid
 - Willingness to listen to prospective bidders and modify the project in response to their concerns prior to procurement and selection
8. Contract size and scope can significantly influence bidder competition and bid prices.
9. Transparency in the procurement process should provide full details of how the winning bidder arrived at its price following selection and contract award.
10. Early financial planning can lead to early financial commitments by project sponsors and stakeholders to expedite project delivery and avoid cost increases for key project materials.
11. Alternative project delivery approaches transfer greater project design and construction risks to the private sector while allowing for innovation and cost-effectiveness.
12. A long-term concession lease may provoke strong reactions, depending on the perspectives of stakeholders involved in the process relative to the perceived costs and benefits of the project on their constituencies. Successful implementation is fostered when project sponsors consider a wider scope of benefits than costs and use lease proceeds for transportation.
13. PPP team members should maintain a spirit of openness and cooperation throughout the project development and implementation phases, soliciting inputs from and communicating with each other and with key stakeholders including the general public to help keep projects moving as the parties work out issues in a collaborative manner.
14. The project sponsor should provide due diligence oversight throughout the project development process to ensure all partners are upholding their commitments and that the partnership can withstand risk factors such as cost, traffic, revenue, and environmental risks.

1. INTRODUCTION

This report summarizes the key findings of the case studies prepared as part of the development of a financial plan framework for the TZB project. These findings represent the major lessons learned from the various state-based, Federally supported, and international transportation facility projects that are most pertinent to the TZB project. These case studies describe large surface transportation projects delivered through some sort of PPP arrangement or bridge projects similar in context and complexity to the TZB. This report also provides additional lessons learned from numerous surface transportation projects developed using some form of PPP in the United States and in other countries, as well as a listing of the critical success factors for transportation PPP projects based on available research.

The USDOT defines PPPs as:

“A public-private partnership is a contractual agreement formed between public and private sector partners, which allows more private sector participation than is traditional. The agreements usually involve a government agency contracting with a private company to renovate, construct, operate, maintain, and/or manage a facility or system. While the public sector usually retains ownership in the facility or system, the private

party will be given additional decision rights in determining how the project or task will be completed.”¹

PPP arrangements represented by the case studies prepared for this project range from design-build to long-term concession or franchise contracts. Figure 1 illustrates the spectrum of PPPs used for surface transportation project financing and delivery, ranging from high to low levels of private sector involvement in project delivery and/or financing.

As shown in Figure 1, there is a wide range of approaches that fall under the definition of PPP.

Figure 1: Alternative Public-Private Partnership Arrangements



2. CASE STUDY SURFACE TRANSPORTATION PROJECTS

A number of project delivery and financing approaches are represented by the case studies prepared for this study. The case studies represent a diverse set of projects representing different kinds of surface transportation facilities, including mostly bridges but also transit fixed guideway projects, a toll road, and a tunnel project. A number of the bridge projects are multimodal, carrying both highway lanes and rail lines.

Figure 2 summarizes the 11 projects covered by the case studies as well as the I-5 Columbia River Bridge Project from Appendix B of this report.

¹ Report to Congress on Public-Private Partnerships. USDOT, Federal Highway Administration, December 2004.

Figure 2: Surface Transportation Infrastructure Project Case Studies

State-Sponsored Projects								
Project	Project Type	Public Sponsor	Project Location	Contract Type	Distinctive Features	Project Cost	Contract Duration	Status
Miami Port Tunnel	Tunnel	Florida/FDOT	Miami/Dade County, Florida	DBFO, Availability based Shadow Tolls	Tunnel with Availability Payments for DBOMF	\$1-\$2B	35-50 years	Awarded 2007
Indiana Toll Road Lease	Existing Toll Highway	Indiana Finance Office	Northern Indiana	Concession Lease - O&M-Preserve	Existing Toll Highway Long-Term Concession Lease	\$3.75B	75 years	Underway 2006
Chicago Toll Skyway Bridge	Existing Toll Bridge	City of Chicago	Chicago, Illinois	Concession Lease - O&M-Preserve	Existing Toll Bridge Long-Term Concession Lease	\$1.8B	99 years	Underway 2005
San Francisco-Oakland Bay Bridge - East Span	Replacement Toll Bridge and Approaches	Bridge and Tunnel Authority	Oakland Bay, California	DBB	Major Bridge Replacement involving Complex Design and Extended Procurement	\$6.3B	10-year construction period	Skyway under construction; tower bridge to open 2012
Pocahontas Parkway	Toll Parkway and Bridge	Virginia DOT	Richmond, Virginia James River	D-B-F, 63-20 Corp Bonds, SIB Loans	New Toll Highway with 63-20 Corporation Financing and Subsequent Long-Term Concession Lease	\$324M	28 year 63-20 bonds	Opened 2002; Refinanced 2006
Tacoma Narrows Bridge	New One-Way Toll Bridge Span	Washington DOT	Tacoma, Washington	DB	New Tolle Second Span using DB Delivery Close to Completion	\$850M	6 years	To be completed 2007
I-5 Columbia River Bridge	Replacement Toll Bridge with Transit Elements	Oregon DOT and Washington State DOT	Portland, OR and Vancouver, WA	TBD	Replacement of a major Interstate bridge (on I-5) with transit elements (BRT/LRT)	TBD	TBD	Preliminary Planning - State and Local MOUs
Federal-Supported Projects								
Project Name	Project Type	Public Sponsor	Project Location	Contract Type	Distinctive Features	Project Cost	Contract Duration	Status
Woodrow Wilson Bridge Replacement	Replacement Bridge, Approaches, and Interchanges	FHWA/VADOT/MdDOT	Potomac River	DBB	Federal Bridge Replacement with Complex Multi-State Ownership Agreement	\$2.4B	14 years	To be completed 2012
T-Rex Road/Rail Expansion	Highway Expansion and Light Rail Extension	FHWA/FTA/Colorado DOT/RTD	Denver, Colorado	DB	Multi-Modal Project using DB Delivery involving Multiple Public Sponsors	\$1.2B	7 years	To be completed 2007
Hudson-Bergen Light Rail Transit Line	New Light Rail Transit Line	FTA and NJTransit	Northern New Jersey	DBOM/Equipment	Innovative Transit DBOM Light Rail Project	\$1.9B	15 years	Opened 2001
International Projects								
Project Name	Project Type	Public Sponsor	Project Location	Contract Type	Distinctive Features	Project Cost	Contract Duration	Status
Oresund Fixed Link - Road/Rail Bridge/Tunnel	New Toll Highway and Rail Bridge and Tunnel	Denmark-Sweden	Copenhagen to Malmö	DBB	Highway-Rail Bridge/Tunnel/Island Project with Bi-Lateral Funding and O&M Responsibilities	\$2.7B	35 to 60 years government financing	Opened 2000
Tsing Ma Toll Road/Rail Bridge	Suspension Bridge for Highway and Rail	Provisional Airport Authority	Hong Kong	DB	New Highway/Rail Bridge using DB Delivery and Long-Term O&M Contract	\$930M	27 years	Opened 1997

 Case study projects most like the TZB project.

3. IMPLICATIONS OF CASE STUDY FINDINGS FOR THE TAPPAN ZEE BRIDGE PROJECT

A summary of main conclusions by individual project case study is included as an appendix to this report. Based on these case studies, a number of findings have significant potential implications for structuring the TZB project. These findings provide project sponsors with insights that can help determine the best course of action to take to develop, finance, deliver, operate, and preserve the bridge if it is decided to pursue one of the many project alternatives. These alternatives include the following, based on the Phase I Alternatives Analysis:

Alternative 1: No Build—\$0.5 billion to \$0.7 billion

Alternative 2: Bridge Rehabilitation with Travel Demand Management/Travel Systems Management (TDM/TSM) Measures—\$2.0 billion to \$2.5 billion

Alternative 3: Bridge Replacement with Full Corridor Bus Rapid Transit (BRT) and Highway Improvements in Rockland County—\$5.0 billion to \$6.5 billion

Alternative 4a: Bridge Replacement with Full Corridor Commuter Rail Transit (CRT) and Highway Improvements in Rockland County—\$11.5 billion to \$14.5 billion

Alternative 4b: Bridge Replacement with Manhattan-Bound CRT and Light Rail Transit (LRT) in Westchester County and Highway Improvements in Rockland County—\$10.0 billion to \$12.5 billion

Alternative 4c: Bridge Replacement with Manhattan-Bound CRT and BRT in Westchester County and Highway Improvements in Rockland County—\$9.0 billion to \$11.5 billion

With bridge replacement alternatives ranging in cost from \$5 billion to \$14.5 billion, the sponsors of the TZB project can benefit by gaining a greater understanding of the strategies used by other magaproject sponsors to address issues that arose in the various case study projects.

The following summarizes the case study findings that have the greatest potential implications for the TZB project. These findings are organized into six categories:

1. Public, Political, and Institutional Support
2. PPP Procurement
3. Financing
4. Delivery
5. Contract Administration
6. Project Scope

Public, Political, and Institutional Support

Large transportation projects (mega-projects) require strong political and public support to bring together disparate stakeholders and create a mutually agreeable financing and delivery solution among the project sponsors. Of note:

- Proactive public involvement can buoy a project facing significant opposition. A public outreach and communication program designed to involve and educate the public on the benefits of the project should be implemented early in the project development.
- Political leadership through one or more project champions is essential to enabling mega-projects to sustain positive momentum throughout the development and implementation phases.

Legal authority is essential before a PPP project can be advanced beyond concept and early planning stages. For example:

- In the case of the Transportation Expansion (T-REX) project, approvals by both the legislature and the governor were required to allow use of alternative project delivery and financing approaches.
- The T-REX project required both an intergovernmental agreement (IGA) between state and local modal sponsors and a partnering charter involving Federal, state, and local sponsors.
- Early proactive public outreach and continuous communications efforts can produce positive voter approval of bonds required for project financing. Project sponsors must communicate with stakeholders early in the planning process and line up support well in advance of project design and development.

Continuous environmental and legal challenges can delay a mega-project when coming from different sources, such as local governments and environmental groups.

Successful mega-project sponsors consolidate transportation improvement goals, various interest groups, multiple modes, and diverse funding sources and financing approaches into a highly integrated infrastructure delivery package, requiring:

- Well informed leadership at all levels of government
- Public confidence in the sponsoring transportation agencies to work cooperatively
- A competitive service delivery market that assures project sponsors they could get the job done within scope, budget, and schedule

These are the goals of any mega-project, and as several of the studies such as the T-REX and Wilson Bridge examples highlight, these goals are achievable.

PPP Procurement

Avoid changing the rules of a PPP procurement and delivery process once the process has already proceeded to solicitation, award, and project initiation. This includes significant changes to a project resulting from legislative changes adopted after the submission of proposals and project award to a PPP consortium. Private sector partners seek assurances that the statutes and regulations that will govern the PPP contract agreement will not change. Enabling legislation is the foundation for many business assumptions on which PPPs are based; ex post facto changes can result in the demise of an otherwise viable PPP project and loss of PPP program credibility.

Ensure that PPP enabling legislation sufficiently balances the needs of public and private sector partners. In most PPPs, there are project roles that the public sector is better suited to manage, such as assessment of environmental impacts, permitting, property acquisition, and public outreach. Other project functions and risks may be managed and more cost-effectively delivered by the private sector, such as design, construction, operations, and preservation. The key is to balance the risks and responsibilities to match the abilities of each partner.

Successful PPPs begin with a clear understanding of the respective roles, responsibilities, risks, and returns each partner will assume during the terms of the project contract agreements, with each party held accountable for delivering according to the terms of the contract.

Evaluate a PPP contract agreement prior to contract execution to mitigate project risks, position responsibility for project risks among the partner(s) best able to manage them, and determine if the project remains financially viable under a reasonable range of project risks.

Comprehensive due diligence and careful structuring of the procurement process are essential to obtain multiple cost-effective bids from qualified private sector teams for a mega-project. These include:

- Risk analysis and risk-sharing mechanisms
- VfM analyses to determine appropriate contract length
- Extensive project documentation giving prospective bidders sufficient confidence about the technical feasibility of the project to offer proposals
- Willingness to listen to prospective bidders and modify the project in response to their concerns prior to procurement and selection

Risk management can be optimized by retaining a private sector project delivery team with extensive experience and capabilities in delivering PPP projects that meet the full terms of the contract.

Contract size and scope can significantly influence bidder competition and bid prices. A mega-project issued as one contract can limit the number of eligible bidders and reduce competition, resulting in higher bid prices. This can be solved by dividing the project into smaller contracts focused on specific parts of the project or features of the facility (as was done for the Woodrow Wilson Bridge project). This can be done by public sponsor or concessionaire.

Transparent solicitation and procurement processes provide equal opportunity for participation in a proposed PPP project by interested private sector firms or teams through comprehensive documentation of facility attributes and project requirements. Transparency in the procurement process should provide full details of how the winning bidder arrived at its price following selection and contract award.

Projects involving existing facilities (such as the TZB project) make traffic and revenue analysis more predictable and less risky.

Financing

Traditional approaches to financing (pay-as-you-go) and delivery (design-bid-build) may be challenged to accommodate the complex requirements of mega-projects, particularly in arranging financing and expediting project delivery. Sponsoring agencies need to consider alternative and innovative approaches to better leverage their scarce public resources for critical projects that are likely to wait decades before adequate funding is assembled to advance the project.

The complexity of the TZB project invites consideration of alternative financial plans until a set of funding and financing arrangements are assembled that are acceptable to all public sponsor agencies, as well as private provider firms if the project is delivered through a PPP.

Mega-project sponsors require a robust financial plan that incorporates risk analysis to identify and develop strategies to mitigate potentially significant swings in project cost, timeframe, or other variables. In the near term, ridership or traffic levels for mega-projects are often lower than projected while costs are significantly higher than estimated. This can be anticipated and better managed if a thorough risk analysis is used to identify the range of possible traffic, revenue, and cost levels that could result from various factors. Once the risks associated with mega-project costs and traffic revenues are quantified and understood by all decision-makers, they can make more informed choices on whether or not to proceed with the project based on the range of possible costs and revenues.

Project sponsors and stakeholders should understand the implications of debt financing options up front. Ideally, the impact of each financing option should be evaluated early in the concept development and financial planning phases prior to contractor selection and contract award. This would achieve the most beneficial financing without requiring changes mid-delivery.

Early financial planning can lead to early financial commitments by project sponsors and stakeholders that expedite delivery of the project and avoid cost increases for key materials used for the project. In the case of the T-REX project, this included a unique bottom-up approach to allocating costs by project component among the sponsoring agencies responsible for project funding and financing. This set of cost allocation formulas became part of the funding agreement and financing plan for the project.

Financing transportation mega-projects involving PPPs usually requires participation by both public and private sector stakeholders. In the case of the Port of Miami Tunnel project financing approach, responsibility for initial project financing rests on the private sector, with the public sector sponsors paying back those costs over time through availability payments derived from state, county, and municipal contributions.

Short timeframes to achieve financial self-sufficiency for greenfield mega-projects can create unrealistic expectations of cost coverage in too short a timeframe. More realistic long-term estimates provide a better basis for judging the financial viability of the project over its actual service life.

Delivery

Consideration of any form of PPP for the TZB project must consider the context of an overall strategy for operation, maintenance, and capital replacement for portions or the entirety of the New York Thruway system and the metropolitan transportation system around New York City.

Various PPP approaches for a complex project like the TZB could be successful; the likelihood of success increases if the public sector sponsor emphasizes outcomes and allows flexibility to the PPP team in the finalization of the project design.

Alternative project delivery approaches such as design-build and design-build-operate-maintain (DBOM) transfer greater project design and construction risks to the private sector while allowing for greater innovation and cost-effectiveness:

- When there are a number of agencies involved in a project using alternative delivery approaches, project leaders must cooperate, coordinate, and communicate early in the process to facilitate execution of the project.
- Alternative project delivery approaches allow more innovation from the delivery consortium when brought in earlier in the project development process, specifically an earlier hand-off of project design to the private provider.
- Alternative project delivery approaches require well-defined performance-based specifications for design, construction, and operations and maintenance (O&M) in the contract.
- Direct responsibility for project design by members of the consortium can produce better results than having the prime contractor rely on subcontractors for the design.
- Project delivery phases can be sequenced to avoid reconsideration of fundamental project design questions beyond the “point of no return.”
- Use of alternative project delivery approaches does not guarantee project viability, especially in the near term, but will likely expedite project delivery.
- Alternative project delivery approaches may not prevent cost increases from occurring, but may allow innovative design, fabrication, and mitigation approaches to keep project costs from rising further. Scope creep is a leading cause of project cost increases relative to initial estimates.

A flexible project development approach for projects that have demanding design requirements will enable the private partner team to introduce design and construction innovations that can better control the cost and timing of the project. This suggests that the public agency partner not over-design the project before bringing the PPP team on board, but instead take the preliminary design process to the point where the basic requirements of the project are defined so the PPP design team can take it from there. It also suggests that the PPP partners should work collaboratively and constructively in confronting obstacles that invariably arise during project development with creative solutions, instead of playing the “blame game.” This requires trust among the PPP members.

Contract Administration

Involvement of multiple public agencies as project sponsors will require close coordination among project partners to ensure timely progress and resolution of issues or conflicts.

Members of the PPP team should maintain a spirit of openness and cooperation throughout the project development and implementation phases, soliciting inputs from and communicating with each other and with key stakeholders including the general public to help keep projects moving as the parties work through the issues.

PPPs need flexibility to allow partners to address problems as they invariably arise.

A facilitated partnering process can quickly resolve problems as they arise by:

- Developing trust among the public agency sponsors and the private sector contractors
- Promoting professionalism in the project partnership relationships
- Minimizing claims and disputes that could significantly delay a project in meeting its schedule milestones

Public agency sponsors of mega-projects require managers, support staff, and outside specialists (as necessary) with significant mega-project experience to achieve successful development and implementation.

Limited experience in the project delivery approach by the sponsoring agency may be offset if the public agency is able to exert more oversight through contract administration to ensure quality results.

The project sponsor agency should provide due diligence oversight throughout the project development process to ensure that all partners are upholding their commitments and that the partnership can withstand various risk factors, such as cost, traffic, revenue, and environmental risks.

Early outreach to the construction industry will promote interest in the project while continuous communication through weekly conference calls among primes and subs can promptly resolve project development issues and avoid claims.

Monetary incentives for early completion and disincentives for late completion encourage contractors to maintain project schedule.

Provisions can be made in long-term contracts to allow congestion (variable or value) pricing to reduce demand to levels conducive to free-flow operations (TDM/TSM).

Long-term contracts need to stipulate financial remedies to the private consortium if the public sector seeks to regain control over the facility before the end of the contract term.

Project Scope

Transportation PPPs are more likely to survive the stresses of development and implementation if the partners share a common vision of the project that provides continuity and mutual commitment throughout these project delivery phases.

A long-term concession lease may provoke strong reactions, depending on the perspectives of stakeholders involved in the process relative to the perceived costs and benefits of the project on their constituencies. Successful implementation will benefit from project sponsors' ability to demonstrate a wider scope of benefits than costs.

- Policymakers will need to address public concerns over long-term concession leases, perhaps by incorporating a fixed toll rate schedule in the early years of the contract, for example; by providing a provision for excess revenue sharing; and perhaps, by including an early termination clause to allow the public sponsor to take back the facility before the end of the contract, provided the concessionaire is compensated for the lost earnings.
- Long-term concession deals can help insulate the project from cyclical shifts in the economy and demographics.

One of the major lessons learned from the Indiana Toll Road (ITR) concession that could be applied to the TZB project is that privatization of highway assets can be more than a one-time phenomenon. The lease of the ITR builds on the breakthrough financial and procurement strategies that were implemented for the Chicago Skyway lease. It demonstrated that states can also participate in PPPs involving long-term concession leases of transportation infrastructure assets. Serious discussion of leasing state-owned toll highways is currently underway in Pennsylvania, New Jersey, and Illinois.

The highway and transit features on the TZB project might be addressed at different timeframes, depending on the cost of the features and the level of highway congestion on the bridge after reconstruction or replacement.

4. CRITICAL SUCCESS FACTORS FOR PPPS IN TRANSPORTATION

Research for the Federal Highway Administration (FHWA) into the use of PPPs to deliver surface transportation projects has identified a number of factors that are common to projects that have been successfully implemented. These critical success factors are listed in Figure 3 and reflect many of the findings of the case studies prepared for the TZB project.

Figure 3: Critical Success Factors for PPP Transportation Projects

- Stakeholder consultation through regular meetings at both the managerial and technical levels
- Active public involvement through public outreach and ongoing communication between project partners and stakeholders
- Political leadership that supports the project and serves as a champion for its successful implementation
- Secure public control of the infrastructure assets through continued public ownership and a PPP team accountable for project results consistent with the contract terms
- Limited complexity of the PPP arrangement and contract agreement to ensure stakeholder understanding and compliance
- Well-defined legal authority for the public sector to enter into PPP arrangements and apply alternative methods of funding, financing, and delivering transportation infrastructure
- Financial viability under a wide range of risk factors
- Clear delineation and balance of project roles, responsibilities, and risks among the PPP partners commensurate with their potential returns
- Demonstrated transportation need (congestion relief, safety improvement, better accessibility, and/or travel time reliability) and public support among numerous stakeholder groups
- Capable public and private sector partners with mutually complementary interests in the project and a willingness to accommodate changing conditions and opportunities consistent with the desired project outcomes and performance requirements
- Adequate dedicated funding sources for the full term of the PPP contract
- Environmental constructability to ensure the project can be cost-effectively constructed without serious damage to the environment through environmental and context-sensitive design and value engineering
- Ample number of capable private sector firms and teams to ensure a competitive procurement and selection process

Source: AECOM Consult, Inc., 2007

5. CONCLUSIONS

The lessons learned and critical success factors presented in this report provide the public sponsors of the TZB project with insights to help guide their efforts to bring this critical project to fruition in the most cost-effective manner, consistent with the transportation needs and resource capabilities of the State of New York and its public sponsoring agencies.

Appendix A provides a more detailed listing of findings pertinent to the TZB project by case study.

The final project considered by the study team is the I-5 Columbia River Crossing Replacement Bridge project, which serves as the basis for the final project case study. It is included as Appendix B at the end of this report. Because this project is at the early stages of the Draft Environmental Impact Statement (DEIS) planning effort assessing three alternatives, Appendix B provides a brief overview of the project and its status and summarizes the memorandums of understanding (MOUs) established in 2006 between the host sponsor, the Washington State Department of Transportation (WSDOT), and seven agencies at the state, regional, and local level that participated in the DEIS effort for the project.

APPENDIX A: LISTING OF KEY FINDINGS WITH IMPLICATIONS FOR THE TAPPAN ZEE BRIDGE PROJECT BY CASE STUDY PROJECT

The summary of key implications for consideration by the public agency sponsors of the Tappan Zee Bridge (TZB) project contained in the main body of this report is based on the more detailed listing of findings contained in this appendix. These findings are culled from the individual case studies produced as part of the Phase I Financial Plan development effort and organized into the following three categories of mega-projects: state sponsored, Federally supported, and international.

State-Sponsored Mega-Projects

Port of Miami Tunnel

Comprehensive due diligence and careful structuring of the procurement process are essential to obtaining multiple cost-effective bids from qualified private sector teams for a mega-project. These include:

- Risk analysis and risk-sharing mechanisms
- Value for Money analyses to determine appropriate contract length
- Extensive project documentation giving prospective bidders sufficient confidence about the technical feasibility of the project to offer proposals
- Willingness to listen to prospective bidders and modify the project in response to their concerns prior to procurement and selection

Financing transportation mega-projects usually requires participation by both public and private sector stakeholders. In the case of the Port of Miami Tunnel project financing approach, responsibility for initial project financing rested on the private sector, with the public sector sponsors paying back those costs over time through availability payments derived from state, county, and municipal contributions.

Large projects require strong political and public support to bring together disparate stakeholders and create a mutually agreeable financing and delivery solution among the project sponsors.

Indiana Toll Road Long-Term Concession Lease

A long-term concession lease may provoke strong reactions, depending on the perspectives of stakeholders involved in the process. These reactions are driven by the perceived costs and benefits of the project on their constituencies and the ability of project sponsors to demonstrate greater benefits than costs and to focus the proceeds on transportation-related projects.

One of the major lessons learned from the Indiana Toll Road (ITR) concession that could be applied to the TZB project is that privatization of highway assets can be more than a one-time phenomenon. The lease of the ITR builds on the breakthrough financial and procurement strategies that were implemented for the Chicago Skyway lease. It demonstrated that states can also participate in public-private partnerships (PPPs) involving long-term concession leases of transportation infrastructure assets.

The ITR concession was a sophisticated transaction involving the lease of the state's only toll road to generate sufficient revenue to fully address the state's unfunded transportation infrastructure backlog for the next 10 years. But as this case study illustrates, the proposed concession was politically contentious, especially in the Northern Indiana counties through which the highway passes. Unlike the Chicago Skyway concession, which was overwhelmingly supported by its sponsors, Chicago's mayor, and the City Council, the ITR concession was narrowly approved by Indiana's legislature and opposed by Indiana residents two to one.

Chicago Skyway Bridge Long-Term Concession Lease

Long-term concession deals can help insulate the project from cyclical shifts in the economy and demographics.

Provisions can be made to long-term contracts to allow congestion (variable or value) pricing to reduce demand to levels conducive to free-flow operations (TDM/TSM).

Long-term contracts will stipulate financial remedies to the private consortium if the public sector seeks to regain control over the facility before the end of the contract term.

Political leadership was essential to enabling the project to sustain positive momentum.

Consideration of any PPP for the TZB project must consider the context of an overall strategy for operation, maintenance, and capital replacement for portions or the entirety of the New York Thruway system and the metropolitan transportation system around New York City.

Public agencies in the United States, under the right conditions, can privatize their highway assets. The Skyway concession represents a significant leap forward in efforts to securitize mature tolled highway facilities in the United States. As the first existing toll facility to be securitized in this country, the Chicago Skyway long-term concession lease paves the way for other similar arrangements to follow in other parts of the county, such as the subsequently approved long-term concession lease for the ITR at the Skyway's eastern terminus.

Transparency in the PPP procurement process should provide full details of how the winning bidder arrived at its price following selection and contract award. With the Skyway project, the process was outlined on its web site and the public was kept informed through regular press releases. The city and its advisors were also successful in publicizing the sale to the tolling and infrastructure equity community, receiving no fewer than 10 statements of qualifications from various domestic and international teams. However, the specific details of the concession agreement have not been fully revealed as the concession team seeks to maintain the confidentiality of its innovative financial approaches.

Ample facility documentation reduces the potential risks of PPP projects to the private sector partners. The City of Chicago prepared significant documentation to support the privatization process, including historical and current information on the condition of the facility, traffic, revenue, operating costs, and patron characteristics. The city also commissioned a significant rehabilitation of the Skyway facility prior to initiating the privatization procurement process, thereby providing prospective bidders ample documentation on the condition of the facility and reducing the bidders' risks of having to cost the full rehabilitation of the facility as part of the deal. One of the consequences of this was to increase the size of the up-front payment proposed by the winning consortium to enable the city to recoup the cost of this prior rehabilitation.

San Francisco-Oakland Bay Bridge—East Span Replacement

Alternative project delivery approaches, such as design-build, transfer greater project design and construction risks to the private sector while allowing for innovation and cost-effectiveness.

Project delivery phases can be sequenced to avoid reconsideration of fundamental project design questions beyond the "point of no return."

Communicate with stakeholders early in the process and line up support well in advance of project design and development.

Ensure that the project has a robust financial plan that incorporates risk analysis to identify and develop strategies to mitigate potentially significant swings in project cost, timeframe, or other variables.

Employ managers, support staff, and outside specialists (as necessary) with significant mega-project experience.

Pocahontas Parkway Refinancing

Public concerns over long-term concession leases can be addressed by using a fixed toll rate schedule in the early years of the contract, with an excess revenue sharing and early termination clause in the

contract to allow the public sponsor to take back the facility before the end of the contract, provided that compensation is given to the concessionaire to make up for lost earnings.

Use of innovative PPP approaches does not guarantee project viability, especially in the near-term, but will likely expedite project delivery.

PPPs need flexibility by partners to address problems as they invariably arise.

Projects involving existing facilities (like the TZB project) make traffic and revenue analysis more predictable and less risky.

Tacoma Narrows Bridge—Second Span

Avoid changing the rules of the PPP procurement and delivery process once the process has already proceeded to solicitation, award, and project initiation. This includes significant changes to a project resulting from legislative changes adopted after the submission of proposals and project award to a PPP consortium. Private sector partners seek assurances that the statutes and regulations that will govern the PPP contract agreement will not change. Enabling legislation is the foundation for many business assumptions on which PPPs are based; ex post facto changes can result in the demise of an otherwise viable PPP project and loss of PPP program credibility.

Ensure that PPP enabling legislation sufficiently balances the needs of public and private sector partners. In any PPP, there are project roles that the public sector is better suited to manage, such as assessment of environmental impacts, permitting, property acquisition, and public outreach. Other project functions and risks may be managed and more cost-effectively delivered by the private sector, such as design, construction, operations, and preservation. The key is to balance the risks and responsibilities to match the abilities of each partner.

Understand the implications of debt financing options up front. Ideally, the impact of each financing option should be evaluated early in the concept development and financial planning phases prior to contractor selection and contract award. This would achieve the most beneficial financing without requiring changes mid-delivery.

Proactive public involvement can buoy a project facing significant opposition. When faced with a public vote on the project's merits, a public outreach and communication program designed to involve and educate the public on the benefits of the project should be implemented early in the project development.

Replacement options provide opportunity to incorporate managed lanes and higher-capacity operations by transit services, such as bus rapid transit, commuter or light rail, and other higher occupancy modes.

Involvement of multiple public agencies as project sponsors will require close cooperation, coordination, and communication among project partners to ensure timely progress and resolution of issues or conflicts, including both passenger and freight agencies and partners.

Federal-Supported Mega Projects

Woodrow Wilson Bridge Project

Project managers recognized early during Woodrow Wilson Bridge (WWB) project development that a partnering process needed to be in place so that problems could be resolved as quickly as possible. In addition, an outside facilitator specializing in the construction industry organized regular project update workshops with contractors, prepared agendas and meeting minutes, and oversaw collection and reporting of partnering rating surveys. The partnering process has proven to be very successful in facilitating trust among the public agency sponsors and the private sector contractors, promoting professionalism in the project partnership relationships and minimizing claims and disputes that could have significantly delayed the project in meeting its schedule milestones.

Contract size and scope can significantly influence bidding competition and bid prices. A mega-project issued as one contract can limit the number of eligible bidders and reduce competition, resulting in higher bid prices. This can be solved by dividing the project into smaller contracts focused on specific parts of

the project or features of the facility (as was done for the WWB project). This can be done by public sponsor or concessionaire.

Continuous environmental and legal challenges can delay a mega-project when coming from different sources, such as local governments and environmental groups.

Early outreach to the construction industry will promote interest in the project while continuous communication through weekly conference calls among primes and subs can promptly resolve project development issues and avoid claims.

Monetary incentives for early completion and disincentives for late completion encourage contractors to maintain project schedule.

T-REX Road/Rail Expansion

Legal authority is essential before a PPP project can be advanced beyond concept and early planning stages:

- For the Transportation Expansion (T-REX) project, approvals by the legislature and the governor were required to allow use of alternative project delivery and financing approaches.
- The project required both an IGA between state and local modal sponsors and a Partnering Charter involving Federal, state, and local sponsors to advance.

Like the public sponsors of the T-REX project, the sponsoring agencies for the TZB project may need to look beyond traditional project financing and delivery approaches to find an acceptable way to expedite the completion of the desired project scope without consuming the surface transportation budget of the state for many years to come.

Early financial planning led to early financial commitments by project sponsors and stakeholders, which expedited delivery of the project and avoided cost increases for key materials used for the project. This included a unique bottom-up approach to allocating costs by project component among the sponsoring agencies responsible for project funding and financing. This set of cost allocation formulas became part of the funding agreement and financing plan for the project.

Early proactive public outreach and continuous communications efforts can produce positive voter approval of bonds required for project financing.

The T-REX project sponsors consolidated transportation improvement goals, various interest groups, multiple modes, and diverse funding sources and financing approaches into a highly integrated infrastructure delivery package. This required:

- Leadership that is well-versed in the issues at all levels of government
- Public confidence in the sponsoring transportation agencies to work cooperatively
- Competitive service delivery market that could assure project sponsors they could get the job done within scope, budget, and ahead of schedule

Hudson-Bergen Light Rail Transit Line

Because there are a number of agencies involved in the TZB project, project leaders should ensure that proper coordination between the many agencies exists early in the process in order to facilitate execution of the project.

Limited experience in the project delivery approach by the sponsoring agency may be offset by having the sponsoring public agency exert greater oversight through contract administration in order to ensure quality results.

DBOM contract delivery allows more innovation from a consortium when brought in earlier in the project development process—specifically an earlier hand-off of project design to the private provider.

Direct responsibility for project design by members of the consortium can produce better results than having the prime contractor relying on subcontractors for the design.

Alternative project delivery approaches such as design-build-operate-maintain (DBOM) require well-defined performance-based specifications for design, construction, and operations and maintenance in the contract.

International Mega-Projects

Øresund Fixed Link—Road/Rail Bridge/Tunnel

Various PPP approaches, such as design-build procurement, for a complex project such as the TZB could succeed, especially if the public sector emphasizes outcomes and allows flexibility to the PPP team in the finalization of the project design.

The landside infrastructure improvement related to a bridge project will often require the same scrutiny and oversight as the bridge elements to ensure scope and cost containment.

In the short term, ridership or traffic levels for mega-projects are often lower than projected while costs are significantly higher than estimated. This can be anticipated and better managed if a thorough risk analysis is used to identify the range of possible traffic, revenue, and cost levels that could occur due to various factors. Once the risks associated with mega-project costs and traffic revenues are quantified and understood by all decision-makers, they can make more informed decisions on whether or not to proceed with the project based on the range of possible costs and revenues.

Alternative project delivery approaches may not prevent cost increases from occurring, but innovative design, fabrication, and mitigation approaches may curtail cost increases. Scope creep is a leading cause of project cost increases relative to initial estimates.

Short timeframes to achieve financial self-sufficiency for greenfield mega-projects can create unrealistic expectations of cost coverage in too short a timeframe. More realistic long-term estimates provide a better basis for judging the financial viability of the project over its actual service life.

Tsing Ma Toll Road/Rail Bridge

The complexity of the TZB project requires consideration of alternative financial plans until a set of funding and financing arrangements are assembled that are acceptable to all public sponsor agencies and private provider firms if the project is delivered through a PPP.

APPENDIX B: MOUs BETWEEN STATE, REGIONAL, AND LOCAL AGENCIES SUPPORTING THE DEIS PLANNING EFFORTS FOR THE I-5 COLUMBIA RIVER CROSSING BRIDGE REPLACEMENT PROJECT

I-5 Columbia River Crossing Replacement Bridge Project Between Portland, Oregon and Vancouver, Washington

The states of Washington and Oregon are collaborating on a planning effort regarding the replacement of the double-lift span Columbia River Crossing Bridge that carries Interstate 5 (I-5) between Portland, Oregon to the south and Vancouver, Washington to the north. The Columbia River Crossing Bridge is a critical link in the I-5 corridor in the Northwestern United States and is highly congested with heavy auto and truck traffic during 6 hours of the day. This is expected to grow to 16 hours of congestion per day by 2030, with truck traffic doubling in that timeframe. In addition, the current structures constituting the Columbia River Crossing Bridge are subject to failure if an earthquake strikes the area. Hence the states of Washington and Oregon have initiated a joint effort to study alternatives for replacing the bridge.

DEIS Study Alternatives

Based on a preliminary analysis of 12 alternatives, the Draft Environmental Impact Statement (DEIS) planning effort now underway is considering the following three alternatives:

Alternative 1: No action

Alternative 2: Replacement bridge and bus rapid transit with express bus service

Alternative 3: Replacement bridge and light rail with express bus service

The inclusion of transit features in both bridge replacement alternatives reflects the region's commitment to transit as a critical ingredient to addressing the growing congestion problems on the bridge, even after replacement as traffic volumes continue to grow in this expanding part of the country.

Interagency Memorandum of Understanding

To begin the DEIS planning process, the Washington State Department of Transportation (WSDOT) and the Oregon Department of Transportation (ODOT) entered into an agreement through a memorandum of understanding (MOU) that described how the two states would work together to fund and manage the DEIS planning process. In addition, six additional MOUs were executed in early 2006 between the lead state agency for the DEIS, WSDOT, and regional and local agencies responsible for planning and transit service delivery in the region. Each MOU defined the respective roles each state, regional, and local agency would play in the DEIS preparation process during 2006 and early 2007, and the level of funding that would be provided to fund the overall effort, including project planning work by an outside consulting team.

DEIS Budget

Funding for the preliminary planning and DEIS effort amounts to \$65.48 million over the period 2003 to 2011. This includes:

\$8.5 million in Federal grants (13 percent)

\$50.07 million in WSDOT funding (77 percent)

\$5.4 million in ODOT funding (8 percent)

\$1.51 million coming from regional and local agencies (2 percent)

Participating Agencies

The agencies participating in the DEIS effort with signed MOUs with WSDOT include the following:

- ODOT
- Regional Transportation Council (RTC), the Metropolitan Planning Organization for the region
- City of Portland Office of Transportation
- City of Vancouver
- Tri-County Metropolitan Transportation District (TriMet)
- METRO—Portland Transit System
- C-Tran—Vancouver Transit System

Functional Areas of Responsibility

Each participating agency signed an MOU that defined the nature and extent of its responsibilities and financial commitment to the DEIS effort during this past year. The nature and level of involvement were defined by the MOUs in the following eight functional areas:

1. Program Management
2. Project Controls
3. Financial Structures
4. Communications
5. Transportation Planning
6. Environmental
7. Transit Planning/Engineering
8. Design Engineering

Conclusions

Figures B-1 and B-2 summarize the timeframe, budget, and functional areas of responsibility for each of the agencies participating in the initial preparation of the DEIS for the Columbia River Crossing Replacement Bridge project, according to their respective MOUs with WSDOT. This information illustrates the breadth of involvement of state, regional, and local agencies in the DEIS planning process for replacing the I-5 Columbia River Crossing Bridge, including planning and transit agencies. This also reflects the multimodal nature of the alternatives analysis being conducted by the project sponsors, including bus rapid transit, light rail, and express bus service.

Figure D-1: I-5 Columbia River Crossing DEIS Participating Agency MOU Timeframes and Budgets

Host Agency	Participating Agency	MOU Title	Date Signed	End Date	Budget
Washington State DOT	Oregon DOT	DEIS Funding Agreement	1/3/2006	10/12/2010	\$63.97 million
Washington State DOT	Regional Transportation Council (RTC) - MPO	I-5, Columbia River Crossing Project Modeling	1/13/2006	3/1/2007	\$0.21 million
Washington State DOT	Portland Office of Transportation	Columbia River Crossing Project	4/26/2006	3/31/2007	\$0.16 million
Washington State DOT	City of Vancouver	Columbia River Crossing	2/15/2006	1/31/2007	\$0.10 million
Washington State DOT	Tri-County Metropolitan Transportation District (TriMet)	Columbia River Crossing	2/14/2006	3/1/2007	\$0.14 million
Washington State DOT	METRO - Portland Transit System	Columbia River Crossing	4/26/2006	3/31/2007	\$0.75 million
Washington State DOT	C-Tran - Vancouver Transit System	Columbia River Crossing	4/10/2006	12/31/2006	\$0.15 million

Figure D-2: Participating Agency MOU Functional Areas of Responsibility

Host Agency	Participating Agency	Description	Functional Scope							
			Program Management	Project Controls	Financial Structures	Communications	Transportation Planning	Environmental	Transit Planning/Engineering	Design Engineering
Washington State DOT	Oregon DOT	Planning, Environmental Clearance, and Preliminary Design	ü	ü	ü	ü	ü	ü	ü	ü
Washington State DOT	Regional Transportation Council (RTC) - MPO	Support DEIS Process Planning, Modeling, and Data Analysis	ü		ü	ü	ü	ü	ü	ü
Washington State DOT	Portland Office of Transportation	Participate in EIS Phase of Project	ü	ü	ü	ü	ü	ü	ü	ü
Washington State DOT	City of Vancouver	Support DEIS				ü	ü	ü	ü	ü
Washington State DOT	Tri-County Metropolitan Transportation District (TriMet)	Support DEIS	ü	ü			ü	ü	ü	
Washington State DOT	METRO - Portland Transit System	Support DEIS	ü		ü		ü		ü	ü
Washington State DOT	C-Tran - Vancouver Transit System	Support DEIS	ü		ü	ü	ü	ü	ü	ü

Chicago Skyway Toll Bridge Case Study

Prepared for the:

**New York State Department of
Transportation**

Metro-North Railroad

New York State Thruway Authority



New York State
Department of Transportation



Metro-North
Railroad



New York State
Thruway
Authority

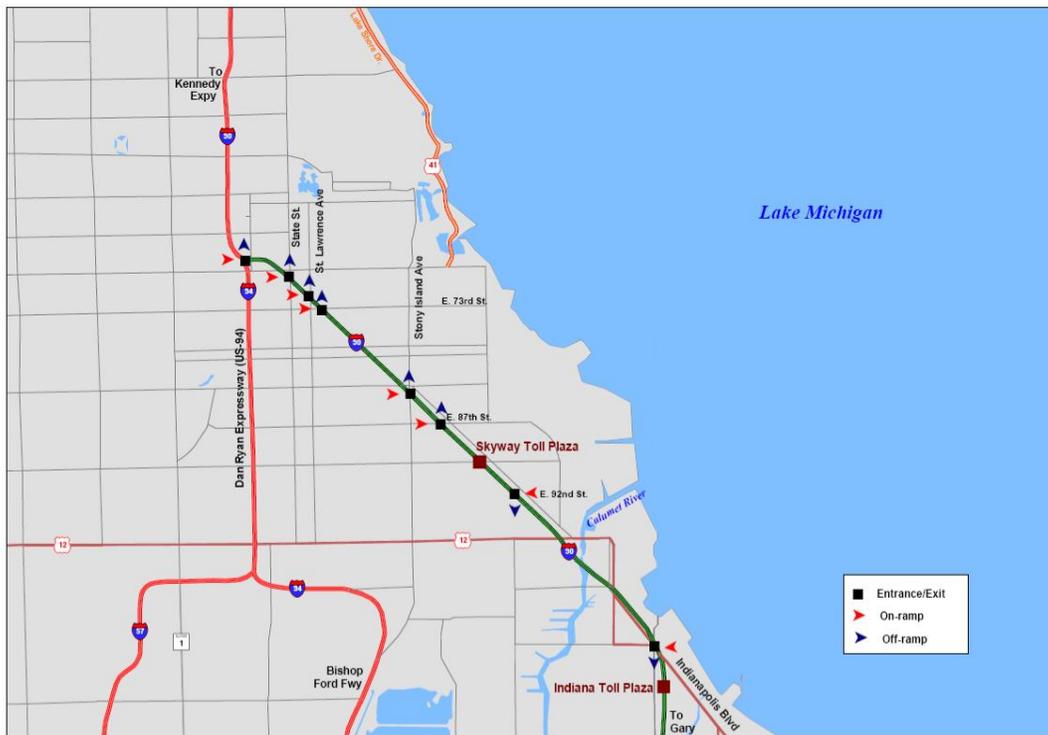
Chicago Skyway Toll Bridge—Chicago, Illinois

Public Private Partnership Delivery	Construction/Development Period	Concession Period	Contract Value	Status
Operations and Maintenance Lease	N/A	99 years	\$1.83 billion	In operation

SUMMARY

The Chicago Skyway is a 7.8-mile elevated toll road connecting Chicago, Illinois, and suburban northwestern Indiana (see Figure 1). Like the Tappan Zee Bridge (TZB), it is a key link between city and suburbs, serving as the primary highway facility approaching downtown Chicago from points south and east by connecting the Dan Ryan Expressway (Interstates 90/94 [I-90/I-94]) in northeastern Illinois to the Indiana Toll Road (ITR) (I-90). Passenger cars account for more than 90 percent of all traffic on the Skyway, with commuters constituting 38 percent of weekday traffic.

Figure 1: Chicago Skyway Alignment and Interchanges



Source: AECOM Consult, Inc.

In October 2003, Chicago Mayor Richard M. Daley announced his plans to seek a long-term concession for the Skyway. The city would turn over responsibility for operating and maintaining the facility, including the collection of tolls, in return for a lump-sum payment to the city at the beginning of the concession period. Following a request for qualifications process that whittled the number of potential bidders from 10 to 5, three teams ultimately submitted bids in 2004 ranging from \$505 million to \$1.83 billion. The city announced that the Cintra-Macquarie consortium (called the Skyway Concession Company LLC)

submitted the winning bid in October 2004, and the concession deal closed in January 2005, with the consortium assuming operating responsibility immediately upon closing.

This long-term lease agreement represents the first privatization of an existing toll road in the United States. It predates by more than a year the \$3.85 billion, 75-year operating lease for the 154-mile ITR, recently awarded to the same concession team of Cintra-Macquarie by the State of Indiana. Both deals have dramatically changed the way tolled highway facilities are being viewed by their government sponsors—as valuable assets whose future cash flows can be turned into current funds for cash-strapped state and local governments.

The Skyway deal occurred largely because of the willingness and capability of public sector sponsors and private sector companies to apply innovative project financing and service delivery approaches to maximize the facility's current value.

Prior to soliciting bids for the long-term lease of the Skyway, and in order to maximize the bid amounts by reducing maintenance and repair cost risks, the city spent \$300 million in mostly borrowed money between 2000 and 2004 to rehabilitate the facility and bring it to a state of good repair. The resulting public-private partnership (PPP) between the City of Chicago and the Skyway Concession Company provided the basis for repositioning the Chicago Skyway as a going concern that offers significant value capture potential to both parties. This is in sharp contrast to how the Skyway was perceived over much of its service life—that of an aging link in the Chicago-area highway network requiring major outlays for reconstruction or expansion and offering limited cash flow potential due to the challenge the public sector faces in raising tolls to support these needs.

In comparing the Chicago Skyway project to the TZB/I-287 Corridor project, there are several aspects of this project, key lessons learned, and strategies used that are worthy of note:

- Consideration of any PPP for the TZB project must consider the context of an overall strategy for operation, maintenance, and capital replacement for portions or the entirety of the New York Thruway system and the metropolitan transportation system around New York City.
- Public agencies in the United States, under the right conditions, can privatize their highway assets. The Skyway concession represents a significant leap forward in the trend toward privatizing tolled highway facilities in the United States. This is the first existing toll road to be privatized in this country. It paves the way for other, similar arrangements to follow in other parts of the country, such as the recently approved operating lease for the ITR at the Skyway's eastern terminus.
- Should the TZB project agencies elect to pursue a concession strategy, they should ensure that the selection process is transparent. With the Skyway project the process was outlined on its web site, and the public was kept informed through regular press releases. The city and its advisors were also successful in publicizing the sale to the tolling and infrastructure equity community, receiving no fewer than 10 statements of qualifications from various domestic and international teams.
- Ample documentation will reduce the potential risks of proposals. The City of Chicago prepared significant documentation to support the privatization process, including historical and current information on the condition of the facility, traffic, revenue, operating costs, and patron characteristics. The city also commissioned a significant rehabilitation of the Skyway facility prior to initiating the privatization procurement process, thereby providing prospective bidders ample documentation on the condition of the facility and reducing the bidders' risks of having to cost the full rehabilitation of the facility as part of the deal. One of the consequences of this was to increase the size of the up-front payment proposed by the winning consortium.

1. PROJECT OVERVIEW

1.1. Project Description

The PPP for the Chicago Skyway involves a long-term operating lease in which the private sector concessionaire, Skyway Concession Company LLC, is responsible for operating, maintaining and, when necessary, renewal of the entire Skyway facility and collecting all toll and concession revenues on the facility for a period of 99 years, ending on January 24, 2104, in exchange for an up-front lump-sum payment to the City of Chicago, which retains ownership and continues to police the facility. Skyway Concession Company LLC is a consortium owned by Cintra Concesiones de Infraestructuras de Transporte, S.A., and Macquarie Infrastructure Group. Tolls may be no higher than is specified in the agreement between the consortium and the City of Chicago, which retains ownership of the facility and continues to police the facility under paid contract with the concession consortium. The operator must comply with 300 pages of detailed operating standards to ensure safety in operations and capital maintenance that meet high engineering standards during the full term of the lease. At the end of the 99-year operating lease, the facility will revert back to the city in a reasonable condition, unless the agreement is extended beyond this period.

There are no non-complete clauses in the agreement prohibiting the development of parallel capacity, but a new highway in this corridor would be highly unlikely given the density of urban development surrounding the Skyway—a de facto limitation on parallel capacity not unlike the TZB corridor. Segments of existing parallel highways, however, such as the Indiana and Illinois Departments of Transportation (DOT)-owned and -operated expressways comprising I-94, and the Illinois State Toll Highway Authority-owned and -operated Northwest Tollway (I-294), are in the midst of improvement programs to relieve congestion, which could impact Skyway traffic when completed. Despite this, Skyway investor Macquarie notes that the Skyway facility has “significant” unused capacity, which makes the Skyway attractive to motorists who value the route’s time savings over the cost of the toll.

1.2. Project History and Development Process

The Chicago Skyway, whose main bridge span over the Calumet River is pictured in Figure 2, opened to traffic in April 1958 as the tail end of a chain of toll superhighways connecting New York City and Chicago that was planned prior to creation of the Interstate Highway System. The 7.8-mile elevated highway was originally constructed by the City of Chicago between 1956 and 1958 and subsequently operated and maintained by the city’s Department of Streets and Sanitation. It is a rare municipally owned facility bridging a portion of the Interstate Highway System. It is the only toll highway facility in Illinois that is not operated by the Illinois State Toll Highway Authority. The Chicago Skyway is legally referred to as a toll bridge with long approaches (formally the “Chicago Skyway Toll Bridge System”), because under Illinois statutes incorporated cities are not permitted to operate toll highways. The facility originally cost \$101 million to construct over a period of 34 months.

The Chicago Skyway facility is entirely elevated and features a 120-foot-high, ½-mile-long steel truss bridge over the Calumet River. It provides three traffic lanes in each direction, with a mainline toll plaza at its midpoint. There are six partial interchanges west of the toll plaza and two partial interchanges east of the toll plaza, as shown in Figure 1. All vehicles using the Skyway must pay the toll, with westbound (Chicago-bound) traffic entering the facility through two interchanges east of the toll plaza, and eastbound (Indiana-bound) traffic entering through six interchanges west of the toll plaza. There is a rest area with a McDonald’s restaurant adjacent to the midpoint toll plaza.

From the start, traffic volume on the Skyway was well below projections, generating only half the revenue planners had projected in its first year of operation. To complicate the situation, several parallel freeways were soon developed by the Illinois and Indiana DOTs. As a result many commuters used these alternate “free” routes to avoid paying the Skyway’s toll, causing Skyway traffic to drop to one-fifth of projected levels.

Figure 2: Chicago Skyway Over the Calumet River



Source: U.S. Library of Congress, Prints and Photographs Division, "Built in America" Collection: Image, Record and Caption

During the 1960s, the city defaulted on its Skyway bond payments and was forced to subsidize the facility's operating and maintenance costs. In the 1970s, 1980s, and 1990s, Skyway bondholders took the city to court several times seeking to increase the toll rates on the facility to enable the facility to pay its debt service costs, including deferred payments. The resulting toll increases had the opposite effect on revenue as the higher tolls created a downward spiral in traffic volumes as even fewer motorists used the facility. This led to calls for even higher tolls. With limited funding to operate or maintain the Skyway, the city was forced to defer maintenance on the facility during the 1970s and 1980s, causing it to fall into a state of disrepair. For a time the city considered demolishing the facility and connecting I-90 via other routes through northeast Illinois.

In recent years traffic growth on the Skyway has been fueled by suburban development in the Indiana counties of Lake and Porter and worsening congestion on competing, non-toll facilities in Indiana and Illinois. In addition, the development of a casino in Hammond, Indiana, less than a mile from the Skyway's eastern terminus, generated additional trips on the facility. As a shortcut connecting out-of-state commuters and through traffic with downtown Chicago, an estimated 50 percent of Skyway commuters originate from or are bound for Indiana.

The growth in traffic generated additional toll revenue to fund much-needed improvements on the dilapidated facility. The city invested \$300 million between 2001 and 2004 to reconstruct the roadway, reducing the operating and maintenance costs associated with the facility's steel structures by replacing certain elevated segments with a raised at-grade roadway built on fill dirt. By 2002, the last full year before construction-related delays forced motorists to use alternate routes, the facility attracted 18.7 million motorists and \$43 million in annual revenue, twice as much as when tolls were last raised to \$2 in 1993. Currently the Skyway handles about 50,000 passenger vehicles per day.

With the facility newly rehabilitated and generating a steady revenue stream, the City of Chicago sought to monetize the net present value of the Skyway by leasing the facility to a private consortium under a long-term contract that provides significant opportunities for the lessee to increase toll rates on a prescribed basis. As a result, the city would transfer the risks associated with operating an infrastructure facility outside of its core competency and rid itself of an asset that was not core to its mission. It would also have a sizable payment that could immediately be used to reduce the city's debt, establish reserve funds, and invest in various city programs.

2. PROJECT PROCUREMENT

2.1. Authorizing Legislation

Under the constitution of the State of Illinois, the City of Chicago, as a home-rule unit of local government, "may exercise any power and perform any function pertaining to its government and affairs." As a result, the only approval required to sell the Skyway concession was that of the Chicago City Council, which voted in October 2004 to approve the lease agreement between Cintra-Macquarie and the city. A second ordinance passed by the council specified how the city would spend funds earned from the sale of the concession. The only other potential impediment to the operating lease agreement was possible opposition by the Federal Highway Administration (FHWA), which had helped the city with early funding of the project's approach roads linking it to other non-tolled interstate roads. However, the FHWA was supportive of the operating lease concept as a PPP and did not require repayment of the early investment of Federal funding in facility-related access roads.

2.2. Key Elements of Procurement Approach

The City of Chicago conducted a competitive procurement process in which it issued a Request for Qualifications from potential concessionaires. Goldman, Sachs & Co. and Loop Capital Markets served as financial advisors to the city. The city received qualifications from 10 teams, five of which were deemed technically and financially qualified to bid on the concession. The five teams that were advanced included:

- **Abertis Infraestructuras, S.A.** (Barcelona, Spain)
- **The Chicago Skyway Group.** Consisting of VINCI Concessions/ASF/COFIROUTE, Borealis Infrastructure Management, Canadian Highways Infrastructure Corp., ABN AMRO, Parsons, American Bridge, and Kenny Construction (France and Irvine, California)
- **Cintra-Macquarie Consortium.** Consisting of Cintra Concesiones de Infraestructuras de Transporte S.A. and Macquarie Investment Holdings Inc. (New York, New York)
- **Skyway Infrastructure Group.** Consisting of Bilfinger Berger BOT Inc. and Cheung Kong Infrastructure Holdings Limited (CKI) (Ontario, Canada and Hong Kong, China)
- **Transurban Infrastructure Developments Limited.** In association with VMS Inc., Ontario Teachers' Pension Plan, Gary/Chicago International Airport Authority, Bear Stearns & Company, and Vollmer Associates, LLP (New York, New York and Victoria, Australia)

The five teams that were not advanced included:

- **The Caja Madrid Group.** (Madrid, Spain)
- **The Carlyle Group.** (Washington, D.C.)
- **CPS Chicago Parking LLC.** Consisting of CPS Parking and Gomez Transportation (Chicago, Illinois)
- **JPMorgan Chase & Co.** (New York, New York and Chicago, Illinois)
- **TransCore, Inc.** (Lisle, Illinois)

The five successful teams were provided additional information about the Skyway and given the opportunity to comment on the city's draft of the concession agreement, which would be common to all bidders. The qualified bidders were then invited to submit competitive sealed bids on the amount they would pay under the terms of the 99-year lease agreement.

In exchange for the up-front lump-sum payment from concessionaires to operate and maintain the facility, the city would relinquish any claim on toll and concession revenues for a period of 99 years. However, the city would retain title to the facility and keep any revenues collected from advertising on the facility. For the duration of the lease the Chicago Police Department would continue to patrol the highway, for which the city would be reimbursed by the concessionaires at a rate of \$6 million per year. At the end of the 99-year contract term, the facility would revert back to the city in a state of good repair, and the city could then decide whether to extend the operating lease, renegotiate the operating lease, procure a new operating lease through competition, or retain operating control of the facility within city government.

Three firms submitted bids: Cintra-Macquarie, with a bid of \$1.83 billion; the Chicago Skyway Group led by VINCI Concessions, Autoroutes du Sud de la France (ASF), and Cofiroute, \$700.5 million; and Abertis Infraestructuras, which bid \$505 million. The city reserved the right to reject all bids if none met the city's reserve price, which was reportedly between \$1.0 and \$1.2 billion.

2.3. Selection of Winning Bid

Ultimately, the city selected the Cintra-Macquarie bid, which was more than 2.5 times higher than its next closest competitor's offer. Cintra has a 55 percent stake in the consortium and Macquarie has a 45 percent stake. The city council approved the agreement between the consortium and the city in October 2004, and the deal closed on January 26, 2005.

Headquartered in Madrid, Spain, Cintra is one of the world's leading private developers of transport infrastructure, managing 18 toll highways (more than 1,100 miles) in Spain, Portugal, Ireland, Chile, and Canada. Teaming with Zackary Construction of Texas, Cintra has a comprehensive development agreement with the Texas Department of Transportation to develop the Trans Texas Corridor I-35 corridor between Oklahoma and Texas, with initial plans to construct a toll road between Dallas and San Antonio.

Macquarie Infrastructure Group is an Australian-based infrastructure investment fund. Macquarie has invested in more than a dozen toll facilities worldwide, including the Dulles Greenway in Virginia; the new South Bay Expressway near San Diego, California; and most recently the ITR.

Cintra and Macquarie are partners responsible for the 407 Electronic Toll Road (ETR) just north of Toronto, Canada. This was the first totally privatized toll facility in North America and operates with no toll booths, using instead electronic toll collection (ETC) and photo-recognition systems to issue late fees to patrons who use the facility without having a transponder to automatically pay the toll upon exiting the system.

The concession consortium is investing an additional \$60 million in capital improvements to the Skyway between 2006 and 2007, completing elements of roadway reconstruction not addressed by the city's Skyway improvements in 2003 and 2004. Projects include upgrading 19 bridges, resurfacing 4 miles of roadway, and reconfiguring toll plazas to ease traffic flow, including the introduction of dedicated ETC lanes and reversible toll collection lanes. The eastbound lanes were improved in 2006, with improvements to the westbound lanes scheduled between March and November 2007.

3. PROJECT FUNDING AND FINANCING

3.1. Concession Funding and Financing

Cintra-Macquarie's Skyway Concession Company paid the city \$1.83 billion for the right to operate the Skyway and collect the facility's toll and concession revenues for a period of 99 years. The consortium used a combination of private equity and financing to fund the up-front concession payment to the city. This included taxable bonds, partner equity, and bank debt. In addition, the consortium partners applied an Internal Revenue Service (IRS) rule that permits entities with operating and maintenance responsibility for leased capital facilities for a period of 50 years or longer to claim depreciation of the asset for tax purposes.

At contract signing in January 2005, the up-front payment was financed with \$880 million in sponsor equity (corresponding with Cintra's 55 percent stake in the Skyway Concession Company and Macquarie's 45 percent stake) and a \$1.19 billion 9-year term loan from Spanish bank Banco Bilbao Vizcaya Argentaria (BBVA); Calyon, French bank Crédit Agricole Group's corporate and investment bank; Ireland-based DEPFA Bank plc; and Spanish bank Banco Santander Central Hispano, S.A. (SCH). By August 2005, the deal was refinanced when the partners issued \$1.4 billion in AAA-rated bonds plus \$150 million in subordinated debt. As a result of the refinancing, the shareholders recovered \$400 million of their initial equity invested in the project.

In association with the concession transaction, Chicago Skyway tolls were raised \$0.50 in February 2005 to \$2.50 for automobiles and \$1.20 per axle for vehicles with three or more axles. To discourage trucks and other heavy vehicles during peak hours the facility applies a heavy vehicle surcharge of 40 percent between 4 a.m. and 8 p.m. daily.

Over time the concession agreement allows the consortium to raise tolls by the greater of the Consumer Price Index (CPI) or contractually specified limits rising from the present \$2.50 toll to \$3 in 2008 to \$5 by 2017. Beyond 2017 the concession may raise tolls by CPI, nominal Gross Domestic Product (GDP) per capita, or 2 percent annually, whichever is greater.

Prior to the concession agreement, all tolls on the Skyway were paid with cash. With the start of the operating lease in January 2005, the new Skyway operators modernized the Skyway's toll collection system by instituting an interoperable ETC system that could accommodate both the Illinois State Toll Highway Authority's I-PASS transponders and the Northeastern U.S. toll consortium's E-ZPass transponders. This has eliminated 15-minute peak-period wait times at the Skyway toll plaza for motorists with transponders.

3.2. Use of Proceeds from the Chicago Skyway Concession

An important aspect of the Chicago Skyway operating lease is the disposition of the \$1.83 billion up-front payment to the city. To gain public support for the deal and ensure City Council approval, the mayor committed that the proceeds from the \$1.83 billion up-front payment would be used "to invest in our people and protect Chicago's taxpayers both today and in the future," as Dana R. Levinson, City of Chicago Chief Financial Officer, said in a city press release issued at the time of the contract signing (City of Chicago, January 26, 2005). To accomplish this, city leadership elected to refund existing Skyway and other city debt, create several general reserve funds, and invest in neighborhood social programs. The city allocated the Skyway deal proceeds as follows:

- \$500 million for a long-term reserve fund (27 percent)
- \$375 million for a mid-term annuity that will serve as a rainy day set-aside to smooth the effects of economic cycles on the city's fiscal position (21 percent)

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- \$100 million to fund quality-of-life investments in city neighborhoods, including assistance programs for needy residents, affordable housing and homeowner programs, job creation programs, and facilities and programs for school children and senior citizens (6 percent)
 - \$463 million to refund existing Skyway debt (25 percent)
 - \$392 million to refund long- and short-term debt and to pay other city obligations (21 percent)

Almost half of the proceeds went immediately to retire city debt, thereby improving the credit rating for the city and reducing its cost of borrowing.

For its part, the Cintra-Macquarie partnership initiated a major capital improvement program for the Skyway, including upgrading bridges, resurfacing pavement, and reconfiguring approach and departure lanes at the toll plaza to facilitate traffic flow and access to the ETC lanes.

Among the purposes cited by city leadership for applying the up-front payment, only the retirement of Skyway debt had any direct relationship to transportation, where much of this debt was incurred to fund the recent rehabilitation project completed in 2004, prior to the start of the operating lease (see Figure 3 for a picture of the main span of the Chicago Skyway over the Calumet River after the city's rehabilitation program was completed in 2004).

Figure 3: Rehabilitated Main Span of Chicago Skyway Toll Bridge Over the Calumet River



Source: AECOM

No proceeds were specified to be used to rehabilitate or expand transportation facilities or services for the benefit of the citizens of Chicago. This has become a major issue among sponsors of highway infrastructure, who are concerned that these kinds of deals will lead to the diversion of the value

associated with existing tolled highways to non-transportation purposes, with little opportunity to use the proceeds to rebuild or expand other existing highway facilities or to fund the development of new facilities.

The City of Chicago's receipt of an up-front lease payment and its application of lease revenue to non-transportation purposes was the subject of Congressional criticism during hearings on the topic of PPPs in transportation in February 2006. "They are great investments for the private companies," said Rep. Peter DeFazio (D-Oregon), the chairman of the U.S. House Highways and Transit Subcommittee, "but in the long term they will not serve the public." According to an Innovation Briefs report on the hearing by Kenneth Orski, critics of PPPs, and the Chicago Skyway concession in particular, contend that long-term concessions that involve up-front lump-sum payments mortgage the future and end up 25 to 30 years later, after the lump-sum money has been spent, with state and local officials "holding the bag," and that alleged ceilings on annual toll increases written into concession agreements will turn out to be floors. Private concessionaires will keep raising tolls to the limit, regardless of the state of the economy.

4. PROGRAM ASSESSMENT

4.1. Institutional Context

A number of institutional factors facilitated development of the Chicago Skyway operating lease as an innovative project from the perspectives of project funding and financing, use of new technologies, and structure as a PPP. Several factors are discussed below:

- **A defined project champion.** The Skyway 99-year operating lease is the first PPP of its kind in the United States, and it required the mayor's influence and legislative support to make this conceptual deal a reality. Propelling the project were two key factors:
 - A newly rehabilitated asset worth upwards of a billion dollars that the city had no interest in continuing to operate
 - A growing budget deficit and limited finances to cushion the city in the event of an economic downturn

Through the concession agreement the city was able to convert an obligation with limited financial potential if left under city operation into an opportunity to address a number of fiscal challenges facing the city. With almost \$2 billion suddenly available to the city's coffers, any political opposition to the deal quickly evaporated and the City Council promptly approved the deal shortly after it was awarded to the Cintra-Macquarie team.

- **Large and growing metropolitan population.** The population of northeastern Illinois is projected to grow by 24 percent over the next 25 years, growing from just over 8 million today to more than 10 million by 2030. Employment is expected to grow by 29 percent to 5.6 million. These growth patterns will produce increasing demand for regional infrastructure, which underscores the investment value of tolled highway facilities within highly developed urban corridors, such as the Skyway alignment, where there is little opportunity to build additional parallel capacity.
- **A facility with a long-term performance record and stable revenues.** While the Skyway had a troubled history in terms of traffic and revenues, its performance record in the dozen years preceding the concession was one of steady growth. Revenue doubled to \$43 million between the city's last toll increase in 1993 and 2002, the last year before the city began rehabilitating the Skyway infrastructure to prepare it for possible privatization through lease. Furthermore, an independent traffic and revenue study commissioned by the city prior to the concession sale projected that increasing tolls on the facility, while slightly reducing traffic, would improve annual revenues. Following the \$0.50 toll increase in February 2005, traffic on the facility from January through November 2005 was down only 0.3 percent, while revenue was up 25 percent, surpassing analysts' projections.

- **Recent capital investment in the facility.** Prior to completing the lease agreement, the city finished approximately \$300 million in improvements to the Skyway. Although additional improvements to the facility would be required, the Skyway was handed over to the concessionaire in a relatively good state of repair relative to its historically dilapidated condition. This likely increased the size of the bids for the Skyway as concessionaires would not have to make these improvements themselves and face decreased traffic levels due to the rehabilitation efforts. By taking the lead in rehabilitating the facility prior to commencing the competition for the operating lease, the city relieved the prospective bidders of the traffic and financial risks associated with taking over a mature asset that had been subject to many years of deferred maintenance.
- **No directly competing parallel facility.** The Skyway is currently the shortest route to downtown Chicago from northwestern Indiana, providing an estimated time savings of 20 to 45 minutes versus other routes, depending on the time of day. This provides the private consortium with assurance that traffic volumes will continue to remain robust, even as tolls increase. Moreover, the risk of the state or local government building or expanding a competing non-tolled facility parallel to the Skyway is mitigated by the lack of available right-of-way to site such a facility, given the density of urban development proximate to the Skyway.
- **Potential for efficiencies through modernization.** Under the city's operation the Skyway continued to accept only cash as toll payment, despite the introduction of the I-PASS ETC system on nearby Illinois Tollway facilities. This presented the eventual concessionaire with significant opportunity to modernize toll collection and other aspects of operation to reduce operating costs on the facility. The introduction of ETC will reduce the number of toll collectors needed on the Skyway and increase its throughput capacity by enabling patrons to pay their toll without having to stop. This improvement will enable the facility to attract additional patrons as wait times to pay tolls could be virtually eliminated.

4.2. Major Issues and Strategies

There were several downside risks to implementation of the Chicago Skyway operating lease that could have slowed or even stopped the initiative. The following section discusses the most significant impediments and the strategies used by project partners to successfully complete the deal, which provides for long-term stewardship of this critical transportation link and a sizable cash payment for use by the City of Chicago to address a number of its fiscal challenges. This section also discusses several risks that could threaten the success of the Chicago Skyway concession in the long term:

- **Potential competition from neighboring, non-tolled expressways.** While no other highway offers the time savings between Indiana and the Loop that the Skyway does, the Indiana DOT and Illinois DOT freeways constituting I-94 as well as the Illinois State Toll Highway Authority's Tri-State Tollway (I-294) offer alternate routes from Indiana to the city and its Illinois suburbs. As capital improvements aimed at alleviating congestion on these highways are completed in the coming years, the Skyway may see some traffic divert to the improved facilities. In addition, job growth in the Chicago metropolitan area is fastest in the suburbs northwest of the city, which are better accessed from Indiana via these alternate routes.

There are several factors that will likely mitigate any significant impact of traffic diversion to alternative routes. The most significant is the lack of affordable, available property to site any new or expanded facilities. The second factor is the continued growth in the region, which will likely produce more travel demand than any combination of highway facilities will accommodate. This latent demand will readily compensate for any such diversion, enabling traffic levels on the Skyway to continue to expand until the facility reaches its effective capacity (which is being increased due to facility improvements and conversion to ETC).

- **Slower population growth in neighboring Indiana counties whose commuters use the Skyway.** While the Chicago area has experienced extraordinary growth in recent years, projected population growth is expected to be much slower over the next 30 years in northwestern Indiana

than the metropolitan area as a whole. Slower population growth in the counties that are home to most Skyway commuters may limit growth in toll revenue on the facility relative to projections based on recent trends.

The long timeframe for the Skyway operating lease (99 years) provides a significant hedge against economic and demographic shifts, particularly of a cyclical nature. With the award of the ITR operating concession to the same consortium team that runs the connecting Skyway, efforts are underway to also implement a compatible ETC system on that facility. This will enable patrons to use both facilities without having to stop to pay tolls, thereby enhancing the attractiveness of this interstate route even after accounting for increasing toll rates.

- **Difficulty calculating net present value of a 99-year lease.** Standard financial planning techniques apply a discount rate to future revenues to calculate the net present value of an investment. When the time horizon of analysis stretches beyond a 20- to 30-year period (depending on the discount rate applied), the net present value of proceeds in outer years becomes negligible. This becomes problematic when evaluating the value of a 99-year concession using net present value as a basis because proceeds from much of the concession period do not affect the result. The wide variance in bids for the Skyway—from a low of \$505 million to the winning bid of \$1.83 billion—illustrates the methodological difficulties inherent in measuring the value of such a long-term investment, particularly when the concession period extends beyond 30 years.

To overcome this analytical dilemma, the winning consortium team converted all future costs and revenues to a single net present value that recognized the effects of escalating toll rates, the price elasticity of demand of a growing number of travelers in the corridor, and life-cycle cost control through the application of asset management techniques. In addition, the winning consortium employed private sector financing resources that included a short-term bank loan and convertible equity, involving patient capital with modest rates of return. By using taxable debt to finance this project, the private sector concession team sought to take advantage of permitted tax credits during the initial years of the development contract. Each of these factors boosted the size of the winning bid. This strategy was successful because the winning consortium was able to convert half of its direct equity invested in the project bid to taxable debt at a significant premium for the members of the consortium team.

- **Regulated toll regime that makes no allowance for facility congestion.** In the near term, critics of the Skyway concession will fault the city for allowing tolls to double over a span of 12 years, from 2005 to 2017. Beyond 2017, tolls may grow at the highest of several rates of inflation or a minimum of 2 percent. These toll rates should ensure free-flow traffic conditions on the Skyway during peak periods given the following:
 - Traffic volumes currently using the facility
 - Projected residential and employment growth patterns over the next 20 to 30 years for the area served by the Skyway
 - Increased throughput capacity resulting from the implementation of open road tolling using ETC technology that is compatible with what is used by toll agencies in Illinois and most northeastern states

Over the course of the 99-year concession, however, congestion on the Skyway may worsen as travel demand increases beyond the facility's capacity. The toll regime specified in the concession agreement does not allow any increase in toll rates after 2017 beyond the higher of growth in the consumer price index (CPI), growth of nominal gross domestic product (GDP) per capita, or 2 percent, even to ensure free-flow traffic conditions. Without the ability to apply congestion pricing, the Skyway may become so congested that the effective throughput capacity of the facility decreases. This would reduce the optimal revenue potential of the facility after the effective capacity of the facility is exceeded. Hence the concession agreement may bind Skyway operators to a pricing scheme that results in a reduction of both facility capacity and revenue, to the detriment of Skyway investors and patrons.

To remedy this situation, the lease agreement would need to be amended to permit congestion pricing when the facility reaches a level of service that causes a reduction in throughput capacity. This could produce a significant windfall to the concession team. To avoid public backlash against the imposition of congestion pricing and the earning of excessive profits by the concession team, the increased revenues resulting from congestion pricing could be dedicated to or shared with the city.

- **Future political uncertainty.** The concession agreement is a fully enforceable contract between the Cintra-Macquarie team and the City of Chicago, ratified by a vote of the Chicago City Council. At the present time, both the mayor who brokered the deal and many of the aldermen who supported it remain in office and are satisfied with the concession arrangement. Over a span of 99 years, however, changes in the political landscape could result in efforts to overturn or alter the agreement—especially after the original cash proceeds to the city are committed or spent. Such a scenario would most likely occur if it is perceived that the concessionaires are receiving windfall profits from the facility. Given current traffic and land use patterns, such a scenario will not likely occur for several decades.

To protect itself from political change, the lease agreement stipulates specific financial remedies due the concession team if the city were to prematurely terminate the deal or otherwise interfere with the ability of the concession team to generate revenue from the facility under the terms of the contract. Such penalties would place a significant financial burden on the city for breach of contract.

5. CONCLUSIONS

5.1. Results of Skyway Concession

With the first year of the Chicago Skyway operating lease completed, early indications from the city and other observers suggest that the transition to privatized operations has been smooth and successful. Apart from the toll increase, the motoring public has viewed apparent differences between operations by the city and by the consortium as improvements, especially the introduction of electronic toll payment systems that have dramatically reduced wait times at Skyway toll facilities. The near-term results of the Skyway concession appear to be quite positive:

- The city immediately used a significant portion of the proceeds from the Skyway operating lease to reduce its debt, thereby increasing its credit rating and lowering its cost of future borrowing.
- The city is able to deliver on a number of social and neighborhood improvement programs made possible by proceeds from the Skyway deal.
- The facility is being well maintained in accordance with the provisions of the lease agreement.
- The concessionaires are making further capital improvements to the facility to increase its effective capacity and reduce the need for rehabilitation efforts that could impede traffic flow and discourage travelers to use the road in the future when rates would be higher.
- The concessionaires have integrated the Skyway toll collection system with the technologies applied on the connecting Illinois Tollway and planned for the neighboring ITR, thereby expediting the implementation of ETC on the Skyway.
- Patrons of the facility (motorists and truckers) are experiencing reduced wait times at the Skyway toll plaza since the introduction of ETC.
- The concessionaires are moving to enable some lanes to become free-flow through the main toll plaza with the implementation of open road tolling technologies and equipment.

In the intermediate to long term, it will be some time before the deal's outcomes can be assessed. The largest question looming over the Skyway deal is whether the city or the concession team will obtain the

greatest value from the deal. The answer to that question will ultimately depend on Skyway traffic, which hinges on such variables as the economic health of the Chicago region, land use and development patterns, traffic and congestion on competing facilities, regional job growth patterns, political stability, and the consortium's performance. Given the substantial up-front investment by the consortium and the lengthy duration of the concession, it will be decades before results are known, and even then the answer will assuredly be subject to debate.

The Chicago Skyway operating lease is a significant development in the advancement of PPPs for highway programs and projects in the United States. The Skyway deal broke new ground in a number of important areas:

- Length of the contract term of 99 years, which allows the deal to be considered a private operation to permit depreciation of the asset for tax purposes
- Life-cycle operating lease, including provisions for operations, maintenance, and rehabilitation
- Absence of a non-compete clause, which removes the stigma of impeding transportation improvements in the corridor
- Prescribed criteria and schedule for toll increases, thereby removing the risk of public sector reluctance to increase toll rates
- Award based on maximum net present value, with proceeds provided to the sponsor for immediate use
- Reliance on taxable debt and equity to finance the deal using private sector sources and access to depreciation tax credits
- Prompt transition and implementation of electronic tolling

The Skyway deal is already having significant repercussions throughout the highway development and investment community as similar concession deals are being proposed and evaluated in a number of states and regions across the nation. Indeed, the neighboring State of Indiana modeled its recent long-term operating concession on the Skyway deal, making adjustments based on lessons learned from the Skyway process and resulting deal, the condition and utilization of the ITR, and the unique political and institutional characteristics of the State of Indiana. However, some are touting this deal as a giveaway to the private sector of a valuable transportation infrastructure asset, even though it remains a lease and not an outright sale of the facility.

Perhaps the greatest legacy of the Chicago Skyway deal is that it demonstrated the potential for public and private partners to apply innovative financing and asset management techniques to highway infrastructure in the United States to maximize the value capture for both public and private sector partners to the deal. Instead of one side being declared a winner and the other side a loser from the deal, the Chicago Skyway long-term operating lease offers the potential for both sides to declare victory—sharing the value capture to their mutual benefit.

5.2. Lessons Learned

Although it is still too early to assess the long-term outcomes of the Skyway operating lease, there are a number of lessons learned from the Skyway deal that can benefit other agencies considering the application of a concession arrangement to the financing, development, and stewardship of their highway transportation assets, including in the following:

- **Public agencies in the United States, under the right conditions, can privatize their highway assets.** The Skyway concession represents a significant leap forward in the trend toward privatizing tolled highway facilities in the United States. This is the first existing toll road to be privatized in this country. It paves the way for other similar arrangements to follow in other parts of

the country, such as the recently approved operating lease for the IT, at the Skyway's eastern terminus.

- **Transparent process levels the playing field.** The city ensured that its selection process was transparent, outlining the process on its web site and keeping the public informed through regular press releases. The city and its advisors were also successful in publicizing the sale to the tolling and infrastructure equity community, receiving no fewer than 10 statements of qualifications from various domestic and international teams. The five teams deemed qualified to bid by the city's financial advisors were further involved in a process by which the teams were invited to review and comment on the proposed lease agreement, as well as conduct a thorough inspection of the Skyway's finances and facilities.
- **Ample documentation reduced risks of Skyway proposals.** The city had prepared significant documentation to support the privatization process, including historical and current information on the condition of the facility, traffic and revenue, operating costs, and patron characteristics. The city also commissioned a significant rehabilitation of the Skyway facility prior to initiating the privatization procurement process, thereby providing prospective bidders with ample documentation on the condition of the facility and reducing the bidders' risks of having to cost the full rehabilitation of the facility as part of the deal. The city reduced the potential of lane closures required during facility repair or rehabilitation on future concession revenues by rehabilitating much of the Skyway infrastructure prior to takeover. One of the consequences of this was to increase the size of the up-front payment proposed by the winning consortium.

5.3. Implications for the Tappan Zee Bridge Project

The Chicago Skyway deal opened the door for public owners of surface transportation infrastructure to consider other types of PPPs that involved high levels of private sector responsibility, risk, and reward, including the application of innovative financing mechanisms previously untested in the United States for public-use transportation facilities, such as the use of taxable debt and equity. This 99-year concession lease form of PPP enabled the private provider team to operate (collect tolls), maintain, and preserve the existing facility while the public owner (the City of Chicago) retained ownership and branding/advertising rights to the Skyway Bridge. Essentially, the city traded future cash flows from tolls collected from users of the Chicago Skyway for an immediate cash infusion from the winning concessionaire for budget relief. Evidence of the increasing interest in PPPs includes the decision by the State of Indiana to award another Cintra-Macquarie consortium a 75-year concession to operate and maintain the ITR in exchange for an up-front cash payment of \$3.85 billion, as well as preliminary inquiries into concessions of state-owned toll highways in Illinois, New Jersey, and Pennsylvania.

There are several parallels between the Chicago Skyway situation and that of the TZB:

- **Both facilities serve in-bound commuters to growing major cities, with limited competition from alternate routes.** The Skyway is one of seven Interstate highways approaching downtown Chicago, while TZB is one of four routes across the Hudson River in the New York Metropolitan Area and one of six routes crossing the divide between New Jersey and portions of New York State west of the Hudson with New York City, Long Island, and Westchester County. In both cases there is limited competition from nearby facilities, and virtually no possibility of direct competition from an immediately parallel facility. The closest river crossing to the TZB is the George Washington Bridge more than 15 miles to the south of the TZB, owned and operated by the Port Authority of New York and New Jersey. There is significant demand for both the Chicago Skyway and TZB, by commuters and other users alike, in regions that are projected to have continued growth in employment and population in the coming decades.
- **Both facilities have a long history of stable toll revenues.** Both facilities were planned and executed prior to the creation of the Interstate Highway System (the TZB opened in 1955 and the Skyway in 1958). The history and stability of traffic volumes and toll revenues on these mature

facilities over a 50-year period, their income-generating capacity offers comfort to private sector investors seeking predictable revenues.

On the other hand, there are a number of key differences that must be taken into account in considering the application of a Skyway-style concession to the TZB:

- **Chicago Skyway’s concession involved assets recently brought to a state of good repair and did not address replacement of the bridge over the Calumet River or repairs to other major infrastructure facilities.** The City of Chicago invested heavily in the Skyway in anticipation of a concession arrangement. This effectively increased the value of the asset to the private sector, and the potential concession payment to the city, because only limited capital improvements would initially be required of the concessionaire. The TZB, however, requires extensive capital improvements, if not outright replacement, due to deterioration and seismic concerns, and the agency that currently operates and maintains the structure has limited financial ability to invest in improvements.
- **The Chicago Skyway is a relatively short toll highway that is not part of a larger system of toll roads managed by the same agency.** The TZB is but one piece of a 641-mile system of toll highways across New York State, while the Chicago Skyway is a standalone 7.8-mile toll road owned and formerly operated by the City of Chicago that serves as a connecting link between Interstate highways in northwestern Indiana and northeastern Illinois. Consideration of any PPP for the TZB replacement must consider the context of an overall strategy for operation, maintenance, and capital replacement for portions or the entirety of the New York Thruway system and the metropolitan transportation system around New York City.
- **The Chicago Skyway incorporates only one mode of transportation.** Plans for the future of the TZB involve consideration of future transit capacity, including bus and commuter rail, either upon replacement of the existing bridge or as a future enhancement that could be constructed on bridge foundations engineered to support such service. This is very different from the Skyway deal, which had no impact on transit in Chicago, incorporating only highway transportation.
- **The TZB already incorporates ETC, so there is less opportunity for efficiencies through new technology.** The New York State Thruway Authority, as one of the originators of the E-ZPass system, has electronically collected tolls at the TZB for more than 10 years. What was perceived as one of the most significant public benefits of privatized operations and maintenance of the Chicago Skyway is a moot issue for TZB, although there may be opportunities for a PPP to apply open road tolling, which would eliminate the need to pass through a plaza to pay the toll.
- **There is little opportunity for New York State to “export” much of the cost of toll increases to non-residents.** To a large extent, the cost of increased tolls to use the Skyway will be borne by non-residents of the City of Chicago: An estimated 50 percent of Skyway commuters originate from or are bound for Indiana, and many other users also reside outside Chicago’s city limits. Politically, Chicago’s mayor and city aldermen could support the toll structure adopted under the concession agreement with full knowledge that its impact on their constituents would be limited. For the TZB, a majority of the users reside in the State of New York. There is less ability to “export” the cost of higher tolls on the TZB to non-residents of New York State, and therefore, more likelihood of generating greater political pressure to limit tolls.

Each of these factors will serve as a potential impediment to a significant private sector interest in financing the TZB project, particularly if the cash flow from toll revenues does not come close to covering the full costs of the project. This may require greater public participation in funding and financing the potential project shortfalls.

However, the TZB has more congestion than the Chicago Skyway, which continues to operate below capacity. The congestion indicates that there is strong demand for use of the TZB, translating into higher

traffic and toll revenues from the facility, which is attractive to potential concessionaires. It also points to opportunities to apply technology and pricing strategies to manage traffic and mitigate congestion.

Ultimately, any PPP crafted to support enhancement of the TZB crossing must reflect the particularities of the situation.

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Hudson-Bergen Light Rail System Case Study

Prepared for the:

**New York State Department of
Transportation**

Metro-North Railroad

New York State Thruway Authority



New York State
Department of Transportation



Metro-North
Railroad



Thruway
Authority

Hudson-Bergen Light Rail System—Hudson County, New Jersey

Public Private Partnership Delivery	Construction/Development Period	Concession Period	Project Cost	Status
Design-Build-Operate-Maintain	10 years	15 years	\$2.2 billion	In operation

SUMMARY

In the 1990s New Jersey Transit Corporation (NJ Transit) sought to increase connectivity among the strand of Hudson River communities facing Manhattan by constructing a light rail transit system to serve their residents and businesses. The Hudson-Bergen Light Rail system, a 15.4-mile, 23-station line constructed in two phases between 1996 and 2006 (see Figure 1), is the result. The agency opted for a design-build-operate-maintain-finance (DBOMF) approach to deliver the project to compress the project delivery timeframe, control project costs, and ensure a quality project based on established performance standards.

NJ Transit selected 21st Century Rail Corporation, a consortium between construction company Washington Group International (formerly Raytheon Engineering and Constructors) and railcar manufacturer Kinkisharyo International, to design and construct the first phase of the project by a date certain at a not-to-exceed price, as well as provide rolling stock. In addition, the consortium would operate and maintain the system for 15 years at a fixed price in 1996 dollars subject to contractually specified escalation rates. NJ Transit subsequently exercised an option in its contract with 21st Century to also design, construct, operate, and maintain the second phase of the project.

As originally envisioned, the consortium would also finance the project by bridging the gap between design and construction expenditures and the receipt of Federal funding. Shortly after contract award and the receipt of a Federal New Starts Full Funding Grant Agreement (FFGA) for the project, however, NJ Transit assumed responsibility for project financing and issued grant anticipation notes (GANs) because publicly financed debt was more cost-effective.

The application of a design-build-operate-maintain (DBOM) is notable because it was one of the first fixed-guideway transit projects in the country supported with Federal Transit Administration (FTA) New Starts grants to apply this public-private partnership (PPP) approach, as well as the first transit procurement in North America in which a single project delivery team (consortium) contracted to perform all design, construction, operation, and maintenance functions for a fixed-guideway transit system over a period of 15 years at a fixed price. The resulting DBOM contract is credited with shortening the project delivery timeframe by 1 to 2 years, insulating project sponsor NJ Transit from the risk of capital and operations and maintenance (O&M) cost overruns, and incentivizing the private sector consortium to design and build a high-quality project that could be cost-effectively operated and maintained.

This project demonstrates how an agency can engage private sector partners to facilitate not only project delivery, but also O&M. Such an approach requires that the sponsor remains an active participant in project management and contract administration to ensure project success and the preservation of its public service goals. In addition, there are several key lessons that could be drawn from the Hudson-Bergen Light Rail project including the following:

- Design-build and DBOM require well-defined performance specifications. Design through 30 percent is appropriate if all that a sponsor wants to specify is the physical layout of the project. If something more specific is desired, the specification should be listed as a mandatory requirement.

-
- In a PPP, the O&M contract requirements must be carefully specified, including identifying requirements for issues of importance, such as station cleanliness or notifying customers of changes in service or other announcements.
 - NJ Transit's ability to successfully manage its multimillion-dollar projects with limited previous experience demonstrates that other public agencies, such as the New York State Thruway Authority (NYSTA), Metropolitan Transportation Authority (MTA), or New York State Department of Transportation (NYSDOT), which may have limited experience in certain kinds of project delivery approaches, can successfully apply PPPs. Agencies should be willing and prepared to retain specialized advisors to advance the learning curve for agency staff on how to develop and manage these new approaches.
 - Because there are a number of agencies involved in the Tappan Zee Bridge (TZB)/I-287 Corridor project, project leaders should ensure that proper coordination between many agencies exists early in the process in order to facilitate the project.

Figure 1: Hudson-Bergen Light Rail System Map



Source: NJ Transit

1. PROJECT OVERVIEW

1.1. Project Description

NJ Transit's Hudson-Bergen Light Rail system is a DBOM project. It connects residential North Bergen, Bayonne, and western Jersey City with Jersey City's Exchange Place and Newport Center and Hoboken Terminal along the Hudson River waterfront in the Northern New Jersey counties of Hudson and Bergen. At Hoboken, the at-grade line provides commuters with connections to the Port Authority Trans Hudson (PATH) train line and NY Waterway ferries to New York City. According to New Jersey Governor James McGreevey at the time of the opening of the Bayonne extension in 2003, "The Hudson-Bergen Light Rail will bring us reduced travel time, more time with our families, increased property values, and significant economic growth along New Jersey's 'Gold Coast.' "

The 15.4 miles built to date were constructed in two phases, with two separate New Starts FFGAs provided by the FTA. The first phase, Minimum Operable Segment 1 (MOS-1), was a 9.3-mile line with 16 stations; 29 vehicles; and parking, maintenance, and storage facilities. MOS-1 connected the Hoboken Terminal to 34th Street in Bayonne to the south and Westside Avenue in Jersey City to the west. The second phase, MOS-2, included a 5.1-mile, six-station extension to the north from Hoboken Terminal to the Tonnelles Avenue park-and-ride lot in North Bergen, and a 1-mile, one-station extension south from 34th Street to 22nd Street in Bayonne. Future plans call for two additional extensions: south from 22nd Street to 8th Street in Bayonne (scheduled to open by 2009) and west to the New Jersey Meadowlands.

Portions of the project operate in freight railroad right-of-way that is part of the Conrail North Jersey Shared Asset Area, a railroad jointly owned by CSX Transportation and Norfolk Southern Railroad. There is an agreement in place permitting freight trains to use tracks in the overnight hours when the Hudson-Bergen Light Rail system is not in revenue service.

The total capital cost of the project's two phases to date is \$2.2 billion, including Federal New Starts transit grants totaling \$1.1 billion and another \$435.4 million in Federal Section 5307 Urbanized Area Formula grants applied to the project. Local contributions included \$636.8 million from the New Jersey Transportation Trust Fund and \$31.3 million from the Port Authority of New York and New Jersey (PANYNJ) and utility reimbursements.

The project is sponsored by NJ Transit, New Jersey's public transportation corporation, with a charter to provide and facilitate bus, rail, and paratransit service statewide. According to the NJ Transit web site, the agency currently operates a fleet of 2,027 buses, 711 trains, and 45 light rail vehicles. NJ Transit provides nearly 223 million passenger trips each year on 236 bus routes and 11 rail lines across the state, in addition to paratransit programs and financial support and equipment to privately owned contract bus carriers.

NJ Transit collaborated with 21st Century Rail Corporation to design, build, operate, and maintain MOS-1 and MOS-2 of the project and to operate and maintain subsequent phases for a period of 15 years.

1.2. Project History and Development Process

The 1980s saw rapid population growth in New Jersey's Hudson and Bergen counties, which lie directly across the Hudson River from Manhattan. Much of the settlement was proximate to the rail and highway river crossings to New York City, especially in communities served by PATH trains such as Hoboken and Jersey City. Yet existing transit services provided radial service to New York City and did not connect the Hudson River waterfront communities.

NJ Transit undertook an alternatives analysis to determine the best option for improving mobility in the corridor, and selected a light rail transit system in the early 1990s. The proposed 20.5-mile system would connect the cities of Bayonne, Jersey City, Hoboken, Weehawken, Union City, West New York, and North

Bergen. Figure 2 illustrates two trains at the Exchange Place station in Jersey City. As originally proposed, the final build-out of the light rail system would extend northward from the Tonelle Avenue Station in North Bergen to the New Jersey Turnpike Authority's Vince Lombardi Service Center and Commuter Parking Facility in Bergen County, and southward from East 22nd Street to West 5th Street in Bayonne. Later, these extensions were respectively postponed indefinitely and modified to a planned terminus at 8th Street in Bayonne instead.

Figure 2: Hudson-Bergen Trains Near the Jersey City Exchange Place Station



Source: AudeVivere via Wikimedia Commons

NJ Transit applied a DBOM project delivery approach for the Hudson-Bergen Light Rail line to advance the timeline for project construction and revenue service and minimize the agency's cost exposure for design-build and O&M activities. The project was part of the FTA Turnkey Demonstration Program, an effort to encourage and measure the results of projects applying innovative project delivery approaches, under which several projects funded by New Starts grants in the mid-1990s were advanced.

NJ Transit estimates it saved at least 1 year and possibly 2 years in developing the project by using the DBOM project delivery approach versus the more traditional design-bid-build approach. According to another estimate by Washington Group International, majority partner in the project consortium, the application of a DBOM delivered the system a minimum of 8 years earlier than would have been the case under a more traditional design-bid-build delivery approach.

2. PROJECT PROCUREMENT

2.1. Authorizing Legislation

NJ Transit, a public corporation created by the state's Public Transportation Act of 1979, was established to "acquire, operate and contract for transportation service in the public interest." Its seven-member board is composed of the commissioner of the New Jersey Department of Transportation, the state treasurer, a state official selected by the governor, and four other gubernatorial appointments with state senate consent.

As a public corporation, NJ Transit had the authority to enter into innovative project delivery contracts such as DBOM, although Hudson-Bergen Light Rail was the agency's first such application of this authority. NJ Transit hired consultants with previous DBOM experience to advise the agency on the

process and ensure a successful procurement. The consultants conducted numerous contractor and supplier outreach sessions to familiarize the industry with the DBOM contracting strategy and ensure adequate competition, assisted in the drafting and preparation of DBOM documents, and assisted in the response to more than 700 questions pertaining to its content.

2.2. Key Elements of Procurement Approach

In 1995 NJ Transit issued a Request for Qualifications (RFQ) for firms to deliver the 9.5-mile initial operating segment of the system for a guaranteed fixed price in 1996 dollars, including a light rail vehicle fleet, a guaranteed completion date, and 15 years of system O&M. The 9.5-mile initial operating segment had 16 stations, four of which facilitated transfers to other transit systems, ferries, and regional rail, as well as four park-and-ride sites providing nearly 3,000 parking spaces.

FTA issued a Record of Decision (ROD) on the Final Environmental Impact Statement (FEIS) for the full Hudson-Bergen Light Rail project in October 1996. That same month, FTA and NJ Transit entered into an FFGA to construct MOS-1.

2.3. Selection of Winning Bid

Two consortia bid on this procurement, and NJ Transit was required to select the lowest bidder. In October 1996, NJ Transit awarded the DBOM contract for initial operating segment of the project to 21st Century Rail Corporation. According to a Washington Group International profile of the project, Washington Group is the majority owner of 21st Century Rail Corporation (with a 70 percent stake) and the prime contractor, responsible for the fast track engineering, design, procurement, civil and rail systems construction, infrastructure improvements, integration, start-up, and commissioning of the system. Washington Group will also operate the system and maintain the infrastructure, stations, and facilities for 15 years.

Kinkisharyo International is the minority owner of 21st Century Rail Corporation (with a 30 percent stake) and is responsible for the design, manufacture, and assembly of the light rail vehicles and commissioning of a fleet of 45 state-of-the-art electrically powered vehicles. The Hudson-Bergen Light Rail system will operate 29 vehicles. The other 16 were manufactured for NJ Transit's Newark City Subway Light Rail system. Kinkisharyo International will provide all routine and periodic maintenance for the Hudson-Bergen fleet and wash and clean each vehicle prior to releasing it for service.

With the project team selected, construction of MOS-1 began in December 1996. During construction, NJ Transit opted to realign the project from the east side of Hoboken to the west side. FTA issued a Finding of No Significant Impact (FONSI) on an Environmental Assessment (EA) for the realigned segment in June 1999. Construction of this segment was completed in September 2002 with a 4,000-foot extension linking the elevated Newport viaduct to a new station located within NJ Transit's Hoboken Regional Rail Terminal.

According to Washington Group International, the consortium completed construction, testing, and commissioning of the southernmost 7.5 miles of the initial operating segment within 42 months of notice to proceed. Revenue operations began in three phases between April 2000 and September 2002.

In September 2000 NJ Transit negotiated with the consortium to construct a 6-mile extension to the initial operating segment, named MOS-2, which provided an additional station with a park-and-ride at East 22nd Street in Bayonne at the south end of the system and extended service northward from Grove Street in Jersey City to the Tonnel Avenue Station in North Bergen. Responsibilities included civil construction, infrastructure and public utility construction, and construction of rail systems and station facilities.

Construction on MOS-2 began in September 2000 under a Letter of No Prejudice, and FTA and NJ Transit entered into an FFGA for the project 2 months later in November 2000. Revenue service of MOS-2 began in three phases between November 2003 and February 2006.

3. PROJECT FUNDING AND FINANCING

The two phases of the Hudson-Bergen Light Rail system constructed to date total greater than \$2.2 billion. The project is one of the largest public works projects in the history of the State of New Jersey in terms of cost.

The total cost of MOS-1 was \$992.1 million, funded through:

- An FFGA for \$604.1 million in Federal Section 5309 New Starts funds
- \$281.7 million in Section 5307 Urbanized Area Formula funds
- A \$106.4 million local share provided by the New Jersey Transportation Trust Fund

The cost of MOS-2 was \$1,215.4 million, funded by:

- An FFGA for \$500.0 million
- \$153.7 million in Section 5307 Urbanized Area Formula funds
- \$530.4 million from the New Jersey Transportation Trust Fund
- \$31.3 million from the PANYNJ and Utility reimbursements

As the project was originally structured, NJ Transit expected that external funding from the state and Federal governments would not match the project's capital construction cash flow requirements. Therefore, the first phase of the project was originally procured as a DBOM-F project, with the consortium responsible for privately financing the shortfalls between project funding and expenditures during the project design and construction phase. Following contract award, however, NJ Transit opted to finance the project itself in 1997, in part because its costs to finance the project with public debt (\$118.6 million) were lower than the consortium's cost to finance it with private debt (\$161.9 million). The agency found that once it had a guaranteed bid price and O&M cost agreement in hand, it could sell the concept of financing the project itself. NJ Transit issued GANs on the Federal New Starts transit grants following the completion of an FFGA with the FTA.

In 2000, NJ Transit issued \$284.9 million in GANs to refinance the debt outstanding on MOS-1 of the project, and \$452.5 million in GANS for MOS-2. The GANs for MOS-1 had a maturity of 4 years while the notes for MOS-2 had a maturity of 11 years. These issues reflect the increasingly long repayment period for New Starts grants, a function of the growing number and expense of projects supported by the program.

NJ Transit will pay the project's DBOM consortium a guaranteed price in 1996 dollars for O&M of the line for a period of 15 years. The O&M payment is subject to adjustment based on increases in the Consumer Price Index (CPI) and other inflation indices for selected operating costs, such as electricity. The contract estimates O&M costs of \$412.6 million over 15 years.

4. PROGRAM ASSESSMENT

4.1. Institutional Context

The selection of a DBOM approach to project delivery is credited with reducing project costs, advancing the project delivery schedule, and contributing to the overall quality of the project's construction. There were a number of factors that contributed to the overall success of the Hudson-Bergen Light Rail project including:

- **A corridor suitable for development of a light rail line.** The Hudson River communities served by the Hudson-Bergen Light Rail system are among the most densely populated in the country, making them ideal candidates for enhanced rail transit. There is a suitable mixture of residential, office, and retail uses in the corridor to make the line attractive to riders, and most importantly, there is direct access to key commuter routes to New York City, including the PATH train and ferries to Manhattan.
- **Willingness of state and Federal sponsors to apply innovative approaches.** This was one of the first applications of the DBOM approach to project delivery for a project supported by Federal New Starts grants for transit capital projects, and the first application of DBOM by NJ Transit. NJ Transit sought the advice of consultants experienced with DBOM projects to successfully guide it through the procurement and administration processes and build institutional familiarity with the concept. The agency has since employed DBOM to deliver another light rail line, the River LINE from Trenton to Camden, and seeks to apply PPP approaches to expedite other proposed projects.
- **Private sector partners capable of completing the job.** Key to the approach employed by NJ Transit was an RFQ, which enabled the project sponsors to vet potential DBOM partners and select only those firms experienced enough with project delivery and O&M to competently bid on and deliver the project.

4.2. Major Issues and Strategies

The project sponsor and the DBOM consortium confronted a number of challenges during the course of delivering the two phases of the Hudson-Bergen Light Rail project. This section describes these impediments and the strategies that were employed by the partners to overcome them:

- **The project sponsor had limited previous experience with the delivery approach.** NJ Transit is a large and mature transit agency, managing directly operated and purchased bus, rail, and paratransit service statewide. However, the agency had never before managed a project with as sophisticated a delivery approach as the Hudson-Bergen Light Rail system's DBOM-F. To remedy this situation, the agency sought the advice of outside consultants with the legal, contractual, financial, and technical expertise to facilitate the project. This quickly brought the expertise on board to develop an effective and equitable procurement process and ultimately deliver this project while building institutional memory within the agency to manage future PPPs.
- **The first phase of the project experienced a significant alignment change following contract award.** Initial plans for project MOS-1 called for the alignment of the rail line to be on the east side of Hoboken. In response to community and political opposition, however, the governor ordered a change in the alignment of the project following issuance of an ROD on the project's FEIS, receipt of a New Starts FFGA from FTA, and award of the DBOM contract to 21st Century Rail Corporation. FTA required the completion of an EA on the proposed realignment, and the DBOM contract required a change order. To the project's benefit, a 1999 FTA review of the project reported that the rerouted alignment would result in cost savings by reducing the need to embed tracks in the streets and reducing property acquisition costs. Construction on the unmodified portions of the project continued while the EA was underway, until a FONSI was issued in June 1999. The third and final segment of MOS-1, from Pavonia-Newport to Hoboken Terminal, opened

in September 2002, nearly 2 years after completion of the Exchange Place to Pavonia-Newport segment. This change caused a significant disruption in the original project delivery timeframe. To successfully complete the project required flexibility by the consortium and NJ Transit in working together as partners to accommodate the changes resulting from the realignment.

- **Project financing responsibility was shifted from the consortium to NJ Transit following DBOM contract award.** NJ Transit's contract for MOS-1 called for 21st Century Rail Corporation to design, build, operate, maintain, and finance the project, bridging the gap between project expenditures and the receipt of Federal funds early in the overall project schedule. Once the agency had a guaranteed bid price for the project it found that it could more cost-effectively issue GANs itself, at a savings to the project of approximately \$43.2 million. This required a contract modification to remove 21st Century's responsibility for project finance.
- **NJ Transit made a number of changes to MOS-2 as a direct result of lessons learned from MOS-1.** There were several lessons learned from MOS-1, including that the agency should exercise greater oversight over the quality of construction, and that the private sector could bring more innovation to bear when it was able to take on design responsibility earlier in the project development process. As a result, NJ Transit made several changes in its approach to the MOS-2 project, including monitoring project quality more closely and handing over design of the project to the consortium earlier in the process.

5. CONCLUSIONS

5.1. Results of Hudson-Bergen Light Rail Project

Thus far, NJ Transit is generally satisfied with the delivery and operation of the Hudson-Bergen Light Rail system. Ridership on the line continues to grow, and economic development in the corridor has been enhanced.

Indirect cost savings resulted from the transfer of risk of operating and maintenance cost increases to the consortium. NJ Transit is paying the Hudson-Bergen Light Rail project's DBOM consortium a guaranteed price for O&M costs in 1996 dollars, which insulates the agency from growth in operating costs for reasons other than inflation, and provides the operating consortium with an incentive to control O&M cost escalation.

Project delivery was advanced by an estimated 1 to 2 years or more in part because of the approach selected. Hudson-Bergen Light Rail passengers benefited from the completion of the project years ahead of the schedule when compared to a more traditional design-bid-build project delivery approach. The project has improved mobility and connectivity in northern New Jersey and has spurred significant economic development in the communities served by the line.

The application of a DBOM for the project provided an incentive for the consortium to build a quality facility to minimize O&M costs over the 15-year operations phase of the contract. According to a report on the application of DBOM by transit agencies around the country prepared for the Seattle Monorail Project by its lead procurement counsel, Nossaman Guthner Knox and Elliott, LLP, NJ Transit's representatives reported that using a single procurement for both design-build and O&M for the Hudson-Bergen Light Rail system resulted in a much better product, especially because the equipment supplier was part of the DBOM consortium. NJ Transit also found that by using DBOM, the agency avoided disputes between agency operating personnel and the contractor as to whether a problem was due to improper design or poor maintenance. In addition, the maintenance provided by the O&M contractor was reported as much better than that with typical agency-operated systems.

As an agency, NJ Transit plans to continue to apply PPPs, including the application of design-build, to the extension of the Hudson-Bergen line south from 22nd Street to 8th Street in Bayonne. The agency will

competitively bid out the civil construction portion of the contract, with 21st Century Rail Corporation tentatively completing the signal and electrical systems. The agency is also actively considering design-build or DBOM for a diesel multiple unit (DMU) project serving northern New Jersey.

5.2. Lessons Learned

There were several key lessons learned by NJ Transit about DBOM contracting because of this project:

- **Design-build and DBOM require well-defined performance specifications.** Design through 30 percent is appropriate if all that a sponsor wants to specify is the project's physical layout. But if something more specific is desired, it must be listed as a mandatory requirement. The agency also learned on the Hudson-Bergen project MOS-1 that it could not transfer its responsibility to conduct project quality assurance monitoring on a timely basis. Periodic inspections were needed by the agency for it to feel comfortable with the project. Safety was never compromised, but it was sometimes a push to get the contractor to perform proper quality control. In the end, NJ Transit and the contractor successfully delivered the project, but it required more active oversight than the agency originally anticipated.
- **When the concessionaire did more design itself instead of subcontracting design, the agency had better results.** This was because there was better coordination between the prime contractor and the operator. The design of MOS-1 was by a subcontractor, which created coordination and communication issues between the project's designer and operator. The design-build consortium lead designed MOS-2 directly and was more responsive to civil and systems needs, which achieved a quality product more easily.
- **The O&M contract requirements must be carefully specified.** From an operations standpoint, NJ Transit discovered that its DBOM contract for the Hudson-Bergen project did not adequately address the quality of service to the traveling public. While the consortium received a penalty or bonus for on-time performance, there were no incentives for station cleanliness or notification of customers of changes in service or other announcements, which became issues. NJ Transit found that the private sector may be less sensitive toward and responsive to customer service needs than the sponsoring agency that owns the facility, particularly if these kinds of service performance standards are not specifically defined in the contract agreement.

5.3. Implications for the Tappan Zee Bridge Project

There are a number of parallels between the Hudson-Bergen Light Rail project and the proposed application of transit to the TZB corridor, including:

- **Limited previous experience by the project sponsor with the selected delivery approach.** NJ Transit, while a large and mature statewide transportation agency, had no experience with turnkey projects prior to the Hudson-Bergen Light Rail project. It developed the capacity, however, to support the project by retaining consultants, attorneys, and other experts external to the agency to supplement agency staff. NJ Transit's ability to successfully manage its multimillion-dollar project with limited previous experience demonstrates that other public agencies, such as NYSTA, MTA, or NYSDOT, that may have limited experience in certain kinds of project delivery approaches can successfully apply PPPs if they are prepared to retain specialized advisors to advance the learning curve for agency staff on how to develop and manage these new approaches.
- **Development of new transit service in a corridor previously used by another mode.** A significant portion of the Hudson-Bergen Light Rail system operates in a freight rail corridor, which continues to function as a freight railroad during hours in which light rail transit is not in service. This is similar to the proposed application of commuter rail transit service in the TZB corridor, which heretofore has only served motor vehicles, including trucks, buses, and automobiles. A key difference, however, is that temporal separation of service is not possible in

the TZB corridor where commuter rail service, if selected, must coexist alongside motor vehicles at all times it is in service.

- **Provision of new, fixed guideway transit service in a corridor with congested roadways.** NJ Transit sought to develop the Hudson-Bergen Light Rail corridor to provide a fast alternative to street congestion in the communities served by the lines, much as the transit alternatives under analysis in the TZB corridor would provide commuters with a faster alternative to sitting in the existing congestion on the bridge today.
- **Coordination between many agencies to facilitate the project.** The Hudson-Bergen Light Rail project required coordination between project sponsor NJ Transit and a host of other entities, including grantees such as FTA and the State of New Jersey; DBOM consortium members Washington Group and Kinkisharyo; city governments through which the system passes; other transit operators including the PATH train operator (the Port Authority of New York and New Jersey), the ferry operator (NY Waterway), and NJ Transit itself; and Conrail and the Federal Railroad Administration regarding shared use of the rail corridor. This is similar to the degree of coordination that may be required among NYSTA, MTA, NYSDOT, and other parties to facilitate the TZB project.

On the other hand, there are several key differences of note. These include:

- **Both projects support economic development objectives, but the approach differs.** The economic development objective of the Hudson-Bergen Light Rail system is point-specific, because the project seeks to generate transit-oriented development within close proximity—one-quarter to one-half mile—of its stations. The TZB project, however, seeks to generate economic development in a general region by improving accessibility to an entire area. The economic development objectives are much less point specific because the bridge project would in part facilitate auto vehicular movements, by definition a mode with broad accessibility. Furthermore, transit stations or stops, the points of maximum accessibility around which transit-oriented development could occur, are not yet fully defined, although potential service corridors have been identified.
- **The TZB will involve a multimodal approach.** The Hudson-Bergen Light Rail corridor connects residential neighborhoods and commercial areas along a string of interrelated communities, and serves as a feeder to existing heavy-rail service to New York City—an ideal application of light rail service. While light rail service is under consideration for cross-Westchester transit service, most of the TZB alternatives consider the application of commuter rail, express bus, and/or BRT services, as well as a new or enhanced bridge for vehicular traffic. The combination of modes creates a much more complex project. Still, the DBOM delivery approach may be successfully used to deliver some or part of the necessary highway and/or transit improvements in the corridor.

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Figure 2: AudeVivere via Wikimedia Commons,
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Indiana Toll Road Concession Lease Case Study

Prepared for the:

**New York State Department of
Transportation**

Metro-North Railroad

New York State Thruway Authority



New York State
Department of Transportation



Metro-North
Railroad



Thruway
Authority

Indiana Toll Road Concession Lease—Northern Indiana

Public Private Partnership Delivery	Construction/ Development Period	Concession Period	Concession Payment	Status
Reconstruct, Operate, and Maintain	N/A	75 years	\$3.8 billion	In operation, with capital/ETC upgrades in progress

SUMMARY

The 157-mile Indiana Toll Road (ITR) transects the State of Indiana across its northern tier of counties and connects the Chicago Skyway to the west with the Ohio Turnpike to the east (see Figure 1). A year after the City of Chicago's 99-year, \$1.83 billion Chicago Skyway concession in 2005, Governor Mitch Daniels of Indiana announced plans to lease the ITR in exchange for an up-front lump-sum payment to the state. The transaction generated \$3.8 billion in revenue, most of which was pledged for a 10-year statewide transportation improvement package. In addition, the selected consortium bears responsibility for significant capital upgrades and maintenance activities at an estimated cost of up to \$700 million over the first 9 years of the lease to bring the toll highway up to a state of good repair and implement modern toll collection technology.

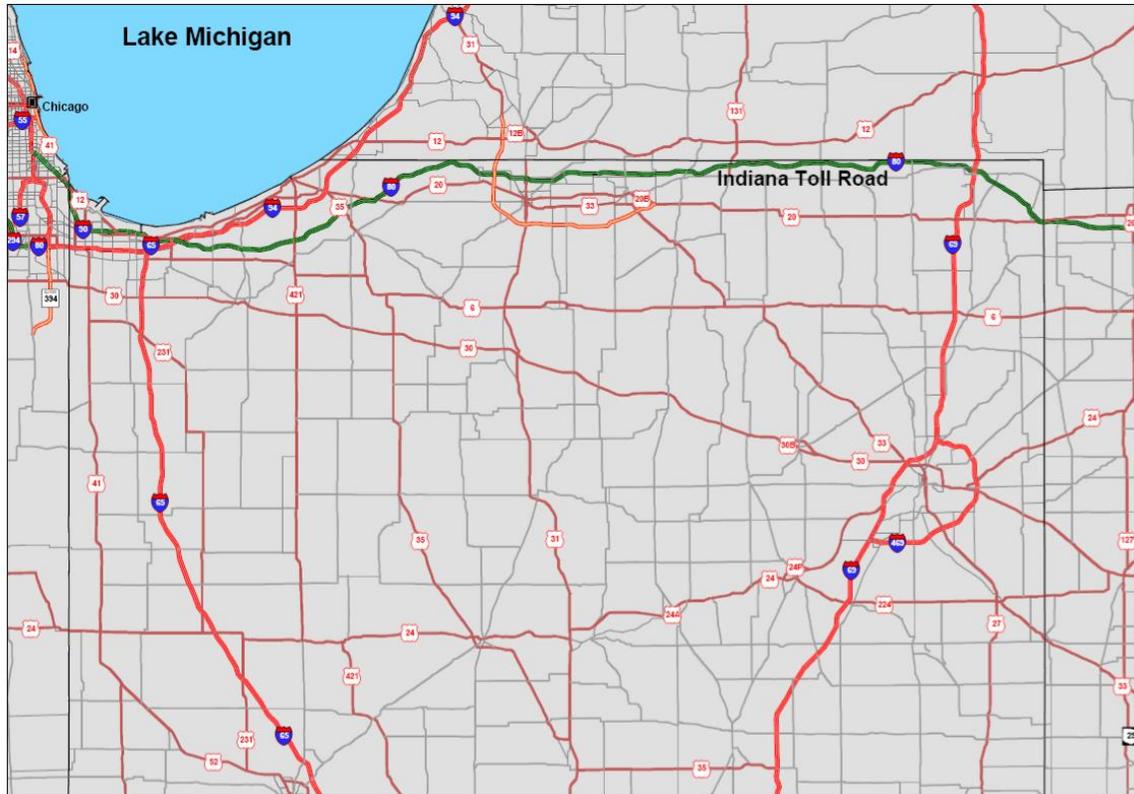
There are both parallels and differences between the ITR concession lease and the Tappan Zee Bridge (TZB)/I-287 Corridor project:

- The existing infrastructure concessioned by the State of Indiana required significant investment to bring it to a state of good repair, and the TZB requires either extensive reconstruction or replacement.
- The ITR concession was for an entire toll road system, while the TZB project consists of only a single facility and its approaches, making it closer in nature to the Chicago Skyway concession lease.
- There is less opportunity for efficiencies to be gained through the introduction of new toll collection technology in the case of the TZB, which already uses electronic toll collection (ETC), unlike the ITR which relied on cash toll collection.
- The ITR concession lease and its proceeds were primarily focused on highway transportation with no provisions for public transportation services or facilities.
- In Indiana, the long-term concession lease provoked mixed reactions, depending on the different perspectives of stakeholders involved in the process, which led to extraordinary efforts to accommodate these various stakeholders by spreading the proceeds across the state and focusing their use on transportation improvement projects.
- One of the major lessons learned from the ITR concession that could be applied to the TZB project is that privatization of highway assets can be more than a one-time phenomenon. The lease of the ITR builds on the breakthrough financial and procurement strategies that were implemented for the Chicago Skyway lease. It demonstrates that states can also participate in public-private partnerships (PPPs) involving long-term concession leases of transportation infrastructure assets. Serious discussion of leasing state-owned toll highways is currently underway in Pennsylvania, New Jersey, and Illinois.

The ITR concession was a sophisticated transaction involving the lease of the toll road to generate sufficient revenue to fully address the state's unfunded transportation infrastructure backlog for the next 10 years. But as this case study illustrates, the proposed concession was politically contentious, especially in the Northern Indiana counties through which the highway passes. Unlike the Chicago

Skyway concession, which was overwhelmingly supported by its sponsors, Chicago's mayor, and City Council, the ITR concession was narrowly approved by Indiana's legislature, and opposed by Indiana residents two to one.

Figure 1: Overview Map of the Indiana Toll Road



Source: AECOM Consult, Inc.

1. PROJECT OVERVIEW

1.1. Indiana Toll Road Overview

The ITR is a 157-mile, four- to six-lane, 21-interchange limited access tolled Interstate highway across Northern Indiana. The route is signed as Interstate 80/90 (I-80/I-90) across most of its length. It has 10 service plazas, one serving each direction of travel at five points along the highway. The highway's FY 2005 operating expenses were \$35.2 million.

In 2004 the highway generated \$85 million in toll revenue, with \$50 million (58 percent) from commercial vehicles and \$35 million (42 percent) from passenger vehicles. The facility had annual average daily traffic (AADT) of 71,000 vehicles in FY 2005. Of tolls paid to use the facility, 66 percent came from out-of-state vehicles, 18 percent came from Indiana-registered cars, and 16 percent came from Indiana-registered trucks. The high percentage of out-of-state users of the ITR was a major factor driving the concession lease and its attendant toll increases, because most of the impact of the deal would ultimately fall on non-residents (and non-voters) of Indiana.

The route passes through seven Northern Indiana counties and skirts the communities of Hammond, Gary, Michigan City, South Bend, and Elkhart. Tolls on the western-most 23 miles of the route, which passes through northwestern Indiana's Chicago suburbs, are collected as fixed amounts at entrance and

exit ramps. There is a mainline toll barrier at the Illinois state line, where the highway meets the Chicago Skyway. This portion of the route runs parallel to another major Interstate highway, the Borman Expressway (I-94), which is toll free but heavily congested. In 2004 this portion of the route generated \$70 million (82 percent) of the highway's toll revenue, with AADT of 46,000 vehicles in FY 2005; \$25 million (35 percent) in revenue was generated from passenger vehicles and \$45 million (65 percent) was from commercial vehicles. Hence, only 14 percent of the ITR system produced 82 percent of the toll road's total revenues, with most revenues (58 percent) coming from commercial trucks.

The remainder of the ITR uses a closed ticket system, charging a distance-based toll. There are mainline barriers at milepost 23 near Portage and milepost 153 near Angola, where the highway meets the Ohio Turnpike. This portion of the ITR does not parallel competing freeways with the exception of the St. Joseph Valley Parkway (U.S. 20), a 29-mile-long toll-free bypass connecting South Bend and Elkhart. In 2004 the eastern portion of the ITR generated \$15 million (18 percent) of the highway's toll revenue, with AADT of 25,000 vehicles in FY 2005; \$11 million (71 percent) in revenue was generated from passenger vehicles and \$4 million (29 percent) from commercial vehicles.

1.2. Project Description

The ITR PPP is a long-term lease in which a private sector consortium, ITR Concession Company LLC, bears the rights and responsibilities to operate, manage, maintain, rehabilitate, and toll the facility for a period of 75 years beginning June 29, 2005. The State of Indiana received an up-front lump-sum payment of \$3.8 billion from the concessionaries, but retains ownership of the highway. At the end of the 75-year concession period the toll road is to be returned to Indiana in a state of good repair by the concessionaire.

ITR Concession Company LLC is a consortium composed of Cintra Concesiones de Infraestructuras de Transporte, S.A. (Cintra) and Macquarie Infrastructure Group (MIG), the same partners that hold a 99-year concession with the City of Chicago for the adjoining Chicago Skyway.

Tolls may be no higher than is specified in the agreement between the consortium and the state. The operator must comply with a detailed, three-volume operating standards manual to ensure safety in operations and capital maintenance that meet high engineering standards during the full term of the lease. In addition, the agreement requires up to \$700 million in mandatory capital expenditures during the first 9 years of the agreement, including the implementation of ETC along the length of the toll road.

The concession may only be terminated upon a concessionaire default, or in other circumstances upon payment of a predetermined compensation package to the concessionaire by the state.

The agreement contains a non-compete clause prohibiting the state from constructing a parallel limited-access highway of greater than 20 continuous miles within 10 miles of the ITR for a period of 55 years from the start of the concession contract.

The concession includes the right to manage and collect rent from fuel and food service vendors at the highway's service plazas. The state retains the right to sell the facility's naming rights, similar to the Chicago Skyway concession lease.

The agreement requires the concessionaire to maintain level of service (LOS) on the route at grade C in rural areas and grade D in urban areas. Service levels will be studied annually, and the concessionaire is required to submit a capital plan to improve LOS, subject to approval by the state. Construction contracts must be awarded within 4 years of study.

The Indiana State Police will continue to police the facility at the same level as other state roads. In addition, the concessionaire may contract separately with the State Police or another agency for enhanced service, subject to state approval. At closing of the concession deal, the State Police were provided \$5 million by the concessionaire for capital improvements to their facilities on the ITR.

1.3. Project History and Development Process

The ITR Commission was chartered by the Indiana General Assembly in 1951 to design, construct, operate, and maintain high-speed toll highways across the state. Like many states, Indiana sought to use toll funding to build limited access highways prior to passage of the Federal-Aid Highway Act of 1956, which authorized Federal fuel tax revenue in lieu of tolls or other revenues to fund construction of the Interstate Highway System. Construction of the Indiana East-West Toll Road, as the highway is formally known, was completed in 1956, 1 year after the Ohio Turnpike to its immediate east and 2 years ahead of the Chicago Skyway to its west. Plans for the commission to develop a subsequent North-South Toll Road along the present-day I-65 corridor from Louisville, Kentucky, to Indianapolis to Chicago were tabled following establishment of Federal Interstate highway funding.

The ITR Commission owned and operated the route until 1981, when its responsibilities were transferred to the Indiana Department of Transportation (INDOT) and it became known as the INDOT Toll Road District. According to INDOT, the Toll Road District was responsible for construction, maintenance, repair, and operation of ITR projects. It was charged with formulating, developing, and recommending a continuing long-range toll road plan and short-term improvement programs and communicating planning information to the public and interested agencies and organizations. The Toll Road District was responsible for services including toll collections, road operation, administration, and toll road management, and it continued to operate the route until the concession reached financial close.

As a major segment of the Chicago to New York system of toll roads developed prior to enactment of the Federal-Aid Highway Act of 1956, the ITR benefited from the tremendous growth in interstate travel between the East Coast and Midwest from the 1950s to the present day. The highway is considered a mature facility, with modest annual growth in traffic and limited congestion outside its urban segments near Chicago.

Tolls on the facility are 3.0 cents per mile for passenger vehicles and 9.3 cents per mile for 5-axle trucks—the lowest in the country relative to its peers—and were last raised in 1985. Thus the ITR remained under-revenued and undervalued by the state and its operating agency, INDOT, as long as it remained under public operational control.

In September 2005, Indiana's newly elected governor announced plans to raise tolls on the ITR and lease the facility to private investors in exchange for a concession payment estimated by the state to be upwards of \$2 billion. The governor pledged to invest the concession proceeds in a statewide transportation improvements package titled "Major Moves," which would include extension of I-69 from Indianapolis to Evansville in the southwest corner of the state as well as other projects. Other proposed inducements included \$100 million for a Northwest Regional Development Authority, \$100 million for local transportation improvements in ITR counties, and at least \$344 million for road projects elsewhere in the state.

Ownership of the toll road shifted to the Indiana Finance Authority (IFA) in 2006. The IFA is a state agency formed in 2006 that is authorized to issue revenue bonds payable from lease rentals (or concession proceeds) under lease agreements with various state agencies and to finance or refinance the cost of acquiring, building, and equipping structures for state use including state office buildings, garages, highways, bridges, and airport facilities in addition to other state-owned facilities.

2. PROJECT PROCUREMENT

2.1. Authorizing Legislation

The concession agreement proposed by Indiana's governor was not authorized by legislative action in advance, but was instead approved by the Indiana General Assembly following the state's selection of a

winning bidder. The issue was very contentious, and the final vote was very close, as described in the Legislative Approval section below.

No formal Federal approvals were required because the design, construction, operation, and maintenance of the ITR was completed without Federal funds prior to the establishment of the Interstate Highway Trust Fund and system plan in 1956. Subsequently, the ITR was grandfathered into the Interstate Highway System as I-80 and I-90 through Indiana.

2.2. Key Elements of Procurement Approach

The IFA conducted a competitive procurement process in which it issued a Request for Proposals (RFP) from potential concessionaires to formally express their interest in bidding on the lease of the ITR. Goldman, Sachs & Co. served as financial advisor to the state, a role similar to the one it played for the City of Chicago for the earlier 99-year Chicago Skyway concession deal.

The RFP outlined several investment highlights for potential concessionaires, including:

- Substantial commercial traffic and lack of competing direct route
- Anticipated small impact of proposed toll increase on traffic demand
- Potentially significant toll revenue growth rates
- 48-year operating history
- Defined future capital expenditure requirements
- Modernization potential
- Beneficiary of regional and national economic growth

The procurement occurred over a relatively short timeframe, totaling 4 months from RFP issuance to announcement of the winning bidder. The RFP was issued September 28, 2005, and the deadline for proposals was 1 month later. Following the receipt of proposals, the state signed confidentiality agreements with its approved bidders, followed by a period of due diligence during November and December. The deadline for final and binding proposals was January 19, 2006.

The four teams submitting bids included:

- **Statewide Mobility Partners LLC.** The Cintra-Macquarie Consortium consisting of Cintra Concesiones de Infraestructuras de Transporte S.A. and Macquarie Infrastructure Group, which submitted the winning bid of \$3.85 billion. (Statewide was a holding company, which later formed the ITR Concession Company, LLC, to operate and manage the ITR.)
- **Indiana Road Company LLC.** A consortium led by Babcock and Brown, which bid \$2.84 billion.
- **Itinere Infraestructuras, SA** Which bid \$2.52 billion.
- **Indiana Toll Road Partners LLC.** A consortium led by Morgan Stanley, which bid \$1.9 billion.

A fifth consortium of Abertis Infraestructuras and Washington Group International was reportedly prepared to bid \$2.0 to \$2.2 billion for the concession, but withdrew from the competition before the bids were to be submitted and opened.

The amounts of the losing bids were not publicly announced until the deal with Cintra-Macquarie reached financial closure.

2.3. Selection of Winning Bid

The Cintra-Macquarie bid was \$1.01 billion higher than the next closest competitor's offer. At the time of the winning bid announcement on January 23, 2006, Governor Daniels said that the concession "offered an enormous amount of money far beyond anything the state could generate on its own."

Cintra and Macquarie each have a 50 percent stake in the consortium. Headquartered in Madrid, Spain, Cintra is one of the world's leading private developers of transport infrastructure, managing 18 toll highways (more than 1,100 miles) in Spain, Portugal, Ireland, Chile, and Canada. Teaming with Zackary Construction of Texas, Cintra has a comprehensive development agreement with the Texas Department of Transportation to develop the Trans Texas I-35 Corridor between Oklahoma and Texas, with initial plans to construct a toll road between Dallas and San Antonio.

Macquarie Infrastructure Group is an Australian-based infrastructure investment fund. Macquarie has invested in more than a dozen toll facilities worldwide, including the Dulles Greenway in Virginia and the new South Bay Expressway near San Diego, California. Other Macquarie investments include toll roads in Australia, Canada, France, Germany, Portugal, and the United Kingdom and, recently, municipal parking garages in Chicago.

Cintra and Macquarie are partners responsible for the Electronic Toll Road (ETR) 407 just north of Toronto, Canada. This was the second totally privatized toll facility in North America, the first being the Dulles Greenway in Northern Virginia that opened in 1995. ETR 407 operates with no toll booths, using instead ETC to automatically collect tolls from transponder-equipped vehicles. The consortium also has a concession to operate, maintain, and collect tolls on the Chicago Skyway, which connects directly to the ITR at the Indiana-Illinois border, detailed in another case study prepared for this project.

2.4. Legislative Approval

The concession required approval by the Indiana Legislature following selection of the winning bidder. The Indiana governor began a statewide campaign to rally popular and legislative support for the legislation needed to approve the concession deal. "Indiana's not going to pass up this opportunity. We're not going to tear up a \$4 billion check. We're not going to throw away thousands of jobs," Governor Daniels said.

Despite the size of the proposed lease payment, there was considerable opposition to the concession deal. Some argued that the state could raise necessary transportation funds itself by raising tolls and bonding against ITR toll revenue or the state's fuel tax instead of leasing the facility to a private concessionaire. Several voiced concerns that this was a short-term windfall that failed to correct long-term fiscal problems with the state's surface transportation program. They noted that the state would spend down the proceeds of the lease agreement in just 10 years while toll road users would continue paying tolls to the concessionaire for an additional 65 years.

Others opposed the process by which the concession was procured and legislatively enabled. Opponents cited a lack of information regarding the terms of the lease agreement and a lack of transparency in the selection process, as well as the fact that legislators had only a 30-day "short" legislative session to evaluate, amend, and approve the agreement.

Opposition was particularly strong in the Northern Indiana counties through which the ITR passes. While the governor's administration pledged \$1.3 billion in transportation improvements and construction bond repayment in the northern tier of counties to be funded by one-third of the lease proceeds, many believed that this amount was not commensurate with the revenue earned from Northern Indiana users of the toll road. "For the next 75 years, we and our children and our children's children will pay for tolls that go directly to southern Indiana," Hammond Mayor Thomas McDermott told the Northwest Indiana Times. McDermott's sentiment was echoed by many Northern Indianans, who raised the issue of the equity

associated with spreading the proceeds from the up-front lump-sum lease payment statewide, while Northern Indiana's primary east-west highway, the ITR, remains the only major toll facility in the state.

Some complained of "foreign ownership" of the toll road, because neither member of the concession consortium was an American-based company. Many objected to "selling" the toll road, despite the fact that title to the highway itself would be retained by the State of Indiana.

Supporters of the measure included advocates for increased transportation funding statewide such as business groups and local government organizations, as well as labor unions whose members stood to benefit from construction jobs generated by spending the state's windfall. The plan was also supported by the Indiana Motor Truck Association for the transportation infrastructure improvements the plan would fund.

A statewide public opinion poll commissioned by the Indianapolis Star in March 2006 found that a large majority of Indianans opposed the ITR concession. According to the poll, 60 percent of state residents opposed the proposed deal, while only 30 percent supported it (with a 4.4 percent margin of error).

As a compromise to residents of Northern Indiana, House and Senate leaders agreed to freeze commuter toll rates, with state-sponsored rebates to motorists using transponders on the western, ticket system section of the toll road. The rebates would cost the state \$150 million over 10 years. This amendment was the sole substantive change to the enabling legislation and was a key factor in ensuring the support of Republican lawmakers from Northern Indiana.

In the end, the Republican-controlled legislature approved the enabling legislation on March 14, 2006, mostly along party lines. The final bill passed the House 51 to 48, with one Republican voting with the entire Democratic caucus to oppose the legislation. In the Senate, the bill passed 31 to 19, with two Democrats voting to support the bill and four Republicans voting against.

2.5. Final Agreement, Litigation, and Financial Close

The IFA and the ITR Concession Company, LLC signed a lease agreement on April 12, 2006. In addition to the concession agreement specified at bid acceptance, an amendment was also signed to freeze passenger vehicle tolls at then current rates until electronic tolling was installed and to institute a 40 percent discount through 2016 for passenger vehicles using a transponder. The IFA agreed to reimburse the concessionaire for revenue lost due to the toll freeze. The amendment, aimed at moderating the effect of tolls on Northern Indiana commuters, was negotiated with the consortium to comply with the amended enabling legislation approved by the General Assembly.

The constitutionality of the concession was challenged in court by a citizen coalition, charging that the concession represented a "sale" of public works by the state, whose proceeds the constitution required to be used to pay down public debt. Another argument was that the partnership would make the state a stockholder in a private corporation, which is expressly prohibited by the state constitution. Ultimately, these objections were unanimously dismissed by the state supreme court.

The transaction closed on June 29, 2006, with the consortium wiring payment of \$3.8 billion¹ to the IFA.

¹ The consortium bid \$3.85 billion, but the final payment was reduced to \$3.8 billion due to fluctuations in interest rates between the acceptance of bids and the financial close, as specified in the lease agreement.

3. PROJECT FUNDING AND FINANCING

3.1. Concession Funding and Financing

The consortium used a combination of private equity and bank debt to fund the up-front concession payment to the state. Cintra and Macquarie each committed \$374 million in equity. In addition, seven European banks put up a total of \$3.25 billion. These banks included Banco Bilbao Vizcaya Argentaria, SA, Banco Santander Central Hispano S.A., BNP Paribas, Caja de Ahorros y Monte de Piedad de Madrid, DEPFA Bank, Dexia Credit Local, and RBS Securities Corporation. The State of Indiana received an up-front payment of \$3.8 billion, and \$196 million was set aside to cover financing fees and to establish a reserve fund for the capital improvement projects that the consortium is required to deliver. There are no restrictions or consent from the state required for the concessionaire to refinance debt.

The lease agreement specifies the rate at which tolls may increase. Passenger car tolls will go from 3.0 cents per mile to 5.1 cents per mile when ETC systems have been fully implemented. In accordance with the terms of the legislative amendment to the lease agreement, the state will pay the concessionaire a shadow toll of 2.1 cents per mile to make up the difference in revenue until ETC systems are fully implemented. Passenger car tolls will remain fixed at 5.1 cents until June 30, 2010, when they may catch up to reflect the prior 4 years' growth in the Consumer Price Index (CPI) or Nominal Gross Domestic Product (GDP) per capita. Five-axle commercial vehicle tolls jumped from 9.3 to 11.4 cents per mile on April 1, 2006, and may continue to grow to 14.4 cents per mile on April 1, 2007; 17.4 cents per mile on April 1, 2008; and 20.3 cents per mile on April 1, 2009. As with passenger car tolls, commercial vehicle tolls may rise on June 30, 2010 to catch up, if necessary, to reflect growth in CPI or nominal GDP per capita over the previous 4 years. Beyond 2010, both passenger car and commercial vehicle tolls may grow at the greater of 2 percent, CPI, or nominal GDP per capita growth. Subject to certain limitations in the lease agreement, future toll increases may be applied disproportionately across the toll road.

According to a presentation on the concession agreement prepared by Macquarie, the ITR investment is expected to yield an internal rate of return (IRR) of between 12.5 percent and 13.5 percent annually. The project has a risk premium between 8 percent and 9 percent annually over the U.S. 10-year bond yield, higher than the Macquarie Investment Group average. There is an average expected yield of 2.6 percent annually over the first 5 years, with an anticipated 15-year payback period for Macquarie's \$385 million equity investment.

3.2. Use of Proceeds From the Indiana Toll Road Concession

The State of Indiana plans to apply most of its \$3.8 billion concession payment to fund transportation improvements across the state in the 10-year Major Moves program. According to the State of Indiana, between 2006 and 2015, the state will invest nearly \$12 billion on hundreds of new road construction, preservation, resurfacing, and other projects. Of the \$12 billion to be spent statewide, \$1.3 billion or 35 percent of the ITR lease proceeds will be spent on major pavement and new construction projects in the 7 toll road counties.

The funds for the 10-year program come from a variety of sources, including preservation gas tax funds (\$5.3 billion), new construction gas tax funds (\$2.5 billion), the proceeds from leasing the ITR (\$3.8 billion), and approximately \$900 million in interest on the unspent proceeds.

In addition, \$120 million of lease proceeds will support the Northwest Indiana Regional Development Authority, including \$20 million for capital improvements to the Gary/Chicago International Airport. The legislature also directed that \$500 million from the lease proceeds be dedicated to a Next Generation Fund to be used for transportation projects beyond the 10-year program. The counties through which the ITR passes will receive payments totaling \$240 million ranging from \$15 million to \$40 million per county for local transportation projects. In 2006 and 2007, all 92 Indiana counties will also receive additional funds totaling \$150 million statewide for their local transportation projects. The amount varies by county

and is based on the Motor Vehicle Highway formula. Lease proceeds will also pay approximately \$225 million for retirement of ITR revenue bonds, administrative costs associated with the lease, and approximately \$150 million in shadow toll payments to the concessionaire to cover the difference between the existing, frozen passenger car toll rates of 3.0 cents per mile and the lease-negotiated toll rate of 5.1 cents per mile.

The Cintra/Macquarie partnership, meanwhile, is required to invest up to \$700 million over the first 9 years of the agreement. This includes mandatory improvements estimated to cost \$305 million required over the first 4 years for the following:

- Implementation of an ETC system
- Expansion to 3 lanes in each direction between mileposts 10.6 and 15.5
- Expansion to 3 lanes in each direction between mileposts 18.5 and 20.3

Much of the remaining investment will fund major maintenance of the toll road facility. Significant investment is required to bring the highway to a state of good repair.

These projects follow improvements completed by INDOT prior to the concession, including reconstruction of the I-65 connector at milepost 17 in 2003 and construction of additional travel lanes in each direction between mileposts 15 and 19 in urban Lake County in 2005.

4. PROGRAM ASSESSMENT

4.1. Institutional Context

A number of institutional factors facilitated development of the ITR operating lease as an innovative project from the perspectives of project funding and financing, use of new technologies, and structure as a PPP. Several of these factors are discussed below:

- **A defined project champion.** The Indiana governor, whose plan survived a skeptical public and a divided legislature, was a strong champion for the lease.

The Indiana governor tied the concession to improved transportation in Northern Indiana and statewide, emphasizing the benefits of addressing the state's multibillion-dollar transportation investment backlog. In addition, he noted that the concession agreement would result in improvements to the ITR itself, including widening urban, western portions of the highway and the implementation of ETC along the entire route.

Governor Daniels also admitted mistakes in implementing his proposal, writing in the *New York Times*, "As governor, I should have done much more than I did to walk Indiana through, in advance, both the business case and the realities of today's global economic competition." In the end, he was able to court sufficient support among legislators from his party to achieve passage of enabling legislation in the state's narrowly divided House of Representatives. But the toll road concession was enormously unpopular with Hoosiers, and has been listed as one of many factors that may have led voters to install a Democratic majority in the State House in 2006.

- **Dedicated funding for statewide transportation improvements.** The lease proceeds will be used to fund more than 200 transportation projects statewide, including extension of I-69 from Indianapolis to Evansville. The prospect of a \$3.8 billion payment and the ability to meaningfully address the state's transportation challenges for the next 10 years made it difficult for many legislators to "tear up the check," as Governor Daniels put it, and deny the lease's enabling act.

The application of funds received from asset leases can be particularly controversial because there are many demands for public resources. Indeed, in the case of the Chicago Skyway deal, the City of Chicago dedicated funds to rainy-day savings and community programs. In fact, no

Skyway funds were applied for transportation purposes with the exception of retirement of Skyway-related debt. In the ITR concession lease, revenues derived from a transportation purpose were re-invested in transportation infrastructure. However, approximately two-thirds of the funds will be expended outside the ITR corridor, to which many Northern Indianans objected.

- **Stable growth in traffic and revenue.** Since opening in 1956 the ITR has had a compound annual growth rate in average daily traffic of 3.9 percent. This steady growth in traffic coupled with the scheduled increase in toll rates over the lease period makes the ITR an attractive concession to the private sector.
- **Limited parallel capacity.** Along its western-most mileage the ITR has limited parallel capacity outside of the congested Borman Expressway (I-94). According to Macquarie, accessing Chicago via I-94 is 20 percent longer, 60 percent slower, and has significantly more variability in travel times than taking the ITR and Chicago Skyway (I-90).

In its rural, eastern stretches, competing routes include I-94 and U.S. 20 through Indiana, much of which is a two-lane rural highway, and is 22 minutes slower than the ITR; and I-94 and U.S. 12 through southern Michigan, which is 63 minutes slower.

Furthermore, the concession agreement prohibits the State of Indiana from constructing a parallel limited access highway longer than 20 continuous miles within 10 miles of the ITR's right-of-way for a period of 55 years.

- **Potential for application of ETC.** Under the state's operation and toll collection, the ITR only accepted cash for toll payments. In addition, tickets at many toll plazas on the western section of the highway were manually distributed to drivers by hand. A condition of the lease requires the concessionaires to implement ETC on the facility. The consortium is currently in the process of implementing an ETC system, which will be compatible with the Illinois I-PASS accepted on the firms' Chicago Skyway as well as Illinois Tollway facilities. In addition, ITR Concession Company, LLC is the first private concessionaire admitted as an operating member of the E-ZPass Interagency Group, meaning ETC transponders issued by toll agencies in the northeastern United States will be accepted by the ITR. ETC will facilitate transactions for motorists—especially long-distance truckers and commuters on the congested western sections of the highway, who will benefit from reduced or eliminated wait times at toll plazas.
- **Smooth operational transfer from the state to the concessionaire.** At 10 a.m. on the day of the lease's financial close, the concessionaire began collecting toll revenue and assumed operation of the ITR, including payroll and other expenses.

Following the transfer of operations, 85 percent of the 550 ITR workers employed by the state were hired by ITR Concession Company, LLC, at wages at or above the levels paid by the state. Approximately 80 employees opted to remain with the state, most of whom were provided job opportunities with INDOT within 25 miles of their homes.

4.2. Major Issues and Strategies

There were a number of significant impediments to the implementation of the ITR concession that could have slowed or even stopped the initiative. The following section discusses the most significant impediments and the strategies used by project partners to successfully complete the transaction. This section also discusses several issues that could threaten the success of the concession in the long term.

- **Popular and political opposition to leasing the ITR.** As detailed in Section 2.4 above, there was significant opposition to the lease from lawmakers and citizens alike. The major reasons for opposition included:
 - Dedication of a significant portion of funds to statewide transportation projects outside the corridor in which the toll road is located and Indiana patrons reside
 - Expenditure of the majority of proceeds over the first 10 years of a 75-year lease

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- Ability to raise necessary transportation funds through other mechanisms, such as bonding against fuel tax or toll revenues
 - Perceived lack of transparency in the seemingly rushed procurement and selection of a concessionaire
 - Limited time and ability for legislative input and approval of the transaction
 - Management and operation of the toll road by foreign-based firms

A majority of Indianans were uncomfortable with the proposed lease, according to public opinion polls, and the final bill passed by only two votes in the State House. To appease representatives from ITR counties, the enabling act was amended to include a toll freeze and rebate or discount for ETC users for 10 years. Without the overwhelming legislative support from the governor's party—including the Republican members of the Northern Indiana delegation—the bill would have failed and the concession lease agreement would not have been consummated.

- **Limited opportunity for operational cost savings.** In a report detailing the concession, Macquarie states that there are “no significant cost savings envisaged” from privatized operations. The firm cites improvements to operations required by the concession agreement that will impact the toll road's future operating costs, including increased police patrols, operational costs of introducing ETC, and external insurance of approximately \$2 million annually (versus self-insurance under state ownership). Another reason there is limited opportunity for operational cost savings, unlike the concessionaire's experience with the Chicago Skyway, is because toll collectors and other employees were not unionized under state management of the facility. Workers will continue to be paid the same market-rate wages under private management that they were paid by the state, which contributed to the significant rate of retention of ITR staff by the consortium. By comparison, none of the unionized Chicago Skyway toll collectors, who were making \$20 an hour under city management, chose to remain with the concession, which paid \$12 an hour.
- **Capital investment in the toll road as a lease requirement.** Another requirement of the lease agreement is investment of up to \$700 million in capital improvements to the toll road within the first 9 years of the concession. This requirement effectively reduced the lump-sum payment that the state received, because it represented a significant additional cost incurred by the consortium. In comparison, the Chicago Skyway was handed to its concessionaire in a relatively good state of repair and without stipulations that the facility be improved.
- **Possible competition from neighboring, non-tolled expressways.** Clearly, the ITR is the preferred cross-state route from Illinois to Ohio, and the lease agreement includes a 55-year non-compete clause. However, its urban western sections are paralleled by I-94, which offers a toll-free alternative to downtown Chicago. While this route's length and congestion make it a longer and slower route, the completion of planned capital improvements to I-94 over the coming years will make it somewhat more competitive to the I-90 combination of the ITR and the Skyway. In addition, job growth in the Chicago metropolitan area is fastest in the suburbs northwest of the city that are better accessed from Indiana via I-94 and other alternates to the toll road.

One factor that will likely mitigate the impact of traffic diversion to alternative routes is the continued growth of the overall Chicago region, which will likely produce more travel demand than any combination of highway facilities will accommodate. This latent demand will readily compensate for any such diversion from the toll road.

- **Future political uncertainty.** The ITR concession was born under a cloud of political uncertainty, and may continue as such over time. According to the terms of the agreement between the consortium and the state, the lease cannot be terminated without significant compensation to the concession team, which provides the consortium with the assurance it needs that ITR will remain an ongoing enterprise under its management.

Over the long span of the concession term, however, changes in the political landscape could result in efforts to overturn or amend the agreement—especially after the original cash proceeds to the state are committed or spent. Such a scenario would most likely occur if it is perceived that

the concessionaires are receiving windfall profits from the facility. Given current traffic and land use patterns, such a scenario will not likely occur for several decades. However, the lease agreement makes no provision for either limiting windfall profits earned by the concessionaire or sharing a portion of these “excess” returns with the state.

5. CONCLUSIONS

5.1. Results of Indiana Toll Road Concession

Nine months following the financial close of the ITR concession deal, the transition to private operation of the facility has been successful:

- The vast majority of state toll road employees have accepted jobs with the private sector concessionaire.
- The consortium has awarded a design-build contract for the \$250 million in mandatory capital improvements to the toll road near its junction with I-65 outside Chicago, to be constructed between 2007 and 2010.
- Plans are proceeding for implementation of a regionally interoperable ETC system by the summer of 2007.

Indiana has also benefited from an improved transportation network as the \$3.8 billion in proceeds of the concession are being used to expedite transportation improvement projects across the state. The state has already cited economic development that has resulted from the state’s commitment to invest in infrastructure, including a \$500 million Honda Motor Company plant near Greensburg that will employ nearly 4,000 people.

5.2. Lessons Learned

The near-term lessons learned from the ITR concession are outlined below.

- **The private sector is willing to provide significant up-front cash and invest in mature, although deteriorated assets.** One of the key differences between the Chicago Skyway and ITR leases is the state of repair in which the assets were turned over to the private sector. While the Chicago Skyway was newly rehabilitated and required relatively minor improvements, the ITR requires extensive investment to rehabilitate the entire facility, especially in the heavily traveled section of the toll road near Chicago. Had the facility not required up to \$700 million in capital improvements over the first 9 years of the lease, Indiana may have received a larger windfall of \$4.5 million or greater. There is a trade-off between up-front money and infrastructure investment, but the private sector is willing to monetize both factors into a lease as needed.
- **Privatization of highway assets is more than a one-time phenomenon.** The lease of the ITR builds on the breakthrough financial and procurement strategies implemented for the Chicago Skyway lease and demonstrates that states can also participate in PPPs involving long-term concession leases of transportation infrastructure assets. Serious discussion of leasing state-owned toll highways is currently underway in Pennsylvania, New Jersey, and Illinois.
- **Approval of controversial proposals for innovative public infrastructure funding can be bruising.** The lease of the ITR was always a much more challenging proposition in Indiana than the concession of the Chicago Skyway was in Chicago. Hoosiers represent a significant share of users of both the ITR and the Skyway with one key difference: They have a vote in the affairs of the government of the State of Indiana, but not the City of Chicago. The mayor of Chicago could export the financial impact of the Skyway concession (i.e., increased tolls) to non-residents; the governor of Indiana had no such luxury. While the Skyway lease unanimously passed the Chicago City Council, the ITR lease narrowly passed a divided Indiana State House.

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- **Strategic approach to Legislative approval.** Had the governor of Indiana approached the legislature for enabling legislation prior to receiving binding private sector bids for the toll road lease, the measure would likely have failed—especially given the narrow margin by which it passed. With a \$3.8 billion check in hand, the legislature was put in the difficult position of saying no to the money rather than saying yes to the nebulous prospect of an asset lease of uncertain value.

5.3. Implications for the Tappan Zee Bridge Project

There are both parallels and differences between the ITR lease and TZB project. These are described below:

- **The existing infrastructure concessioned by the State of Indiana required significant investment to bring it to a state of good repair, and the TZB requires either extensive reconstruction or replacement.** The TZB requires billions in funding to rehabilitate or replace the structure. The ITR required concessionaire investment in the facility as a condition of the lease agreement, although the immediate capital infusion to improve the ITR was significantly smaller than that which the TZB needs.
- **The ITR concession was for an entire toll road system while the TZB project consists of a single facility and its approaches, making it closer in nature to the Chicago Skyway concession lease.** The vast majority of the toll portfolio of the State of Indiana was concessioned in this transaction. Unlike New York State toll facilities, of which there are not only many but also multiple agencies with ownership and operating responsibility, only Indiana owns this single cross-state toll road and a few minor toll bridges, all of which were operated by the state's transportation department. While the State of Indiana all but got out of the tolling business by concessioning the ITR, several agencies in New York would continue to own and operate toll facilities. The Chicago Skyway concession, on the other hand, was for a single toll bridge and approaches totaling only 8 miles, similar in scope to the TZB and its approaches.
- **There is less opportunity for efficiencies to be gained through the introduction of new toll collection technology in the case of the TZB, which already uses ETC, unlike the ITR, which relied on cash toll collection.** The New York State Thruway Authority has electronically collected tolls at TZB for more than 10 years. What was perceived as one of the most significant public benefits of privatized operations and maintenance of the ITR is a moot issue for the TZB project.
- **The ITR concession lease and its proceeds were primarily focused on highway transportation with no provisions for public transportation services or facilities.** Plans for the future of the TZB also involve consideration of potential transit features, including bus and commuter rail, either immediately upon replacement of the existing bridge or as a future addition to a bridge engineered to support rail. While the proceeds from the ITR lease were invested in a number of transportation improvements, including enhancements to the Gary/Chicago International Airport, the funds were primarily dedicated to highway construction. Furthermore, no other modes of transport are directly involved in the ITR concession.
- **In Indiana, the long-term concession lease provoked mixed reactions depending on the different perspectives of stakeholders involved in the process, which led to extraordinary efforts to accommodate these various stakeholders by spreading the proceeds across the state and focusing their use on transportation improvement projects.** There are a large number of views on PPPs and concessions in particular, with many stakeholders supporting and many opposing agreements for a variety of reasons. In Indiana and around the country, there is significant concern regarding the up-front lump-sum payment structure of the ITR and Chicago Skyway leases. This type of PPP would likely provoke similar reactions in New York State, which would need to be addressed early in the project development process to determine the viability of the approach. It will be many years before it is possible to evaluate whether the public sector, private sector, both, or neither is the ultimate financial winner from these concession agreements. In the meantime, supporters of leases point out such benefits as the significant financial resources

these concessions have provided to public sector sponsors; the benefits to the motoring public from improved operation of the leased facility; and, in the case of Indiana, the investment in statewide highway infrastructure.

The ITR concession illustrates one state's approach to meeting statewide transportation needs by leveraging the future revenue from one asset. A similar approach may or may not be appropriate in the context of the TZB project. Every PPP agreement must be customized to fit the unique situation of the project to which it is applied, when it is deemed appropriate and beneficial to the patrons and the public in achieving the objectives of the project in the most cost-effective manner.

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Image References

Figure 1: AECOM Consult, Inc.

Øresund Bridge Case Study

Prepared for the:

New York State Department of Transportation

Metro-North Railroad

New York State Thruway Authority



New York State
Department of Transportation



Metro-North
Railroad



New York State
Thruway
Authority

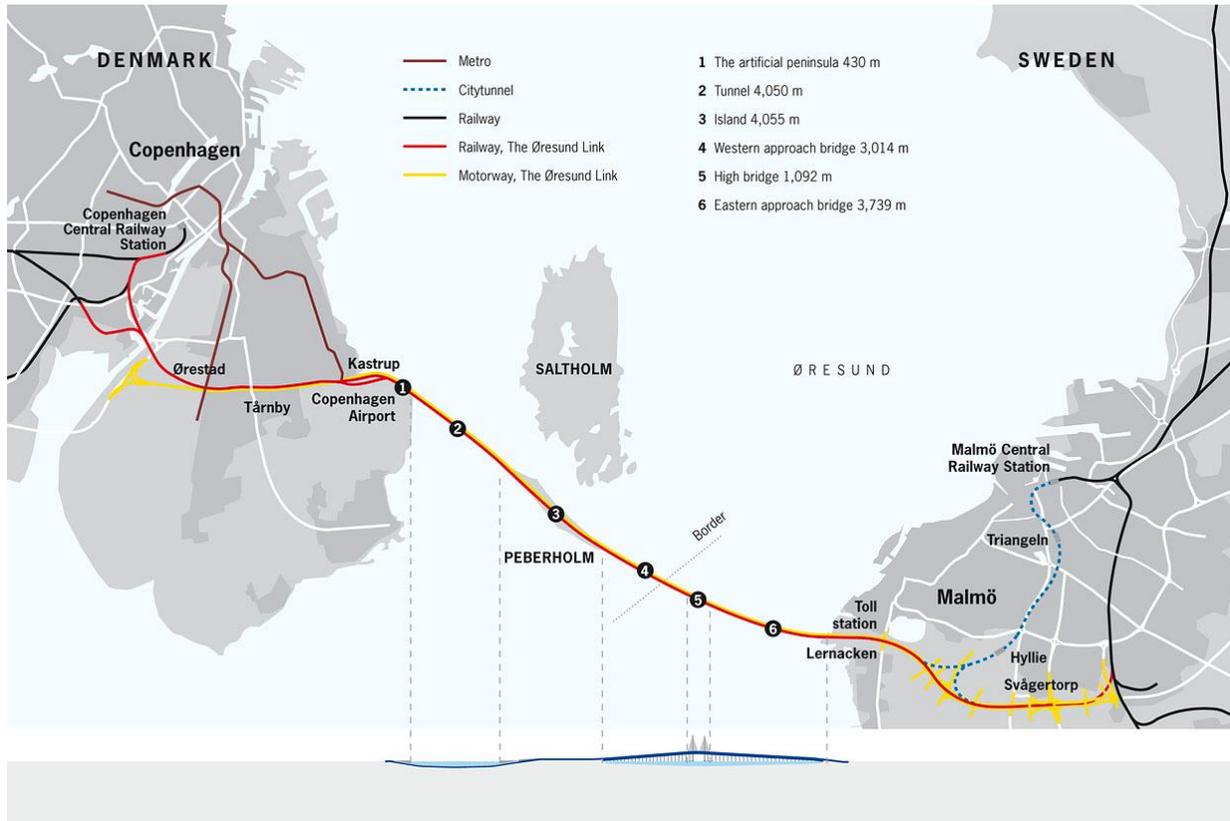
Øresund Bridge—Copenhagen, Denmark and Malmö, Sweden

Public Private Partnership Delivery	Construction/ Development Period	Concession Period	Contract Value	Status
Design-Build	1992–2000	N/A	\$5.4 billion	In operation

SUMMARY

The Øresund Bridge is a 16-kilometer fixed link carrying highway and railroad traffic across the Øresund Sound between Copenhagen, Denmark, and Malmö, Sweden. The link, which opened in July 2000, includes a 4-km immersed tunnel; an 8-km, two-deck bridge providing high clearance over the navigation channel; and a 4-km artificial island where the traffic transitions between the tunnel and the bridge. The map in Figure 1 shows the Øresund Bridge in relation to the metropolitan areas of Copenhagen and Malmö and the transportation networks on each side of the Øresund Sound.

Figure 1: Map of Øresund Bridge and Surrounding Area



Source: “Facts Worth Knowing About the Øresund Bridge,” used with permission of Øresundsbro Konsortiet, 2008.

In 1991, the Danish and Swedish governments signed a bilateral agreement to build the fixed link across the Øresund Sound where only ferries had previously offered service. From the outset, the Øresund Bridge was conceived of not simply as an infrastructure project, but as a “statement” about environmental protection, economic development, and international relationships. Environmental concerns dictated the alignment and overall design of the bridge, with maintenance of water flow a paramount concern. The bridge-island-tunnel facility was intended to expand the available housing options for workers in

Copenhagen and increase development in Malmö. The facility was also intended to attract international corporations to the Øresund region and provide the entire region with a sense of unity and a physical connection to the rest of mainland Europe.

The Øresund Bridge is owned and operated by the Øresundsbro Konsortiet, a client company that was created by and is equally owned by the Danish and Swedish governments. The Øresund Bridge was promoted by its government supporters as a “self-financing” facility, able to fund all costs from road and rail usage fees over a 30-year timeframe. On the basis of these assurances, the construction was financed in the international capital markets through loans guaranteed by the two national governments.

The self-financing of the bridge is now in doubt, due to both construction cost overruns and lower-than-expected traffic volumes. In particular, trucks predominantly use competing sea ferry services to reach the Swedish peninsula. However, the Øresundsbro Konsortiet did take a leading role in using public-private partnerships (PPPs) for design and construction, and the bridge was one of the first projects of this scale in Europe that was delivered through a series of design-build contracts. This approach produced a number of innovations in design, fabrication, and environmental mitigation for the bridge.

While there are many differences between the Øresund Bridge project and the Tappan Zee Bridge (TZB)/I-287 Corridor project, there are a number of important lessons learned from development of the Øresund Bridge that may benefit the sponsors and developers of the TZB project:

- Various PPP approaches, such as a design-build procurement, for a complex project like the TZB can succeed, especially when the public sector emphasizes outcomes and allows flexibility to the PPP team in the finalization of the project design.
- The landside infrastructure that supports the TZB will require the same scrutiny and oversight as the bridge elements to ensure scope and cost containment.
- Environmental issues should be identified and addressed early in the project planning process to ensure proper protection of the environment likely to be impacted by the bridge project and mitigate any remaining impacts to avoid costly project delays.
- Environmental concerns should be formalized and incorporated into the facility location decision and the design standards for the TZB project.
- The risks associated with TZB project costs and traffic revenues should be understood by all decision-makers so they can make informed decisions on proceeding with the project based on the range of possible costs and revenues.

1. PROJECT OVERVIEW

1.1. Project Description

The Øresund Bridge (previously known as the Øresund Fixed Link) is a 16-km (10-mile) link carrying highway and railroad traffic across the Øresund Sound between Copenhagen, Denmark, and Malmö, Sweden. The link includes a 4-km immersed tunnel; an 8-km, two-deck bridge; and a 4-km artificial island (called Peberholm) where the traffic transitions between the tunnel and the bridge. The bridge itself is composed of a 3-km western approach and a 4-km eastern approach joined by a 1-km cable-stayed bridge (see Figure 1). The cable-stayed bridge section, which has the longest main span in the world at 490 meters, provides high clearance for ships in the navigation channel below. On the bridge sections, the two-track railway runs on the lower deck and the four-lane roadway runs on the upper deck, while the road and rail run in four side-by-side tubes in the tunnel section. Figure 2 shows the double-deck high bridge and approaches crossing the Øresund Sound.

Figure 2: Øresund Bridge Main Span and Approaches



Source: Erik Christensen, via Wikimedia Commons

1.2. Project History

The Øresund Bridge was completed and opened to traffic in July 2000, but ideas for a fixed link connecting Sweden and Denmark across the Øresund Sound had been discussed since the late nineteenth century. Serious proposals for a Copenhagen-Malmö link were raised in 1930, but they never got beyond the planning stages as international uncertainty increased in the years before World War II. Following the war, Nordic politicians searched for ways to encourage greater economic and political cooperation among their countries, including the formation of a Nordic Council and a Nordic passport union in the mid-1950s. Buoyed by these events, in 1954 an earlier bridge proposal was resuscitated and revised, but disagreements over the bridge's location undermined that plan.

The impetus for an Øresund Sound crossing decreased in the 1960s and 1970s as Denmark focused on increasing its ties to the rest of mainland Europe and expanding the market for its agricultural exports, and Denmark joined the European Economic Community (the forerunner to the European Union) in 1973. However, despite the prior difficulties in finding an acceptable location for a crossing of the Øresund Sound, the potential benefits of such a project caused proposals to continue to be advanced. Crossings were examined at various locations, including a rail tunnel between Elsinore (Denmark) and Helsingborg (Sweden), which are further to the north where the Øresund Sound is narrower.

The situation finally changed in 1986 when Denmark decided (after many decades of similar hesitation) to proceed with the construction of the Great Belt Fixed Link. The Great Belt link, which opened to rail traffic in 1997 and road traffic 1 year later, connects the Danish island of Zealand (which includes Copenhagen) to the island of Funen to the west, which then connects on to Jutland and the road and rail networks of mainland Europe. With the Great Belt project underway and a rail link between France and England

established in 1995 with the opening of the tunnel under the English Channel, the Øresund Sound then remained as the only barrier to a seamless and integrated European surface transportation network.

1.3. Project Context

From the outset, the Øresund Bridge was conceived of not simply as an infrastructure project, but as a “statement” about environmental protection, economic development, and international relationships. While a full examination of these larger issues is beyond the scope of this case study, it is important to recognize them when evaluating the engineering and financial decisions made during the design, procurement, and construction of the Øresund link:

- **Environmental protection.** Based on the precedents set for environmental protection and mitigation of environmental impacts by the Great Belt Fixed Link project, strong environmental protection measures have been applied to the Øresund link from the very beginning of its development process. When the Great Belt link was approved, environmental groups succeeded in attaching a so-called “Zero Solution” to the project, which required that the flow of water through the Belt had to be unchanged after construction was completed (compared to the pre-construction flow), so that the plant and animal life of the Baltic Sea would not be disturbed. This same type of restriction was then applied to the Øresund link, which imposed a major constraint on the acceptable designs for the facility. In addition, the artificial island of Peberholm was developed as a nature preserve, and it now contains more than 400 types of plants as well as endangered bird species. Finally, the Øresund Bridge continues to be closely monitored for water discharges, noise pollution, and air pollution. The monitoring of greenhouse gases has been notably controversial, especially because the bridge operators have lowered tolls in an attempt to stimulate additional road traffic.
- **Economic development.** While Copenhagen has a long-established history as a center of European social and economic life, the Malmö area of Sweden has been relatively quiet, and the economies on both sides of the Øresund Sound were seen as not being well integrated. Supporters of the link pushed strongly for the project as a mechanism for stimulating regional growth. In addition to simple efficiencies gained through travel time savings, expectations included greater growth in the Malmö residential market (because Danes would be able to live in less costly residential communities in Sweden and commute by rail or car to Copenhagen), higher levels of tourism (as the area became more integrated with Europe), and greater overall attractiveness to national and international corporations. In conjunction with the bridge project, an entirely new town called Ørestad has been under development since 2003 on the Danish side between the bridge and Copenhagen’s city center.¹
- **International relationships.** Despite their close proximity and shared heritage, Denmark and Sweden are distinct societies, with different institutional structures (e.g., for employment, taxes, and welfare) and different social cultures. The Øresund Bridge is a physical expression of the desire of many politicians and residents to see these two countries more closely integrated, and for a single “Øresund region” to ultimately be created. As Bent Flyvbjerg and his co-authors note in their book *Megaprojects and Risk*, “The Øresund link is currently best seen as a grand social experiment in cross-national and cross-cultural integration via transport infrastructure development. Such experiments are rare and only time will tell whether this one succeeds or not.”

¹ Ørestad is now regarded by many as a model for urban growth management. Officials in Copenhagen had long wanted to redevelop brownfield sites (abandoned buildings or polluted parcels of land) in the industrial and low- to middle-income residential areas south of Copenhagen. The area also is home to some of the last remaining undeveloped areas within a 5-km radius of the city center. Ørestad was envisioned as a transit-oriented development (TOD) extension of the city, where office parks and retail outlets would be centered around transit stations. The transit mode used to spur this new development and re-development was the Copenhagen Metro. The first phase of the Metro extension opened in 2002, in advance of any retail or residential development. The alignment took advantage of the unused and under-used land to spur development in the area, and the corridor now boasts retail giant Field’s and several large office buildings.

A project like this has costs and benefits that are not easily captured by financial models, and this should be recognized when assessing the Øresund Bridge project.

Figure 3 provides a close-up of the cable-stayed section of the Øresund Bridge, whose design and size makes the bridge a signature gateway between the Scandinavian Peninsula and Western Europe.

Figure 3: Main Span of the Øresund Bridge



Source: Marcus Bengtsson, via Wikimedia Commons

2. ORGANIZATION AND PROCUREMENT

2.1. Legal Authority

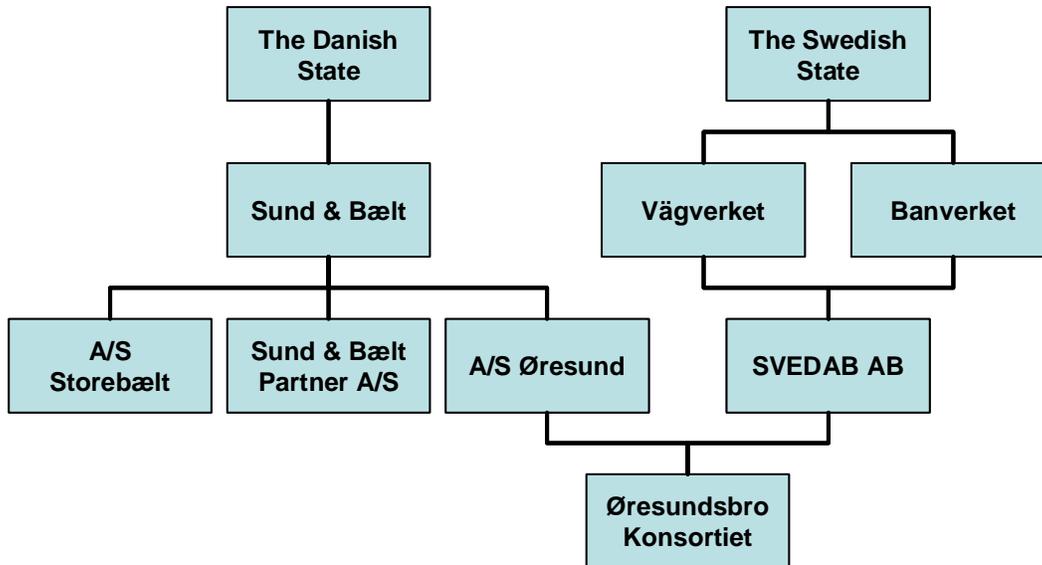
In 1991, the Danish and Swedish governments signed an agreement to build a fixed link across the Øresund Sound. This joint agreement provided the legal authority for the two nations to jointly finance, develop, and operate the facility. As a result of this bilateral agreement, the ultimate responsibility for the ownership and operation of the Øresund Bridge lies jointly with the two sponsor governments, making it a public-public partnership between two sovereign nations.

2.2. Project Organization

The Øresund Bridge is owned and operated by the Øresundsbro Konsortiet, a client company that was set up by the Danish and Swedish governments. The full organizational structure, as shown in Figure 4, is complex, with the stock of Øresundsbro Konsortiet being equally owned by the Danish holding company

A/S Øresund and the Swedish holding company SVEDAB AB, which in turn are controlled by the Danish and Swedish transportation ministries.²

Figure 4: Øresund Bridge Organizational Structure



Source: Adapted from “Facts Worth Knowing About the Øresund,” Øresundsbro Konsortiet, 2006

According to the agreement between Denmark and Sweden, the two holding companies (A/S Øresund and SVEDAB AB) are each responsible for the ownership and operation of the landworks (e.g., access roads and connecting rail tunnels) on their respective sides of the bridge. The Øresundsbro Konsortiet is then responsible for the management and operation of the bridge, including toll collections, road operations, maintenance, and administrative functions (e.g., marketing, finance, and customer service). The overall management of the rail line also lies with Øresundsbro Konsortiet, but the railway agencies control the capacity and day-to-day operations of that part of the Øresund link.³

2.3. Procurement Process

When the Øresund link was initiated in the early 1990s, significant private sector involvement in the financing and operation of major public infrastructure projects was not nearly as widespread as it is today. In the case of the Øresund link, that lack of expertise in PPPs (on both the government side and the private sector side) was magnified by the massive scope and uncertain outcome of the proposed project. As a result of the overarching policy goals noted above, the two governments were determined to provide a major new road and rail link in a transportation network where only ferry boats had existed previously. Only the sovereign governments were seen as being capable of taking on the level of financial risk this entailed. However, the Øresundsbro Konsortiet did take a leading role in using PPPs for design and construction, and the Øresund Bridge was one of the first projects of this scale in Europe that was delivered through design-build contracts.

When used correctly, the benefits of design-build over the traditional design-bid-build approach can be significant. While reduced cost is often touted as a key advantage (because the contractor should not face unnecessary design constraints), design-build also allows for continuous adjustment of the design

² In Figure 4, Vägverket and Banverket are the Swedish road and rail authorities, respectively, while Sund & Bælt is the Danish authority that oversees the major Danish island linkages. A/S Storebælt acts as a holding company for the Great Belt Fixed Link, much as A/S Øresund does for the Øresund Bridge.

³ The national railway agencies of the two countries pay a fixed (indexed) sum to Øresundsbro Konsortiet for the right to use the railway on the link. The agencies then sell capacity on the link to rail operators.

even while construction is proceeding, which can significantly reduce project duration. This project delivery approach also encourages the project sponsor to explicitly identify the project's objectives and to translate those objectives into performance specifications.

A project must be suited for design-build project delivery to achieve these benefits. In particular, the project should be sufficiently large and complex that real innovation and cost-saving can be achieved, and the project sponsor must be willing to concede control over the detailed design of the project once performance specifications have been determined. The Øresund Bridge clearly qualified on the first criterion, and the two governments succeeded in achieving the second criterion.

The broad requirements of an Øresund crossing were apparent from the outset. Given European dependence on passenger rail and the dual-mode nature of the Great Belt Fixed Link to the west, it was clear that the link would need to serve both roadway and rail traffic. The basic structure of a bridge/tunnel combination was also necessitated by other assets already in place:

- **Tunnel.** On the Danish side, the Copenhagen International Airport (Kastrup) sits directly on the Øresund Sound, to the south of the city center. Fears of bridge interference with airport operations forced the western portion of the link underwater into a tunnel.
- **Bridge.** Closer to the Swedish mainland on the eastern side, a major shipping channel runs through the Øresund Sound. The sound is relatively shallow, however, leading to concerns about large ships passing over a road/rail tunnel. Thus, a high bridge was also deemed necessary.
- **Island.** Some type of landing was also needed in order to transition traffic between the bridge and tunnel sections of the link. The obvious first choice was the Danish island of Saltholm (see Figure 1) in the middle of the Øresund Sound. Saltholm had even been considered in previous decades as a location for a new Copenhagen airport. However, Saltholm is undeveloped and serves as a major nature preserve, and environmental groups successfully fought to prevent the link from crossing the island. Instead, an entirely man-made island was created, in part from materials dredged from the Øresund Sound during construction.⁴

Beyond these major elements, however, there still existed significant opportunities for innovative designs and cost savings. Thus, the entire project was divided into a series of design-build contracts. In addition to smaller contracts for installation of traffic and communications systems and installation of the railway track, the three major contract areas were:

- **Bridge.** The bridge section was initially split into two separate contracts for the approaches and the high bridge. However, the consortium Sundlink Contractors (including Swedish, German, and Danish firms) was selected for both the high bridge and the approaches, so those contracts were ultimately merged. The design-build approach, combined with well-defined specifications by Øresundsbro Konsortiet, led to innovations in corrosion protection, fire engineering, and off-shore prefabrication of bridge elements, as well as the overall design of the high bridge. The bridge contract was signed in November 1995 with an initial value of DKK 6.3 billion, or approximately US\$1.1 billion.⁵
- **Tunnel.** Four consortia were invited to offer bids for the tunnel section, and Øresund Tunnel Contractors (ØTC), which was composed of firms from Sweden, Denmark, France, the Netherlands, and the U.K., was selected for the design-build contract. In addition to innovations

⁴ Saltholm literally means "salt islet" in Danish, so the new man-made island was called Peberholm, or "pepper islet."

⁵ Denmark is one of the few European Union countries (along with Sweden and the U.K) not to have adopted the euro as its currency. In 1995, the exchange rate between the Danish krone (DKK) and the U.S. dollar (USD) stood at approximately 0.18 USD per DKK. The current exchange rate between the two currencies is in the same range (0.178 on March 20, 2007). In the period between 1995 and 2007, there was natural fluctuation in the exchange rate, and it dipped as low as 0.11 in 2001. For the sake of clarity in this case study, however, an exchange rate of 0.18 USD-to-DKK is used throughout. Unless otherwise noted, figures are not adjusted for inflation.

and cost savings in the design (in areas such as the tunnel foundation, tunnel joints, and segment lengths), the massive size of the Øresund tunnel forced ØTC to create an entirely new approach to tunnel fabrication and construction that would not require huge below-water-level excavations and groundwater lowerings and contamination. ØTC ultimately constructed a special tunnel fabrication facility, which required a huge up-front capital cost, but these costs were more than balanced by a reduction in construction time, a more steady utilization of labor over time, reduced excavation, and reduced weather risk. Without a design-build approach, such a new methodology likely would not have been undertaken. The tunnel contract was signed in July 1995 at an initial value of DKK 3.98 billion (US\$720 million).

- **Dredging.** The dredging contract was awarded to Øresund Marine Joint Venture (ØMJV), which included firms from Denmark, the Netherlands, and the United States. The dredging work was carried out under highly restrictive conditions and included compensatory dredging to ensure that the “Zero Solution” of uninterrupted water flow to the Baltic Sea would be achieved. The dredging contract was signed simultaneously with the tunnel contract at an initial value of DKK 1.4 billion (US\$250 million).

3. FUNDING AND FINANCING

3.1. Costs and Debt

The Øresund Bridge was promoted by supporters as a “self-financing” facility, able to pay back all its costs from road and rail usage fees over a 30-year timeframe. The Danish Minister of Transport, in proposing the Øresund project to the Danish Parliament in 1991, predicted that the link would create net revenues of DKK 50 million (US\$9 million) per year. On the basis of such forecasts, the governments of Denmark and Sweden undertook the project, and the construction was financed in the international capital markets through loans guaranteed by the two national governments.

However, the project was beset by both higher costs and lower traffic than originally forecast. This is a situation that is associated with many mega-projects whose highly optimistic initial projections of usage and costs helped justify the projects. By the time the bridge was opened, the total cost (in 2000 prices) for just the coast-to-coast facility operated by Øresundsbro Konsortiet was DKK 19.6 billion (US\$3.5 billion). This represented a real cost increase of approximately 25 percent over what had been projected. In addition, the landside infrastructure costs had risen sharply. On the Danish side, rail and road connections cost DKK 7.9 billion (US\$1.4 billion), and the Swedish connections cost another DKK 2.6 billion (US\$470 million). This represented a combined real cost overrun of almost 70 percent for the landside projects. Thus the total construction costs for the project were approximately DKK 30.1 billion (US\$5.4 billion), versus the initial projected cost of US\$3.2 billion. Because the two governments own the facility, both governments bore the entire risk for the resulting cost increase.

Initial traffic on the facility came in well below projected levels, thereby lowering the amount of revenue produced by the facility. Planning projections estimated 10,000 vehicles per day for the roadway in the opening year, along with 16,500 to 19,000 rail passengers. But in calendar year 2001 (the first full year of operation), even after a toll reduction, the average daily traffic was only 8,100 road vehicles and 13,400 rail passengers. Part of the reason for the lower traffic volume is that regional integration proved more difficult than expected, due to the different institutional and cultural environments on the two sides of the link. However, another important factor (see next section) is that competition from the remaining ferries on the Sound has been much stronger than anticipated, especially for commercial freight traffic seeking a lower-cost alternative. However, the facility is still fairly new, and the typical ramp-up period for traffic growth has not had time to be fully realized.

Because of the higher costs and lower initial revenues, the “self-financing” of the facility is currently in doubt. Even under a high-growth scenario, with aggressive assumptions about regional economic growth

and trip-making, the facility will not likely be repaid until 2029 or 2030. Under more moderate assumptions, that period extends to 2035, and under a “stagnation” scenario (where traffic growth has slowed to 1 percent per year by 2025), the period extends to 2046 and beyond.

3.2. Pricing Structure and Recent Traffic Results

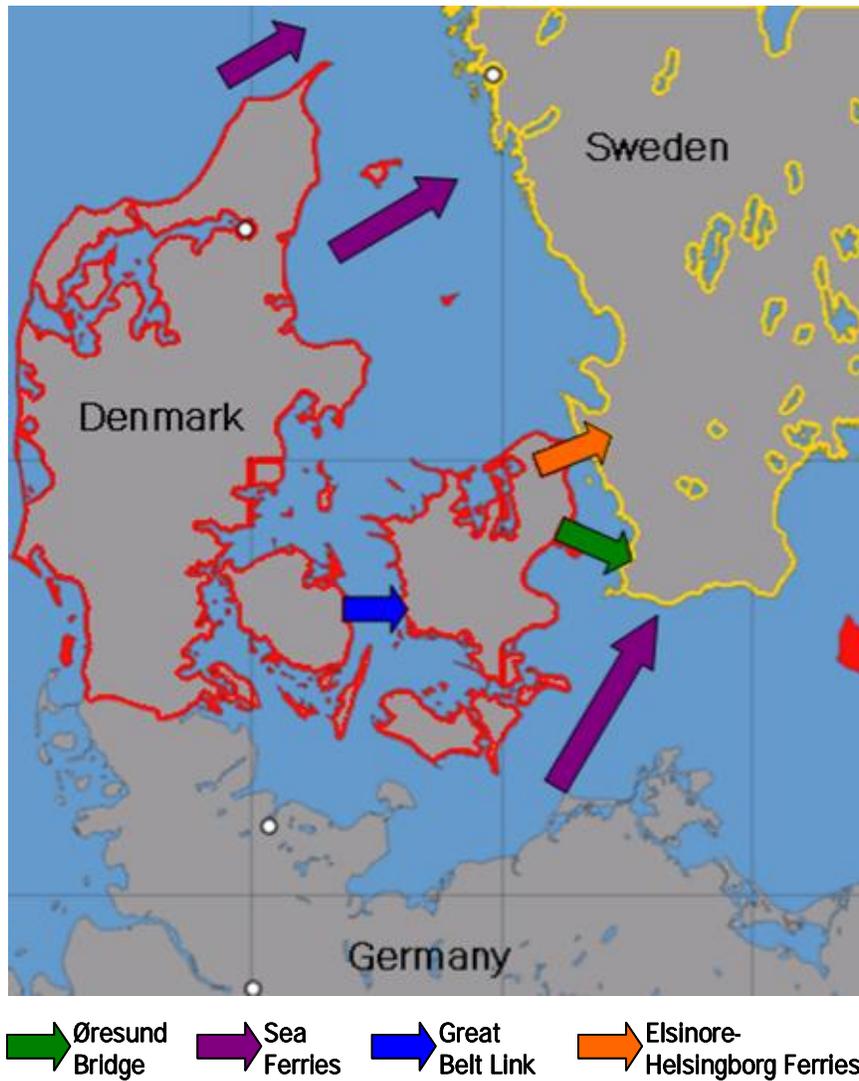
One of the major causes of the lower-than-expected traffic levels on the Øresund Bridge has been the high cost of tolls. In 2006, the standard one-way cost for a passenger car was DKK 235, or approximately US\$42. Øresundsbro Konsortiet has introduced reduced pricing options, such as a 10-trip card for DKK 164 (US\$30) per trip, and the BroPas for frequent users at a cost of DKK 125 (US\$22) per trip. Commuters willing to pay a fixed monthly fee who travel very frequently (25 round-trips per month) can pay only DKK 52 (US\$9) per trip. However, even these heavily discounted prices are relatively high compared to many other toll facilities in Europe. Prices for vans, trucks, and coaches are similarly high. The one-way toll in 2006 for a large truck was DKK 748 (US\$135).

The results of this pricing approach can be seen in the growth and distribution of traffic since the facility opened, both regionally (across the Øresund Sound) and on longer-distance trips. For inter-regional traffic traveling to and from the Scandinavian Peninsula, there are now five routes available, as shown in Figure 5. The Øresund Bridge is the only road/rail crossing between Denmark and Sweden. Of the remaining crossing options, there is a competing ferry crossing of the Øresund Sound between Elsinore and Helsingborg. Sea ferries also cross the Skagerrak and Kattegatt Seas between the northern peninsula of Denmark and southeastern Sweden, as well as the Baltic Sea between Germany and Sweden. Despite the various ferry options, the Øresund Bridge carries the majority of inter-regional passenger travel in cars and coaches (buses), with market shares of 58 percent and 53 percent, respectively. The Elsinore-Helsingborg ferry captures approximately 25 percent of the remaining market for cars and coaches, and the three sea ferry routes split the remaining trips about equally. However, the Øresund Bridge carries only a small percentage of inter-regional truck traffic due to the high cost of truck tolls. Nearly half of truck trips continue to be made on ferry in the Baltic Sea between Germany and Sweden, while the Øresund Bridge is capturing only 15 percent of this market.⁶

For local and regional traffic, the surprising result has been the ability of the Øresund ferry service between Elsinore and Helsingborg (Elsinore is approximately 50 kms north of Copenhagen) to retain a significant volume of traffic across the Øresund Sound. Total traffic across the Sound in 1999, the year before the Øresund Bridge opened, was approximately 3.1 million vehicles, with the Elsinore-Helsingborg ferries commanding nearly 90 percent of that total and the Copenhagen-Malmö ferries only 10 percent. In 2001, roughly 3 million vehicles crossed the Øresund Bridge, but well more than 2 million still used the Elsinore ferry service. Ferry traffic continued to grow slowly between 2001 and 2004, but took a dip in 2005 (though still remaining above 2 million vehicles per year). In this same period, traffic across the Øresund Bridge grew to approximately 5 million vehicles per year. Thus, the Øresund Bridge has both captured and stimulated traffic between Denmark and Sweden across the Øresund Sound, which was one of its chief objectives, although at a volume less than originally projected.

⁶ This situation may change in the future, because Germany and Denmark are now considering a fixed link (the Femern Bridge) that would connect the Danish island of Lolland with the German mainland. This would allow road traffic from northern Germany to reach Copenhagen and then Sweden (via the Øresund Bridge) without using ferries or having to travel north into Jutland and across the Great Belt Link. The Femern Bridge would likely have a positive impact on the traffic and revenues of the Øresund Bridge.

Figure 5: Routes From Denmark/Germany to Sweden



Source: Underlying map from Wikimedia Commons; additional annotation on routes by AECOM Consult.

4. ASSESSMENT AND CONCLUSIONS

4.1. Institutional Context

From the outset, the Øresund Bridge was conceived of as a showpiece project providing the final land link for auto and rail traffic in Europe. Given its visibility and political significance, the Øresund Bridge was not developed merely to reduce travel time between Copenhagen and Malmö and capture traffic crossing the Sound, but also to promote economic development, international integration, and environmental protection. The project was sponsored and financed directly by the two national governments, and the risks associated with this mega-project were borne entirely by those two nations that understood the long-term significance of this vital link between the Scandinavian Peninsula and Western Europe.

The TZB, by contrast, is a mature link for roadway traffic crossing the Hudson River that serves well-established local, regional, and national travel markets. For many of its patrons, there are no plausible

alternatives for crossing the Hudson. There is no large-scale ferry service in operation to compete with the bridge, and the nearest major bridge is almost 20 miles to the south (the highly congested George Washington Bridge, which is owned and operated by the Port Authority of New York and New Jersey).

As a reconstruction or replacement project, the risks associated with the TZB project are different and potentially smaller and more manageable than those facing the Øresund Bridge. The possibility exists for sharing or transferring some or all of the risks facing the various public agencies that own and operate the current bridge or have a stake in its replacement with the private sector through a PPP. These include the cost, duration, and quality of the resultant facility; operating service quality; and possibly traffic and revenue risks.

An institutional similarity between the Øresund Bridge and the TZB project is the potential sponsorship by several major and autonomous public agencies. In the case of the Øresund Bridge, these were the transportation ministries of Denmark and Sweden, acting on behalf of their national governments. In the case of the TZB, this includes the New York State Thruway Authority, the Metropolitan Transportation Authority, and the New York State Department of Transportation. Balancing the risks and responsibilities of the various project sponsors is a challenge in any project. In the case of the Øresund Bridge project, this was successfully managed in an equitable and amicable manner.

Another clear similarity between the Øresund Bridge project and the TZB project is the potential to include both road and rail capabilities in the facility. In the case of the Øresund Bridge, this was a prerequisite for the surface transportation system in Europe, where rail passenger service is more heavily used and more ubiquitous than in the United States. Metropolitan New York City is more closely aligned with the density of European metropolitan areas that depend heavily on rail passenger services and incorporate rail capabilities in their surface transportation infrastructure, especially when bridges and tunnels are built. There are numerous cases where bridges include separate decks for auto and rail modes in Europe.

4.2. Issues, Strategies, and Lessons Learned

The Danish and Swedish governments, together with their private sector partners, faced an array of challenging issues in constructing and operating the Øresund Bridge. Some of these issues were successfully surmounted, while others continue to impede the financial stability of the project:

- **Design-build.** The use of a design-build procurement approach was one of the most successful decisions of the Øresund Bridge project. The Øresund Bridge presented a range of difficult technical challenges, and the entire project was constrained by demanding environmental requirements during construction and after completion. The national governments were able to define their performance standards (for the road/rail traffic and the environmental requirements), and the private sector responded with innovative design, fabrication, and mitigation approaches. For projects where sponsors face difficult design requirements but can define their ultimate needs as measurable standards, design-build can be a very attractive approach.
- **Cost overruns and “scope creep.”** The cost overruns on the coast-to-coast sections of the Øresund Bridge were significant (25 percent), but not unexpected for a project of such scale and complexity. By contrast, the landside infrastructure was significantly more expensive (70 percent) than first projected and ultimately represented one-third of the total project cost. This can be attributed in part to “scope creep,” where the landside road and rail projects grew far beyond their original dimensions. In particular, Malmö is now undertaking construction of a City Tunnel (which is not included in the cost figures above) that links the Øresund Bridge with the Malmö central rail station. This new tunnel is expected to cost more than US\$1 billion. For projects of such great size, it can be easy to focus on the major elements, but the smaller supporting elements deserve the same level of scrutiny and oversight.

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- **Risk analysis of costs and revenues.** The national governments were assured in 1991 that the Øresund Bridge would be self-financing, but the Danish Auditor-General later determined that the Transport Ministry had performed four appraisals of project viability, and each concluded that only minor variability from the projected costs and revenues was required to make the project non-viable (i.e., unable to pay back its costs in the 30-year timeframe). As it turned out, such variability was likely and the project is not expected to meet its 2030 payback goal unless traffic growth in the next 20 years is very strong. In the meantime, taxpayers in the two countries must make up the difference. It is critical in such projects that reasonable ranges of outcomes be explored and understood from the outset, so that decision-makers can determine whether to proceed as planned or whether to make design or performance changes in response to the possible range of outcomes.
 - **Timeframe for self-sufficiency.** For a new project of the magnitude of the Øresund Bridge, the 30-year target for project self-sufficiency may have been too low and raised unrealistic expectations among sponsors, the financial community, and the public. Facilities such as this typically have service lives of 100 or more years, yet are expected to fully pay for themselves in only 30 years. This is driven more by the nature of traditional debt financing instruments used in Europe than the nature of the infrastructure asset.
 - **Entry into an established competitive market.** The Øresund Bridge was a new entrant to an established transportation market consisting of multiple ferry service operations. Potential customers for the bridge were accustomed to these ferry services, which had a distinct cost advantage, especially for truck traffic. These factors have undermined the traffic and revenue projections for the bridge in its early, ramp-up years of operation. Over time, competing ferry services may reduce operations or go out of business entirely as more auto and rail patrons choose to use the Øresund Bridge due to its greater reliability. However, it is expected that some form of ferry service will continue as an alternative to the bridge to preserve a back-up in case of bridge or tunnel failure, such as adverse wind conditions that force the closure of the high bridge (which may also curtail ferry operations) or other emergencies or incidents.
 - **Environmental impacts.** Environmental groups in the Nordic countries have significant influence on public policy, and the Øresund Bridge project was no exception. In this case, the influence went beyond issues such as monitoring of impacts to actually dictating the alignment of the link and some of the basic performance specifications of the facility (relating to water flow). Despite these constraints, the project was successfully completed and is now seen as a model of environmental sensitivity and protection. In projects of this size and complexity, environmental impact concerns will naturally be addressed in the planning process, but if the concerns can be translated into specific performance standards, then the design process can incorporate the standards from the outset.

4.3. Implications for the Tappan Zee Bridge Project

As noted above, the institutional, financial, and even geographic environments are significantly different between the Øresund Bridge and the TZB. Despite these differences, there are some useful implications that can be drawn from the Øresund Bridge experience that may be applicable to the TZB project:

- **The landside infrastructure that supports the TZB will require the same level of scrutiny and oversight as the crossing elements.** The TZB is a critical link in the New York Thruway system and the entire transportation network serving the Hudson Valley. If the bridge is replaced with a wider structure, the interfaces with the existing roadways will also require major alterations. If the new bridge were to also contain a rail link that must connect with existing Metro-North services on both sides of the river, the landside challenges will grow significantly. These landside projects will require equal attention in order to ensure cost and scope containment.

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- **A PPP approach such as a design-build procurement for a complex project like the TZB can succeed; the likelihood of success increases when the public sector emphasizes outcomes and allows greater flexibility in the finalization of the project design.** While the TZB project does not face the same types of technical challenges (such as tunneling at sea) that faced the Øresund Bridge project, there will still be significant complexities to the project, including potential multimodal design and environmental protection. Perhaps foremost will be the question of how to rehabilitate or replace the existing bridge while maintaining a reasonable throughput of traffic in order to protect the cash flow from the bridge tolls. In the face of such challenges, the public agencies sponsoring the project may wish to turn to the private sector for innovative design and construction ideas to overcome these constraints. However, to successfully use a design-build or other PPP approach, these agencies must be willing to set performance standards and then allow their private sector partners flexibility in how they meet these standards. This will be an important consideration given the project's visibility, the sensitivity of major stakeholder groups to how the project is contracted, and organizational relationships and responsibilities of the project sponsors.
 - **The risks associated with TZB project costs and traffic revenues should be analyzed and presented to all decision-makers.** Unlike a "greenfield" project such as the Øresund Bridge or the Pocahontas Parkway in Virginia, where the facility was new and lacked a history of traffic flow, estimates of future traffic levels (especially in the near term) are not as large a risk for the TZB project, although projections of the impact of long-term toll increases may contain significant uncertainty. However, the risks inherent in the traffic forecasts and the construction costs if both the highway and rail link are included will likely be greater due to the introduction of a new competitive mode of transportation along the river crossing served by the bridge.

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Image References

Figure 1: "Facts Worth Knowing About the Øresund Bridge," used with permission of Øresundsbro Konsortiet, 2008.

Figure 2: Erik Christensen, via Wikimedia Commons, <http://commons.wikimedia.org/wiki/Image:Drag%C3%B8r.5.jpg>

Figure 3: Marcus Bengtsson, via Wikimedia Commons, http://commons.wikimedia.org/wiki/Image:%C3%96resund_bridge.JPG

Figure 4: Adapted from "Facts Worth Knowing About the Øresund," Øresundsbro Konsortiet, 2006, <http://www.oeresundsbron.dk>

Figure 5: Underlying map from Wikimedia Commons at <http://commons.wikimedia.org/wiki/Image:Carte-Danemark-Su%C3%A8de-%C3%98resundsbron.png>; additional annotation on routes by AECOM Consult.

Pocahontas Parkway Case Study

Prepared for the:

New York State Department of Transportation

Metro-North Railroad

New York State Thruway Authority



New York State
Department of Transportation



Metro-North
Railroad



New York State
Thruway
Authority

Pocahontas Parkway—Richmond, Virginia

Public Private Partnership Delivery	Construction/ Development Period	Concession Period	Contract Value	Status
Design-Build-Finance (63-20 Corporation)	1998–2002	N/A	\$381 million	Refinanced
Long-Term Private Concession	2006–Present	99 years	\$615 million	In operation

SUMMARY

The Pocahontas Parkway (Route 895) is an 8.8-mile tolled highway south of Richmond, Virginia. The four-lane roadway opened to traffic in 2002 and connects Chippenham Parkway (VA-150) and Interstate 95 (I-95) with I-295 near the Richmond International Airport. The facility includes a high-level bridge over the James River allowing unimpeded access for shipping to the Port of Richmond. The need for this critical connector had been identified as early as 1980, but the highway remained on the drawing board for many years as other projects claimed the limited state funds available for capital construction.

This constrained financial environment was changed with the passage of Virginia's Public-Private Transportation Act (PPTA) in 1995. The Pocahontas Parkway was the first new construction project implemented in the Commonwealth under the PPTA. The private firm FD/MK (a joint venture of Fluor Daniel and Morrison Knudsen) was chosen to design, build, and assist in financing the facility in conjunction with the Virginia Department of Transportation (VDOT). FD/MK and the Commonwealth established a private, not-for-profit corporation called the Pocahontas Parkway Association (PPA) to issue \$354 million in tax-exempt toll revenue bonds to finance the construction (in accordance with Internal Revenue Service [IRS] Revenue Ruling 63-20). These funds were supplemented by an \$18 million loan from the Virginia State Infrastructure Bank (SIB) and \$9 million in Federal funds to cover design costs.

The highway was completed and fully opened to traffic in September 2002, but by 2004 daily traffic was running at only half of projected levels, and a default on the revenue bonds loomed as a possibility. In June 2006, following 18 months of negotiation, VDOT and Transurban (USA) entered into an agreement whereby Transurban acquired the sole rights to manage, operate, maintain, and collect tolls on the Pocahontas Parkway for a period of 99 years. As part of this agreement, Transurban has defeased all of the PPA's outstanding debt and paid back VDOT for prior maintenance and operating expenses.

The financing for this long-term lease is composed of \$420 million in senior debt provided by a consortium of international banks and \$195 million in equity and subordinated debt provided by Transurban. In addition, Transurban will be obligated to construct and operate a 1.6-mile Richmond Airport Connector (RAC) road if \$150 million in Federal Transportation Infrastructure Finance and Innovation Act of 1998 (TIFIA) credit assistance is made available for that purpose. The concession agreement includes a schedule of maximum tolls through 2016 and caps on annual increases beyond that date, a revenue-sharing agreement if revenues exceed expectations, a non-compete agreement prohibiting VDOT from building additional James River crossings nearby, and a clause allowing VDOT to terminate for convenience at any time after 40 years (although a penalty payment is required).

Thus, in just 5 years, the Pocahontas Parkway has transitioned from one public-private partnership (PPP) approach (design-build-finance) that expedited project delivery to a second PPP approach (long-term concession lease and expansion) that addressed the short-term financial problems that resulted from the original financing arrangement and the overly optimistic initial projections of traffic and revenue for the facility.

While there are important differences between the Pocahontas Parkway and the Tappan Zee Bridge (TZB)/I-287 Corridor projects, the experience demonstrates the potential that PPPs have both for initial project delivery and for asset recovery, program enhancement, and budget relief. In particular, the following lessons could benefit other agencies considering the potential application of a concession arrangement to their existing tolled highway transportation assets:

- Roadway concessions can raise concerns in the traveling public (especially current patrons of a facility) that the private operator will raise tolls far beyond what average drivers can pay. Developing a toll schedule not only provides near-term certainty for drivers, but also provides certainty for participating agencies and reduces their uncertainty risk in pricing the deal.
- Private sector involvement was made possible in Virginia by the PPTA, which permitted private firms to bring project delivery and financing ideas and sources of capital to the table that the public sector might not have available or even have considered. As such, legislation that would facilitate and support financing ideas and sources of capital could improve the progress of the TZB project.
- The TZB project agencies should take care to address uncertainties, such as future facility congestion and political uncertainty, early in the project development. VDOT and Transurban addressed these in their PPP agreements. To address congestion concerns, Transurban must make investments to improve the Parkway's capacity to maintain relatively free-flow conditions for patrons. If it does not make these investments, the non-compete protection will lapse, and VDOT will be able to consider the construction of competing crossings over the James River. They addressed potential political uncertainties by giving VDOT the right to terminate the lease for convenience at any time after 40 years, although a financial penalty would apply. Both arrangements give the Commonwealth a greater ability to deal with future changes.
- Along with the Chicago Skyway and Indiana Toll Road concessions, the recent Pocahontas Parkway lease opened the door for owners of public infrastructure to partner with private sector firms to further develop, operate, and maintain existing infrastructure through the application of long-term financial strategies that maximize the proceeds to the sponsoring government agency. By applying long-term concession lease arrangements to existing transportation infrastructure, these deals offer the potential to rescue troubled projects through refinancing or to generate up-front financial windfalls for rejuvenating under-funded capital improvement programs. It is the immediacy of funding availability through financing approaches and toll increases that makes these kinds of "brownfield" leases attractive. As a result, a number of other states are considering such concessions for major facilities, including major turnpikes in Pennsylvania and New Jersey.
- For many large transportation projects without adequate public funding programmed for the project, PPPs provide a variety of approaches to accomplish the project with the involvement of experienced private sector providers. The PPPs can offer cost-effective ways to design and build the project in a shorter timeframe than using traditional approaches like design-bid-build due to the ability to perform certain functions concurrently instead of sequentially without impacting the project's quality. There is also greater opportunity to better integrate the design and construction functions, which produces a more constructible design that is less susceptible to design flaws. In addition, as with the Pocahontas Parkway project, the PPP team can work with the project sponsor to establish a public-use corporate entity that could gain access to tax-exempt financing for the project.

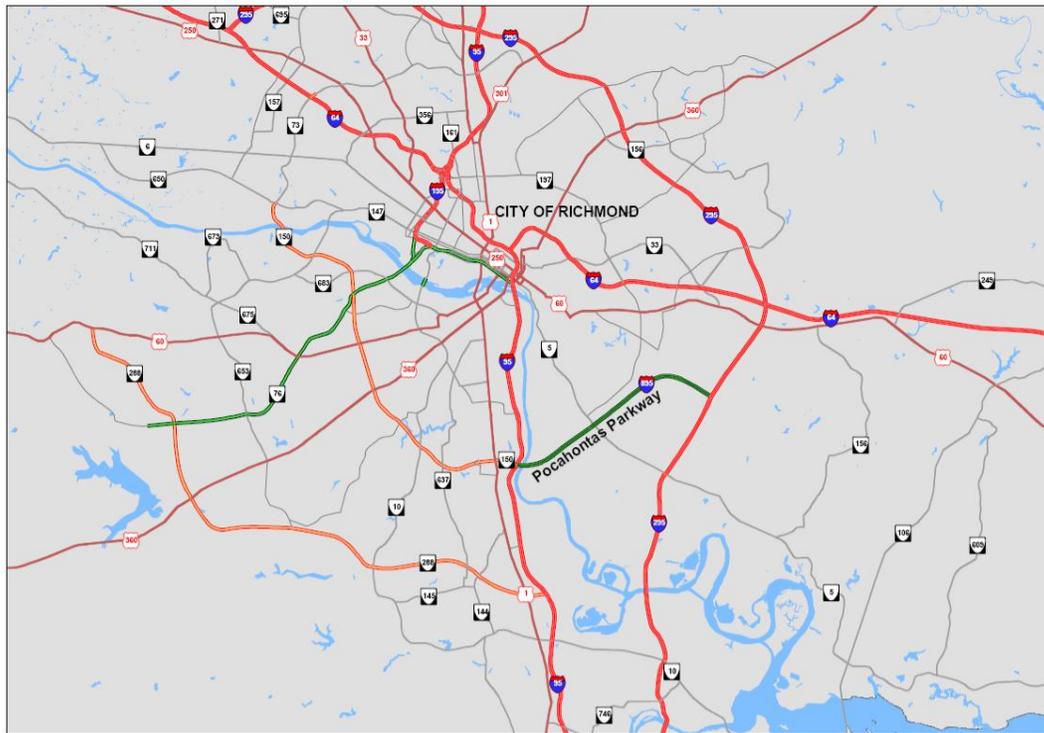
1. PROJECT OVERVIEW

1.1. Project Description

The Pocahontas Parkway (Route 895) is an 8.8-mile tolled highway approximately 7 miles south of Richmond, Virginia. The four-lane roadway opened to traffic in 2002 and connects Chippenham Parkway (VA-150) and I-95 in Chesterfield County with I-295 near the Richmond International Airport in Henrico

County. The facility includes a high-level bridge over the James River (allowing unimpeded access for shipping to the Port of Richmond 1 mile north) and an interchange with Laburnum Avenue. The bridge carrying Route 895 over the James River (now known as the Vietnam Veterans Memorial Bridge) is the only river crossing for 6 miles in either direction. Figure 1 shows the Parkway alignment relative to the City of Richmond and the surrounding highway network.

Figure 1: Pocahontas Parkway Alignment and Surrounding Network



Source: AECOM Consult, Inc.

1.2. Project History and Development Process

The need for a high-capacity east-west connector in the Richmond-Petersburg area had been identified in planning studies as far back as 1980, with a number of corridors under consideration. In 1983, the Commonwealth Transportation Board (CTB) approved an I-95/I-295 Connector in the current location, and the Federal Highway Administration (FHWA) gave tentative approval for Interstate 4R funds to be used to construct the road as a toll-free Interstate. However, the highway remained on the drawing board for more than a decade following that approval as other projects in Richmond and across the state claimed the limited state funds available for capital construction.

This constrained environment was changed with the passage of Virginia's PPTA in 1995 (additional details are in Section 2.1 below). The Pocahontas Parkway was the first new construction project implemented under the PPTA. The private firm FD/MK was chosen to design, build, and finance the facility in conjunction with the CTB and VDOT. FD/MK and the CTB established the PPA to issue \$354 million in tax-exempt toll revenue bonds to finance the construction (in accordance with IRS Revenue Ruling 63-20). These funds were supplemented by an \$18 million loan from the Virginia SIB and \$9 million in Federal funds to cover design costs. Construction on the Parkway began in October 1998, and the first section of the roadway opened in May 2002. The highway was completed and fully opened to traffic in September 2002, but by 2004 daily traffic was running at only half of projected levels, and a default on the revenue bonds loomed as a possibility.

In June 2006, following 18 months of negotiation, VDOT and Transurban (USA) entered into an agreement whereby Transurban acquired the sole rights to manage, operate, maintain, and collect tolls on the Pocahontas Parkway for a period of 99 years. As part of this agreement, Transurban has defeased all of the PPA's outstanding debt. The financing for this long-term lease is composed of \$420 million in senior debt provided by a consortium of international banks and \$195 million in equity and subordinated debt provided by Transurban. In addition, Transurban will be obligated to construct and operate a 1.6-mile RAC road if \$150 million in Federal TIFIA credit assistance is made available for that purpose. This connector segment is viewed by many as a link critical to the ultimate financial viability of the Pocahontas Parkway whose absence from the initial project undermined the Parkway's ability to gain the necessary traffic volumes and toll revenues to become financially solvent in its early years.

2. PROJECT PROCUREMENT

2.1. Authorizing Legislation

At the time of the passage of the PPTA in 1995 the Pocahontas Parkway had been expected to remain in the planning stages for many more years due to a lack of available funding. The PPTA fundamentally altered the way that Virginia plans, procures, and finances transportation infrastructure, and it was because of this Act that the Parkway was delivered by 2002 and that a new financing and operating agreement could be reached in 2006.

The PPTA is the legislative framework that enables the Commonwealth of Virginia, local governments, and certain other public entities to enter into agreements that authorize private entities to develop and operate certain transportation facilities. In particular, the PPTA not only allows the Commonwealth to solicit proposals from private firms, but also allows private firms to offer unsolicited proposals for projects they view as worthwhile, which the Commonwealth can then accept or reject as it deems appropriate. The Act applies not only to VDOT, but also the Department of Rail and Public Transportation, Department of Aviation, Department of Motor Vehicles, Virginia Port Authority, and other transportation agencies. The guidelines for projects proposed under the PPTA include the following:

- Proposals must include specific actions that share cost and/or risk between the parties beyond those commonly obtained through the competitive bidding or competitive negotiation process. These actions should include one or more of the following:
 - Direct capital investment
 - Dedicated revenue sources such as tolls or special tax districts
 - Lower project cost
 - Decreased delivery time due to pooling of funding resources
 - Project cost guarantees
 - Project schedule guarantees
 - Product quality warranties
- Proposals should avoid the creation of state-supported debt whenever possible.
- Proposals must fully disclose all public sector financial commitments, including any Federal, state, regional, or local public funds. Proposals must also identify the development of user fees or any long-term public sector commitments including, but not limited to, operations and maintenance costs.

In addition, the PPTA provides for procurement procedures that are consistent with either “competitive sealed bidding” or “competitive negotiation.” In general, competitive negotiation may not be used unless the public agency partner provides a written determination to the Secretary of Transportation that such procedures are advantageous to both the agency and to the general public based on (1) the probable scope, complexity, or urgency of a project; (2) risk-sharing, including guaranteed cost or completion

guarantees, added value, or debt or equity investments proposed by the private entity; or (3) an increase in funding, dedicated revenue source, or other economic benefit from the project that would not otherwise be available.

2.2. Procurement Process

Following the passage of the PPTA the international engineering and construction firms Morrison Knudsen (now part of Washington Group International) and Fluor Daniel jointly approached VDOT with a proposal to design and build the Pocahontas Parkway. The parties entered into competitive negotiation, as permitted under the PPTA guidelines, and the negotiations lasted approximately 3 years. The final contract between VDOT and FD/MK (the joint venture company created by the two firms) used a design-build-finance procurement approach which included the following terms:

- FD/MK would complete the final design for the facility (based on VDOT's preliminary design).
- FD/MK and VDOT would identify and acquire the necessary right-of-way.
- FD/MK would be responsible for construction of the facility, although it was not permitted to self-perform the construction. The actual construction contracts were competitively bid in two separate portions. The roadway and small bridge construction was completed by the firm W.C. English, while the interchange with I-95 and the 145-foot-high, cast-in-place segmental bridge over the James River were subcontracted to Recchi/McLean, which had just completed a similar structure in Florida.
- FD/MK would receive a fixed-price payment in exchange for its design and construction work. This put the majority of the construction risk on the private developer rather than on the Commonwealth.
- Financing for the bridge and roadway construction would come primarily from toll revenue bonds sold through a private, non-stock, not-for-profit corporation created by the Commonwealth for the sole purpose of financing the Parkway (see Section 3 below for more details).
- VDOT would be the owner of the new Parkway and would be responsible for ongoing maintenance.

The Pocahontas Parkway established a successful precedent for using the PPTA, which in turn allowed current public-private projects in Virginia such as Route 28 and Route 288 to proceed. The Commonwealth is now considering even larger public-private projects, such as the I-495 High-Occupancy Toll (HOT) lanes outside Washington, D.C., as well as Truck Only Toll (TOT) lanes on I-81 in western Virginia.

3. PROJECT FUNDING AND FINANCING

3.1. Initial Tax-Exempt Financing

Although Virginia is an active and highly rated issuer in the tax-exempt bond market, one of the major goals of the PPTA was to provide access to new sources of capital in order to advance critical transportation projects more quickly. Furthermore, debt issuance by the Commonwealth (through the CTB) requires approval by the General Assembly and is constrained by Virginia's overall debt capacity limits. Thus, to achieve the lowest cost of capital and improve the financial feasibility of the proposed Pocahontas Parkway, Virginia chose to pursue so-called "63-20" tax-exempt revenue bond financing. Such financing is regulated by IRS Revenue Ruling 63-20, which permits state and local governments to issue tax-exempt revenue bonds through a non-profit corporation.

VDOT did not proceed with this financing approach without assessing the potential impact on the Commonwealth's credit ratings as a result of debt issued on behalf of VDOT by a non-profit corporation. Among the requirements for tax exemption under the IRS 63-20 rule is that the governmental unit must

approve both the non-profit corporation and the issuance of the bonds. VDOT, as the responsible public entity under the PPTA process, was the appropriate approving governmental unit for the Pocahontas Parkway project.¹

VDOT officials met with the major rating agencies to assess the potential impact on the Commonwealth's credit ratings as a result of debt issued by a 63-20 entity. In general, the rating agencies perceived no adverse impact on the Commonwealth's credit ratings as a result of the debt issuance on behalf of VDOT for a VDOT-owned facility by a non-profit corporation. However, one rating agency did caution that the expectation would be that Virginia, as an AAA-rated state, would not provide approval for project debt of a speculative nature.

In July 1998, VDOT completed the financing for the construction of the Pocahontas Parkway through the sale of toll revenue bonds by a newly created not-for-profit private corporation, the PPA. The PPA was established as a Virginia non-stock, not-for-profit corporation to sell \$354 million in toll revenue bonds. The transaction was structured in conformity with the requirements of IRS Revenue Ruling 63-20, thereby achieving the tax exempt status on the bonds and providing the lowest cost financing possible without direct issuance by the CTB. Additional funding for the project of \$27 million was provided by the state through an SIB loan (\$18 million) and by Federal funding for roadway design (\$9 million).

While IRS Revenue Ruling 63-20 has been in existence for more than four decades, its use as a financing mechanism for transportation projects has been limited. The Pocahontas Parkway was only the second transportation project nationwide to be financed through this concept, after the Southern Connector in Greenville, South Carolina, also financed in 1998. Since then, only the Las Vegas Monorail and the Massachusetts Route 3 North projects have used tax-exempt 63-20 financing.

3.2. Refinancing and Long-Term Lease

Although the Pocahontas Parkway was successfully delivered using a design-build approach, the facility did not serve as much traffic after opening as was originally estimated. By early 2004, traffic levels (approximately 15,000 annual average daily traffic) were only half what had been forecast in the traffic and revenue studies. This raised the possibility of a default on the bonds and had important negative financial impacts for the project and the 63-20 corporation established to finance the facility. The ratings agencies, while not downgrading the PPA's bonds below investment grade, put the bonds on a negative watch and strongly encouraged the PPA and VDOT to raise tolls to protect the interests of the bondholders despite public pressure not to do so. This in turn prevented the PPA from selling additional toll revenue bonds, which would allow it to extend the FD/MK design-build contract in order to complete a RAC road that had initially been planned as part of the project.

Under the auspices of the PPTA, the private sector responded again. In October 2004, Transurban (USA) and DEPFA Bank made an unsolicited proposal to VDOT and PPA to acquire the rights to operate the Pocahontas Parkway. Given the financing concerns over the existing roadway and the desire to complete the airport connector, the Commonwealth responded positively to the offer. By June 2005, the parties had reached an exclusive memorandum of understanding (MOU), and in June 2006 a comprehensive agreement was signed. Under the terms of this agreement, Transurban acquired the sole rights to manage, operate, maintain, and collect tolls on the Pocahontas Parkway for a period of 99 years. Key provisions in the agreement include:

¹ For a non-profit corporation to issue tax-exempt debt, it must satisfy the following criteria established by the IRS: (1) the corporation must engage in activities which are essentially "public in nature"; (2) the corporation must not be organized for profit; (3) the corporate income must not inure to any private person; (4) the State or political subdivision must have a "beneficial interest" in the corporation while the indebtedness remains outstanding; (5) the corporation must be approved by the State or the political subdivision, which must also approve the specific obligations issued by the corporation; and (6) unencumbered legal title in the financed facilities must vest in the governmental unit after the bonds are paid.

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- **Total funding of \$615 million.** Transurban is financing the lease using approximately 70 percent debt and 30 percent equity. The \$420 million in senior debt financing is being provided by a consortium of international banks led by DEPFA Bank (headquartered in Ireland), and the equity is being provided by Transurban.
 - **PPA debt defeased and VDOT reimbursed.** The lease proceeds will defease all of PPA's remaining outstanding debt and will reimburse VDOT for its prior expenses to maintain and operate the Parkway.
 - **Guaranteed toll escalation.** The agreement includes a schedule of maximum tolls that may be charged by the operator for the period from 2006 to 2016, with the toll at the main line toll plaza rising from the current rate of \$2.25 to a maximum of \$4 in 2016. After 2016, tolls may rise annually by the greater of the increase in the Consumer Price Index (CPI), real Gross Domestic Product (GDP), or 2.8 percent. All downside revenue risk is borne by Transurban.
 - **Revenue sharing.** VDOT will share in the revenue generated by the facility if traffic growth exceeds expectations. Specifically, VDOT will receive as a "permit fee" 40 percent of gross toll revenues after the project yields a pre-tax internal rate of return (IRR) on the combined debt and equity of 6.5 percent. This fee increases to 80 percent if the IRR exceeds 8.0 percent.
 - **Termination for convenience.** VDOT has the right to terminate the agreement for convenience at any time after 40 years, although such termination would require repayment of all debt and would include a penalty payment to the operator for lost return-on-equity. Forty years was estimated as the time it would have taken PPA to pay off its previous liabilities.
 - **Non-compete agreement.** VDOT must compensate Transurban for any lost revenue if a new James River crossing is constructed within 3 miles of the existing Route 895 Bridge. This requirement will lapse if the Parkway becomes congested and Transurban fails to enhance its capacity.

In addition to gaining full control over the operations and revenues of the Pocahontas Parkway, Transurban is also obligated to construct, maintain, and operate the 1.6-mile RAC if \$150 million of Federal TIFIA credit assistance is made available for that purpose. The RAC is seen as critically important to the financial success of the Pocahontas Parkway as well as the economic development of the Richmond region, but it is not feasible as a standalone project. For the past 4 years, the RAC has been one of only two new-build road projects in the entire Virginia Transportation Improvement Program (TIP).

In July 2006, immediately following the signing of the agreement with Transurban, VDOT submitted a Special Experimental Project Number 15 (SEP-15) application to FHWA seeking permission to deviate from the TIFIA definition of "eligible project costs" to include the cost of refunding long-term project debt that Transurban raised in order to acquire the rights to the Parkway.² In August 2006 the application for the deviation was approved, and VDOT and Transurban are now negotiating with FHWA for \$150 million in TIFIA mezzanine loan funds. If the loan is forthcoming, the funds will be used to refinance approximately \$95 million of the long-term senior debt; upgrade the electronic tolling system, at a cost of approximately \$7 million; and construct the RAC, at a cost of approximately \$48 million. Based on this scenario, the project sponsors have already received an indicative investment-grade rating from Fitch for the post-TIFIA-financing senior loans.

² SEP-15 derives from Section 502 of Title 23, and it allows the Secretary of Transportation to waive the requirements and regulations under Title 23 on a case-by-case basis. SEP-15 allows FHWA to experiment in four major areas of project delivery: contracting, right-of-way acquisition, project finance, and compliance with the National Environmental Policy Act (NEPA) and other environmental requirements. The SEP-15 goals are to increase project delivery flexibility, encourage innovation, improve timely project construction, and promote PPPs. SEP-15 allows FHWA to identify current FHWA laws, regulations, and practices that inhibit greater use of PPPs and private investment in transportation improvements. (Adapted from FHWA, www.fhwa.dot.gov/ppp/dbfo_6320.htm.)

4. PROGRAM ASSESSMENT

4.1. Institutional Context

A number of critical factors converged in the mid-1990s that convinced VDOT to use a design-build-finance approach for the construction of the Pocahontas Parkway:

- **Growing metropolitan area needing highway connections.** The Richmond metropolitan area, especially Chesterfield County to the south and west, was (and continues to be) a growing region, with many planned housing developments and strong growth in passengers and cargo anticipated at Richmond International Airport. An I-95/I-295 connector had long been seen as a desirable addition to the region's road network, especially given the lack of crossings over the James River. As the years passed the connector increasingly became a necessity.
- **Constrained conventional funding sources.** As in many states and regions, conventional funding for transportation, especially new construction, became very constrained in Virginia in the 1990s. This delayed a number of worthwhile projects including the Pocahontas Parkway. Moreover, debt financing directly through the Commonwealth was not an attractive approach because Virginia is constrained by overall debt limits and has been very protective of its high credit rating. Virginia was searching for new financing methods and new sources of capital.
- **New political environment.** As described above, the passage of the PPTA changed the transportation infrastructure financing and project delivery environment in Virginia. The Commonwealth could now approach private sector groups to engage in PPPs to develop transportation facilities, and those groups could offer unsolicited proposals to the Commonwealth for worthwhile projects—as Fluor Daniel and Morrison Knudsen did with this project. A design-build-finance delivery method, using tax-exempt 63-20 financing, was negotiated, and the Pocahontas Parkway thus became the first new construction project implemented under the PPTA in Virginia.

When traffic levels on the new Pocahontas Parkway grew to only half of the projected amount by 2004, it became uncertain if the project could generate sufficient cash flow to service the debt, leading to possible default on the 63-20 corporation-issued bonds. The alternative was to raise tolls on the facility, which was not publicly acceptable. In this financially challenging environment, a private sector concessionaire made an unsolicited proposal under the PPTA to essentially “bail out” the troubled 63-20 financial arrangement and replace it with a long-term lease. A number of factors made such a lease attractive to the concessionaire, Transurban and its financial backers:

- **No directly competing parallel facility.** There are no river crossings within 6 miles of the Parkway's bridge over the James River. This makes the Parkway an attractive facility despite the toll and offers major time savings to area residents, thereby providing value to patrons for the toll they pay to use the facility. Transurban ensured that this advantage will continue by including a non-compete clause in the lease agreement.
- **Facility with a performance record.** Although the Parkway does not have the long history of usage like other facilities that have recently been leased in the United States (such as the Chicago Skyway and Indiana Toll Road), Transurban was able to rely on almost 4 years of traffic data rather than purely speculative traffic forecasts. This gave Transurban and its backers significantly more confidence in their pricing and increased their willingness to take on revenue risk.
- **Recent investment in the facility.** Transurban is taking over a new facility that should have relatively low operating and maintenance costs during the early years. This will allow the private consortium to focus on paying back investors and developing the new Airport connector, while at the same time building up a sufficient reserve for future maintenance expenses.
- **Foothold in Virginia market.** The Pocahontas Parkway is Transurban's first facility lease in the United States, and Transurban sees Virginia as a major area of growth for transportation projects

delivered through the mechanism of PPPs. It intends for the Parkway to provide a strategic foundation in the Commonwealth that will give it the access and the credibility to pursue larger PPPs, such as the proposed HOT lanes on the Capital Beltway and I-95/I-395 in Northern Virginia.

4.2. Potential Issues and Strategies

Despite the positive factors identified above, VDOT and Transurban both foresaw potential issues facing such a long-term lease. The concession agreement reflects the consideration of these issues and includes strategies to deal with them, as discussed below:

- **Revenue sharing if facility exceeds expectations.** One of the most common charges from opponents of roadway concessions is that the government is “giving away” a valuable public asset and its future net cash flow. Transurban and VDOT have mitigated this complaint by including a revenue-sharing provision in the agreement. If traffic on the Parkway exceeds expectations, the Commonwealth will share in the additional revenues at increasing proportions based on the rate of return on the investment made by the concessionaire.
- **Regulated toll regime.** Roadway concessions can raise concerns in the traveling public (especially current patrons of a facility) that the private operator will raise tolls far beyond what average drivers can pay. Transurban and VDOT have agreed on a regulated toll regime through 2016 (with tolls rising to a maximum of \$4 by 2016), and further increases after 2016 capped by rates based on overall economic growth, inflation, or a minimum annual rate of 2.8 percent. This toll schedule not only provides near-term certainty for drivers, but also provides certainty for Transurban and reduces its uncertainty risk in pricing the deal.
- **Future facility congestion.** While Transurban is protected from competing facilities, this protection carries with it the responsibility to mitigate congestion on the Parkway itself. If Parkway traffic in future years becomes highly congested and tolls cannot be raised to reduce travel demand during peak periods of the day, Transurban must make investments to improve the Parkway’s capacity to maintain relatively free-flow conditions for patrons. If it does not make these investments, the non-compete protection will lapse, and VDOT will be able to consider the construction of competing crossings over the James River.
- **Future political uncertainty.** As with any long-term deal, it is impossible to predict what the political environment will be like in Virginia in 20 years, let alone in 99 years when the lease ends and the Parkway reverts to VDOT. Transurban and VDOT have addressed this concern by giving VDOT the right to terminate the lease for convenience at any time after 40 years, although a financial penalty would apply. This gives the Commonwealth a greater ability to deal with future political changes.

5. CONCLUSIONS

5.1. Lessons From the Initial Parkway Delivery

The initial Pocahontas Parkway delivery had both positive and negative outcomes, and it has served as an object lesson for other PPPs in Virginia and across the United States:

- **Private sector involvement can successfully accelerate projects.** The Pocahontas Parkway would not have been completed by 2002 without the involvement of the private sector, and some Virginia politicians have stated that it would never have been built under traditional public financing and project delivery approaches. Private sector involvement was made possible in Virginia by the PPTA, and this Act has shown that private firms can bring project delivery and financing ideas and sources of capital to the table that the public sector might not have available or even have considered.

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- **Project size and travel demand must be carefully matched.** The Parkway appears to have been overbuilt for its initial traffic levels. The original proposal from FD/MK involved a phased approach, with only one bridge span and two of the four bridge ramps (which were expensive and difficult to build) being constructed initially, and then a companion bridge span and the additional two ramps being built later when traffic levels demanded it. However, VDOT pushed strongly for the entire facility to be built as a single phase, and FD/MK ultimately agreed. This increased the overall cost that had to be financed at the outset, but did not generate significant traffic or toll revenue to make the financial arrangement viable in the project's early years.
 - **63-20 financing can be difficult to implement.** Had the Transurban lease and refinancing not been implemented in 2006, it is possible that the PPA would have defaulted on its bonds at some point in the near future. In the view of some observers, the incentives and risks are not properly aligned in a 63-20 arrangement. The "overbuilding" of the Parkway is seen as evidence of this. VDOT wanted more infrastructure in a shorter timeframe, and FD/MK was willing to undertake it (facing only construction cost risk), but the non-profit PPA was ultimately the entity bearing the revenue risk. The experience across the United States with other 63-20-financed projects has been difficult, as other 63-20 non-profit corporations for financing transportation infrastructure have faced similar revenue shortfalls.

5.2. Lessons From the Subsequent Parkway Refinancing

Although it is too early to assess the long-term outcomes of the Pocahontas Parkway concession lease, there are lessons that can benefit other agencies considering the potential application of a concession arrangement to their existing tolled highway transportation assets:

- **FHWA will support private sector involvement.** The approval of the SEP-15 application to have the Parkway's refinancing costs included in the definition of "eligible project costs" was a significant success for VDOT, because it pushed the RAC road toward reality. It also marked an explicit approval by FHWA of innovative ways to apply private sector leasing and refinancing approaches, and it is likely to encourage other agencies to undertake similar approaches.
- **Public sector agencies should be willing to "think big."** Given the problems facing the PPA and the repayment of its bonds, Virginia could have been satisfied with simply refinancing the bonds and turning over operations and maintenance of the Parkway to Transurban. However, by pushing to include the RAC as a critical part of the project, the Commonwealth was able to accelerate another key Richmond-area project that would otherwise have remained on the drawing board for many years.
- **Agreements should actively address public concerns over concessions.** Roadway concessions are viewed with concern both by drivers (who fear major toll increases) and by anti-privatization advocates (who fear that governments are "selling off" valuable long-term assets to the private sector for short-term budget windfalls). VDOT and Transurban have actively addressed these concerns by negotiating a fixed yet reasonable toll schedule in the first 10 years of the agreement, requiring revenue sharing if traffic exceeds expectations, and allowing VDOT to terminate the concession for convenience after a period of 40 years.
- **Reducing uncertainty benefits the concessionaire and the public agency.** The agreement between Transurban and VDOT includes a number of features aimed at reducing risk for one or both partners. In addition to the fixed toll increase schedule in the first 10 years of the agreement, which reduces toll rate uncertainty for both parties, the agreement includes a non-compete clause, which reduces Transurban's long-term competitive risk and places all the operating cost and downside revenue risk on Transurban.

5.3. Implications for the Tappan Zee Bridge Project

In just 5 years, the Pocahontas Parkway project has transitioned from one PPP approach (design-build-finance) that expedited project delivery to a second PPP approach (long-term concession lease and

expansion) that addressed the short-term financial problems that resulted from the manner in which the original PPP arrangement was financed and the overly optimistic initial projections of traffic and revenue for the facility. The implications of this evolution of a PPP project for the TZB include the following:

- **Precedents set by recent concession leases demonstrate the potential to apply this approach to transportation asset recovery, program enhancement, or budget relief.** Along with the Chicago Skyway and Indiana Toll Road concessions, the recent Pocahontas Parkway lease has opened the door for owners of public infrastructure to partner with private sector firms to further develop, operate, and maintain existing infrastructure through the application of long-term financial strategies that maximize the proceeds to the sponsoring government agency. By applying long-term concession lease arrangements to existing transportation infrastructure, these deals offer the potential to rescue troubled projects through refinancing or to generate up-front financial windfalls for rejuvenating under-funded capital improvement programs. It is the immediacy of funding availability that attracts elected officials to these kinds of “brownfield” leases through the use of financing approaches and toll rate increases that the public sector has been unable or unwilling to do on its own. As a result, a number of other states are considering such concessions for major facilities, including major turnpikes in Pennsylvania and New Jersey.
- **Use of a design-build-finance PPP approach significantly expedited the initial delivery of the Pocahontas Parkway.** For many large transportation projects without adequate public funding programmed for the project, PPPs provide a variety of approaches to accomplish the project with the involvement of experienced private providers. The PPPs can offer cost-effective ways to design and build the project in a shorter timeframe than using traditional approaches such as design-bid-build due to the ability to perform certain functions concurrently instead of sequentially without impacting the quality of the project. There is also greater opportunity to better integrate the design and construction functions, which produces a more constructible design that is less susceptible to design flaws. In addition, as with the Pocahontas Parkway project, the PPP team can also work with the project sponsor to establish a public-use corporate entity that could gain access to tax-exempt financing for the project.
- **Use of innovative PPP approaches does not guarantee project viability.** Despite the many advantages in using innovative PPP project delivery and financing approaches, the Pocahontas Parkway lacked the proper connectivity to major traffic generators in the area it served (Richmond Airport) as well as sufficient time to permit a reasonable ramp-up period before the financial obligations associated with the project’s loan agreements came due. Hence the use of innovative project financing and delivery approaches through a PPP does not guarantee project viability, particularly in the short term when traffic volumes may fail to meet projections.
- **Partners in a troubled PPP arrangement can recover if the partnership takes a flexible approach to addressing problems.** VDOT and the investors in the Parkway’s 63-20 entity benefited from a mutual willingness to restructure the PPP as a long-term concession lease, which was a more appropriate contract vehicle for a start-up project such as the Pocahontas Parkway. This created a positive outcome for all parties because the original partners constituting the 63-20 entity recovered their investment, VDOT received a commitment to build a needed connector to the Richmond Airport, and the concessionaire gained an important foothold in a visible project whose creative financing arrangement proved its credibility as a legitimate player in the U.S. PPP/concession market.

However, there are also many key differences between the TZB project and the Pocahontas Parkway that must be taken into consideration:

- **The Parkway is a relatively short toll highway that is not part of a larger system of toll roads.** The Pocahontas Parkway can be dealt with in relative isolation, while the TZB is one piece of a 641-mile system of toll highways across New York State. In the case of the Parkway, the failure to build necessary connections of the highway system around Richmond to key traffic generators, such as the Richmond Airport, impeded the Parkway’s ability to become financially

self-sufficient. The feasibility of applying any type of PPP to the replacement of the TZB must consider the context of the project within the overall strategy for preserving, expanding, financing, and operating the rest of the statewide Thruway System.

- **The Parkway incorporates only one mode of transportation.** Plans for reconstructing or replacing the TZB involve consideration of future transit capacity, including bus and rail, either upon replacement of the existing bridge or as a future enhancement that could be constructed on bridge foundations engineered to support such service. This is significantly more complicated than the Parkway, which serves only highway transportation (cars, trucks, and buses).
- **The Parkway concession involves assets in a state of good repair and does not address issues such as bridge replacement or management of existing traffic.** The Parkway is a nearly new facility, which increases the value of the asset to the private sector, and only limited improvements will initially be required of the concessionaire for the existing facility. Additional capital expenditures may be required for the RAC when the issue of TIFIA eligibility is decided, but this will also be “greenfield” construction. The TZB, by contrast, will require extensive reconstruction if not outright replacement, and the alternatives that contemplate commuter rail on the bridge will require even more complicated and expensive engineering and construction including tunneling. Moreover, high levels of existing traffic on the TZB must be managed while the reconstruction or rebuilding is completed.
- **The Pocahontas Parkway has traffic levels below its capacity while the TZB is congested and well above capacity.** The two facilities are operating in very different economic environments. Transurban must seek to stimulate demand for the Parkway while generating enough toll revenue to pay back its investors. The concessionaire is also counting heavily on continued growth in the region and on additional traffic from the airport connection. By contrast, the Thruway could likely increase its overall revenue from the TZB by raising tolls, reducing congestion, and increasing the total throughput on the bridge. (The Thruway faces many constraints that may prevent it from pursuing such a strategy.) These very different economic situations may require different approaches for involving the private sector.

Thus, while the TZB and the Pocahontas Parkway are quite different facilities, functionally and economically the Parkway offers some important guidelines for considering PPPs for the TZB. In particular, the Parkway demonstrates that while innovative financing approaches do not guarantee project viability, they can be successfully negotiated and structured to mitigate many of the public’s concerns about private sector involvement.

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Image References

Figure 1: AECOM Consult, Inc.

Port of Miami Tunnel Case Study

Prepared for the:

New York State Department of Transportation

Metro-North Railroad

New York State Thruway Authority



New York State
Department of Transportation



Metro-North
Railroad



New York State
Thruway
Authority

Port of Miami Tunnel—Miami, Florida

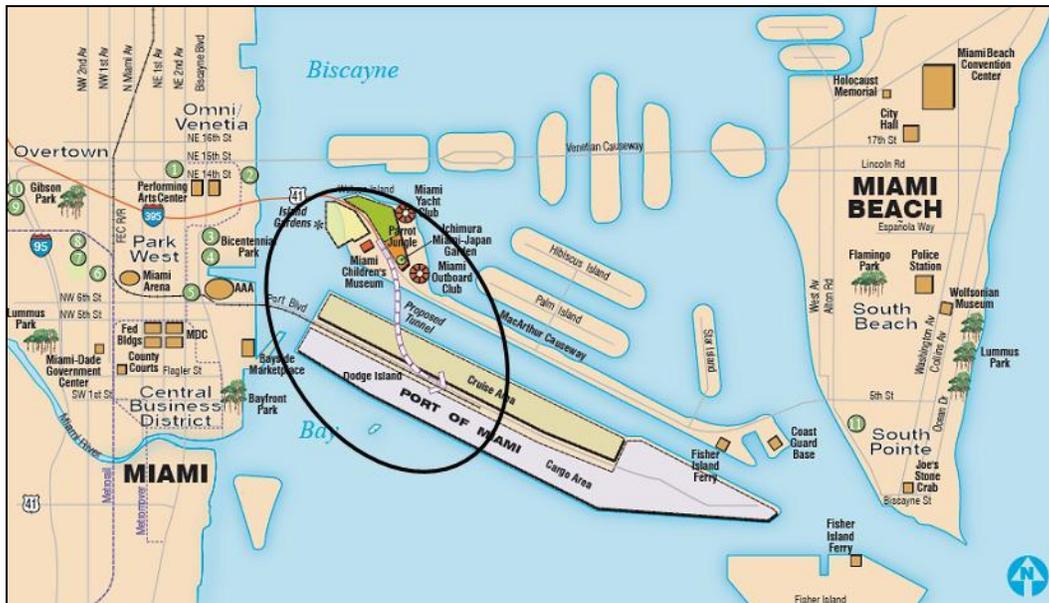
Public Private Partnership Delivery	Construction/ Development Period	Concession Period	Contract Value	Status
Design-Build-Finance-Operate-Maintain	1981–Present	30 years after opening	\$1.4 billion	In development

SUMMARY

The Port of Miami Tunnel (POMT) project will create a new, direct-access roadway connection from South Florida’s Interstate highway network to the Port of Miami (POM). The POM is widely recognized as the “Cruise Capital of the World.” It also serves bulk and container cargo ships. Currently all auto, bus, and truck traffic headed to and from the Port must traverse local city streets, creating severe congestion in downtown Miami. The POMT will route much of this Port-related traffic directly onto nearby Interstate highways, thereby improving safety, facilitating redevelopment, and maintaining the POM’s competitiveness.

The POMT will consist of three integrated components: twin-bored tunnels underneath the Main Shipping Channel between Dodge Island and Watson Island, widening of the existing MacArthur Causeway Bridge, and connections between the tunnel and the existing Port road network. Figure 1 shows the alignment of the tunnel relative to the Port and downtown Miami. The length of the entire facility is approximately 3 miles.

Figure 1: Port of Miami Tunnel Alignment



Source: Miami Dade County, 2007, www.portofmiamitunnel.com

The POMT is being sponsored by the Florida Department of Transportation (FDOT) in cooperation with Miami-Dade County and the City of Miami, which will collectively provide the funding for the project over its service life. FDOT has chosen to develop the POMT through a public-private partnership (PPP), with the private sector providing the financing to develop the project and the public sector providing the funding to repay the private development financing and the costs for long-term operations and maintenance (O&M) of the facility. Three international consortia submitted bids for the project. The

winning consortia, Miami Access Tunnel (headed by Bouygues Travaux Publics of France), Bouygues hereafter, will be responsible for the design, construction, and financing of the entire facility, as well as the operation and maintenance of key segments of the facility for 30 years after the POMT opens to traffic. Instead of receiving revenue from direct user tolls, the concessionaire will receive “availability payments” from FDOT throughout the duration of the contract. Miami Access Tunnel’s winning bid included a maximum availability payment of \$33.2 million per year.

One of FDOT’s major goals in procuring the POMT as a PPP is the transference of significant portions of the project risk to the private sector concessionaire. In general, all risks that are not expressly assumed in whole or in part by FDOT are assumed by the concessionaire, and the concessionaire will bear substantially all the risk associated with design, construction, operation, maintenance, and financing. However, the unique geotechnical risks associated with a tunnel of this size require that risk sharing occur with regard to potential changes in site conditions. If the concessionaire proceeds appropriately and experiences cost overruns due to unforeseen geotechnical conditions, then several layers of risk sharing are available to mitigate the cost burden on either the private developers or public sponsors of the project.

The total base project cost is approximately \$1.4 billion, with FDOT, Miami-Dade County, and the City of Miami sharing the project’s funding responsibilities, although the exact sources of the local contribution have not been fully determined. Miami Access Tunnel will receive the agreed-to “maximum” availability payment on a monthly basis, less any deductions assessed if contractual performance standards are not met. The performance standards include measures of availability, service quality, and safety. This approach creates incentives for timely completion of project construction and high operating and maintenance standards. FDOT has also included a “High Traffic Payment” in addition to the availability payment, which will compensate the concessionaire for higher maintenance costs if traffic levels greatly exceed forecasts.

Although the POMT project has not entered the construction stage, it offers lessons for the Tappan Zee Bridge (TZB)/I-287 Corridor project:

- **Comprehensive due diligence and careful structuring of the procurement are essential to obtaining cost-effective bids from the private sector for a mega-project.** FDOT was able to get multiple competitive bids from qualified consortia because of the structure of the procurement and detailed due diligence efforts. The due diligence efforts included risk-sharing mechanisms; a Value for Money (VfM) analysis, which helped determine an appropriate contract length; extensive geotechnical sampling that gave the bidders sufficient confidence about the technical feasibility of the project to offer proposals; and a willingness to listen to the bidders and modify the project in response to their concerns.
- **Risk sharing is critical.** Through PPP delivery mechanisms, public sector sponsors are increasingly seeking to transfer project risks to private sector partners. On many dimensions, particularly regarding financial risk, private firms are willing and able to bear these risks. However, the risks must not be so large or so difficult to predict that the firms’ cost of capital becomes a barrier. In the case of the POMT, the geotechnical risks associated with the tunnel had to be shared in order for the project to proceed.
- **Successful financing requires multiple stakeholder participation.** Transportation mega-projects are often too large to be funded or financed by a single public or private sector source. Project sponsors in Florida solved this problem for the POMT by turning to availability payments. This approach puts the responsibility for initial project financing on the private sector, and then the public sector sponsors pay back those costs over time. This public funding responsibility in turn is divided between FDOT, the county, and the city.
- **Strong political support is necessary.** The POMT remained in the planning stage for two decades until the project received strong support at the state level, which helped to bring together disparate stakeholders and create a mutually agreeable financing and delivery solution among the project sponsors.

Note: AECOM Consult is an affiliate of DMJM Harris. DMJM Harris was a member of the Miami Mobility Group consortium, which was one of the three consortia bidding for the POMT concession. Miami Mobility Group was not selected as the winning bidder. All the information contained in this case study was taken from publicly available sources, and no proprietary or confidential information about the project or any of the consortia has been used.

1. PROJECT OVERVIEW

1.1. Project Description

The POM is widely recognized as the “Cruise Capital of the World.” It serves eight cruise lines that carried more than 3.6 million passengers in 2005 via the Port. The POM also serves bulk and container cargo ships that moved about 9 million tons of freight through the Port, including more than 500,000 20-foot equivalent units (TEUs) in container traffic during 2005. All of these activities are served by cars, buses, and trucks, which must travel on local roads in downtown Miami, creating severe traffic congestion.

The POMT project will create a new, direct-access roadway connection from the MacArthur Causeway (State Road A1A) on Watson Island to the POM on Dodge Island in Biscayne Bay east of downtown Miami. The POMT project will consist of three integrated components. The first is the construction of twin-bored tunnels underneath the Main Shipping Channel between Dodge Island and Watson Island. The second is the widening of the existing MacArthur Causeway Bridge connecting Watson Island with the mainland and Interstate 395 (I-395). The final component is the creation of connections between the tunnel and the existing POM road network on Dodge Island. The length of the entire facility, including connecting roadways, is approximately 3 miles.

The alignment and configuration of the tunnel and its connecting roads are severely constrained by existing land use, traffic flow, and environmentally sensitive areas. Once completed, the POMT will relieve the congested downtown Miami streets of Port-related passenger and heavy truck traffic, which will improve traffic safety, keep the POM competitive with other ports, and facilitate ongoing and future development plans in downtown Miami.

The POMT project is being sponsored by the FDOT in cooperation with Miami-Dade County, the POM (a department of the County), and the City of Miami. FDOT has chosen to develop the POMT through a PPP. The winning bid was selected in early May 2006, and a single consortium of firms (Miami Access Tunnel, headed by Bouygues of France) will be responsible for not only the design, construction, and financing of the entire POMT facility, but also the operation and maintenance of key segments of the facility for 30 years after the POMT opens to traffic. There will be no direct fees or tolls charged to users of the tunnel facility. Instead of receiving revenue from tolls, the concessionaire will receive “availability payments” (explained in detail below) from FDOT throughout the duration of the contract in exchange for maintaining a predetermined level of availability, service quality, and safety on the facility. FDOT specified the performance characteristics; the level of the availability payments was proposed by the competing teams as part of the contract bidding process. The selection of a team and final proposal determined the level of payment. Miami Access Tunnel’s winning bid included a maximum payment of \$33.2 million per year.

1.2. Project History and Development Process

Access improvements for the POM have been in various stages of planning and development for more than a quarter-century. By the late 1970s, cruise and cargo traffic to the POM was growing and was projected to continue to grow substantially, but access was limited to a two-lane bascule highway bridge (carrying Port Boulevard) and a single-track bascule railroad bridge (carrying the Florida East Coast [FEC] Railway). A report issued as part of the POM Master Development Plan in June 1979 recommended that the existing Port Boulevard Bridge be replaced with a four-lane, high-level fixed-span

bridge and that Port Boulevard be grade-separated over Biscayne Boulevard (U.S. Route 1). Other proposals for alternate access routes were only briefly considered, but a Seaport Development Order issued later that year by the City of Miami demanded a more detailed examination of alternatives. The objectives of this examination were to define an environmentally acceptable truck route for accessing the POM and to reconsider the proposed Port Boulevard routing across Biscayne Boulevard in order to minimize the impacts on nearby Bayfront and Bicentennial Parks.

A study by the Seaport Department in July 1981 put forward four alternatives for vehicular access to the POM. These alternatives covered four basic alignments for accessing Dodge Island—via I-395, Watson Island, the Miami central business district (CBD), or I-95—but all the alternatives considered only a bridge facility. In 1982, the Dade County Metropolitan Planning Organization (MPO) established a POM Task Force that further evaluated those alternatives. Most of the bridge alternatives were eliminated due to cost considerations and impacts on the CBD, but the I-395 bridge alignment was retained and a tunnel alternative was added. The proposed tunnel would have run east of, and parallel to Biscayne Boulevard and merged with I-395.

In June 1983, an independent Feasibility and Cost Study of Tunnel Alternatives was completed and three separate tunnel alignments were brought under consideration. Two of the tunnel alternatives would have run parallel to the existing Port Boulevard Bridge, with one connecting directly to Biscayne Boulevard and the other running north (parallel to the shoreline) and connecting to I-395. The third alternative envisioned a tunnel crossing under the Main Channel connecting to the MacArthur Causeway.

In August 1984, a three-phase Transportation Improvement Plan (TIP) was approved by the County Board of Commissioners, which gave further support to a tunnel. The TIP called for improvements to the existing Port Boulevard intersections (particularly with Biscayne Boulevard), construction of a new high-level Port Boulevard Bridge (which was successfully completed in 1991), and construction of a four-lane underwater/underground tunnel connecting the POM with I-395.

Progress on a tunnel then lagged for approximately 5 years until October 1989 when FDOT began a Project Development and Environment (PD&E) study to develop and evaluate cost-effective alternatives for linking the POM to the Interstate system. A total of eight tunnel and bridge alignments were considered in this study, including some previously reviewed alternatives and some new alignments that envisioned utilization of the FEC right-of-way, connection to the Rickenbacker Causeway to the south, and connection to Alton Road in Miami Beach to the east. In September 1990, after approximately a year of analysis and meetings between community members, local officials, FDOT, and the Federal Highway Administration (FHWA), a tunnel under the Main Channel to Watson Island was selected as the preferred alternative.

Over the next 10 years, the project moved slowly through the various environmental review processes at the state and Federal levels. A Draft Environmental Impact Statement (DEIS) was signed by FHWA in April 1996 and the project's public hearing was held 2 months later. However, due to concerns raised by the Florida Department of Environmental Protection (FDEP) about negative impacts on Biscayne Bay from blasting and dredging, the proposed tunnel construction method was reevaluated for the use of a tunnel-boring machine. The tunnel-boring method was found to be less environmentally intrusive. As a result, FHWA downgraded the project's environmental determination from EIS to Environmental Assessment/Finding of No Significant Impact (EA/FONSI) in May 1997, and in December 2000 FHWA granted Location and Design Concept Acceptance for a bored tunnel.

However, the POMT was not yet ready to move into the final design and construction phases. In June 2003, Florida's Turnpike Enterprise (FTE) initiated a Project Reevaluation to review construction methods for the preferred alternative and to update the PD&E project documents. The reevaluation was completed and approved by FHWA in December 2005, and while the project was given clearance to advance a number of design changes were recommended. The most significant of the changes included the

widening of the MacArthur Causeway Bridge, reduction in the grades inside the main tunnel alignment, and flood gates (for hurricane surge protection) on the Dodge Island tunnel portals.

2. PROJECT PROCUREMENT

2.1. Authorizing Legislation

The State of Florida has been a leader in using PPPs for the procurement and delivery of transportation infrastructure. Florida Statute 334.30 (“Public-private transportation facilities”) provides authorization for a wide range of private sector involvement in the design, financing, and operation of transportation facilities. The key elements of this enabling legislation include:

- Allow solicited and unsolicited proposals for PPP projects.
- Allow private sector funds and local, state, and Federal funds to be combined on a PPP project, including the lending of funds from the Toll Facilities Revolving Trust and loans from the State Infrastructure Bank.
- Allow private entities to set the level of tolls and other user fees, subject to regulation by FDOT to avoid “unreasonable costs” to users.
- Do not include limitations on the modes of transportation eligible to be developed as PPPs.
- Allow the public sector to grant long-term leases or franchises to the private sector for the construction, operation, and maintenance of transportation facilities.

2.2. Procurement Process

When completed, the POMT will be a public facility and a part of the Florida Intrastate Highway System (FIHS). FDOT will exercise public authority over the facility and act as the contracting entity for the concession. FDOT has described its procurement approach for the POMT in the following way:¹

“The POMT is being procured as a public-private partnership (PPP) designed to transfer the responsibility to design-build-finance-operate-and-maintain (‘DBFOM’) the project to the private sector. It is a high-risk, technically challenging project that has attracted three bidding consortia comprised of several of the most technically sophisticated and financially-sound constructors and financiers in the world. In addition, the POMT approach has attracted national attention as states around the country contemplate PPP programs and seek to avoid the open-ended risk experienced on projects like the ‘Big Dig.’ Under the POMT Concession contract, the concessionaire will finance the project based on the expectation of earning annual ‘availability payments’ once the project opens for service. Essentially these will be payments from FDOT, contingent upon actual lane availability and service quality. Local partners in Miami-Dade County are committed to share 50% of the capital cost of the project.”

Section 3 below provides detail on the project financing and availability payments. Other key highlights of the procurement process include:

- **Permit responsibility.** FDOT has identified a set of major regulatory permits that are required for the project, including approvals from FDEP, Miami-Dade County Department of Environmental Resource Management, U.S. Army Corps of Engineers, U.S. Environmental Protection Agency (through the National Pollutant Discharge Elimination System), and U.S. Coast Guard. The concessionaire bears responsibility for obtaining all these necessary local, state, and Federal permits.

¹ Port of Miami Tunnel Project, “Project Overview,” FDOT, March 19, 2007.

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- **Right-of-way.** FDOT developed preliminary right-of-way plans for inclusion in the Request for Proposals (RFP), and FDOT expects to secure that right-of-way in a timely fashion without involving the concessionaire. Any additional right-of-way deemed necessary by the concessionaire, including permanent right-of-way for the facility or for offsite O&M needs and temporary space during construction, is the responsibility of the concessionaire.
 - **Utility and railroad relocation.** The RFP included a preliminary utility work schedule, and FDOT has responsibility for securing utility agreements with the impacted utility companies prior to contract award. In addition, the concessionaire will be responsible for relocating railroad tracks that are in the proposed project right-of-way on Dodge Island and are owned by the POM.
 - **Maintenance of vehicular traffic, vessel traffic, and port operations.** The concessionaire must ensure that there are no reductions in the number of existing traffic lanes on the MacArthur Causeway during peak hours, that access to the POM is maintained at all times, and that scheduled vessel movements (in both the channel and the turning basin) are not interrupted.
 - **Taxes and financial structuring.** The concessionaire is responsible for tax planning and compliance with applicable tax laws. Payments to or from FDOT will not be adjusted for any deficiencies in tax planning, and the concessionaire bears the risk of future changes in U.S. or foreign tax laws. In addition, each proposal included a detailed financial model, which showed projected income and cost estimates and an internal rate of return (IRR) for each year of the concession period. Miami Access Tunnel's financial model will be incorporated into the concession agreement and will be referenced if there are cost overruns for which FDOT bears risk or if there are settlements required following an early termination or discharge of the concession agreement.
 - **Handover.** At the conclusion of the 30-year operating period specified by the contract, the concessionaire must hand over the facility to FDOT. At that time, an inspection will occur (following the terms set forth in the RFP), and efforts to meet contract obligations associated with performance warranties may extend the involvement of the concessionaire beyond the operating period until any deficiencies are corrected to the satisfaction of the project sponsors.

2.3. Risk Sharing

One of FDOT's major goals in procuring the POMT as a PPP is the transference of significant portions of the construction and operating risk to the private sector concessionaire. In general, all risks that are not expressly assumed in whole or in part by FDOT are assumed by the concessionaire. In particular, the concessionaire will bear substantially all the risk associated with design, construction, operation, maintenance, and financing. Figure 2 summarizes the allocation of project risk.

However, the unique geotechnical risks associated with a tunnel of this size require that risk-sharing occur with regard to changed conditions. In their supplement to the Project Information Memorandum (dated March 17, 2006), FDOT describes the risk-sharing as follows:²

"FDOT will accept risk sharing for uninsured losses if the Concessionaire's technical approach is appropriate for the project scope and the conditions in Baseline Geotechnical Report. If the Concessionaire proceeds appropriately and experiences cost overruns due to geotechnical conditions that were not foreseen in the Baseline Report ('Changed Conditions'), then several layers of risk sharing are contemplated.... FDOT also anticipates that in the most extreme case, the discovery of an extraordinary condition or major unforeseen event (as defined in the Concession Agreement), will trigger the option to terminate the Concession Agreement under a contractually-mandated termination settlement formula. Changed Conditions which result in overruns greater than \$180 million would be considered extraordinary. In addition, if a Changed Condition which is likely to be extraordinary is discovered early in the design or construction process a termination option also may be triggered."

² Port of Miami Tunnel Project, "Project Information Memorandum Supplement," FDOT, March 17, 2006.

Figure 2: Overall Risk Allocation

Risk Category	Description	Risk Allocation		
		FDOT	Concessionaire	Shared
Political	Intergovernmental Agreements needed for award of concession	X		
Financial	Appropriation risk for Const. Milestone Payments and Avail. Payments		X	
	Equity and debt funding (financial close, interest rate and currency risk)		X	
Right-of-Way	Areas within Preliminary Right of Way Plan	X		
	Areas outside Preliminary Right of Way Plan		X	
Permits	Obtaining Federal, State and Local Permits		X	
Utilities	Agreements, schedules and relocations			X
Procurement	Legislative and regulatory authorities for award of concession	X		
Construction	Unforeseen conditions			X
	Impacts on vehicle traffic and POM operations beyond agreed levels		X	
	Impact to adjacent communities during construction above agreed levels		X	
	Unforeseen increases in material costs and labor		X	
Operations & Maintenance	Meeting availability and O&M criteria		X	
	Inflation during the Operating Period			X
	Traffic exceeding specified levels			X
Hand-Back	Return O&M Segments in specified condition when concession ends		X	
Force Majeure	Specified events not covered by insurance or performance specifications			X

Source: Port of Miami Tunnel, Project Information Memorandum, February 17, 2006

Figure 3 shows the preliminary risk allocation associated with changed conditions that were included in the Supplement to the Project Information Memorandum.

Figure 3: Risk Allocation for Changed Site Conditions

Uninsured Losses (x)	Risk Allocation
x < \$10 million	100% Concessionaire
\$10 million < x < \$160 million	100% FDOT
\$160 million < x < \$180 million	100% Concessionaire
x > \$180 million	90% FDOT / 10% Concessionaire

Source: Port of Miami Tunnel Project, Project Information Memorandum Supplement, March 17, 2006

2.4. Current Procurement Status

As noted in the Project Overview excerpt, the POMT project had three consortia bidding for the concession rights. These three consortia were short-listed in April 2006 based on their responses to a Request for Qualifications (RFQ) that was released in March 2006. The short-listed groups were then given the opportunity to respond to the full RFP for the tunnel project, which was released in November 2006. The three consortia were:

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- **Miami Access Tunnel.** This consortium, which ultimately was selected as the winner, is led by Bouygues Travaux Publics of France, which has the lead on all contracting and engineering efforts. The firm of Jacobs Civil, Inc. will provide additional engineering support, and Transfield Services Ltd. is the lead firm for facility O&M upon completion. In addition, Babcock & Brown Infrastructure Group is an equity partner in the consortium.
 - **Miami Mobility Group.** This consortium was led by ACS Infrastructure/Dragados of Spain, Odebrecht Construction of Brazil, and Parsons Transportation Group, all of which were equity members. Dragados was the lead tunneling contractor, Odebrecht was the lead non-tunneling contractor, and Parsons was the lead tunnel design engineering firm. In addition, DMJM Harris was the lead non-tunnel engineering firm, and Iridium Concesiones de Infraestructuras (which is affiliated with ACS/Dragados) was the lead O&M firm.
 - **FCC Construcción/Morgan Stanley.** This consortium was headed by FCC Construcción of Spain, which was to provide equity and take the lead on all contracting and O&M. Morgan Stanley was also to provide equity. Tunnel design engineering was to be led by Hatch Mott MacDonald Florida, and non-tunnel engineering by Edwards and Kelcey.

On April 3, 2007, FDOT made public the sealed project bids from the three consortia, each with a different maximum availability payment (MAP) over the 30-year operating and maintenance contract term of the proposed project. Miami Access Tunnel proposed a MAP of \$33.2 million per year and a construction plan requiring 50 months, Miami Mobility Group proposed a MAP of \$39.8 million and a 47-month construction plan, and FCC Construcción /Morgan Stanley proposed a MAP of \$63.2 million and a 42-month construction plan. These availability payments would be adjusted annually for inflation throughout the term of the contract.

At that public opening, reports were also made to the project's Technical Scoring Subcommittee by the technical expert panel that had been reviewing the proposals since their submission in early March. In mid-April, the financial expert panel presented its fact-finding to the Financial Scoring Subcommittee. Finally, on May 2, 2007, FDOT announced a Notice of Intent to Award the contract to Miami Access Tunnel. When combined with \$100 million in progress payments and a \$350 million payment upon completion of construction, this results in a project cost of approximately \$1.4 billion. It is expected that the contract between FDOT and Miami Access Tunnel will be signed approximately 60 days after the Selection Committee has announced its decision.

3. PROJECT FUNDING AND FINANCING

3.1. Funding Overview

The total base project cost will be approximately \$1.4 billion, although the final figure will depend on the degree to which geotechnical, inflationary, and other risks manifest themselves. FDOT, Miami-Dade County, and the City of Miami will share the cost of the project, although the source of the local contribution (county and city) has not been fully determined. County voters approved \$100 million in bond funding for the project in 2004, and the County Manager has outlined a plan to dedicate more than \$100 million in transportation fees and \$47 million in donated right-of-way to the project. However, the balance of the funding has yet to be identified. Various proposals for additional port user fees and tax increment financing have been suggested. As noted above, FDOT will make \$100 million in progress payments to the concessionaire during the construction period and another \$350 million payment upon completion of construction. Construction is expected to begin in 2008, and availability payments would then be initiated upon opening the project to traffic.

3.2. Availability Payments

Many concessions in the transportation arena are financed through direct user fees, such as highway tolls or airport landing fees. However, user fees can be supplemented or even replaced by public sector

revenue streams in situations where direct user fees alone are insufficient, difficult to predict, or unacceptable from a policy perspective. In the case of the POMT, all three of these reasons apply to varying degrees:

- The existing un-tolled Port Boulevard bridge will continue to provide alternative access.
- Activity at the POM itself will be outside the concessionaire's control.
- There is little physical space available for tolling infrastructure.
- A major goal of the project is to divert trucks and buses off Port Boulevard and remove them from the downtown street network.

Thus, FDOT has chosen to use availability payments as its method for reimbursing the private sector concessionaire. Availability payments are regular (in this case, monthly) payments that are made to the concessionaire in return for having a facility available for public use at a predetermined level of capacity and quality. This payment mechanism has been used frequently in the United Kingdom, but the POMT is the first major U.S. transportation project to be concessioned in this way. Unlike shadow tolling, availability payments do not depend on the volume of traffic using the facility, and the concessionaire is not directly responsible for maximizing traffic volume. Instead, the concessionaires bid a "maximum" availability payment over a specified contract term, and the winning team (Miami Access Tunnel) will receive that payment on a monthly basis, less any deductions it is assessed based on failure to meet certain contractual performance standards. The performance standards include availability (usually measured in lane hours or tunnel hours, but also including time for clearing of accidents and disabled vehicles), service quality (including lighting, ventilation, pavement surface, and cleanliness), and safety (including incident response time and traveler information). This approach has a number of distinct benefits:

- Creates an incentive for timely completion of project construction (because availability payments do not begin until the facility opens)
- Provides an incentive for continued high operating and maintenance standards
- Lowers the concessionaire's cost of capital by eliminating traffic risk

In the case of the POMT, FDOT has added an additional risk-sharing component by including a "High Traffic Payment" as part of the availability payment. This payment will compensate the concessionaire for the higher maintenance costs that accompany higher than expected traffic levels, particularly heavy truck traffic. In the Supplement to the Project Information Memorandum, FDOT includes an example showing that if heavy truck and bus traffic levels exceed the baseline projections by 20 percent to 33 percent, the concessionaire will receive an incremental payment equal to 2 percent of the MAP. If traffic is 33 percent to 50 percent above the baseline, the incremental payment is 3 percent of the MAP. If traffic is 50 percent above the baseline, the incremental payment is 3.5 percent of the MAP. In addition, if high traffic persists for more than 5 consecutive years, then the entire basis for the MAP can be reevaluated following a cost audit.

The availability payment covers not only day-to-day O&M costs, but also initial capital expenditures, financing, and major rehabilitation costs. The fixed availability payment transfers the risk associated with these costs to the concessionaire, which will use the resulting revenue stream to reimburse its financing partners.

4. PROGRAM ASSESSMENT AND CONCLUSIONS

4.1. Project Context

Despite its long and difficult development history, the POMT is finally moving toward final design and construction, and the selection of the DBFOM concession approach has played a critical role in making the project feasible. Yet this particular procurement and delivery approach is highly dependent on the institutional, technical, and financial contexts surrounding the POMT:

- **Strong support for PPPs in Florida.** As noted above, the legislative and political environment in Florida is particularly supportive of PPPs for transportation, and many PPPs of various kinds are already completed or underway in the state. In many other states, a concession for such a large and visible facility, especially one that will not be supported by tolls or other direct user fees, might have faced substantial opposition. FDOT was willing not only to pursue a PPP, but also to use an innovative financing mechanism (availability payments) to make the project feasible as a PPP.
- **Bored-tunnel technology.** After the FDEP raised concerns about blasting and dredging in Biscayne Bay, it became clear that the project would be able to proceed if only bored tunnels, rather than immersed tube tunnels, were constructed. There were also concerns about risks of interrupting port operations during construction of the immersed tube tunnels located in close proximity to the turning basin used by the large cruise ships that are based at the POM. However, because the most advanced tunnel-boring technology is not available from domestic construction firms, international constructors were invited to participate in the procurement for the project. Many international firms have significant experience with PPP delivery methods and tend to prefer long-term concessions to traditional design-bid-build or even design-build procurement for two reasons. First, the combination of high technology requirements and high construction cost and schedule risks generally require higher rates of return for the firms to cover the potential costs of assuming these risks. Second, long-term financing arrangements generally result in better equity returns for the financing partners. Thus, FDOT selected a delivery method that would attract highly sophisticated and experienced international tunneling contractors.
- **High construction and O&M risks.** The POMT is a massively complicated project, with very significant construction risks (both technical and financial) that increase the likelihood of cost and/or schedule overruns. The long-term operating and maintenance risks are also large given the mix of traffic and the difficult operating environment. FDOT was willing and able to shift most of those risks onto the private concessionaire in exchange for larger availability payments in the future. This arrangement is seen as benefiting FDOT and the public sector in multiple ways:
 - Cost overrun risk is mitigated, because the concessionaire must finance the construction privately and has no recourse to ask FDOT for additional funding.
 - The concession team is incentivized to mitigate the delay risk and O&M quality risk by the availability payments because payments do not start flowing to the concession team until the project opens, and payments will be reduced if O&M quality is deficient relative to performance standards specified in the contract.
 - Construction quality is assured by the long tenor (30 years) of the operating period, because the effects of substandard construction should be felt by the concessionaire well before operational responsibility for the facility is transferred to FDOT.

4.2. Lessons Learned

- **Some risks must be shared between the public and private sector.** FDOT's goal throughout the procurement has been to shift as much construction and O&M risk as possible onto prospective private concessionaire teams while counting on competition to minimize the availability payment. In general, the private sector concessionaires have proved willing to take on significant risk in this project, but the geotechnical risks associated with the POMT had to be shared with FDOT due to their continued uncertainty. Without the sharing of geotechnical risk, the

private sector firms would likely have had much greater difficulty finding cost-effective financing and would likely have demanded significantly higher availability payments.

- **Detailed analyses are required to determine the best procurement structure.** FDOT undertook a structured VfM analysis before proceeding with the procurement process. This VfM analysis determined if it was more cost-effective for FDOT to build the POMT itself or to award a concession. The analysis looked at construction and long-term operation and maintenance requirements and considered a wide range of issues, including cost of capital, risk transfer, and completion time. This process not only convinced FDOT that a concession would be more cost-effective, but it also gave FDOT the information necessary to select the duration of the concession (30 years) that balanced the benefits to FDOT of risk transference with the private sector's need for equity returns.
- **A well-structured procurement process can result in real competition for a “mega-project” concession.** Original FDOT estimates anticipated MAPs of approximately \$38 million per year over the term of the contract. While FDOT did receive one proposed MAP that was 66 percent above that figure, it also received one that was 5 percent above the estimate and one that was 17 percent below the estimate. The MAP is not the only factor used in selecting the winning bid, because FDOT used a best-value approach that also took into consideration the proposed construction schedule, project management, and quality control. However, the MAP is a major factor, and FDOT appears to have managed the process in such a way as to reduce the uncertainty for the bidding firms and make the POMT an attractive project.
- **Availability payments can be a useful approach for facilities where direct tolling is not an attractive option.** Only time and experience will prove if FDOT's decision to use an availability payment mechanism is cost-effective. However, it appears that the approach is appropriate given the number of competitive bids received. Its use for this project may encourage other agencies and transportation departments to consider shadow tolling or availability payments in situations where direct tolling or other user fees are not feasible.

4.3. Implications for the Tappan Zee Bridge Project

There are many key differences between the POMT project and the TZB project. The most obvious, of course, is that the POMT is a brand-new tunnel, while all the options currently under consideration for TZB are for a replacement bridge. State and local officials in Florida also decided not to impose direct tolls on tunnel facility users due to concerns that vehicular traffic would divert to the existing bridge or, even more negatively, that some cargo or cruise ship traffic would divert to other competing ports in Florida and other East Coast states. Thus, the POMT is financed using availability payments, while the TZB is very unlikely to move away from direct tolls. Despite these differences, however, the POMT offers several useful lessons for the TZB project:

- **Comprehensive due diligence and careful structuring of the procurement are key to getting cost-effective bids from the private sector for a mega-project.** This lesson applies in almost all infrastructure projects, even a traditional design-bid-build delivery, but it is particularly critical in a PPP procurement. In the case of the POMT, FDOT was able to get multiple competitive bids from qualified consortia because of the structure of the procurement and FDOT's detailed due diligence efforts. These included the structuring of the risk-sharing mechanisms, the VfM analysis that helped determine the appropriate contract length, extensive geotechnical sampling that gave the bidding consortia sufficient confidence about the technical feasibility of the project to offer proposals, and a willingness to listen to the potential bidders and modify the project in response to their concerns.

In contrast, for example, the entire Woodrow Wilson Bridge (WWB) project was initially put out to bid as one large contract. Only a single bid was received, which was far above the project sponsor's cost estimate. When that project was then split up into a set of smaller component-specific contracts, more firms were willing to bid on each component contract, resulting in a total project cost close to the initial engineers' estimate. Like the POMT and the WWB project, the TZB

project will be quite complex and costly, particularly if commuter rail is included as part of the project. There will be major financial, technological, and environmental risks, and the sponsoring New York agencies will need to expend considerable effort prior to putting out the final RFP in order to ensure multiple, competitive cost-effective responses.

- **Risk sharing is critical.** As the POMT demonstrates, major transportation projects are subject to a wide range of risks, and through PPP delivery mechanisms public sector sponsors are increasingly seeking to transfer major risks to private sector partners. On many dimensions, particularly regarding financial risk, the private firms are willing and able to assume these risks. However, the risks must not be so large or so difficult to predict that the firms' cost of capital becomes a barrier. In the case of the POMT, the geotechnical risks associated with the tunnel needed to be shared between the concession team and the public sector sponsors in order for the project to proceed. In the case of the TZB project, while the issues will be somewhat different given the challenging environmental and land use constraints in the Hudson River Valley, risk-sharing will likely be needed if a PPP procurement and delivery approach is used.
- **Successful financing requires multiple stakeholder participation.** Transportation mega-projects like the POMT and TZB are generally too large to be funded or financed by a single public sector source. Project sponsors in Florida solved this problem for the POMT by turning to availability payments. This approach puts the responsibility for initial project financing on the private sector, and then the public sector sponsors pay back those costs over time. This public funding responsibility in turn is divided between FDOT, the county, and the city. FDOT will likely cover its share through its normal state-level funding sources, while the county and the city will need to turn to a mix of local bonding, right-of-way donation, port fees, and other funding sources. Given the magnitude of the TZB project, a similar sharing of the funding burden across different agencies and different levels of government will likely be required.
- **Strong political support is necessary.** As noted above, the POMT did not move out of the planning stages until the project was strongly supported at the state level. State officials were then able to bring together the various stakeholders and forge a workable financing and delivery solution among the project sponsors. Despite the importance of the TZB to the regional economy and transportation network, strong political support will likely be required to bring together the many stakeholders with varied (and sometimes competing) interests in the bridge to arrive at a mutually acceptable solution.

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San Francisco-Oakland Bay Bridge East Span Seismic Safety Replacement Project Case Study

Prepared for the:

**New York State Department of
Transportation**

Metro-North Railroad

New York State Thruway Authority



New York State
Department of Transportation



Metro-North
Railroad



Thruway
Authority

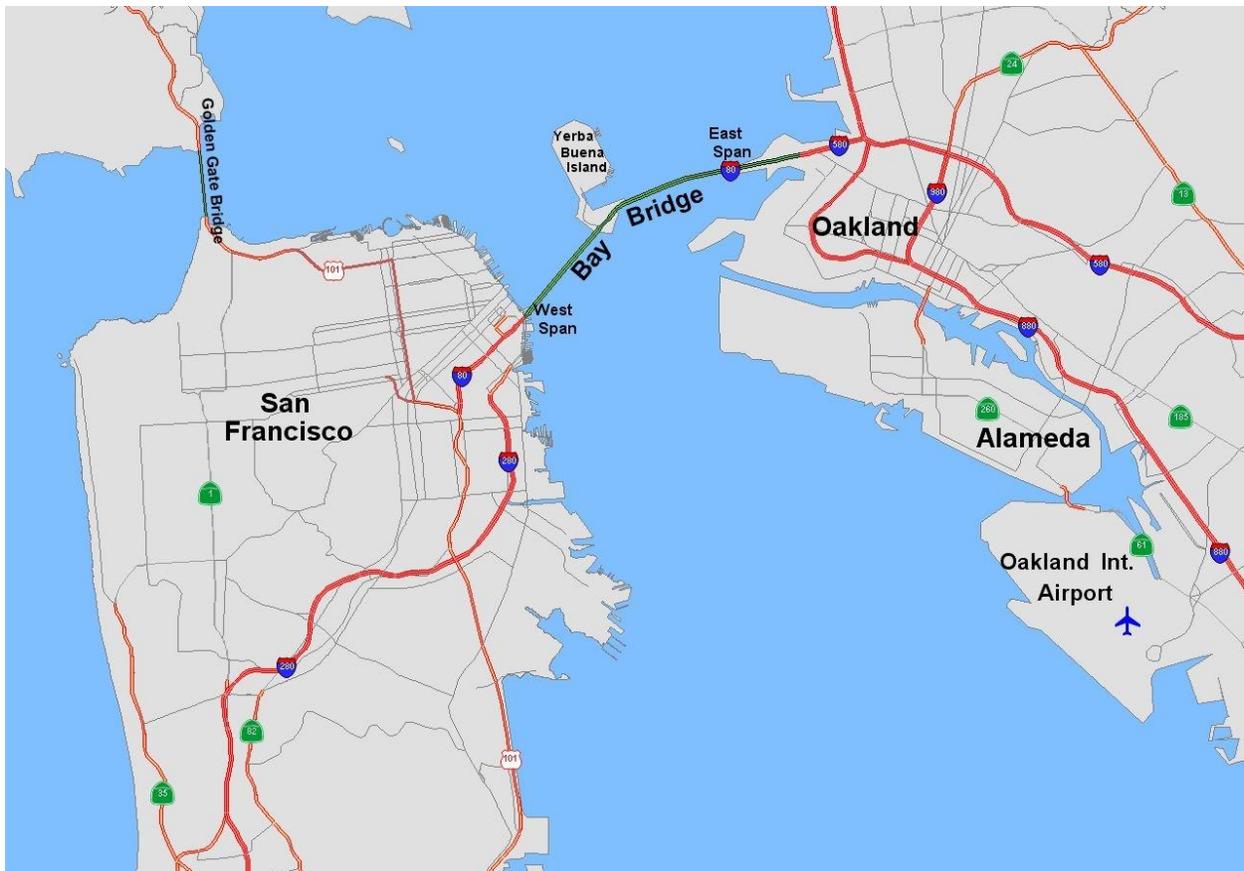
San Francisco-Oakland Bay Bridge East Span Seismic Safety Replacement Project—Northern California

Public Private Partnership Delivery	Construction/Development Period	Concession Period	Total Project Cost	Status
N/A	1997–2015	N/A	\$5.5 billion (East Span only)	Under construction

SUMMARY

The San Francisco-Oakland Bay Bridge (Bay Bridge) is an 8.4-mile series of bridges across San Francisco Bay (see Figure 1). As one of the oldest major bridges in the seismically active Bay Area, the crossing required significant capital investment to bring its structures to modern seismic standards. The impetus for improvements was the collapse of a 250-ton section of the bridge’s East Span during the 1989 Loma Prieta Earthquake, which killed one motorist. The project includes several elements, but the focus of this case study is on the East Span replacement project, which would replace the East Span’s existing cantilever bridge with a self-anchoring suspension (SAS) span and skyway.

Figure 1: San Francisco-Oakland Bay Bridge Alignment



Source: AECOM Consult, Inc.

As the project developed, however, its costs spiraled higher, driven by its complex design, materials sourcing requirements, procurement initiation delays, and inflation. The estimated cost of the bridge

increased from \$1.3 billion in 1997 to \$2.6 billion in 2001 to \$5.1 billion in 2004. The estimated cost of the East Span project is \$5.5 billion (total project cost is \$6.3 billion), a price that has stood firm since state and regional leaders forged a compromise in 2005 to fund the full cost of the signature span. Tolls on seven state-owned toll bridges in the San Francisco Bay Area have been raised by \$2, primarily to fund the increased cost of the Bay Bridge East Span replacement project.

The site and situational characteristics of the Bay Bridge and Tappan Zee Bridge (TZB) are similar in several ways:

- Both are heavily traveled bridges that connect sub-regions of a major metropolitan area.
- Both are in seismic zones across wide, shallow water bodies and require technically complex bridges.
- Both have complex institutional environments, with multiple agencies bearing responsibility for elements of funding, design, construction, operation, and maintenance of the crossing.

One key difference, however, is that the TZB/I-287 Corridor project seeks to improve the capacity of the crossing through additional lanes, congestion pricing, and/or enhanced transit services, while the Bay Bridge will maintain its existing five lanes in each direction.

This case study illustrates many important lessons learned by the California Department of Transportation (Caltrans), Bay Area Toll Authority (BATA), and other partners that are delivering the project. These include:

- Transfer project design and construction risks to the private sector through the application of a project delivery mechanism such as design-build
- Sequence project delivery phases so as to avoid reconsideration of fundamental project design questions beyond the “point of no return”
- Communicate with stakeholders early in the process and line up support well in advance of project design and development
- Ensure that the project has a robust financial plan that incorporates risk analysis to identify and develop strategies to mitigate significant swings in project cost, timeframe, or other variables
- Employ managers, support staff, and outside specialists (as necessary) with significant mega-project experience
- Consider regulatory requirements within the context of design and construction
- Approach novel designs with caution

1. PROJECT OVERVIEW

1.1. San Francisco-Oakland Bay Bridge Overview

The Bay Bridge is an 8.4-mile, double-deck structure with five traffic lanes on each level. The toll bridge currently serves about 280,000 vehicles per day and provides regional access between the San Francisco Peninsula and the East Bay cities of Oakland, Hayward, and Berkeley. As a component of Interstate 80 (I-80), the Bay Bridge is a critical link in the Interstate Highway System and serves as a major trade corridor and port of entry.

The bridge has three major sections:

- **East Span.** A 1.9-mile double-tower cantilever bridge that connects Yerba Buena Island to the Oakland toll plaza, pictured in Figure 2

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- **West Span.** A 1.8-mile double suspension bridge that connects San Francisco to Yerba Buena Island, pictured in Figure 3
 - **Yerba Buena Island Tunnel.** A 539-foot-long bored tunnel connecting the spans

Figure 2: Existing East Span, San Francisco-Oakland Bay Bridge



Source: Flickr

In addition, approach roads and minor spans bring the total length of the Bay Bridge complex to 8.4 miles. The bridge opened in 1936, 6 months prior to the Golden Gate Bridge.

At present, eastbound traffic is on the lower level of the bridge with westbound traffic above. The bridge currently carries annual average daily traffic (AADT) of 280,000 vehicles.

Figure 3: West Span, San Francisco-Oakland Bay Bridge



Source: Michael Connor via Wikimedia Commons

1.2. Project Description

The San Francisco-Oakland Bay Bridge Seismic Safety Project was initiated as a result of the collapse of a portion of the upper deck of the bridge's East Span following the Loma Prieta Earthquake in 1989. A major project element, and the focus of this case study, is the East Span replacement, which involves the construction of a new bridge to consist of two side-by-side bridge decks of five lanes each plus shoulders. It is being constructed north of the old bridge to take advantage of geologic conditions near Yerba Buena Island. The new bridge will be a combination concrete segment skyway and single-tower self-anchored suspension (SAS) span and will include a bicycle/pedestrian path on the south side of the eastbound deck. The total cost of the East Span replacement project is currently estimated at \$5.5 billion.

The East Span replacement is one of seven San Francisco-Oakland Bay Bridge Seismic Safety Project elements initiated by Caltrans and its regional partner, the BATA, to seismically upgrade the entire Bay Bridge. The Bay Bridge project is part of the agencies' Toll Bridge Seismic Safety Retrofit Program, an \$8.7 billion effort to seismically upgrade all state-owned toll bridges, most of which are located in the San Francisco Bay Area.¹

The other six elements comprising the Bay Bridge Seismic Safety Project are described below:

- **West Approach Seismic Replacement.** The West Approach extends from Fifth Street to the double suspension bridge's west anchorage in San Francisco. The retrofit of this portion of the bridge calls for complete replacement of most of the structure.
- **West Span Seismic Retrofit.** The West Span is the double suspension bridge connecting the San Francisco Anchorage to Yerba Buena Island. Retrofit of the West Span will add bracing beneath the upper deck, add plates on the towers, and replace the existing lattice work members on the truss portions with solid or perforated plates.
- **West Viaduct, Yerba Buena Island.** The West Viaduct is the portion of the bridge on Yerba Buena Island immediately west of the Yerba Buena Tunnel. Retrofit of the West Viaduct will strengthen the existing double-deck structure by retrofitting or replacing columns and footings and replacing the bent caps underneath the upper deck on-ramp.
- **Yerba Buena Island Tunnel.** The seismic retrofit strategy for the tunnel involves protecting users from collapsing rubble. Rock bolts will tie back the portals, arched headwalls, selected retaining walls, architectural walls, and one rock slope north of the west portal.
- **East Span Interim Seismic Retrofit.** The Interim Retrofit Project consists of strengthening bents and columns on the east viaduct (on Yerba Buena Island) and strengthening piers, bents, and trusses at selected locations on the East Span structure. This project will provide for increased seismic safety on the existing structure until an East Span retrofit/replacement alternative is implemented.
- **East Span Demolition.** Demolition of the existing East Span when construction of its replacement is complete.

1.3. Bridge History

The idea of a bridge linking San Francisco with the cities of Oakland, Berkeley, and Alameda can be traced to 1850 when San Francisco newspaper editor William Walker proposed construction of a causeway. Later, engineers who had built the western portion of the transcontinental railroad considered

¹ The Bay Area bridges included in the seismic safety program include the Benicia-Martinez Bridge, Carquinez Bridge, San Mateo-Hayward Bridge, Richmond-San Rafael Bridge, and Bay Bridge. Two other state-owned Bay Area toll bridges not included in the program include the Antioch and Dumbarton bridges. The Golden Gate Bridge is owned and operated by the Golden Gate Bridge, Highway, and Transportation District and is neither state-owned nor included in the seismic safety program.

the idea, but it never materialized, primarily because of the engineering challenge of bridging the crossing and the state of technology at the time.

Concrete plans for a bridge did not move forward until the 1920s, when growing use of the automobile prompted demand for a vehicular crossing between San Francisco and Oakland. In 1926 the California State Legislature chartered a Toll Bridge Authority to bridge the crossing, which selected the route via Yerba Buena Island to facilitate construction. Construction began in 1933 after the Reconstruction Finance Corporation, an independent agency of the United States Government chartered during the Great Depression to provide Federal aid to public works projects, agreed to purchase bonds to be repaid with bridge tolls. Construction of the original bridge, shown in Figure 4, was completed and the bridge opened to traffic in 1936.

At the time of its construction, the double-decked bridge was the world's longest rail/vehicular bridge. The upper deck of the bridge carried three lanes of auto traffic in each direction and the lower deck was reserved for truck traffic and the inter-urban railway, including the Key System streetcars that ran through East Bay communities. Construction of the Bay Bridge cost \$77 million, including the east and west spans and the Yerba Buena Island tunnel. In its first year the bridge served 9 million vehicles, and by 1950 it was serving 29 million vehicles annually. In 1958, rail service was removed from the lower deck of the bridge to make way for five lanes of auto and truck traffic in each direction.

In 1989 the Loma Prieta Earthquake caused the collapse of one segment of the Bay Bridge East Span, killing one motorist. The east-west ground movement caused part of the bridge to shift by as much as 25 cm, causing bolts supporting the upper deck to shear and a portion of the deck to fall onto the lower deck, pictured in Figure 5. More than 1,300 buildings in the Bay Area were destroyed and 20,000 were damaged. Approximately 3,757 people were injured and 62 died, 42 of whom were killed when Oakland's double-decker Cyprus Viaduct, a segment of I-880 and an approach to the Bay Bridge, collapsed.

The East Span was repaired that same year, but additional work was required to seismically upgrade the entire bridge so that its spans could withstand future earthquakes. Caltrans began to design seismic safety improvements for the East Span, initially focusing on retrofit of the existing bridge. A retrofit alternative was devised and an initial environmental review was conducted.

Figure 4: Construction of the Original San Francisco-Oakland Bay Bridge, 1934



Source: U.S. Government via Wikimedia Commons

Figure 5: Collapse of East Span Segment During 1989 Loma Prieta Earthquake



Source: C.E. Meyer, U.S. Geological Survey

Later cost comparisons were conducted to determine whether to retrofit the span or replace it. While replacing the bridge would cost about \$1 billion more than retrofitting the bridge, it was determined that replacement would be safer, cheaper, and easier to maintain in the long-run. In 1997, Caltrans and its parent agency, the Business, Transportation, and Housing Agency, recommended a replacement of the East Span of the bridge instead of seismic retrofit. The design was approved in 1998. The new East Span would include two parallel, five-lane roadways; a bicycle/pedestrian path; and provisions for future inclusion of rail. It would be constructed alongside the old span to minimize traffic interruptions. Construction of the replacement approaches to the East Span of the Bay Bridge began in 2002.

2. PROJECT DEVELOPMENT

2.1. Authorizing Legislation

Following Southern California's Sylmar Earthquake in 1971 Caltrans established a Seismic Safety Retrofit Program to complete the seismic retrofit of state-owned and state-operated highways. After the Loma Prieta Earthquake in 1989 and the Northridge Earthquake in 1994 caused substantial damage to California roadways in northern and southern California, respectively, greater emphasis was placed on the Seismic Safety Retrofit Program, which included efforts to increase program funding. The California Legislature authorized financing seismic retrofit projects from motor vehicle fuel tax revenues and additional funding mechanisms in 1991.

The Seismic Retrofit Bond Act of 1996 (Proposition 192) was placed on the 1996 ballot when it was recognized that additional funding resources were needed to continue the Seismic Safety Retrofit Program. The act authorized the sale of approximately \$2 billion in state revenue bonds, including \$650 million for toll bridges, to finance retrofit improvements. All toll bridge seismic retrofit costs were to be funded using general obligation bonds with no direct funding of the capital project coming from current state funds or tolls. State General Fund revenues, which are received primarily from state personal and corporate income taxes and sales taxes, were to be used to defray the cost of debt service on the bonds.

The act also temporarily suspended state statutes that were deemed to potentially delay or unnecessarily encumber the implementation of retrofit projects. All seismic retrofit projects, including the East Span replacement project, are exempt from the requirements of the California Environmental Quality Act (CEQA) under California Streets and Highways Code (CSHC) Section 180.2 and CEQA Section 21080. While CEQA review was not conducted as part of the East Span replacement project, an environmental and socioeconomic review was conducted to comply with the National Environmental Policy Act (NEPA).

Caltrans later reported that the estimated costs for retrofitting the East Span alone were greater than \$1 billion, which exceeded the total funding level for toll bridges provided under Proposition 192.

In 1997, Senate Bills 60 and 226 authorized \$2.6 billion for the Toll Bridge Seismic Safety Retrofit Program, with \$1 billion appropriated for the East Span of the Bay Bridge. Senate Bill 60 provided for a \$1 increase in tolls on the seven Bay Area state-owned bridges to cover the program's cost. The increase could be extended for 8 years and would be administered by the newly created BATA, an agency that shares responsibility with Caltrans for the administration, operation, and upkeep of the seven state-owned bridges in the San Francisco Bay area. In addition to the \$1 toll surcharge, the bill identified additional funds for the seismic upgrades, including state sources, primarily the State Highway Account, which receives most of its revenues from state and Federal motor fuels and other transportation-related taxes, and the Proposition 192 general obligation bond proceeds that were approved in 1996.

Senate Bill 60 also extended the Seismic Safety Retrofit Program's statutory exemption from CEQA until 2005. The bill called for the East Span replacement to be a standard freeway viaduct bridge with a "cable-suspension span."

Senate Bill 226 transferred programming authority for Bay Area toll bridges from the California Transportation Commission to BATA, a unit of the Metropolitan Transportation Commission (MTC), the transportation planning, coordinating, and financing agency for the nine-county San Francisco Bay Area. This permitted BATA to extend the period of toll surcharges to cover the cost of enhancements, including bicycle/pedestrian access to either the new East Span and/or the retrofitted West Span. Senate Bill 60 was amended in 1998 via Assembly Bill 2038 to allow BATA to fund the addition of bicycle/pedestrian access to either the new East Span or the retrofitted West Span or both, within the restrictions set forth by Senate Bill 60 or a future toll surcharge extension.

Estimated costs for the Seismic Safety Retrofit Program increased further after schedule delays occurred between 1997 and 2001. In 2001, the 1997 cost estimates for the toll retrofit program increased by 77 percent, or \$4.6 billion, mostly as a result of the East Span replacement project. In response, the state enacted Assembly Bill 1171. The bill provided total authorization of \$5.1 billion for the Toll Bridge Seismic Safety Retrofit Program, including \$448 million in overrun authority if costs should increase further. Funding would come from the extension of the toll surcharge to 2038 and from allowing the state to bond against the revenue stream to finance the cost of the retrofit projects.

In 2005, Governor Schwarzenegger signed Assembly Bill 144, which provided a comprehensive financial plan for the Toll Bridge Seismic Safety Retrofit Program, including the consolidation and financial management of all toll revenues collected on state-owned bridges in the San Francisco Bay Area. The bill provides \$630 million in additional funding, including \$300 million to fund the cost of demolishing the existing East Span, from state sources that support the State Highway Operations and Protection Program, project savings, or the Federal Highway Bridge Replacement and Rehabilitation Program. It authorizes BATA to increase tolls on the state-owned toll bridges in the Bay Area by an additional \$1 to provide adequate funding for the completion of the Toll Bridge Seismic Safety Retrofit Program.

The Toll Bridge Program Oversight Committee (TBPOC) was also created as part of Assembly Bill 144. The TBPOC is composed of the Director of Caltrans, the Executive Director of BATA, and the Executive Director of the California Transportation Commission. The role of the TBPOC is to provide project oversight and project control for the Toll Bridge Seismic Safety Retrofit Program. TBPOC responsibilities include review and approval of contract bid documents, review and resolution of project issues, evaluation and approval of project change orders and claims, and the issuance of monthly and quarterly program progress reports

2.2. Design Considerations: Retrofit or Replace

The original design for the replacement of the Bay Bridge East Span was determined in 1998. However, the project was delayed due to cost increases, unidentified funding sources, and disputes over the recommended design. The following is a timeline showing key milestones for the design of East Span replacement project:

1997

In 1997 Caltrans pursued a study of the feasibility of replacing the Bay Bridge East Span. MTC formed the Bay Bridge Design Task Force to develop a regional consensus on how the bridge should look. An Engineering and Design Advisory Panel (EDAP) recommended 17 design criteria that became the guidelines for the new bridge design, which fundamentally changed the design criteria set forth in Senate Bill 60 (i.e., standard freeway viaduct bridge with a cable-suspension span). A partial list of the recommendations include:

- Construction of the East Span replacement on a northern adjacent alignment
- A skyway section with long, equal span lengths
- A cable-supported main span with a single vertical tower with single or multiple legs in the transverse direction and single or multiple planes of supporting cables

-
- Two parallel separated decks on the causeway section and either a parallel separated deck or a single deck on the cable-supported section
 - A design to accommodate the possibility of future rail service

MTC recommended that Caltrans select two design teams, each of which would develop a cable-supported alternative to approximately the 30 percent completion stage of design. This would provide information about the relative seismic performance, cost, and aesthetics of each design alternative before a final decision was made. Caltrans commissioned designs for a self-anchored suspension bridge and a cable-stayed bridge, each to the 30 percent stage. MTC also ranked its priorities for the allocation of additional project funding to pay for enhancements, including:

- A cable-supported East Span segment across the shipping channel adjacent to Yerba Buena Island
- Building a bicycle/pedestrian path on the new span

The additional funding was authorized by the state legislature in Senate Bills 60 and 226.

1998

MTC's Bay Bridge Design Task Force recommended a single-tower, SAS design for the main span across the channel adjacent to Yerba Buena Island in 1998. Later that year, Caltrans issued the Federal Draft Environmental Impact Statement (DEIS) for the replacement of the East Span. The DEIS evaluated five alternatives for the design and alignment of the eastern span, including no-build, retrofit of the existing structure, two northern replacement alternatives, and one southern replacement alternative. The recommended alternative identified in the DEIS was the construction of a new eastern span on the northern alignment, with a single-tower suspension main span. During the DEIS public review/comment period, the Navy and the City of San Francisco voiced opposition to the selection of the northern alignment. The city and U.S. Navy claimed that MTC and Caltrans had biased the process toward the selection of a northern alignment by proceeding with design and site investigations without fully assessing the other alternatives. They also claimed that the analyses of impacts were deficient in the categories of land use, visual, historic resources, bicycle safety, geology, and noise. Despite the complaints, Caltrans officially selected and approved the recommended northern alignment.

1999

New Governor Gray Davis asked his new Caltrans director to review cost estimates to change the alignment in 1999. The Bay Bridge Design Task Force later met to hear San Francisco's objections to the design. The city was concerned that the new bridge would not be able to withstand a major earthquake. The city was supported by Abolhassan Astaneh-Asl, a Professor of Structural Engineering at the University of California who led previous seismic retrofit studies of the existing bridge in 1992.

2000

Professor Astaneh-Asl met with White House officials to express his concern over the high probability that the proposed bridge constructed on the proposed northern alignment would not be able to withstand an earthquake. This prompted the Federal Highway Administration (FHWA) to commission the Army Corps of Engineers to study the preferred design of the East Span in 2000. By this time, Caltrans had reportedly spent approximately \$70 million on design and engineering for the new span.

The U.S. Army Corps of Engineers released two reports. In the first report the Corps of Engineers endorsed the decision to rebuild the East Span rather than retrofit the existing span. In the second report, the Corps reported that while the design was still incomplete, the design team was progressing toward a design that would meet seismic performance criteria. However, the Corps of Engineers raised questions about the methods Caltrans should use to determine the earthquake ground motions that the new bridge would need to withstand. The report also recommended that Caltrans perform additional evaluation and

testing of the replacement design as it neared completion. Following the release of the two reports, Caltrans and the EDAP met with the Corps of Engineers to respond to their concerns. Caltrans and the EDAP indicated that they intended to implement most of the Corps' recommendations for additional evaluation and testing prior to construction of the East Span replacement.

2001

Caltrans released the Final EIS for the East Span replacement project in May 2001. The FHWA approved the Record of Decision (ROD) in July. Caltrans advertised for bids on the skyway portion of the East Span in December.

2.3. Other Design Issues

There were a number of issues that delayed the environmental and design process from the time the DEIS was published in 1998 to the ROD in 2001. Safety concerns were voiced to officials as high as the White House, as described in Section 2.2, which prompted the FHWA to commission the Army Corps of Engineers to study the proposed design of the East Span replacement project. Other issues are described below.

Aesthetics and Economic Development

Several area residents objected to the proposed design, which was ridiculed as "a freeway on stilts." The Oakland mayor called the bridge ugly and low class. Berkeley City Councilwoman Dian Wooley called the design "viaduct a la mode, and the ice cream is all on one end." The Alameda vice mayor called it "nothing more than a train trestle bridge."

In June 1997, San Francisco Mayor Willie Brown opposed the proposed northern alignment because it would preclude development of most of the developable land on Yerba Buena Island. In July of the same year, he reversed his position for support of the proposed alignment stating that the economic development opportunities for the Port of Oakland would outweigh those on Yerba Buena Island. In June 1998, he again opposed the proposed alignment saying that it would interfere with the city's reuse plans for Yerba Buena Island. In 2000, the mayor met with presidential advisors at the White House stating that retrofitting the bridge would be quicker and safer than building a new span.

Navy Concerns

The portion of that land where the East Span is anchored on Yerba Buena Island was owned by the U.S. Navy until the fall of 2000. In 1995, during the early stages of development of the East Span Seismic Safety Retrofit Project, Caltrans notified the Navy that it would need a 100-meter-wide right-of-way along the route of the existing bridge for the East Span replacement project as well as additional easement for other construction activities on the island. The Navy was concerned about potential impacts the project could have on the island, including construction impacts on historic buildings, funding of improved ramps onto the island, and lead contamination underneath the existing bridge. The dispute between Caltrans and the Navy continued until the fall of 2000, when the FHWA, under orders from the White House, ordered the Navy to transfer the disputed land to Caltrans.

Rail and Bicycle and Pedestrian Access

In May 1997, Caltrans reported that a bicycle/pedestrian lane added to the full length of the bridge would cost up to \$167 million. Following a significant outpouring of public support, funding for the bicycle/lane alternative was included in Senate Bill 60, passed in August 1997. The Bridge Design Task Force selected a bridge with a bicycle/pedestrian lane in June 1998.

In 1997, the Public Works Director for the City of Oakland wrote in support of the northern alignment and requested that the bridge include a bicycle/pedestrian path and that the bridge be capable of accommodating rail, a notion that was subsequently supported by other East Bay leaders in 1998. Later that year, voters in San Francisco, Oakland, Berkeley, and Emeryville passed identical ballot initiatives

that recommended MTC and Caltrans include passenger rail service on the bridge. In December 1999, a consultant study commissioned by MTC stated that the inclusion of rail on the bridge would cost an additional \$3 billion.

2.4. Bridge Construction and Re-Consideration of SAS Design

In 2001, with an ROD in hand for an East Span replacement featuring a skyway and an SAS suspension span, Caltrans sponsored several contractors outreach conferences to provide information on the East Span contracts for the construction of the replacement bridge. The East Span replacement project was divided into four separate construction contracts to facilitate an efficient and cost-effective building program. These included:

- **Geofill.** Create a roadbed for the land portion of the bridge at the Oakland Touchdown Area.
- **Skyway.** Construct the skyway portion of the East Span.
- **Self-Anchored Suspension Bridge and Yerba Buena Island Transition Structures.** Construct the SAS portion of the bridge and construct the structures to transition to the existing tunnel on Yerba Buena Island.
- **Oakland Approach Structures.** Construct a segment to connect the skyway to the Oakland Touchdown Area.

The following is a timeline showing key milestones for construction of the East Span replacement.

2002

Construction on the replacement of the East Span of the bridge began in 2002 with the geofill and skyway contracts. The \$8 million geofill contract involved building and stabilizing a roadbed along the muddy Bay shore, north of the existing toll plaza. It was completed in 2003.

The \$1.0 billion skyway contract was awarded in 2002, but the projected cost of the skyway had grown to \$1.3 billion as of 2005.

2003

Construction began on the skyway portion of the bridge in 2003. Skyway construction is continuing with a scheduled completion date of December 2007.

In January 2003, Caltrans advertised for the SAS portion of the bridge. The following month, contractors warned Caltrans that the contract had unrealistic expectations that could deter bidders. Issues of note included:

- Low Caltrans cost estimates
- Unrealistic schedule for constructing the unique and highly sophisticated bridge design
- Project's large scale and the limited market for barges, cranes, and labor
- Difficulties getting bond underwriters to make loans on jobs of that size in the post-September 11 environment
- Applicability of Federal "Buy America" requirements for steel to be used on the bridge

As a result, Caltrans changed the deadline for bidding on the SAS span from June to August. The agency also divided the four construction contracts into 13 smaller contracts in an effort to increase bidding competition. Legislation (Assembly Bill 1745) was also introduced to ease construction bonding requirements.

The SAS tower marine foundation bid opened in August. Caltrans received one bid in the amount of \$210 million, 63 percent higher than Caltrans' \$129 million estimate. Caltrans rejected the bid and formed an Independent Review Team (IRT) to review its contracting and bidding processes. In October, Caltrans re-advertised for the SAS marine foundation contract.

Caltrans received five bids for the Yerba Buena South Detour Contract in December 2003, to design and construct a temporary bridge to connect the Yerba Buena Island Tunnel to the existing bridge. It allows for the removal of a portion of the bridge for installation of a permanent transition. Caltrans estimated the contract to be \$92.5 million, and received bids ranging from \$78.8 million to \$112.4 million.

Meanwhile, in November 2003, Gov. Gray Davis was recalled and Arnold Schwarzenegger was elected governor.

2004

Caltrans awarded a performance-based contract to design and construct the Yerba Buena South Detour Bridge to low bidder C.C. Myers in 2004.

The contract for the marine foundations for the SAS Bridge was awarded to Kiewit-FCI-Manson, a joint venture, on April 1, 2004. The bid was \$50 million lower than the 2003 bid.

In April, the IRT advised Caltrans that construction for the SAS superstructure could be higher than Caltrans' \$800 million estimate and that the costs could be as much as \$1.5 billion. The committee indicated that Caltrans would not be able to reduce the cost of construction without choosing a different design.

In May, Caltrans received one bid for construction of the SAS superstructure from the joint venture of American Bridge, Nippon Steel Bridge, and Fluor Enterprises. The bid came in at \$1.4 billion to \$1.8 billion—\$1.4 billion if foreign steel were used and \$1.8 billion if domestic steel were used. Again, the state asked the IRT to review the bid received and assess the viability and risks of awarding the contract, re-bidding the contract, or redesigning the span. The IRT recommended that the contract should not be awarded to the single bidder. It also advised Caltrans to evaluate redesign alternatives while also preparing to re-bid the SAS superstructure contract should the redesign alternatives prove infeasible.

Caltrans examined six alternatives that included redesigning or re-bidding the SAS, various cable-stayed designs, and continuing the skyway across the shipping channel. The alternatives were reviewed by the IRT, which ultimately endorsed the cable-stayed design. They found that the cable-stayed alternatives could meet seismic objectives and would have environmental impacts similar to those of the SAS design. Further, the cable-stayed design would be simpler to construct, present fewer risks of schedule delays, and could save \$600 million.

The FHWA coordinated a Peer Review Team to rate the risk of the six design alternatives. The team concluded that the risks of not achieving project objectives would be lowest if Caltrans continued with the existing SAS design. The risks for skyway redesign would be higher, and would be highest for a cable-stayed alternative. The dominant factors that contributed to higher risk for redesign was public acceptance and the environmental approval that would be required for a redesign.

Caltrans also reviewed the six design alternatives. It concluded that the state would not be able to achieve the cost savings identified by the IRT because the cable-stayed and skyway options were both only at the conceptual stage. Further, other ongoing East Span contracts would have to be cancelled in order to complete a redesign, which would further increase the cost. Therefore, Caltrans recommended re-advertising the SAS superstructure contract with modifications and enhancements to encourage bidding and to make it easier to construct. Modifications included easing rules on using only domestic steel, a new approach to bonding and insurance, and hiring an outside construction management

consultant. Caltrans also recommended further consideration of the skyway alternative because of its potential for cost savings.

In December, the state endorsed the skyway design because that option could deliver the bridge in the same amount of time as the SAS and would save \$300 million to \$400 million. The Administration indicated, however, that Caltrans should continue to prepare the existing SAS design for a re-bid should funding become available in 2005. The Administration announced its intention of having higher bridge tolls in order to pay for the project cost overruns. Some Bay Area leaders, however, were unhappy with the aesthetics of the skyway and the prospect of the Bay Area shouldering most of the cost overruns through bridge tolls.

2005

Bay Area officials and the state disputed for months over the design of the East Span of the Bay Bridge. Bay Area officials did not like the look of the skyway and the state insisted that it would not continue to fund the SAS because of ever increasing costs. In the meantime, the SAS tower marine foundation project was suspended in light of the dispute over the design of the SAS superstructure. A compromise was finally reached in June to continue construction of the bridge with the SAS design. In the agreement, signed into Assembly Bill 144, the state will contribute \$360 million to pay for the demolition of the old East Span portion of the Bay Bridge and the remainder will be funded through a \$1 toll increase to begin in January 2007. The new toll will be \$4 on all state-owned Bay Area bridges. The compromise also included the formation of an independent oversight board, the TBPOC.

The TBPOC worked closely with the construction industry to identify and implement key contract enhancements to the SAS superstructure contract in order to improve competitive bidding. Amendments to the contract included:

- Extending the bid advertisement period
- Extending the contract by 1 year
- Paying a stipend of \$3 million to the three lowest responsive bidders
- De-federalizing the contract, which would remove the Buy America requirements from the contract
- Increasing the share of the savings to the contractor from the Cost Reduction Incentive Program (CRIP), under which the contractor identifies areas of potential cost savings in constructing the project
- Including incentives for contractor cost reduction, including a not-to-exceed 6-month \$50,000 per day clause to reward and encourage time savings by the contractor

2006 to the Present

In March 2006, Caltrans received two bids for the SAS superstructure contract for \$1.4 billion and \$1.7 billion. The winning bid was \$49 million less than Caltrans engineers' estimates. A steel fabrication contract was signed with a Chinese company as part of this SAS superstructure contract.

Portions of the Yerba Buena Island South Detour contract were suspended in June to minimize impacts on commuters. The delay necessitated design enhancement to allow it to stand alone for a longer duration and to enhance seismic safety. The suspension also prohibited the steel fabricator from maintaining the original contract schedule.

The contract to construct the eastbound approach is scheduled for advertisement for early 2007. The two remaining contracts are expected to be advertised in 2010.

3. PROJECT COST AND FINANCING

3.1. Project Cost

Estimated costs for the East Span replacement project have steadily increased since the project's inception in 1997: from \$1.3 billion to approximately \$5.5 billion today (the full project cost inclusive of approaches and the West Span rises to \$6.3 billion). The Results Group conducted a review of the history of cost increases for the East Span Seismic Retrofit Project in 2004 for the State of California Business, Transportation, and Housing Agency. Released in January 2005, the resulting report was segregated into two phases of cost increases, as shown in Figure 6. This table has been updated by including the 2007 cost estimate that reflects changes in project cost since the time of The Results Group's 2004 review as reported in the TBPOC's Second Quarter 2006 Toll Bridge Seismic Retrofit Program Report.

Figure 6: Comparison of East Span Cost Estimates

San Francisco-Oakland Bay Bridge East Span Estimate	1997 (Senate Bill 60)	2001 (Assembly Bill 1171)	2004 (Results Group Review)	2007 (Present Estimate)
Total Estimate Amount	\$1.3 billion	\$2.6 billion	\$5.1 billion	\$5.5 billion
Amount of Increase		\$1.3 billion	\$2.5 billion	\$0.4 billion
Percent Increase		102%	97%	7%

Sources: The Results Group (1997, 2001, 2004); Toll Bridge Program Oversight Committee (2007)

The Results Group concluded that there were three fundamental elements that contributed to the cost increases for the East Span of the Bay Bridge:

- **External market conditions.** Including increases in the cost of steel and limited number of potential bidders due to industry consolidation.
- **Design complexity.** Primarily due to the long asymmetrical SAS span, which has never been built before. Initial estimates that the bridge could be constructed for \$241 million were unrealistically optimistic.
- **Time.** As a result of the repeated delays in schedule, project cost estimates escalated due to inflation and increases in Caltrans and contractor overhead.

Figure 7 shows the total cost of the project as forecast as of the second quarter 2006 TPBOC report.

The total cost of the East Span replacement project for which funding was appropriated in Assembly Bill 144/Senate Bill 66 in 2005 has grown to \$5.5 billion. This is \$0.4 billion (0.7 percent) higher than the \$5.1 billion cost estimate studied by The Results Group and is the result of continued refinement of the final project cost estimate between the time of their study and the compromise agreement for increased local funding to afford the SAS span. The East Span project cost estimate has remained at \$5.5 billion since legislative passage of the compromise measure in 2005.

Figure 7: Current East Span Replacement Cost Summary

Contract	Forecast Cost
Capital Outlay Support	\$977 million
Capital Outlay	
• Skyway	\$1,293 million
• SAS Superstructure	\$1,767 million
• SAS E2/T1 Foundations	\$314 million
• Yerba Buena Island Foundations	\$319 million
• Oakland Touchdown	\$545 million
• Yerba Buena Island South Detour	\$134 million
• Existing Bridge Demolition	\$222 million
• Stormwater Treatment Measures	\$15 million
• East Span Completed Projects	\$90 million
• Right-of-Way and Environmental Mitigation	\$72 million
• Other Budget Capital	\$11 million
Total Forecast Cost	\$5,487 million

Source: Toll Bridge Program Oversight Committee

3.2. Funding and Financing

The East Span replacement project is funded by a combination of state taxes, bond revenue, and toll revenue. State fuel tax revenues earmarked for seismic upgrade projects will fund approximately 33 percent of the East Span replacement project costs. State Seismic Retrofit Revenue Bonds issued by the state after voter approval of Proposition 192 in March 1996 will fund an additional 30 percent. The surcharge on Bay Area toll bridges will fund the remaining 37 percent.

The project is being financed in part with a \$450 million Transportation Infrastructure Finance and Innovation Act of 1998 (TIFIA) loan from the U.S. Department of Transportation. The loan will be repaid by revenue generated from the \$1 Bay Area toll bridge surcharge. The TIFIA loans parallel the role that the Federal Government played in the original construction of the bridge, when the Reconstruction Finance Administration issued bonds on behalf of the project that were repaid with bridge toll revenue. Federal funds were specifically excluded from the East Span replacement project budget to avoid triggering Federal Buy America regulations, as noted elsewhere in this report.

4. PROGRAM ASSESSMENT

4.1. Institutional Context

The institutional framework that governed the East Span replacement project was a significant factor in the project's struggles to advance. However, there were several institutional factors that kept the project moving despite its many hurdles. These are discussed below:

- **Upgrading the bridge was a requirement.** The East Span replacement project, along with the seismic retrofit of the remainder of the Bay Bridge, was a required transportation improvement. This, above all else, is what sustained a project that might otherwise have long ago been tabled. The bridge serves an average of 280,000 motorists daily and seismic retrofit was required to

bring the crossing to modern safety standards and mitigate the possibility of future bridge user death and injury from tremors.

- **Complex ownership and operational structure.** Funding and operational responsibility for the Bay Bridge, along with other state-owned toll bridges in the region, is shared between Caltrans and BATA. This is an unusual institutional structure born of the technical complexity and expense of the state's toll bridge seismic retrofit program. While Caltrans owns and operates the bridges, BATA administers programs and allocates revenues from tolls on Bay Area bridges and funds the day-to-day operations, facilities maintenance, and administration of the bridges. BATA also funds the long-term capital improvement and rehabilitation of the bridges, including seismic retrofit projects.
- **Strong regional interest in the project.** There was significant debate in the region surrounding the bridge's design, driven by an intense interest in the project by regional and local officials and the public. It was demands from regional leaders that ultimately led to the inclusion of a bicycle/pedestrian way on the bridge, the ability to support rail, and the signature SAS span. Ultimately, the region rescued the project by committing to fund the added cost of its preferred design through higher bridge tolls region-wide.
- **Expert involvement throughout the process.** One of the reasons the project has proceeded so slowly is that Caltrans and other agencies have stepped back, when warranted, to re-study and reevaluate the project whenever serious objections were raised by key stakeholders. Throughout the significant debate over whether to construct an SAS span or skyway across the Yerba Buena Island channel, the sponsor agencies engaged qualified experts to advise the project. According to The Results Group historical review of the project, "Caltrans proactively sought guidance and scrutiny from industry experts and review panels regarding virtually all major project decisions."
- **Breaking the project into manageable contracts.** It was clear early on that the size and complexity of this project would not permit Caltrans to deliver major elements of the project without breaking it into smaller contracts. This was a factor in driving down the cost of several elements of the project when initial bids were higher than Caltrans engineers had estimated.
- **Existing framework for funding improvements.** The existing Bay Bridge is a toll bridge, and the delivery of this project as part of an overall seismic retrofit program for state-owned toll bridges across the region provided a built-in collection method for additional revenue to fund improvements. From the standpoint of public acceptance, raising tolls on facilities on which a toll is already collected is generally more acceptable than implementing tolls on a previously untolled crossing, and this benefited the project's financial plan.

4.2. Major Issues and Strategies

There were many issues that affected the timely and cost-effective completion of the East Span replacement project. These range from regulatory and economic factors to political and project management impacts, as outlined below:

- **The East Span was a technically challenging project.** The project involves spanning the shallow, sandy-bottomed 2.2-mile distance of San Francisco Bay between Yerba Buena Island and Oakland. The bridge must be able to withstand the force of an earthquake of significant force. Beyond the challenges posed by the project site, the proposed SAS span is quite complex and unique. The bridge will be the largest single-tower, asymmetrical SAS bridge in the world. As stated in a review of the bridge project by The Results Group, "The asymmetrical Self-Anchored Suspension feature, with its short tower height and other restrictions, has never been attempted before.... No bridge has ever been required to meet such a demanding combination of environmental, seismic, and aesthetic requirements." These factors alone required a unique construction approach, which drove up the cost of the bridge. As project sponsors have learned, a unique design can incur significant risk and uncertainty.

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- **Political in-fighting challenged the project.** There were many demands placed on this bridge by a variety of bodies politic, including the California State Legislature; the Governor; the California Business, Transportation, and Housing Agency; Caltrans; the California Transportation Commission; BATA and MTC; the U.S. Navy; the City and County of San Francisco; and the City of Oakland. There was no singular agency or public official solely responsible for the bridge's completion, which created a void filled by a variety of political figures who offered differing perspectives on the project as the project evolved. A demonstrated success factor for several large projects profiled in this series of case studies of other mega-projects is the presence of a political champion to buoy the project. The East Span replacement project suffered from the lack of a political champion and a singular high-level point of authority to manage the project as it advanced to construction.
 - **The project suffered from economic impacts that raised its cost.** An external factor beyond the control of project sponsors was the rising cost of construction materials, especially the cost of fabricated steel. A steel price index published by the Ohio Department of Transportation shows the price of steel growing from \$83.75 per gross ton in April 2001 to \$275 per gross ton in March 2007, an increase of 328 percent. Construction commodities costs were primarily influenced by increasing overseas demand, especially from India and China.

Notably, the SAS span requires large-scale steel components, with highly sophisticated fabrication requirements. A 2002 AECOM Consult report for Caltrans found that the delivered price for fabricated steel is determined less by the per-unit purchase price of the steel and more by the fabrication required, which can represent up to 75 percent to 80 percent of the cost of steel components. According to the report, "Bridge plate fabrication is the most costly component of structural steel used in large bridges, due to its high labor-intensity."

Other factors driving the cost of steel included domestic steel industry consolidation, which limited the capacity of the domestic market to provide the size and quantity of fabricated steel required for the project. According to a Caltrans letter to the Federal Government, the SAS span would require the formation of a consortium to construct new fabrication facilities for the express purpose of this one project, with development costs having to be fully incurred by the sponsors of the bridge project.

- **Regulatory requirements, especially the application of Federal Buy America rules, cost the project time and money.** The Davis administration sought to make the project eligible for Federal funding should the need arise by complying with Federal Acquisition Regulations including, notably, Buy America. But the SAS span's complex design would strain the capacity of West Coast steel fabricators—the only firms geographically capable of delivering the large steel components to the construction site—thereby driving up the cost of domestically sourced steel. This became evident in 2004 when the lone bid to construct the SAS quoted \$1.8 billion using domestically fabricated steel versus \$1.4 billion for foreign-supplied steel, a difference of 29 percent and greater than the 25 percent difference required under Federal regulations to be granted an exemption from Buy America.

Because only one bid was initially received and project sponsors sought to maintain the project's eligibility for Federal funds, considerable time elapsed between the receipt of initial bids for the SAS in 2004 and the second round of bids in 2006. In the meantime, Federal, state, and regional officials extensively reevaluated the design of the signature span before ultimately reaching a compromise in which the SAS would be constructed if the region covered the difference in cost between the SAS and a concrete skyway through an additional \$1 toll surcharge on the region's toll bridges to cover the cost of the project. In addition, Federal funding eligibility requirements were removed by the Schwarzenegger administration, enabling the project to procure foreign fabricated steel. During this period, however, the price of fabricated steel and other construction commodities rose dramatically. In the end, Caltrans accepted a bid of \$1.43 billion to construct the SAS span, which was less than the agency's 2006 cost estimate of \$1.45 billion, but still greater than the 2004 foreign-sourced fabricated steel bid of \$1.40 billion.

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- **Aesthetic priorities trumped a functional, cost-effective design.** In December 2004 Caltrans endorsed the construction of a concrete skyway in lieu of the SAS span across the Yerba Buena Island navigational channel. The estimated savings from the skyway were \$300 million to \$400 million, a considerable figure. The skyway would have provided the same vehicular capacity as the SAS, as well as met all other functional criteria for the crossing, including seismic design criteria, the inclusion of a 15-foot-wide bike/pedestrian path, and the capability of accommodating rail. But it did not meet the aesthetic criteria established for the project to be a “world-class design” capable of “creating an inspirational identity for Oakland and the East Bay,” as suggested by the City of Oakland in 1997. Were considerations of the bridge’s form subordinate to functional criteria, a replacement bridge might have been constructed much earlier, and at lower cost, than the signature span currently under construction.
 - **The project’s rising cost required additional funding to support construction.** As project costs rose, state and regional officials sought new and additional ways to fund the project. Initially this was accomplished through dedicated fuel tax revenues, followed by the issuance of state-backed general obligation debt—repaid with state sales and income tax revenue—to cover the capital costs of this project and other seismic retrofit projects statewide. Ultimately, however, the region—and more specifically, the bridge users—were required to pay the increasing cost of the retrofit program and the East Span replacement project in particular through higher tolls. The State Legislature approved a \$1 surcharge on bridge tolls in 1997 for a period of 8 years, which was extended by legislative action in 2001 through 2038. This was followed by another \$1 surcharge approved in 2005, which took effect January 1, 2007. This second dollar, which applies to all seven Bay Area bridge crossings under BATA authority, was effectively enacted to cover the construction cost for the self-anchoring suspension portion of the Bay Bridge East Span.
 - **Caltrans project management practices may have negatively impacted the project.** The 2005 review of the project by The Results Group found several problems in the project management arena, including frequent district management and project-level staff changes, transfers of project responsibility between Caltrans district and headquarters staff, lack of a single point of authority, and poor coordination of communications within the agency. Part of the reason for these problems was the long timeframe taken to move the project from concept approval to construction. While the same report credits Caltrans for seeking expert input on major project decisions and breaking the project into smaller contracts, inconsistent project management during the project development phases was a contributing factor to the struggles of a project that faced myriad external challenges.

5. CONCLUSIONS

5.1. Results of the East Span Replacement Project

Currently, a major portion of the East Span replacement project, construction of the skyway, is nearing completion, while construction of the SAS span is just underway. Since the passage of Assembly Bill 144 in 2005, construction costs have not exceeded the budgeted cost of \$5.5 billion. The project timeframe has grown, however, with the bridge scheduled to open to traffic in September 2013 instead of September 2012. The overall completion date of the project—when demolition of the existing bridge is expected to be complete—is now scheduled for September 2015. However, an early completion incentive in the SAS contract has the potential to reduce the construction schedule by 6 months.

According to the most recent report of the TBPOC dated June 30, 2006, eight of 19 contracts to complete the East Span replacement project are complete, including an interim retrofit of the existing bridge and significant groundwork for the replacement span. Five contracts are under construction, including the skyway contract, which was 91 percent complete; the SAS marine foundations contract, which was 42 percent complete; and the SAS contract, which was 5 percent complete by mid-2006. There are six additional contracts, including the construction of approach structures, electrical work on the bridge, and demolition of the existing bridge.

5.2. Lessons From the East Span Replacement Project

The East Span replacement project presents a number of critical lessons learned that should be considered by sponsors of projects that have similar institutional arrangements, financial challenges, and technical complexities. These are discussed below:

- **Consider transfer of project design and construction risks to the private sector through the application of a project delivery mechanism such as design-build.** In the case of the Bay Bridge East Span replacement project, a significant portion of project risk was assumed by Caltrans and BATA, sponsors of the retrofit project. The project applied a traditional design-bid-build delivery approach, in which the public sector agency or its consultants fully design the structure before competitively bidding construction as one or more separate contracts. While the contractors selected to build the SAS span are contractually obligated to deliver their portion of the project for a fixed price by a fixed date, they had no direct input into the design of the bridge. In this case, there was only one bidder on the initial letting to construct the bridge. This was due in part to the bridge's complex design, which did not take into account the bridge construction industry's limited capacity to build such a bridge.

In contrast, the application of a design-build delivery approach would have combined the design and construction phases of the project into one contract. Public sector sponsors would have specified an array of performance-based criteria for the bridge, including seismic standards, bicycle and pedestrian facilities, the ability to support future rail service, and a signature bridge design. A design-build consortium would have had strong incentive to design a cost-effective bridge that facilitated construction, with the consortium's construction contractors providing valuable feedback to its design team. It is possible that a significant portion of the increase in cost associated with the complex design for the East Span could have been mitigated by applying a different project delivery approach.

- **Sequence project delivery phases to avoid reconsideration of fundamental project design questions beyond the “point of no return.”** When SAS span bids in 2004 came in higher than Caltrans' estimates, project sponsors revisited the bridge design. For 2 years state and regional officials grappled with whether to construct the SAS span or an alternate, less costly and complex design. Caltrans was close to building a skyway instead of the SAS span, but ultimately reached a compromise with the region in which tolls would be raised on the Bay Area's state-owned toll bridges to support the cost of a signature bridge for the East Span. Ideally, fundamental questions of bridge design should be avoided after bid letting has occurred. In this case, heeding the warnings of potential contractors and other analysts regarding the bridge's complexity and the cost-effectiveness of its construction earlier in the process could have yielded substantial savings and prevented years of delay.
- **Communicate with stakeholders early in the process and line up support well in advance of project design and development.** Early in the project, decisions to incorporate enhancements, such as the pedestrian/bicycle way, were reached after preliminary design concepts had been developed. This led to subsequent redesigns to incorporate these elements. By meeting with community groups and other stakeholders prior to development of preliminary designs, these issues could have surfaced and been incorporated into the project design from the start. Early stakeholder involvement can identify potentially “fatal flaws” in the project concept or location, mitigate opposition to the project, and achieve buy-in from stakeholder groups critical to the project's success. Furthermore, this can minimize the cost and delay associated with mid-course project redesign.
- **Ensure that the project has a robust financial plan that incorporates risk analysis to identify and develop strategies to mitigate significant swings in project cost, timeframe, or other variables.** Since the initial development of the Bay Bridge project, Federal guidelines have been changed to require development of a project-specific financial plan for Federally funded mega-projects, currently defined as projects of greater than \$500 million in cost. While the SAS span ultimately was not completed as a Federally funded project, the creation of a

comprehensive financial plan early in the process would have enabled project sponsors to map sources and uses of funds and plan for contingencies such as increases in project cost due to changes in project scope, timing, inflation, project financing, or other variables, as well as changes in project funding. A multivariate risk analysis should be employed by project planners to ensure that contingency funds will cover changes in costs or revenues within the project's range of uncertainty.

- **Employ managers, support staff, and outside specialists (as necessary) with significant mega-project experience.** Caltrans was criticized for its management of the Bay Bridge project, in part because of frequent turnover of project staff and the lack of a dedicated project manager. A project with the complexity of the Bay Bridge Seismic Safety Retrofit Program (or similar mega-projects) requires careful attention to project staffing, especially at the highest levels of project management. The employment of experienced project managers with previous experience with mega-projects will facilitate the sponsor's ability to manage the delivery of the project, especially given the high stakes at risk in high-dollar-value projects.
- **Consider regulatory requirements within the context of design and construction.** It is not clear whether applicable regulatory requirements—notably, Federal Buy America guidelines—were considered in the course of designing of the SAS span. Had designers considered the impact that Buy America would have on the availability of materials for the project, project sponsors may have opted for a less complex design. It is important to consider a project's regulatory environment up-front and apply project design, delivery, procurement, and contracting approaches that avoid or mitigate regulatory conflicts. The regulatory environment for this project changed midstream as a new governor sought to Federalize the project, thereby subjecting the project to the various stipulations attached to Federal dollars—including Federal Buy America regulations. This changed a fundamental assumption underlying the initial design of the project, that Buy America would not apply, and opened the project up for increased cost and project delivery uncertainty.
- **Approach novel designs with caution.** More than any other factor, the uniqueness of the SAS span presented a host of challenges for project sponsors. As the largest span of its kind ever proposed, the project had a variety of features that imperiled its cost-effectiveness from the start. Furthermore, the novelty of the East Span's design was driven less by technical requirements than by a desire to create a signature span for the gateway to the San Francisco-Oakland Bay, much like the Golden Gate Bridge has done for the entrance to San Francisco Bay. An equally stunning design might have been developed that fulfilled stakeholders' criteria for a signature span while using existing technology that is well understood from the standpoint of engineering, cost, and constructability. Sponsors of similarly complex bridges should cautiously approach unusual designs given the experience of the East Span, especially when a simpler, cost-effective, or more proven approach will fulfill the project's goals and objectives.

5.3. Implications for the Tappan Zee Bridge Project

The experience of the development of the Bay Bridge East Span is relevant to the TZB for a variety of reasons. The issues confronting both spans—as toll bridges that serve major metropolitan areas across a technically complex water body—are very similar. Furthermore, the institutional arrangements in the region are also similar in some ways:

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- **The TZB and the Bay Bridge are both heavily traveled bridges that connect sub-regions of a major metropolitan area.** The Bay Bridge provides a direct link between two of the largest cities in northern California and is a key access route to the region's main central business district, downtown San Francisco. Similarly, the TZB serves commuters heading to and from New York City and the metropolitan area north of the city while providing a key route for interregional and interstate travelers. Both bridges are significantly congested during peak periods. Furthermore, construction of replacements must occur in close proximity to existing facilities that remain open to traffic, using traffic maintenance techniques to minimize motorist inconvenience. The TZB has three lanes in each direction and a reversible lane, while the Bay Bridge has five lanes in each direction. Passenger car tolls on both bridges are \$4, charged in one direction.
 - **Both bridges are in seismic zones across wide, shallow water bodies and require technically complex bridges.** The East Span bridges the 1.9-mile distance between Yerba Buena Island and Oakland, which is a little more than a mile shorter than the 3.0-mile TZB. Both bridges cross shallow, muddy water bodies in seismic zones. The site characteristics of each bridge require a uniquely engineered crossing.
 - **The institutional environment in the Bay Area is similar to the complex interrelations between agencies in greater New York.** In both cases, the bridges are entirely within one state. This is significant, because the ability to reach agreement with another state government can be a significant factor in successfully (or unsuccessfully) completing a project. Yet both projects exist in complex institutional environments. In the case of the Bay Bridge, sponsorship responsibility is shared by BATA and Caltrans, both of which are governed by supervisory agencies. The TZB, meanwhile, is currently owned and operated by the New York State Thruway Authority. However transportation improvements related to the bridge upgrade project may involve partnerships with other agencies, including the Metropolitan Transportation Authority and the New York State Department of Transportation. The TZB project's eventual project sponsors should carefully evaluate potential project management arrangements to avoid the institutional struggles that impeded the Bay Bridge project.

There is a significant difference between the Bay Bridge project and the TZB project that will impact the development and implementation of alternative approaches and designs selected for the New York State crossing:

- **The Bay Bridge retrofit program sought only to address the seismic deficiencies of the span without increasing the capacity of the crossing.** The Bay Bridge project scope was limited to bringing the full length of the bridge up to seismic standards without adding additional capacity. The new East Span will carry five lanes in each direction, the same as the existing structure. This is due in part to the capacity constraints of the Yerba Buena Tunnel and the West Span portions of the bridge, neither of which were replaced or enlarged as part of the seismic retrofit campaign. In contrast, the TZB/I-287 Environmental Review is considering a number of approaches to increase the capacity of the bridge, including enhanced transit or the application of congestion pricing to facilitate greater throughput. These additional features, if implemented, will change the context of bridge operations and will add complexity to the development and delivery of TZB improvements that was not a factor in the case of the Bay Bridge East Span project.

The lessons learned by Caltrans and its partner project sponsor, BATA, highlight a number of risks and challenges in advancing a mega project such as the Bay Bridge or TZB. Of particular note, however, is that despite numerous challenges sponsors of the Bay Bridge East Span project were ultimately successful in solving the problems and advancing the project.

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Southeast Transportation Expansion Project (T-REX) Case Study

Prepared for the:

**New York State Department of
Transportation**

Metro-North Railroad

New York State Thruway Authority



New York State
Department of Transportation



Metro-North
Railroad



Thruway
Authority

Southeast Transportation Expansion Project (T-REX)—Denver, Colorado

Public Private Project Delivery	Construction/ Development Period	Concession Period	Contract Value	Status
Design-Build	7 years	Contract: 7 years	\$1.67 billion	Opened in 2006

SUMMARY

The Transportation Expansion (T-REX) project is part of a multibillion-dollar, multimodal transportation improvement program that is aimed at addressing 28 priority projects across the State of Colorado. The T-REX project is the largest of these initiatives and is addressing mobility, congestion, and safety problems along the most densely populated corridor in metropolitan Denver, Colorado. This is the corridor along Interstate 25 (I-25) between downtown Denver and the fast-growing Southeast Business District, including the linkage between I-25 and I-225 with connects to the main bypass around the eastern side of the Denver metropolitan area. To achieve this marvel of interagency cooperation, public support, public-private partnership (PPP), and engineering excellence, all of the major stakeholders for the project found common ground regarding the goals and the means to achieve these goals in a cost-effective manner.

The project, completed in 2006, has two interrelated components; the alignment is shown in Figure 1:

- Extending the region's light rail system 19 miles to the southeast along the I-25 corridor and down the middle of the I-225 spur
- Improving 17 miles of highway through southeast Denver, Aurora, Greenwood Village, Centennial, and Lone Tree

This \$1.67 billion project is the result of a unique collaboration between the Colorado Department of Transportation (CDOT) and the Regional Transportation District (RTD). The project had strong support from the Federal Highway Administration (FHWA) and Federal Transit Administration (FTA) to adopt innovative approaches to expedite the financing and delivery of this multimodal project, strong support from project champions in the legislature and the governor's office, and widespread public support.

T-REX construction began in fall 2001 and was completed in November 2006 with the opening of the light rail extension facilities. The highway portion of the project was completed in August 2006. This completion schedule is 11 years ahead of what had been projected using traditional methods of project financing and delivery. The project is within budget and scope.

In comparing this project to the Tappan Zee Bridge (TZB)/I-287 Corridor project, there are several aspects of this project, key lessons learned, and strategies used that are worthy of note:

- Like the public sponsors of the T-REX project, the sponsoring agencies for the TZB project may choose to look beyond traditional project financing. Innovative non-traditional delivery approaches also will be needed to find an acceptable way to expedite the completion of the desired project scope without consuming the surface transportation budget of the state for many years to come.
- The highway and transit features on the TZB project might be addressed at different timeframes, depending on the cost of the features and the level of highway congestion on the bridge after reconstruction or replacement.
- Mega-projects do not need to “break the bank” of surface transportation agencies. Multiple funding sources can be tapped and leveraged through phased delivery of project components and creative financing approaches involving all levels of government and those private entities with a vested interest in the improved accessibility to be provided by the project. The fact that tolling already exists on the TZB is a major step to developing a financially viable project.

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- Traditional approaches to financing (pay-as-you-go) and delivery (design-bid-build) may struggle to accommodate the complex requirements of mega-projects, particularly in arranging financing and expediting project delivery. Sponsoring agencies need to consider alternative and innovative approaches to better leverage their scarce public resources for critical projects that could require years to assemble full funding to advance the project.
 - The TZB project differs from the T-REX project in that it requires the coordination and collaboration of a broader array of public agencies. The unique agency partnering approach developed for the T-REX project was an important part of that project's successful implementation.
 - A number of project features will have to be developed for the TZB project to enable it to move forward in a timely manner. These include developing a favorable statutory framework to allow for the possibility of PPP project delivery approaches (design-build); a broad base of political, public, and user support for the project given its multimodal scope; and significant financial resources to draw upon and leverage with Federal, state, and local initiatives.

Figure 1: Alignment for Southeast Transportation Expansion Project (T-REX)



Source: RTD T-REX Fact Sheet, December 2005 and FHWA

1. PROJECT OVERVIEW

1.1. Project Description

T-REX is a \$1.67 billion highway expansion and light rail project in the I-25 corridor southeast of the Denver central business district, including a spur along I-225 to provide connectivity to Denver's major eastern bypass highway, I-70. The project adds highway and transit capacity to the highly congested

corridor linking downtown Denver to the burgeoning Southeast Business Center. The T-REX project is being jointly directed by the CDOT and the Denver RTD, and it is the largest surface transportation project ever undertaken in the State of Colorado. Upon its scheduled completion, the T-REX project will have:

- Widened 16.6 miles of Interstate highway in the region's most congested corridor, reconstructed eight highway interchanges, and replaced 13 bridges.
- Constructed a new 19.7-mile light rail transit (LRT) extension in the same right-of-way, including 13 new stations, a light rail vehicle maintenance facility, and connections and improvements to the existing light rail line in downtown Denver.

1.2. Project History and Development Process

The Southeast Corridor in Denver had been identified in many studies going back to the 1970s as a corridor in need of major highway expansion, but no action had ever been taken by the state or the city. Finally, a congestion study by the Denver Regional Council of Governments (DRCOG) in 1992 served as a “wake-up call” for the region by showing that I-25 was already exceeding its original design capacity and that traffic volumes in the corridor were rising even more quickly than population and employment. The DRCOG study was also the first to suggest the incorporation of a mass transit element into the highway expansion.

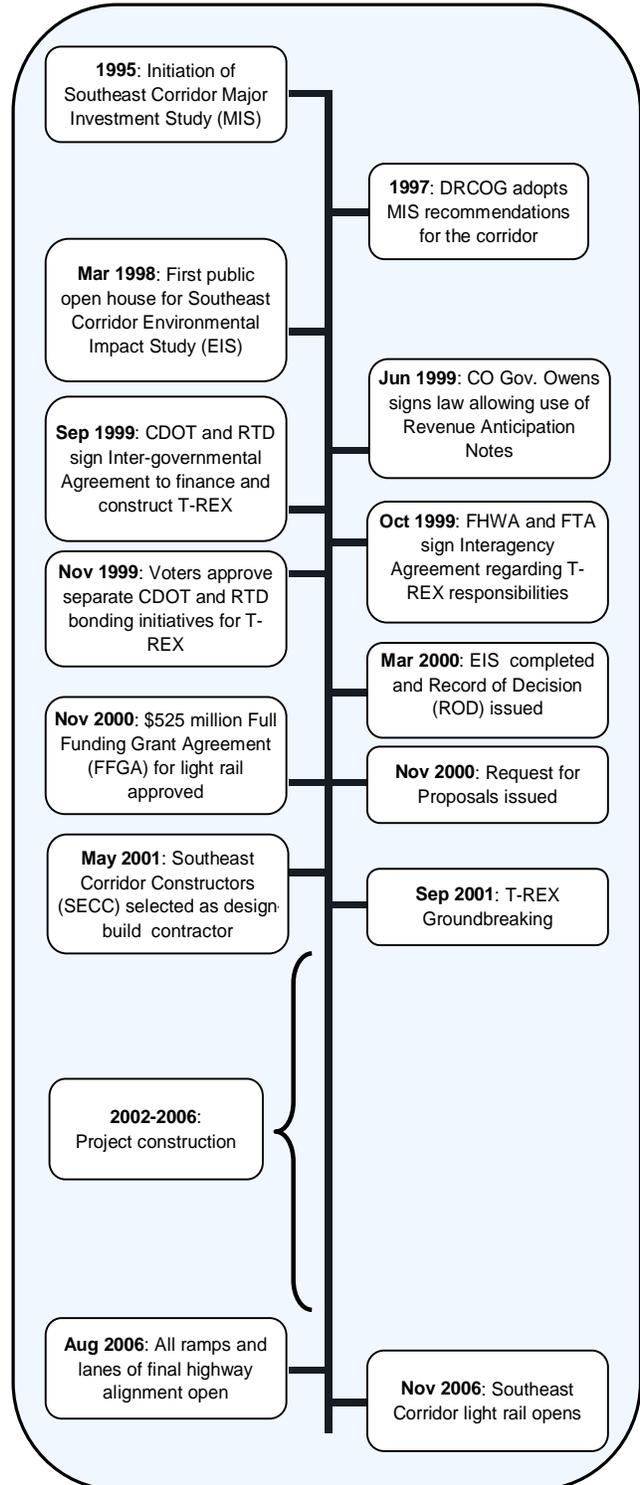
The DRCOG study essentially began the formal project development process for the T-REX project as it is recognized today. The key milestones of this process are shown in Figure 2 and described in the paragraphs that follow.

Following the DRCOG report, CDOT and RTD began cooperatively studying the corridor and made short-term improvements to the concept plan by adding ramp metering and increasing bus service and park-and-ride capacity. Then, in 1995, CDOT and RTD jointly commissioned a Major Investment Study (MIS) for the entire length of the I-25 Southeast Corridor as well as the I-225 spur.

A range of modes and alignments were considered, but the final MIS recommendations for the corridor included the following essential elements:

- 19.7 miles of new double-track light rail (connecting to the existing Broadway station)
- 13 new light rail stations along the extended length of the light rail line to serve local community residents and park-and-ride commuters going to either downtown Denver or the Southeast Tech Center
- Major highway features to improve safety and operational efficiency: lane

Figure 2: Project Timeline



Source: Adapted from T-REX Project Factbook

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- additions, shoulder widenings, bridge replacements, interchange reconstruction, and drainage replacements along the 16.6-mile corridor and spur
 - Improved bicycle and pedestrian facilities along the Southeast Corridor and the new light rail facilities
 - Transportation Management efforts, such as high-occupancy vehicle (HOV) lanes, to improve the operational efficiency of the highway corridor by encouraging increased use of car-pooling and other high-occupancy vehicles (such as buses, including the potential for bus rapid transit)

In 1997, DRCOG adopted the MIS recommendations for the Southeast Corridor, and in March 1998 the Environmental Impact Statement (EIS) process was started. The initiation of the EIS brought the project directly to the public's attention and brought the question of project funding and financing to the forefront. In 1999, a package of legislation passed the Colorado General Assembly and was signed into law that facilitated the T-REX project and allowed innovative financing and project delivery for transportation projects across Colorado. The two most critical bills in that package allowed CDOT to institute two innovations critical to the success of the project:

- Issue transportation revenue anticipation notes to fund transportation projects (commonly referred to as GARVEE bonds or grant anticipation revenue vehicles)
- Use design-build contracts that could be awarded on a "best value" basis, rather than the more traditional design-bid-build approach that chose contractors solely on a low-bid basis

In November 1999, two separate public bond initiatives were approved for the T-REX project in the general election. By a 62 percent affirmative vote, Colorado voters confirmed CDOT's authority to issue transportation revenue anticipation notes for T-REX and 24 other highway projects throughout the state. At the same time, voters in the Denver region approved RTD's light rail initiative in the Southeast Corridor by a 66 percent affirmative vote, which gave RTD the authority to issue bonds backed by future sales tax revenues to help finance the rail portion of the project. These simultaneous demonstrations of public approval gave CDOT and RTD the opportunity to join together in seeking further project funding. This was in sharp contrast to the traditional competition between these two modal agencies, resulting in a more synergistic approach to the congestion problems along this critical commuter and interstate corridor.

The EIS process was completed and a Record of Decision (ROD) was issued in March 2000. At this time, additional highway expansion elements were added to the plan, beyond the original MIS recommendations. A \$525 million Full Funding Grant Agreement (FFGA) to support the light rail transit portion of the project was reached with the FTA in November 2000. With funding in place, a Request for Proposals (RFP) was issued, and in May 2001 the Southeast Corridor Constructors (SECC), a joint venture of Kiewit Construction and Parsons Transportation Group, was selected as the design-build contractor. Groundbreaking was held in September 2001, and construction progressed during the subsequent 5 years.

All the ramps and lanes of the final highway alignment opened in August 2006, and the light rail system was completed in September 2006. Following 2 months of operational testing, the new light rail corridor opened in mid-November 2006.

2. PROJECT PROCUREMENT

2.1. Authorizing Legislation

Many major transportation projects in Colorado had been pending for several years in the late 1990s, and forecasts were anticipating continued transportation revenue shortfalls resulting in significant delays in project delivery. To remedy this situation, a transportation legislation package consisting of House Bills 99-1324 and 99-1325 was considered during the 1999 Legislative Session. Colorado had historically

been a "pay as you go" highway state, but House Bill 99-1325 authorized CDOT to issue revenue anticipation notes (secured by future Federal grants) in order to finance transportation projects. The Colorado Supreme Court ruled that issuing revenue anticipation notes would require voter approval because these notes would constitute a multiple fiscal year debt under Colorado's TABOR Amendment (the "Taxpayer Bill of Rights"). TABOR is a set of constitutional provisions Colorado voters adopted in 1992 to limit revenue growth for state and local governments

The issue was brought before the voters as a referendum on the November 1999 ballot and was approved by a significant margin. Also approved by the General Assembly in that same year was House Bill 99-1324, which allowed CDOT, with the Transportation Commission's approval, to use design-build contracts for transportation construction projects. Moreover, 99-1324 allowed these contracts to be awarded on a best-value basis, meaning that CDOT could select the contracting team that offered the most effective solution for the Southeast Corridor rather than being forced to simply choose the lowest bidder.

Other legislative efforts undertaken in the 1999 session to keep the T-REX project on track included the following:

- **House Bill 1206.** Provided funding to complete 28 Strategic Transportation Projects, including the Southeast Corridor Project (T-REX). This broadened the appeal to the voters in Colorado for funding initiatives requiring their approval by including other priority projects from across the state.
- **House Bill 1327.** Allowed for increased private participation in public transportation transfer facilities (co-development PPPs).
- **House Bill 1294.** Authorized landowners adjacent to existing RTD boundaries to petition for inclusion into the RTD tax district (special district areas).

The strong support of the governor and legislature for advancing priority transportation infrastructure projects was critical to the ability of the T-REX and other projects to overcome traditional statutory impediments, receive convincing voter approval for innovative financing arrangements, and move forward.

2.2. Key Elements of Procurement Approach

Following the passage of Bill 99-1324, CDOT and RTD chose the design-build method of contracting to deliver the T-REX project. The most common reasons for using design-build include accelerated project delivery, reduced project cost, more effective risk management, minimization of owner resources, and increased innovation. Based on two independent estimates, CDOT and RTD were unwilling to pay a single contractor more than \$1.225 billion for the T-REX design-build contract. (This contract did not include all elements of the project.) This amount was incorporated into the procurement process, and referred to as the "upset amount." The RFP used the best-value process to select a contractor, with price and technical factors weighted approximately equally. Thus, the RFP allowed award of the contract to the proposer with the best value proposal and a price not greater than the upset amount. If no proposal was within the upset amount, CDOT and RTD could enter into a best and final offer (BAFO) process in lieu of proceeding with the best-value determination. In addition to being limited by the upset amount, CDOT and RTD's funding was limited on an annual basis.

In accordance with CDOT and RTD's goal of encouraging contractors to innovate, the proposers were allowed to suggest alternatives to certain requirements that were equal or better in quality or effect prior to the proposal due date. Proposers were allowed to incorporate any of these pre-approved changes in their proposals. Under this process, 58 changes were submitted, and 41 were approved or approved with conditions, resulting in cost savings ranging in value from \$500,000 to \$5 million. The RFP also required

the proposers to submit separate option prices for 15 project enhancements that were desired by CDOT and the local jurisdictions but for which funding had not yet been identified.

Another critical decision facing CDOT and RTD prior to issuing the RFP was the definition of project design levels for different project elements. In general, a higher level of design can reduce risk and give greater control to the project sponsor, but at the same time it detracts from the primary goal of a design-build approach, which is to take advantage of the contractor's expertise and potential for innovation. CDOT and RTD determined that the overall level of design in the RFP would be 30 percent. They felt this would give sufficient direction to the proposers and would allow for realistic cost estimates. However, some elements in the RFP were developed to a 70 percent design level. Because Denver already had an existing light rail network, design specifications already existed for many major components of the light rail system (such as signals, communication, and electrification), and the need for seamless interoperability was very high. At the same time, CDOT and RTD received strong feedback in public meetings regarding the appearance of light rail stations and surrounding urban areas. It was determined that these elements would also be developed to a 70 percent level for the RFP.

A final critical area for the procurement was risk allocation. Design-build contracts allow more of the project risk to be taken by the contractor, but the allocation and management of this risk must be handled carefully. A risk matrix was developed to apportion the risks between CDOT/RTD and the contractor, and in particular CDOT and RTD identified three areas that potentially posed high risks to contractors and developed a significant amount of information in those areas prior to awarding the contract:

- **Utilities.** An extensive utility database was created and a number of early utility relocations were carried out.
- **Contaminated materials.** A large number of samples were taken and the results were provided to the proposers as part of the RFP
- **Participation of local jurisdictions.** CDOT and RTD worked extensively with local public officials to raise awareness, assist in the permitting process, and support overall coordination.

2.3. Selection of Winning Bid

CDOT and RTD received proposals from two competing design-build teams on March 23, 2000. The bid from SECC was ultimately selected as the winning bid. The final contract amount for SECC was \$1.18 billion. SECC also committed to finishing the project by the fall of 2006, or almost 2 years ahead of the scheduled completion date.

The losing bid came from Valley Corridor Constructors, a joint venture of Flatiron Structures and Granite Construction. According to the Rocky Mountain News, the Valley Corridor Constructors bid would have completed T-REX a year earlier than SECC, but their bid amount was approximately \$146 million over the bid ceiling set by CDOT and RTD.

In the end, by using bond financing and the design-build project delivery process instead of pay-as-you-go financing and design-bid-build project delivery, the winning team was able to reduce the projected project delivery time by 11 years, with the completion timeframe moved up from 2017 to 2006.

3. PROJECT FUNDING AND FINANCING

The total project cost for T-REX was \$1.67 billion, with the highway portion accounting for \$795 million and the transit portion \$879 million. The challenge facing the project sponsors was twofold. First, due to a large number of competing infrastructure projects and the political unpopularity of tax increases, it was determined that T-REX would have to be supported by a combination of bond proceeds, Federal discretionary grants, existing sales taxes, and local funding. Second, the joint highway-transit nature of

the project, as well as the presence of two distinct agencies, demanded a sophisticated and coordinated funding effort.

As described above, the two bonding initiatives to support T-REX were successfully passed in November 1999, and the FFGA was reached with the FTA in November 2000. The revenue sources are summarized in Figure 3. The CDOT bonds are 15-year GARVEES that will be repaid with future Federal and state program funds, while the RTD will use future sales and use-tax revenues to repay its bonds. Conversely, the sales and use-tax revenues, as well as the local funding, represent pay-as-you-go refunding of the project-enabling bonds.

Figure 3: T-REX Revenue Sources

Revenue Source	CDOT (Highway) (millions)	RTD (Transit) (millions)
FTA (FFGA)		\$525
Bond Proceeds	\$600	\$324
Sales and Use Tax Revenues	\$195	
Local Funds		\$30
Total	\$795	\$879

The SECC design-build contract does not consume the entire \$1.67 billion project cost. Project elements not included in the SECC contract include the purchase of 34 new light rail vehicles (\$92 million), design and construction of the new light rail maintenance facility (\$40 million), and purchase of new light rail ticket vending machines (\$3 million to 4 million).

4. PROGRAM ASSESSMENT

4.1. Experience in Colorado

As noted above, Colorado had previously taken a strict pay-as-you-go approach to transportation financing and a traditional design-bid-build approach to project delivery. In 1996, the Colorado Transportation Commission identified, for the first time, the state's 28 highest priority transportation projects to be placed on an accelerated schedule. This program has been commonly referred to as the "7th Pot," and T-REX was included in this program. At the time, the Commission dedicated \$100 million a year to these high-priority projects. At that funding level, it was estimated that it would take more than 50 years to complete all 28 projects. In 1997, the legislature passed Senate Bill 97-01, which transfers 10 percent of the sales tax revenue (considered to be motor vehicle related) to CDOT annually. This transfer is earmarked specifically for the 28 strategic projects. With that continued transfer, it is estimated that construction of the priority projects would take 25 years to complete. Thus despite these actions, high-priority projects continued to be delayed for lack of funding.

Therefore, the state pursued additional legislative initiatives to increase the involvement of the private sector and to encourage innovative financing and procurement techniques to leverage scarce public funds. In addition to allowing design-build contracts and allowing the issuance of revenue anticipation notes, the state is now one of the nation's leaders in encouraging PPPs in transportation. Colorado law allows solicited and unsolicited proposals for PPPs, and a statewide Colorado Tolling Enterprise was subsequently created within CDOT to finance, build, operate, and maintain toll highways across the state that could add direct user charges to increase transportation funding and better manage the operations of congested corridors through the pricing mechanism. The Colorado Tolling Enterprise operates as a "government-owned business" within CDOT, and therefore has PPP authority on specific projects

including tolled highways and tolled lanes that permit vehicles with multiple occupants to use the facility at no or discounted toll rates.

4.2. Agency Partnering

The T-REX project is the result of a unique public-public partnership between CDOT, essentially a highway agency, and RTD, essentially a transit agency. The partnership began informally, as the two agencies studied the needs of the Southeast Corridor and then initiated the MIS. As the project moved into the EIS and came closer to realization, it became clear that a more official arrangement would be needed to facilitate interagency coordination and cooperation. CDOT and RTD formally entered into a working relationship when Tom Norton, CDOT executive director, and Cal Marsella, RTD general manager, signed an Intergovernmental Agreement (IGA) on September 9, 1999.

The IGA describes the T-REX project, outlines the responsibilities of each agency, explains the design-build concept, and lays out the method of financing the project. By signing this agreement, the agencies agreed to work together to finance and construct T-REX and to enter into a single design-build contract for both the design and construction using a best-value rather than a low-bid approach for contracting. The agreement also assigned responsibility for the development of specifications for the major project components, the composition of the procurement team to select the design-build contractor, and how the project would comply with state and Federal laws regarding disadvantaged business enterprises.

At the same time, FHWA and FTA developed a unique agreement regarding their work on T-REX. FHWA and FTA officials signed their Interagency Agreement on October 7, 1999, which outlines guiding principles and designates responsibilities for each of the Federal modal transportation agencies. FHWA and FTA agreed to “cooperatively work together to seamlessly represent the interests of the U.S. Department of Transportation without creating institutional competition or disagreements that could jeopardize project progress.” As a result, the FHWA and FTA local representatives worked collaboratively to ensure that Federal requirements pertaining to the T-REX project were implemented in a manner that embodied the concept of “One DOT.”

On November 11, 1999, all four agencies (CDOT, RTD, FHWA, and FTA) mutually agreed to the following goals for the project:

- Minimize inconvenience to the public
- Meet or beat a total program budget of \$1.67 billion
- Provide for a quality project
- Meet or beat the schedule to be fully operational by June 30, 2008

This four-way public agency partnership arrangement complemented the PPP between the sponsors of the project and the SECC design-build team, based on the principles of collaboration, consistency, flexibility, and accountability. Together this PPP group developed and became signatories to the T-REX Partnering Charter, which focused on a mutual commitment to partnering values and objectives associated with each value against which the success of the project would be measured. The partnering values included:

- Community
- Safety
- Cost
- Quality
- Schedule
- Teamwork

The partnership process included bi-monthly meetings of the executive managers of each public agency and SECC partner firm, project-level meetings and reports involving more than 20 task force teams, and a Dispute Review Board to resolve impasses among the partners that arose during the development process.

4.3. Major Issues and Strategies

CDOT and RTD successfully designed the RFP and the subsequent contract in a manner that anticipated concerns and created well-defined strategies for addressing them. The following set of issues provides insight into the cost-effective approach crafted by CDOT and RTD to meet or exceed the goals of the project as contained in the interagency agreements:

- **Allocating project costs between the modal components of the project.** Being an unusual multimodal project with major highway and transit elements, the T-REX sponsors faced an institutional challenge in determining how to assign responsibility for project costs among the various funding pools that came from different modal or jurisdictional sources. The innovative solution, supported by the FHWA and FTA local representatives, was to assign direct costs to each modal funding pool when there was a clear and single modal requirement for the cost item. For example, the costs of the additional highway lanes and interchange requirements were assigned to the highway funding pool while the costs of the light rail line, communications, and power facilities were assigned to the transit funding pool.

However, where there were cost items that served both modal components of the project, each of these items was carefully reviewed to determine what portion of the cost could be assigned to each modal funding pool. For example, the costs of replacing bridges that spanned both the highway and light rail line were allocated based on the proportion of bridge length that spanned the right-of-way required for each modal feature. For each cost item in which there was a shared use or purpose between the two modes, a cost allocation basis and proportion were developed by a joint team representing the sponsoring modal agencies, with the full concurrence of FHWA and FTA.

- **Erosion control and stormwater.** A year after project construction began the Environmental Protection Agency (EPA) increased its administration and enforcement of erosion control and stormwater management across the country. The implications of this enforcement meant that the SECC's Compliance Manager was obligated to request a change in the contractor's standards in order to be in compliance. Because the T-REX project was already underway, a change in standards resulted in increased in-house training in an effort to bring work procedures into compliance with regulatory stormwater requirements. This was a new permit requirement that SECC had to rapidly adapt and respond to.
- **Dust control.** SECC also initiated an air quality/dust control permit. Any dust movement across the right-of-way line to an offsite location would require immediate mitigation. This occurred during construction in the summer months when the project area was arid. To rectify this situation, the contractor developed and implemented a best management practices plan that included the provision of water trucks along the right-of-way lines to keep the soil moist and to minimize the opportunity for offsite transport of fugitive dust.
- **Hazardous materials.** Several events occurred where SECC encountered asbestos on utility pipes during construction. The RFP stipulated that after the Notice to Proceed (NTP) was received by the design-build team, job manuals on health and safety and contaminated materials management would be developed by the design-build contractor and approved by CDOT and RTD. When this event occurred, the Environmental Compliance Manager was contacted and construction was halted until the SECC's environmental team could dispose of the asbestos and minimize further contamination. The cost of remediation for environmental cleanup issues was anticipated by CDOT and RTD through advanced planning and budgeting for T-REX. As a result, an internal budget of \$11 million was set aside from the contract to cover unexpected remediation costs outside of the base project scope. This helped mitigate the risks to the design-build team for

costs associated with unexpected environmental mitigation requirements as the site work proceeded.

- **Utility relocation.** In 2000, legislation was passed allowing the state to use Project-Specific Utility Relocation Agreements (PSURAs). As a result of this legislation, CDOT coordination with the utility companies could occur immediately following the acceptance of the EIS/ROD. Because of this early notification to the utility companies, PSURA was included in the RFP. This innovative approach required a new level of cooperation with the utility companies that was essential for expediting the construction process and minimizing schedule delays, risks, and costs throughout the T-REX project. In this case, PSURA provided the following advantages to the project:
 - Encouraged utility companies to use CDOT's contractor (in this case, SECC)
 - Allowed the utility company to negotiate the costs of relocations and provided the option of allowing the utility company to perform the work itself if a cost could not be agreed upon with the contractor
 - Provided for possible sanctions and liabilities that could be placed on the utility companies if they performed their own work and ended up delaying the contractor
 - Encouraged contractors to speak proactively with utility companies prior to submitting their bids
 - Authorized CDOT to purchase or advance funds for easements on behalf of the utility company and required repayment with interest from the utility

In this case, CDOT and RTD were able to survey the entire corridor ahead of time to locate all structures and utilities in advance of having SECC under contract. This approach limited opportunities for unknown impacts, minimized the risks of increased costs resulting from these unexpected impacts, minimized or avoided schedule delays, and limited the number of design changes during the project development phase.

5. CONCLUSIONS

5.1. Success of T-REX

T-REX has been widely recognized as one of the most successful surface transportation projects in the country. The project has proceeded from MIS to full operation in only 11 years, and at critical junctures in the process the project sponsors made bold yet prudent political and economic choices:

- A necessary package of significant statutory changes was successfully introduced and passed by the legislature and then signed by the governor prior to the start of the project. These legislative provisions permitted the use of innovative financing and project delivery approaches that enabled the project to be completed within budget and before the schedule deadline.
- Broad-based public outreach and communication efforts by the project sponsors resulted in voter approval rates for both bond initiatives of more than 60 percent.
- The entire environmental review and analysis process was completed with a supportive ROD issued in less than 2 years.
- The overall strength of the project from transportation, environmental constructability, local support, and leveraged financing standpoints enabled RTD to receive an FFGA from FTA for the light rail portion of the project relatively quickly.
- The IGA between CDOT and RTD, as well as the Partnering Charter among the Federal, state, and local project sponsors and its private sector design-build team, have proven durable and flexible in fostering trust among project participants and reducing time-consuming disputes and claims that often occur between project sponsors and providers.
- The enduring attitude of cooperation and coordination between the two state (CDOT and RTD) and two Federal (FHWA and FTA) sponsoring agencies proved essential to sustaining project

momentum and overcoming impediments that could have significantly delayed the project and driven up its costs.

- The financing plan expedited project initiation and construction, which provided cost savings by avoiding escalating costs of key elements of the project such as steel and concrete whose unit prices have skyrocketed in recent years, due largely because of competition from China's expanding economy. This was done without increasing existing taxes or instituting new taxes.
- By putting significant effort into the structuring of the RFP and by working with the prospective bidders, CDOT and RTD received competitive bids, including the winning bid that provided an acceptable price and a promised completion date almost 2 years ahead of the state's schedule.

Other critical success factors of the T-REX project for public sponsoring agencies and the project delivery teams include the following:

- Development of reliable capital cost estimates and the negotiation of a design-build contract within a reasonable and affordable price ceiling
- Early identification of key risk factors that could not be priced, such as hazardous materials, and the establishment of realistic allowances for each risk factor outside the fixed price for the design-build contract
- Application of a capital cost allocation methodology based on a negotiated approach developed and agreed to by the key parties to the project contract, whereby neither of the key programmatic funding sources was required to cross-subsidize the other
- Use of partnering to overcome institutional differences between public agencies involved in the project, cutting across modes and bureaucratic levels
- Full cooperative involvement of all key agencies involved in the project at the state and local levels (CDOT and RTD) and the Federal level (FHWA and FTA) throughout the project planning and development phases
- Ability of the project sponsoring agencies to fund and finance the program without increasing taxes or user fees

5.2. Lessons Learned

The T-REX project provides many useful lessons for sponsors of mega-projects, such as the TZB project, to help them avoid many of the pitfalls that have undermined other large-scale, complex, and multimodal projects. The key lessons learned from the T-REX project most relevant to the prospective sponsors of mega-projects such as the TZB project are the following:

- **The state and local communities took a system-wide approach to the congestion problem along the I-25 corridor between downtown Denver and the Southeast Business District.** This included upgrading and expansion of the highway facilities along I-25 and I-225 and a public transportation alternative in the form of a light rail extension to the highly popular light rail system already serving downtown Denver. This brought together in a highly synergistic way transportation, environmental, and community interest groups that typically opposed each other when new transportation projects were being considered. In the T-REX project, there was great strength in broadening the advocacy base.
- **The state legislature and governor packaged the T-REX project, which was largely a Denver metropolitan area project, with 27 other priority projects in developing the financing plan for the project.** This aligned the project with the interests of many other parts of the state, which could have opposed the T-REX project if perceived as merely serving the metropolitan residents of Denver.
- **The project sponsors began the financial planning efforts for the project at the beginning of the environmental review stage.** They did not wait until the project concept was fully

developed and vetted through the environmental clearance process. This was providential because the results of the early financial analyses clearly demonstrated the need for additional and more flexible ways to fund the project and to deliver it once the funding picture was defined. This provided time for the legislature and governor to generate legislative initiatives to enable the project sponsors to use PPPs and alternative financing approaches that had not been permitted before.

- **Early planning and preliminary public fact-finding led to a proactive public outreach and communication program for the project.** These efforts convinced the project sponsors to develop and implement a comprehensive and ongoing public outreach and communications program to guide decisions on transportation alternatives and combinations. These efforts, given a constitutional prohibition against public agencies issuing bonds unless specifically approved by the voting public, helped win the support of voters for two bonding initiatives that were essential to help fund the project.
- **Early financial planning focused on filling funding shortfalls by tapping multiple stakeholders.** By understanding what funding amounts could become available by source relative to the expected cost of the project, the project sponsors were in a better position to focus on the areas of shortfall and gain greater credibility when approaching Federal transportation agencies to secure significant sources of funds for the project, including FTA FFGA and FHWA GARVEE bonds. This also convinced the local communities to use sales and use-taxes to augment the funding base for the project, demonstrating the full range of public support for the project at all levels of government.
- **Having the design-build team start final design at the 30 percent design stage produced mixed results for the project.** In turning to a design-build approach for project delivery, the project sponsors wanted assurance that what they would get in the end fairly matched their expectations for the project in terms of design and execution. Therefore the design-build team started work after the sponsoring agencies developed the project to the 30 percent stage of design. While some could argue that this reduced the opportunity for the design-build team to offer more cost-effective ways to design and construct the project, the greater level of internal design produced a plan with greater credibility to the sponsoring agencies and fewer design changes during project development, which helped to keep the project on schedule and within budget.
- **The project sponsors found a way to consolidate transportation improvement goals, various interest groups, multiple modes, and diverse funding sources and financing approaches into a highly integrated infrastructure delivery package.** This required well-informed leadership at all levels of government; a public with confidence in their transportation agencies to work cooperatively; and a competitive service delivery market that could assure project sponsors they could get the job done within scope, budget, and ahead of schedule. These are the goals of any mega-project and their achievement by the T-REX project team demonstrates the ability to achieve all these goals and the ingredients to success.

While no two projects are completely alike, the lessons of the T-REX project are applicable and adaptable to many large-scale projects. The challenge for sponsors of mega-projects is to come together and find common ground with competent delivery teams qualified to cost-effectively manage the risks associated with adopting new approaches to project financing, delivery, public involvement, and quality control. The T-REX project exemplifies the value of synergy among transportation agencies, public institutions, and the private sector.

5.3. Implications for the Tappan Zee Bridge Project

When considering the T-REX project in Denver, Colorado, there are a number of issues and strategies that merit consideration by the public agencies sponsoring the TZB project in evaluating alternative approaches to delivering the project in a timely and cost-effective manner, consistent with state statutes and sensitivities. The example of the T-REX project offers certain insights into addressing such issues as:

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- Alternative organizational and institutional arrangements for cooperatively managing the project during development and operation phases
 - Various project scopes and phasing of different project features
 - Partnering relationships between the potential project sponsors and a prospective project delivery team
 - Innovative approaches to leverage scarce public resources through alternative project financing, development, operation, maintenance, and preservation functions

Key issues and strategies with implications for the TZB project include:

- **Both projects are mega-projects, involving the commitment of huge financial resources.** The costs of designing and constructing these two projects dwarf prior surface transportation projects in their respective states due to project scope and complexity. Like the public sponsors of the T-REX project, the sponsoring agencies for the TZB project will likely need to look beyond traditional project financing and delivery approaches to find an acceptable way to expedite the completion of the desired project scope without consuming the surface transportation budget of the state for many years to come (as happened in Massachusetts with the “Big Dig” project).
- **Mega-projects should not overwhelm the capital budgets of surface transportation agencies that sponsor them.** Mega-projects do not need to “break the bank” of surface transportation agencies. Multiple funding sources can be tapped and leveraged through phased delivery of project components and creative financing approaches involving all levels of government and those private entities with a vested interest in the improved accessibility to be provided by the project. The fact that the TZB is already tolled is a major advantage in developing a financially viable project.
- **Traditional project development approaches are not well suited to mega-projects.** Traditional approaches to financing (pay-as-you-go) and delivery (design-bid-build) may struggle to accommodate the complex requirements of mega-projects, particularly in arranging financing and expediting project delivery. As demonstrated by the T-REX project, sponsoring agencies need to consider alternative and innovative approaches to better leverage their scarce public resources for critical projects that are likely to wait decades before adequate funding is assembled to advance the project. However, as T-REX also demonstrates, this requires the following prerequisites:
 - Statutory authority to apply these approaches
 - Public staff to administer the project procurement process, oversee the project delivery process, and manage the contract beyond construction completion if operations and maintenance are included in the contract scope
 - Competitive array of qualified private sector firms or teams able to deliver quality projects using alternative approaches and performance standards specified in the contract
- **Both projects include multimodal features.** T-REX is a dual-mode project, including light rail and additional highway lanes in separate rights-of-way within the same corridor. The TZB project has the potential to include highway and transit features, such as commuter rail or bus rapid transit. The nature and role of public transit features in the TZB project are important considerations for the sponsoring agencies given the emphasis being placed on more holistic approaches to congestion relief by USDOT and its surface transportation administrations that cuts across traditional modal boundaries. Multimodal projects are gaining increasing interest among Federal transportation agencies and can be effectively developed and financed only if the modal agencies at all levels of government work in a cooperative partnership throughout the planning and delivery phases of development.
- **Tolling already exists on the TZB.** This provides the opportunity to introduce creative congestion management techniques such as variable pricing based on time of day, day of week,

vehicle type, and/or level of congestion in an environment where the users of the facility are already accustomed to tolling and electronic toll collection. The T-REX project involved a non-tolled highway, which was far less complex operationally, but did not provide the opportunity for introducing congestion management techniques as does the TZB.

- **T-REX had stronger institutional support, capabilities, and resources when planning started.** The T-REX project started with a favorable statutory framework to apply PPP project delivery approaches (design-build); a broad base of political, public, and user support for the project given its multimodal scope; and significant financial resources to draw upon and leverage with Federal, state, and local initiatives that enhanced the project's financial feasibility. These included grants, bonding against future Federal program funding, proceeds from state sales and use taxes, and direct local funding. Most of these features will have to be developed for the TZB project to enable it to move forward in a timely manner.
- **The TZB project has more public agency sponsors with more diverse objectives.** There are two major non-Federal highway agencies involved in the TZB project, including the statewide toll authority (New York State Thruway Authority) and department of transportation (New York State Department of Transportation), and one regional multimodal transportation agency (Metropolitan Transportation Authority). For the T-REX project there was only one statewide transportation agency (CDOT) and one local transit authority (RTD) serving as the principal project sponsors. For the TZB project, this creates greater institutional challenges to accommodate the diverse interests of a broad array of public agencies.
- **Financial requirements for the TZB project might be phased over a longer period of time.** Unlike the T-REX project where the highway and transit features were completed and opened to service within 4 months of each other, the highway and transit features on the TZB might be addressed at different timeframes, depending on the cost of the features and the level of highway congestion on the bridge after reconstruction or replacement.

These implications highlight aspects of the T-REX project case study of most value and relevance to the public sponsors framing the proposed TZB project.

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Image References

Figure 1: RTD T-REX Fact Sheet, December 2005 and FHWA

Figure 2: Adapted from T-REX Project Factbook

New Tacoma Narrows Bridge Project Case Study

Prepared for the:

**New York State Department of
Transportation**

Metro-North Railroad

New York State Thruway Authority



New York State
Department of Transportation



Metro-North
Railroad



Thruway
Authority

New Tacoma Narrows Bridge Project—Tacoma to Gig Harbor, Washington

Public Private Partnership Delivery	Construction/Development Period	Concession Period	Contract Value	Status
Design-Build; originally Design-Build-Finance-Operate	Development: 1994–2008 Construction: 2002–2008	N/A	\$849 million	Under construction

SUMMARY

The new Tacoma Narrows Bridge project involves the construction of a new suspension bridge parallel to and south of an existing suspension bridge constructed in 1950, as well as a seismic retrofit of the existing bridge and upgrades to 3.4 miles of roadways and interchanges adjacent to the bridge. The current bridge carries State Route 16 (SR-16) across Puget Sound, connecting the cities of Gig Harbor to the west with Tacoma to the east (see Figure 1). After the new bridge is opened in summer 2007 and improvements to the existing span are completed in 2008, the two bridges will provide a combined total of seven lanes and a bikeway across the waterway, compared to four lanes at present. The new structure, which will carry eastbound (Tacoma-bound) traffic, will be tolled, the first tolling of the crossing since the current bridge was tolled from in 1950 (its opening) to 1965.

The new bridge is being completed as a design-build project, but initial plans called for a design-build-finance-operate (DBFO) project delivery approach. Following award of a contract to a consortium to deliver, operate, and finance the project, the state legislature amended the enabling legislation governing the partnership to require an advisory vote on the project and to supplant the private sector finance plan with lower-cost state financing. These changes led to reconfiguration of project delivery.

There are both parallels and differences between the new Tacoma Narrows Bridge project and the Tappan Zee Bridge (TZB)/I-287 Corridor project:

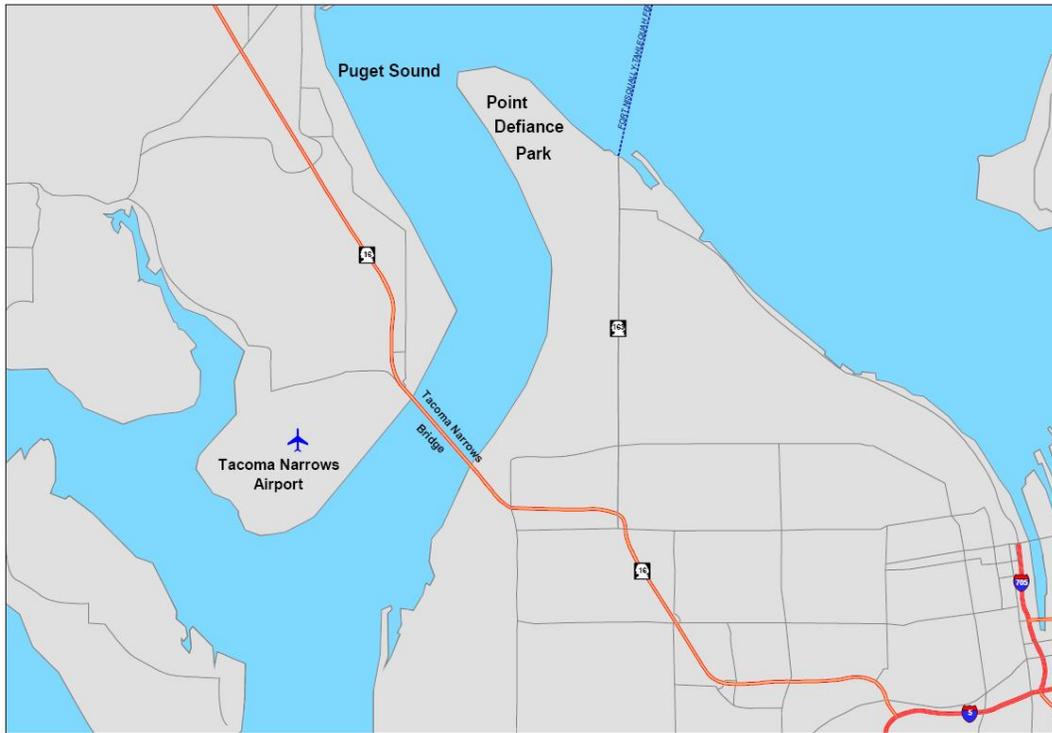
- Tacoma Narrows Bridge was Washington’s first transportation public-private partnership (PPP), much as a TZB project could be New York State’s first PPP mega-project.
- The new Tacoma Narrows Bridge project mimics a potential TZB replacement project because it provides additional capacity across one of the state’s signature water crossings, and requires the seismic retrofiting of the existing span.
- When completed, the two Tacoma Narrows Bridge spans will each include a high-occupancy vehicle (HOV) lane across the facility, an attempt to improve multimodal mobility at the crossing, much as future plans for the TZB involve consideration of bus, rail, and other higher occupancy modes.
- Tolls will be imposed on eastbound Tacoma Narrows Bridge motorists for the first time in decades following completion of the new span, while tolls have been continuously collected on the TZB since its construction.
- Only one agency, the Washington State Department of Transportation (WSDOT), is responsible for the delivery of the new Tacoma Narrows Bridge project, while the TZB project will likely include several agencies as co-sponsors.

The lessons that can be learned from this project that could have implications for the TZB project include:

- Avoid changing the rules of the game midstream. The most significant changes to this project resulted from legislative changes adopted after the submission of proposals and project award to a PPP consortium. Private sector partners seek assurances that the statutes and regulations that will govern the PPP contract agreement will not be subject to change. Enabling legislation is the foundation for many business assumptions on which PPPs are based, and changes can result in the demise of an otherwise viable PPP project.
- Ensure that PPP enabling legislation sufficiently balances the needs of public and private sector partners. In any PPP, there are project roles that the public sector is better suited to manage, such as assessment of environmental impacts, permitting, property acquisition, and public outreach. Other project functions and risks may be managed and more cost-effectively delivered by the private sector, such as design, construction, operations, and preservation. The key is to balance the risks and responsibilities to match the abilities of each partner.
- Understand the implications of debt financing options up front. Ideally, the impact of each financing option should be evaluated early in the concept development and financial planning processes prior to selection and award of the project to an apparent winning team. This would achieve the most beneficial financing without requiring changes mid-delivery.
- Proactive public involvement can buoy a project facing significant opposition. When faced with a public vote on the project's merits, a public outreach and communication program designed to involve and educate the public on the benefits of the project should be implemented early in the project development. Imposing a cost on an existing "free" facility is never popular—indeed, it has never been done in the United States on an existing highway—but as the Tacoma Narrows Bridge case demonstrates, if the public can be convinced of the project's merits, they may support the project.

This case study explores the \$849 million project as currently being completed by WSDOT and the events that reversed the original plans to apply a DBFO approach.

Figure 1: Overview Map of the Tacoma Narrows Bridge Location



Source: AECOM Consult, Inc.

1. PROJECT OVERVIEW

1.1. Tacoma Narrows Bridge Overview

The existing Tacoma Narrows Bridge is a four-lane, 5,979-foot suspension bridge constructed in 1950. The bridge crosses the Tacoma Narrows of Puget Sound, connecting the Washington State city of Gig Harbor (population 6,500) to the Tacoma metropolitan area (population 701,000) and providing a direct route from Tacoma to the Bremerton area (population 232,000). It is the only bridge connecting Washington State's Olympic Peninsula with the populated Seattle-Tacoma metropolis. Alternative crossing options include several ferry services and a land connection at the base of the peninsula at Olympia.

The crossing is infamous as the location of the original Tacoma Narrows Bridge, which opened in July 1940 but was destroyed 4 months later in a wind-induced collapse. The high winds that flow through the Tacoma Narrows gorge caused the bridge deck to oscillate up and down like a roller coaster until it finally fell apart. Hence its nickname: "Galloping Gertie." The ill-fated two-lane 1940 bridge was originally constructed at a cost of \$8 million, with \$6 million in funding from the Public Works Administration and the remainder covered by tolls of \$0.75 per vehicle/driver plus \$0.10 per passenger, in each direction. It would be 10 more years before the original span was replaced, due in part to technical and funding concerns and the advent of World War II, which demanded funding, labor, and materials that might have been dedicated to bridge construction in peacetime. The current four-lane bridge, pictured in Figure 2, was constructed in 29 months between 1948 and 1950 at a cost of \$14 million.

Figure 2: Current Tacoma Narrows Bridge, Circa 1980s



Source: U.S. Department of the Interior, National Park Service via Wikipedia Commons

The replacement bridge has a main span (tower to tower) of 2,800 feet, making it the fifth-longest suspension bridge in the United States. Its total length is 1.1 miles. Originally, a \$0.50 toll per vehicle/driver, plus \$0.10 per passenger, was collected in both directions, but tolls were lifted in 1965 following repayment of the bridge's construction bonds. At that time, ownership and operational responsibility for the bridge was transferred from the Washington State Toll Bridge Authority to the Washington Department of Highways, which later became WSDOT.

The 1950 bridge was designed to carry an annual average of 60,000 vehicles daily. Traffic has grown from an annual average daily traffic (AADT) of 4,700 vehicles in 1955 to 39,000 in 1980 to 67,000 in 1990. As the bridge exceeded its design capacity in the late 1980s, it became apparent that a new span would be required to alleviate congestion at the crossing. Traffic grew 32 percent during the 1990s to an AADT of 88,000 vehicles by 2000, and today exceeds 90,000 vehicles per day.

1.2. Project Description

The new Tacoma Narrows Bridge project costs \$849 million to design and construct. It consists of building a new suspension bridge of 5,400 feet (1.02 miles), upgrading 3.4 centerline miles of roadway (including the bridge), and upgrading the current bridge to seismic standards. The new bridge, pictured to the right of the existing 1950 bridge in Figure 3, has a tower height of 510 feet and a main span of 2,800 feet, the same length as the current bridge, and will be the longest suspension bridge constructed in the United States since New York's Verrazano Narrows Bridge opened in 1964.

Figure 3: The New and Existing Tacoma Narrows Bridges



Source: Kathy Calm via Wikimedia Commons

The new bridge will open with a temporary configuration in the summer of 2007 with two full-service eastbound lanes, one westbound lane, and a barrier-separated reversible lane running eastbound in the morning and westbound in the evening. The existing bridge, meanwhile, will have one westbound lane at all times while seismic repairs and other upgrades are completed to the structure. When the retrofit project is concluded in summer 2008, the temporary lane configuration will be converted to the permanent one. The new bridge will carry four eastbound lanes, including two general purpose lanes, an HOV lane, and a “drop” lane for vehicles entering and exiting the highway at interchanges adjacent to the bridge. In addition, the new bridge will include a barrier-separated bike path. The existing 1950 bridge will carry three lanes westbound, including two general purpose lanes and one HOV lane. One of the existing lanes on the 1950 bridge will be converted to a breakdown lane, so it will lose one through-lane of traffic.

WSDOT states that safety improvements and congestion relief are the two primary benefits of the project. The existing bridge has narrow lanes separated by open grating, and does not have shoulders nor physical separation of opposing traffic. The new configuration will separate oncoming traffic and provide wider travel lanes and safety shoulders. The increased number of lanes—seven in total, including two HOV lanes (up from four general purpose lanes on the existing bridge)—will facilitate development of a network of HOV lanes on the bridge and approaches that is intended to alleviate congestion across the Narrows.

The project is being completed using a design-build delivery approach. The contractor is Tacoma Narrows Constructors (TNC), a joint venture between Bechtel Infrastructure Corporation and Kiewit Pacific Company. As described further in the project development section below, the consortium was originally awarded a DBFO contract, but its scope was changed as a result of legislative intervention. The consortium’s responsibilities were reduced to design and construction of the bridge at a fixed price of \$615 million with a 2007 opening date.

As part of the project, WSDOT will reinstitute tolls on the crossing, initially charging all vehicles (including HOV lane users) \$3 in the eastbound direction only, with escalating tolls over time. The toll plaza will be constructed on the Gig Harbor side of the bridge, with three open road tolling lanes, six manual cash collection lanes, and one transponder-only ramp lane. The project will be the first toll bridge or highway in Washington State since 1990, because the state has a history of de-tolling facilities once their construction bonds are paid off. WSDOT is currently in the process of rolling out its “Good to Go” electronic toll collection (ETC) program, which will enable electronic toll payments at the Tacoma Narrows Bridge, on the SR-167 high-occupancy toll (HOT) lanes between Seattle and Tacoma scheduled to open in 2008, and on future WSDOT toll facilities.

WSDOT projects that the institution of tolls will reduce demand at the crossing by approximately 25,000 vehicles daily by 2020. Without tolls, WSDOT estimates that demand would top 120,000 vehicles daily by 2020, versus a projected 95,000 with tolls, which is only slightly more than the 90,000 AADT that crosses the bridge today. The new bridge is designed to accommodate construction of a second deck, if required in the future.

2. PROJECT DEVELOPMENT

2.1. Authorizing Legislation and Project Procurement

The new Tacoma Narrows Bridge project was first advanced in 1993 under Washington State's Public Private Initiatives Act (RCW 47.46), which authorized WSDOT to solicit and construct six demonstration projects as PPPs with private financing. The law was among the first generation of state PPP enabling acts and was based on California's Assembly Bill 680, passed in 1989, which authorized construction of four privately financed, developed, operated, and maintained demonstration projects in that state. The Washington Act permitted the secretary of transportation “to test the feasibility of building privately funded transportation systems and facilities or segments thereof through the use of innovative agreements with the private sector,” and gave the secretary “the authority to solicit, evaluate, negotiate, and administer public-private agreements with the private sector relating to the planning, construction, upgrading, or reconstruction of transportation systems and facilities.” Furthermore the act provided for “private entities to undertake all or a portion of the study, planning, design, development, financing, acquisition, installation, construction or improvement, operation, and maintenance of transportation systems and facility projects.”

In 1994, WSDOT issued a Request for Proposals inviting firms to submit proposed projects for consideration under the Act. A total of 14 proposals were received, 6 of which were selected for development. One of the projects was to upgrade SR-16 and the Tacoma Narrows Bridge crossing, for which three proposals were submitted. Other selected projects included three proposals to upgrade state highways in the greater Seattle area, a congestion pricing project, and a project to improve park-and-ride lots in Seattle's King County. However, one of the highway upgrade projects was dropped immediately due to limited public involvement and support.

In 1995, the state legislature amended the Act to require an advisory vote by residents of the project's affected area as a result of being challenged by a petition of 5,000 signatures. This was a significant change in the law, making several of the selected demonstration projects less attractive and giving project opponents a mechanism for defeating undesired projects. The same year, the proposed congestion pricing project was dropped from consideration.

In 1996, the act was again amended to require legislative funding for environmental, engineering, and public involvement work before proposed projects could proceed. Only the new Tacoma Narrows Bridge project received legislative appropriations, effectively killing the remaining demonstration projects.

In 1997 WSDOT conducted a competitive procurement for the new Tacoma Narrows Bridge project. The project was procured as a “Pre-Development PPP,” in which selection was qualifications based. Qualifications were evaluated for each proposing team based on the following criteria:

- Project understanding
- Conceptual development and finance plans
- Track record
- Pricing of pre-development work

Characteristics of pre-development PPPs include:

- Partnership formed at the beginning or during the environmental process for the development of a large and complex project
- Fluid project configuration
- Rudimentary or non-existent finance plan
- Preliminary traffic and revenue analysis that suggests financial feasibility
- Lack of public funds or resources to advance the project

2.2. Selection of Winning Bid and Advisory Vote

In 1997 the consortium of United Infrastructure Washington, Inc. (UIW), a wholly owned subsidiary of Bechtel, was selected to deliver the new Tacoma Narrows Bridge project. As proposed, WSDOT would contract with UIW to develop, finance, and operate the new bridge. Tacoma Narrows Constructors (TNC), a joint venture of Bechtel and Kiewit, would serve as design-builder. TransCore would design, install, and operate the bridge’s toll system. UIW would provide oversight and management of the facility throughout the duration of tolling. The Tacoma Narrows Bridge Nonprofit Corporation was to have been established to issue tax-exempt debt for the project. Tolls collected by TransCore would cover the debt service on the nonprofit corporation’s bonds.

While the consortium had been selected, WSDOT did not enter into a contract with the firm because citizens had collected sufficient petition signatures to force an advisory vote on the project. WSDOT conducted a comprehensive analysis of traffic patterns and economic impacts to define the geographic boundary of the affected project area, and created a citizen advisory committee to advise WSDOT on the vote.

The advisory vote was held in the affected region during the 1998 general election. The public was asked the question, “Should the Tacoma Narrows Bridge be modified and a parallel bridge constructed, financed by tolls on bridge traffic, and operated as a public-private partnership?” On election day 53 percent of voters voted in favor of the proposal, enabling the project to proceed.

2.3. Litigation and Legislative Revisions

In 1998, the legislature authorized an initial roundtrip toll on the bridge not to exceed \$3 and provided a \$50 million state contribution to the project. Following this action, WSDOT executed a contract with the DBFO consortium, 2 years after its selection.

In 2000, the governor approved \$800 million in privately issued tax-exempt financing for the project. However, the state supreme court ruled that WSDOT did not have the authority to impose tolls on users of the existing bridge, which halted the project.

At the same time, public and legislative opposition to private financing of the project mounted when it was determined that the cost of non-recourse debt financing was higher than publicly issued debt. A

deadlocked state House of Representatives adjourned during the summer of 2001, however, without amending the enabling legislation for the bridge project to permit public debt.

In 2002, the state legislature revised the PPITA once again to permit state-issued bonds and public financing of the project, as well as to allow tolls to be collected on the existing bridge. The amendment accomplished the following:

- Clarified the ability of WSDOT to use public and private financing for projects selected and developed under the act
- Provided WSDOT with specific means of state financing, when in the public's interest
- Provided citizens living in the impacted areas a statutory mechanism to review proposed toll rates and provide input before adoption of toll schedules by the toll authority
- Prevented unreasonable delay of critical transportation projects deemed essential for public safety and welfare

The same year, the legislature appropriated \$849 million for the project, including the issuance of \$800 million in bonds to be repaid with tolls from the bridge. The legislative deal also included \$40 million in payment to UIW to compensate the consortium for its planning and development costs related to transfer of finance and construction management responsibility from the consortium to WSDOT. These actions paved the way for completion of the bridge project, although under a very different structure than the PPP originally proposed:

- Instead of contracting with UIW to deliver, finance, and operate the project, WSDOT would contract directly with its design-build consortium member, TNC.
- In addition, WSDOT would contract directly with TransCore to design, install, and initially operate and maintain the bridge's toll collection system.
- The State of Washington would assume responsibility for project finance, issuing general obligation bonds for the project.
- UIW would be relieved of responsibility to maintain the new bridge following its completion.

The design-build-finance-operate (DBFO) PPP was reduced to a design-build PPP, with a greater assumption of project risk and responsibility by the public sector as a result of public opposition and legislative acquiescence to these challenges. A result of the changing PPP process associated with the new Tacoma Narrows Bridge project was that many private sector firms lost interest in the state's ever-changing PPP program. In addition, the state legislature lost credibility as a reliable supporter of innovative project delivery and finance approaches.

2.4. Design-Build Contract Terms and Conditions

In 2002, WSDOT executed a \$615 million fixed-price design-build agreement with TNC. Under the terms and conditions of their contract, monthly payments were tied to progress toward completion of the project over a period of 1,980 days (65 months) from Notice to Proceed (NTP) on September 25, 2002.

The consortium's obligations included:

- Constructing the new suspension bridge
- Upgrading the existing bridge to meet current seismic standards
- Making improvements to SR-16 approaching the bridge, including improvements to several adjacent interchanges
- Preparing readiness for installation of toll collection equipment by WSDOT's toll contractor within 3 years of NTP

-
- Completing the new bridge and highway improvements in just over 4.5 years
 - Completing all work, including the seismic and deck improvements to the existing bridge, in 5.5 years

In the event that the consortium had an unexcused failure to meet the specified completion dates, the consortium was required to pay financial penalties to WSDOT. The agreement also specified WSDOT's oversight responsibilities, allocation of risks between WSDOT and TNC, warranties, insurance, and dispute-resolution procedures.

Construction has generally proceeded on schedule since 2002, and the new bridge is expected to open in summer 2007. In April 2007, however, TNC was granted a *force majeure* extension as a result of three severe winter storms in the region during early 2007. WSDOT allowed TNC to add 16 days to the contract schedule. TNC remains obligated to pay WSDOT liquidated damages for late completion. The payment will be based on the number of days between the bridge opening date and the completion date specified in the contract. The new bridge, as it appeared as of January 2006, is pictured in Figure 4.

Figure 4: New Tacoma Narrows Bridge Under Construction: January 2006



Source: Cacophony via Wikimedia Commons

3. PROJECT FUNDING AND FINANCING

3.1. Project Cost

The total cost of the project is \$849 million, broken down in Figure 5.

Figure 5: Tacoma Narrow Bridge Project Uses of Funds

Use of Funds	Amount
Design-Build Contract	\$615 million
Construction Management and Oversight	\$41 million
Project Contingency	\$55 million
Toll System Supply	\$9 million
Phase 1 Development Costs	\$41 million
Subtotal	\$761 million
Minimum Funding Balance	\$6 million
Toll Preparation	\$1 million
Financing Costs	\$8 million
Reserve for Capitalized Interest	\$73 million
Total Uses of Funds	\$849 Million

Source: WSDOT

The largest line-item, the design-build fixed-price contract with TNC, grew \$75 million, from \$540 million in January 2001 to \$615 million at the time WSDOT converted the project to design-build in January 2002, as a result of a variety of factors including:

- Adjustment for inflation: \$37 million
- Increased expenses related to insurance bonding after September 11, 2001: \$14 million
- Other miscellaneous cost changes totaling \$13 million including:
 - Added cost to obtain marine equipment
 - Weather and scheduling critical activities to accommodate fish window impacts (fish windows are three-month periods when work in, near, or above streams is least likely to harm fish and fish habitat)
 - Scope changes resulting from permit conditions
 - Project office costs
- Adjustment for increase in the base for overhead and profit determinations: \$11 million

The design-build contract price has remained fixed at \$615 million since January 2002.

3.2. Project Funding and Financing

Originally, the project was to be privately financed under Washington's PPITA. Much of the project was to be financed with bonds issued via the Tacoma Narrows Bridge Nonprofit Corporation, a 63-20 corporation to be established by the private consortium to issue non-recourse tax-exempt debt on behalf of the project. In addition, the project was awarded a Transportation Infrastructure Financing Innovation Act (TIFIA) Loan of \$240 million in direct loans and a line of credit of \$30 million for the first 10 years of operation. However, none of this financing was used. Instead, the \$849 million cost of the project is being funded with \$800 million in bond proceeds, \$39 million in cash from the state Motor Vehicle Fund, and \$10 million in interest income.

The bonds issued for the project are technically motor vehicle fuel tax general obligation bonds, but will effectively be repaid with toll revenues collected on the new bridge. As general obligation debt, the state is able to borrow at low interest rates available to it, based on AA ratings from both Standard & Poor's and Fitch Ratings, and an Aa1 rating from Moody's for the state. Bond insurance earned the debt issued

on behalf of the project an AAA rating, the highest score possible. According to the Washington State Treasurer's Office, advantageous market conditions have, according to conservative estimates, saved the state more than \$400 million over the projected financing cost of the project in 2002.

Initially, tolls across the span will be \$3 per vehicle (including HOV lane users) in the eastbound direction only. Toll increases are planned for every 3 years in \$1 increments until a maximum auto toll of \$6 is reached in 2016. Starting in 2008, vehicles with more than two axles will be charged a higher toll in proportion to the number of axles (capped at a six-axle maximum toll). However, the Washington Transportation Commission, which governs WSDOT, will ultimately set toll rates, and has established a citizen commission to advise it on toll rate policy.

4. PROGRAM ASSESSMENT

4.1. Institutional Context

Washington State was one of the first states in the nation to enact enabling legislation for PPPs in 1993, with passage of the PPITA. However, the new Tacoma Narrows Bridge project was the only project advanced under the act, and the state has not been an active player in the PPP arena, primarily as the result of legislative tinkering that effectively diluted the efficacy of the PPP statute.

A 2003 workshop on PPPs in Vancouver, Washington, sponsored by the Federal Highway Administration (FHWA), found a diversity of attitudes toward PPPs within all levels of government in Washington State, including elected officials and WSDOT. At the time, there was strong support for PPPs within each segment, but also skeptics who expressed countering opinions.

According to the report on the workshop proceedings, the mixed view of PPPs within WSDOT was illustrated by several comments made by project engineers who clearly expressed reservations about the use of PPPs, due in part to limited experience and understanding of the process for applying this type of project delivery approach and concerns about losing control over projects and their outcomes. Simultaneously, others expressed a clearer understanding of the potential of PPPs and were eager to gain additional information about best practices for developing and implementing them. The divergence of opinions and levels of experience in the public sector and the series of amendments to the state's PPP enabling statute also led the private sector to be more cautious in its dealings with the state with respect to PPP initiatives. However, as expressed by private sector participants in the workshop, the private sector maintained an open view toward the possibilities that PPPs would emerge to play a significant role in WSDOT's surface transportation program in the future.

In 2005, the Washington Legislature approved new PPP enabling legislation for transportation projects, which replaced the PPITA, under which the new Tacoma Narrows Bridge project was gradually advanced. In general, the new PPP law is much more flexible than the previous act, and is similar in many ways to the act enabling PPPs in Virginia, which has successfully advanced a number of projects via PPPs (including the Pocahontas Parkway, profiled in another case study developed for this series). The new law allows the use of most types of PPPs for all modes of transportation, but stipulates that projects must be publicly financed. Solicited and unsolicited proposals are permitted, and there are no limits on the number of projects that WSDOT may advance under the bill. No advisory vote on PPP projects or negotiated PPP agreements is required. This is a key change from the amended Act that required an advisory vote on the new Tacoma Narrows Bridge project.

4.2. Major Issues and Strategies

This project faced a number of significant issues that impacted its progress toward completion:

- **There was a demonstrated transportation need for the project.** As with each of the projects profiled in this series, there was a demonstrated transportation need for the project, which sustained forward progress despite institutional setbacks. Congestion on the existing bridge demanded a widened crossing at the Tacoma Narrows. In addition, there was popular support for the project, as demonstrated by the public vote in favor of the new bridge.
- **The state legislature made multiple amendments to the enabling PPP legislation underlying the project.** The context of the project changed over time as a direct result of several amendments to the project's enabling legislation that placed increasing restrictions on the role of the private consortium. This slowed the project delivery schedule and led to several revisions in project approach—the most notable of which was the shift from a DBFO to design-build project. Certainly, the next private sector team to propose a PPP in the state—solicited or unsolicited—will proceed with caution given the legislature's history of changing the state's PPP law.
- **The project survived a local referendum that could have cancelled the project.** The most significant challenge the project overcame was a referendum on the bridge improvements, which could have cancelled the project. Such a referendum was not envisioned when the PPITA, which enabled the partnership, was passed, nor when private sector proposals were submitted under the Act. The legislature, however, imposed this requirement midway through project development, prior to the award of a contract to the winning consortium, UIW. WSDOT was diligent in determining the extent of the communities impacted by the project and educating the public on the merits of the project. Ultimately, the public voted in favor of the project, although by a narrow majority.
- **The project transitioned from a full-scale DBFO PPP to a design-build contract.** While the project was originally proposed as a DBFO partnership, the context changed over time to design-build. Several factors resulted in scaled-down private involvement in the project delivery. The primary reason was the state's interest in reducing the cost of financing the bridge's construction by issuing general obligation bonds directly rather than revenue bonds through a special purpose public agency. With the state responsible for financing the project, toll revenue collected from bridge users would convey to the state instead of the private sector consortium. In addition, the state assumed project management and development responsibility due to intervention by the legislature. With a growing state role in managing and financing the project, the risks and responsibilities for operating and maintaining the new bridge were transferred from the consortium to the state, with the state subsequently contracting with TransCore, the toll facility operator that had been a part of the UIW consortium, to implement and conduct tolling operations at the new bridge. As currently envisioned, maintenance of the new structure will be the responsibility of WSDOT.
- **The project reintroduced tolling on a presently untolled crossing.** Tolls on the existing Tacoma Narrows Bridge were removed in 1965, but will be reintroduced on eastbound crossings when the new bridge opens. Despite the re-introduction of tolling, the public voted to support the bridge project—highlighting that the public will accept tolling when the value of the project can be demonstrated and communicated to the public. Re-introducing the collection of tolls to a state that has not operated a toll highway or toll bridge since 1990 is WSDOT's present challenge, especially because the introduction of ETC has dramatically altered the operational context for toll collection in that time period among most of the toll collection agencies in the United States. Given the state's limited experience with modern toll collection technology, it has contracted with a private sector firm to operate toll collection on the new Tacoma Narrows Bridge, partially as a legacy of the project's original DBFO delivery approach.

5. CONCLUSIONS

5.1. Results of the New Tacoma Narrows Bridge Project

Since transitioning from a DBFO to a design-build project in 2002, design and construction have essentially continued on time, with the exception of the force majeure extension of approximately 2 weeks resulting from severe winter weather experienced in the region. The project's fixed-price design-build contract has held firm at \$615 million. The new bridge will open as planned, but significant congestion relief will not arrive until 2008 when retrofits to the existing 1950 bridge are complete.

Beyond the Tacoma Narrows crossing itself, the project has opened the door to increased use of tolling and PPPs in Washington State. Potential toll projects include upgrading the SR-520 Evergreen Point Floating Bridge across Lake Washington in Seattle; a new Interstate 5 (I-5) bridge between Vancouver, Washington, and Portland, Oregon; and improvements to I-90 at the Snoqualmie Pass west of Seattle.

None of these potential PPPs could advance without the passage of new enabling legislation in 2005. The state's current act governing PPPs made significant refinements to the 1993 PPITA and rolled back several of the legislative amendments that hamstrung advancement of the bridge project. Time will tell whether the state's recent actions will successfully encourage numerous private sector consortia to propose partnerships with WSDOT.

5.2. Lessons Learned

There are several fundamental lessons learned from this project that have assisted the advancement of PPPs elsewhere as other states sought to avoid the struggles that curtailed WSDOT's original PPP program. These lessons include the following:

- **Avoid changing the rules of the game midstream.** The most significant changes to this project resulted from legislative changes adopted after the submission of proposals and project award to a PPP consortium. Private sector partners seek assurances that the statutes and regulations that will govern the PPP contract agreement will not be subject to change. Enabling legislation is the foundation for many business assumptions on which PPPs are based, and changes can result in the demise of an otherwise viable PPP project. In this case, the project endured, but several other PPP pilots that were originally proposed under Washington's PPITA did not survive the legislative changes. Not coincidentally, many of these original pilots remain unaddressed and are prime candidates for PPPs under the state's new act.
- **Ensure that PPP enabling legislation sufficiently balances the needs of public and private sector partners.** One of the problems with Washington's PPITA was that it originally placed complete responsibility for project delivery in the hands of private sector partners. The Washington Act, much like the California Act on which it was patterned, permitted limited state DOT involvement in project management, which did not enable optimization of risk and responsibility between the public sponsor agency and private sector consortium. In any PPP there are project roles that the public sector is better suited to manage, such as assessment of environmental impacts, permitting, property acquisition, and public outreach. Other project functions and risks may be managed and more cost-effectively delivered by the private sector, such as design, construction, operations, and preservation. The key is to balance the risks and responsibilities to match the abilities of each partner.
- **Understand the implications of debt financing options up front.** A major change in project scope involved the assumption of project financing by the public sector. The change had a mixed impact on the project by reducing the cost of the project's debt financing by more than \$400 million but delaying the project's construction as WSDOT and the private consortium negotiated a scope change. Ideally, the impact of each financing option should have been evaluated early in the concept development and financial planning processes, prior to selection and award of the project

to an apparent winning team, to achieve the most beneficial financing without requiring changes mid-delivery.

- **Proactive public involvement can buoy a project facing significant opposition.** When faced with a public vote on the project's merits, with opposition stemming primarily from the re-introduction of tolls at the crossing, WSDOT successfully implemented a public outreach and communication program to involve and educate the public on the benefits of the project and why tolls would be required. Imposing a cost on an existing "free" facility is never popular—indeed, it has never been done in the United States on an existing highway—but as this case demonstrates, if the public can be convinced of the merits, they may support the project. WSDOT employed a number of strategies to educate the public, including public meetings, advertising, web sites, and other campaigns. Ultimately, a majority of voters decided the cost of only the users of the new bridge paying tolls was worth the benefit of an improved Tacoma Narrows crossing.

5.3. Implications for the Tappan Zee Bridge Project

The new Tacoma Narrows Bridge project has several implications for the TZB project, due in part to several similarities between the crossings. There are also some significant differences, however, which stand out. The two projects are compared below:

- **The Tacoma Narrows Bridge was Washington's first transportation PPP, much as a TZB replacement project could be New York State's first PPP mega-project.** The new Tacoma Narrows Bridge was the first and only project advanced under Washington State's PPITA, and is WSDOT's only example of a transportation PPP. To date, none of the TZB New York State partner agencies (New York State Thruway Authority, Metropolitan Transportation Authority, and New York State Department of Transportation) have engaged in a major PPP to advance a transportation project. New York has the opportunity to benefit from the lessons learned by Washington and other states that were early adopters of PPPs that faced significant challenges to implementing their programs.
- **When completed, the two Tacoma Narrows Bridge spans will each include an HOV lane across the facility and an attempt to improve multimodal mobility at the crossing, much as future plans for the TZB involve consideration of bus, rail, and other higher occupancy modes.** In addition to considering additional capacity at the bridge itself, planning for the new Tacoma Narrows Bridge included improvements to major approaches to the bridge and the implementation of a network of HOV lanes throughout the Tacoma metropolitan area. Moreover, the introduction of one-way tolls at the crossing not only provides a revenue source for the new bridge span's construction, but also serves to check demand for the crossing. These aspects are similar to the consideration of high-occupancy lanes, transit improvements, and congestion pricing across the TZB and throughout the counties adjacent to the bridge.
- **Tolls will be imposed on eastbound Tacoma Narrows Bridge motorists for the first time in decades following completion of the new span, while tolls have been collected continuously on the TZB since its construction.** Unlike the TZB, the Tacoma Narrows Bridge has not been tolled in 42 years. But while any TZB project will not face the imposition of tolls on a currently free facility, improvements may require toll rates much higher than are charged at present. In this regard, some of the successful strategies applied by WSDOT to elicit voter support for its toll project could be applied by project sponsors of the TZB project to educate the public on the benefits of higher tolls for an improved crossing.
- **Only one agency, WSDOT, is responsible for the delivery of the new Tacoma Narrows Bridge project, while the TZB project will likely include several agencies as co-sponsors.** The multimodal and region-wide approach to improving the TZB crossing involves partnerships between several public agencies, while WSDOT was the only public agency with a major role in delivering the new Tacoma Narrows Bridge project. This is a function of the centralized structure of Washington State's transportation program versus the multiple enabled transportation agencies

in New York State. Interagency partnerships can introduce additional complexity to a project; this is one challenge that WSDOT did not encounter that New York State may face.

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Tsing Ma Bridge Case Study

Prepared for the:

New York State Department of Transportation

Metro-North Railroad

New York State Thruway Authority



New York State
Department of Transportation



Metro-North
Railroad



New York State
Thruway
Authority

Tsing Ma Bridge—Hong Kong

Public Private Partnership Delivery	Construction/ Development Period	Concession Period	Contract Value	Status
Design-Bid-Build	Mid-1992 to 1997	N/A	HK\$7.1 billion (US\$0.9 billion)	In operation

SUMMARY

The Tsing Ma Bridge in Hong Kong, China is the world's sixth largest suspension bridge and the largest bridge that carries both road and rail traffic. The bridge carries six lanes of traffic on the upper deck. There are two railway tracks and a two-lane emergency roadway on the lower deck that is used for maintenance and the diversion of traffic during high winds. It has a main span of 1,377 meters (4,518 feet) and a height of 206 meters (676 feet). The Tsing Ma Bridge links Tsing Yi Island on the east to Ma Wan Island on the west over the Ma Wan Channel. It is part of the Lantau Link, which includes four long-span bridges that link Hong Kong and Chek Lap Kok, where the Hong Kong International Airport is located.

The Tsing Ma Bridge was constructed as part of the Airport Core Program, which included 10 projects developed to provide regional access to the new Hong Kong International Airport. Figure 1 provides a view of the Tsing Ma Bridge from the air.

Figure 1: Hong Kong Bay and the Tsing Ma Bridge



Source: Thierry from Le Plessis Robinson, France via Wikimedia Commons

Construction of the bridge was financed entirely by the Hong Kong Government. The bridge is currently operated and maintained by Tsing Ma Management Limited, a private management contractor, under a 6-year contract. The rail line is part of the Mass Transit Railway's Tung Chung Line and Airport Express, which are operated by Mass Transit Railway Corporation Limited (MTRCL), a private company.

There are aspects of the Tsing Ma Bridge project that have potential implications for the Tappan Zee Bridge (TZB)/I-287 Corridor project. These include the following:

- Like the Tsing Ma Bridge project, the complexity of the TZB project requires consideration of alternative financial plans until a set of funding and financing arrangements are assembled that are acceptable to all public sponsor agencies, and private provider firms if the project is delivered through a public-private partnership (PPP).
- The site characteristics of each bridge require complex engineered designs. The Tsing Ma Bridge had to be constructed to withstand strong winds associated with a typhoon. Similarly, the TZB would have to be constructed to withstand the effects of a possible earthquake.
- Both projects involve multiple stakeholders with different sensitivities, objectives, and criteria for success or acceptability to consider in negotiations on project scope, design, financing, and delivery approach.

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- Both the Tsing Ma Bridge and TZB projects include consideration of rail services on the bridge. While the TZB does not currently accommodate rail service, it is being considered during the bridge reconstruction planning process. For the new Tsing Ma Bridge, the capability to accommodate rail service was a prerequisite of the Airport Core Program, whose transportation network anticipated high traffic volumes and a significant reliance on rail passenger service.
 - Both bridges have one-way tolls that economize on the toll collection function and improve safety. This is easier to justify for the Tsing Ma Bridge because it serves a series of connected islands leading to the new airport where there is only one route in and out. All inbound vehicles must also use the same bridge facility for outbound trips from Lantau Island and the new airport on Chek Lap Kok Island.

1. PROJECT OVERVIEW

1.1. Project Description

The 2,160-meter (1.34-mile)-long Tsing Ma Bridge is the world's longest suspension bridge that carries both road and rail traffic. It is a toll bridge that links Tsing Yi Island on the east over the Ma Wan Channel to Ma Wan Island on the west. As part of the Lantau Link, the double-deck bridge is the first road link between Lantau Island and Hong Kong. The Lantau Link consists of four long-span bridges that connect the New Territories (mainland China) and provides access to the Hong Kong International Airport at Chek Lap Kok. A daily average of 52,000 vehicles used the Lantau Link in 2005 (Government of Hong Kong, 2005).

The Tsing Ma Bridge was designed to carry a six-lane expressway on the upper deck and two railway tracks on the lower deck. There are also two sheltered, single-lane carriageways on the lower deck that can be used for maintenance access and the diversion of traffic during high winds or in emergencies. It was designed by Mott McDonald. Figure 2 is a picture of the Tsing Ma Bridge.

One-way tolls are collected on the bridge—drivers do not pay a toll when entering Lantau Island but pay a double toll upon leaving the island. The double toll ranges from HK\$20 (US\$2.55) to HK\$80 (US\$10.25)¹ for different types of vehicles. The bridge also includes surveillance cameras to record traffic conditions. The video is updated every 2 minutes and is available on the Hong Kong Government web site.

¹ US\$1 = HK\$7.8

Figure 2: Tsing Ma Bridge



Source: Baycrest via Wikimedia Commons

Rail service on the bridge is operated by MTRCL, which provides two separate services to the airport that operate on the same tracks over the Tsing Ma Bridge, but split into separate routes.

- The Airport Express provides premium service that links Central Hong Kong to the new airport, with stops at Kowloon and Tsing Yi. It carries approximately 8.4 million passengers annually. Fares for the Airport Express range from HK\$60 (US\$7.70) from Tsing Yi to HK\$100 (US\$12.80) from Hong Kong Island.
- The Tung Chung Line provides domestic service that links Central Hong Kong to Tung Chung, with stops at Kowloon, Tai Kok Tsui (Olympic Station), Lai King, and Tsing Yi. The Tung Chung Line has two different fare classes: Adult and Concessionary. Lower concessionary rates are available to children below the age of 12, senior citizens 65 years or older, or full-time Hong Kong students between the ages of 12 and 25. Children below the age of 3 travel free. Passenger fares depend on the approximate distance traveled. Adult fares range from HK\$3.80 (US\$0.50) to HK\$26.00 (US\$3.35). Concessionary fares are usually half the adult fare, and range from HK\$2.40 (US\$0.30) to HK\$13.00 (US\$1.65).

1.2. Project History

The Tsing Ma Bridge was part of the HK\$189.3 billion (US\$24.3 billion) Airport Core Program, which consisted of 10 interlinked projects involving the construction of the new Hong Kong International Airport at Chek Lap Kok and new road and rail links to the airport, with associated bridges and tunnels. The program also included major land reclamation projects on Hong Kong Island and in Kowloon.

The Airport Core Program originated from the need to replace Hong Kong's old Kai Tak Airport, which had become one of the busiest and most congested airports in the world. The solution to the congestion was to construct a new airport north of Lantau Island on Chek Lap Kok Island. Chek Lap Kok Island was constructed on dredged material from the sea. The site was officially confirmed and the project approved in 1989 with the Hong Kong Government's Port and Airport Development Study (PADS).

The formal start of the new airport development began in September 1991 with the signing of a memorandum of understanding (MOU) between the governments of Great Britain and the People's Republic of China (PRC). The MOU stipulated that the Hong Kong Government would complete the core scope of the new airport and transport network, which would allow them to commence operations prior to July 1, 1997, when the administration of Hong Kong would be transferred from the British Government to the PRC (Jhan and Shotwell, 1993).

The new airport required a major transport link to connect it to Kowloon and Hong Kong Island, approximately 25 kilometers (15.5 miles) to the east. As such, a new expressway was proposed that would serve the airport and the new town of Tung Chung. The expressway would comprise the North Lantau Highway, Lantau Link, Cheung Tsing Highway, Cheung Tsing Tunnel, Tsing Kwai Highway, West Kowloon Highway, and Western Harbour Crossing.

The Tsing Ma Bridge is an element of the Lantau Link. The Lantau Link also includes the Ma Wan Viaduct, which continues the route of the Tsing Ma Bridge; the Kap Shui Mun Bridge, which connects Ma Wan to Lantau Island over Kap Shui Mun; and the Ting Kau Bridge, which links Tsing Yi Island and Tuen Mun. Construction of the Tsing Ma Bridge began in May 1992 and was completed and opened to traffic in May 1997. It will eventually become part of the planned Route 8 expressway that will connect the Lantau Link, West Kowloon Highway, Cheung Sha Wan industrial area, and new territory of Shatin.

2. ORGANIZATION AND PROCUREMENT

This section describes how the Tsing Ma Bridge project was organized as part of the much larger program of mega-projects needed to provide accessibility to the new Chek Lap Kok Airport on Lantau Island.

2.1. Project Organization

The project was organized into two concentric zones, one encompassing the entire Chek Lap Kok Airport Core Program and the other encompassing the area around the Tsing Ma Bridge itself---known as the Control Area. Each is described below.

Airport Core Program

The New Airport Projects Coordination Office (NAPCO) and Bechtel Corporation were responsible for the implementation of the Airport Core Program projects. Bechtel assisted NAPCO in managing the work of 170 contractors and 200 major contracts. NAPCO worked closely with the Hong Kong government works department and companies that were building the projects. NAPCO reported directly to the Airport Development Steering Committee, which was chaired by the Chief Secretary for Administration and comprised the Financial Secretary and Bureau Secretaries; the Committee had overall responsibility for guiding the implementation of the Airport Core Program.

NAPCO provided overall program management services in coordinating and guiding the implementation of the projects. It introduced strict procedures for controlling costs and monitoring progress to ensure that projects were built on time and within budget. The application of these procedures during the design and construction stages gave maximum assurance that this aim would be achieved (Hong Kong Airport Core Program).

The Airport Authority, the MTRCL, and Western Harbour Tunnel Company Limited (WHTCL) had full responsibility for their own project-level planning, execution, control, and management. NAPCO ensured compliance with the Airport Core Program plans, programs, and budgets and acted as a focal point for the management of project interfaces and resolution of problems and conflicts.

Tsing Ma Control Area

After the highway route to the Hong Kong International Airport was opened to traffic in May 1997, the Hong Kong Government designated the Tsing Ma Control Area (TMCA) to ensure safe and efficient traffic operations. The control area is composed of the 11-mile expressway network and interchanges, the Tsing Ma Bridge, the Kap Shui Mun and Ting Kau bridges, and the Cheung Tsing Tunnel. The TMCA is operated and maintained by a private management contractor, Tsing Ma Management Limited, which is controlled by the Wilson Group. Under the 6-year Maintenance Operation and Management (MOM) contract, Tsing Ma Management Limited is responsible for the following:

- Monitoring, patrolling, and controlling traffic
- Collecting tolls
- Carrying out routine inspection, maintenance, and repair for facilities within the TMCA
- Performing day-to-day road inspections and keeping associated records
- Preparing design proposals, cost estimates, and documents for non-scheduled works

A team within the Hong Kong Highways Department monitors the performance of Tsing Ma Management Limited with respect to highway management works. The team is also responsible for monitoring the structural behavior and condition of the three long-span cable-supported bridges in the TMCA. Other responsibilities of the Highways Department monitoring team include (Highways Department, 1997):

- Administering the maintenance portion of the Tsing Ma Management Limited contract, including coordination with other government maintenance authorities
- Carrying out random and regular inspections of the work conducted by Tsing Ma Management Limited
- Checking and approving proposals, cost estimates, and tenders prepared by Tsing Ma Management for non-scheduled work
- Developing and implementing the Wind and Structural Health Monitoring System for the three cable-supported bridges
- Overseeing the implementation of the quality assurance and safety plans of Tsing Ma Management Limited
- Assessing the effects and consequences of damages to facilities within the TMCA during emergency situations and coordinating responses with responsible departments and concerned parties

Mass Transit Railway

The Mass Transit Railway Corporation (a public entity) was established by statute in 1975 to operate the MTR. It was wholly owned by the government and operated on commercial principles (i.e., maximize the rate of return on assets, cover costs, and establish reserves for future expansions). The objective behind the establishment of the MTRC to run the MTR was to improve the efficiency and cost-effectiveness of railway operations. It was also consistent with the government's policy of not subsidizing public transport. In 1997, the MTRC netted HK\$1.6 billion to HK\$2.3 billion (US\$200 million to US\$300 million), with profits returned to the Hong Kong General Fund (Taube, 1999).

The Hong Kong Government decided to partially privatize the MTRC in 2000 in order to make the corporation more market sensitive, invite an influx of private equity, and better integrate the various rail

operations constituting this expanding rail network. The MTRCL came into existence as a public-private partnership (PPP) on June 30, 2000. The MTRCL is publicly listed with the Hong Kong Government as the primary shareholder.

The MTRCL operates six rail lines: the Kwun Tong Line, Tsuen Wan Line, Island Line, Eastern Harbour Crossing rail tunnel (connecting Kwun Tong to Quarry Bay), Tung Chung Line, and Airport Railway. In addition to railway operation and development, the MTRCL engages in development, sale, and management of residential and commercial properties above and adjacent to its stations and depots in partnership with property developers. These joint development agreements with owners and developers of nearby property contributed significantly to the financial viability of the rail systems and the infrastructure they required. The MTRCL also has a number of shopping centers as long-term investments and provides property management services (Liu, 2004).

2.2. Procurement Process

In the 1980s and 1990s, the Hong Kong Government had adequate capital for the much needed transportation infrastructure on the island. For most projects, Hong Kong chose to divert the funds to alternative uses while mobilizing private sector resources under the build-operate-transfer (BOT) form of PPP. This enabled the government to share project financial risks with private entities.

To determine whether the proposed project was suitable for the BOT type of PPP, the Hong Kong Government commissioned a team of engineers and financial, legal, and environmental consultants to conduct a multi-disciplinary feasibility study of the project. If found feasible, the government would prepare a project brief as part of the tender documents to:

- Explain the government's requirements with respect to the project and concession and provide available supporting documentation
- Provide guidance in the preparation of tenders and explain the tender evaluation criteria
- Set out in detail the government's requirement for design, construction, operation, and maintenance

However, some projects, such as the transportation projects associated with the Airport Core Program, did not merit applying the BOT-type PPP approach because too many uncertainties could delay the transportation projects from being completed on schedule. The government also believed that private companies would demand a high level of government guarantees and financial support. As a result, construction for the Tsing Ma Bridge was conventionally bid using the design-bid-build project delivery approach. The Kap Shui Mun Bridge, a second bridge in the Lantau Link, was delivered through a design-build contract.

The tendering process was monitored by the Independent Commission Against Corruption (ICAC) (Kumaraswamy and Zhang, 2003).

2.3. Construction Process

The Tsing Ma Bridge was built by the Anglo-Japanese Construction Joint Venture, composed of Trafalgar House Construction (Asia) Limited (part of the Kvaerner Group of Norway), Costain Civil Engineering Limited of Britain, and Mitsui and Co. Limited of Japan.

There were five major components in the construction of the Tsing Ma Bridge (Wai Man, 1998):

- **Foundations and construction of the bridge tower.** One tower is located on the Tsing Yi side and the other on a man-made island 120 meters (394 feet) from the coast of Ma Wan Island. Both towers are 206 meters (676 feet) above sea level and founded on relatively shallow bedrock.

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- **Anchorage.** The pulling forces in the main suspension cables were taken up by large gravity anchorages located at both ends of the bridge. The anchorages are massive concrete structures deeply seated on bedrock on the land side of Tsing Yi and Ma Wan Islands.
 - **Main cables.** The cables were constructed by an aerial spinning process. The process involved drawing wires from a constant-tension supply and pulling loops of these wires from one anchorage to the other, passing a 500-ton cast-iron saddle on top of each bridge tower seating the cable.
 - **Suspended deck.** The steelwork for the deck structure was fabricated in Britain and Japan. After delivery, it was further processed and assembled in Dongguan in China into standard deck modules.
 - **Approach span on the Tsing Yi side.** Similar in form and cross-section to the suspended deck, the approach span was supported on piers instead of cable support. The first span was assembled on the ground and raised into position using jacks. Further erection efforts then proceeded with a cantilever approach to attach smaller sections using derrick cranes stationed on the deck level.

Because of the interrelated nature of the Airport Program, a more intensive level of project integration and contract management was applied to the individual projects in order to meet the objectives and milestones of the overall program. NAPCO therefore introduced a comprehensive project control system for project managers to follow that included control, administrative, and reporting requirements. Program-level objectives were established by NAPCO and adopted as baseline targets at the contract levels. Individual project progress and status details were analyzed against the targets and summarized by the project managers.

Each month, the individual project managers were required to submit a report to NAPCO that provided the status of the project and contract. The reports included scope, program, and cost objectives as measured against the baseline. The reports also included key issues that would require NAPCO's immediate attention so as to not affect the overall Airport Core Program delivery schedule. Any potential interface conflicts and variances from the baseline schedule had to be reported immediately for prompt resolution. The reporting requirements provided the basic control for progress monitoring and problem identification and resolution (Schmitz and Shotwell, 1993).

3. FUNDING AND FINANCING

3.1. Costs and Financing

Airport Core Program

Airport financing was a point of contention with the PRC prior to the transfer of Hong Kong to PRC rule in July 1997. From the time the project was proposed in 1989 until 1991 when development of the project began, the Hong Kong Government lacked specific financial arrangements or commitments for the Airport Core Program despite repeated requests to the Chinese Government. Because administration of Hong Kong would be transferred to China in 1997, the government of China had to approve the methods of funding the Airport Core Program. From 1992 to 1994, the Hong Kong Government submitted four financial proposals (Lai, 1998). Opening of the new airport was delayed a year as a result of the protracted financing negotiations. PRC officials demanded a higher percentage of equity because they feared that the British Government was trying to divert resources through heavy borrowing on the project.

The first proposed financial plan was submitted in April 1992. The cost for the Airport Core Program, estimated at HK\$90.3 billion (US\$11.6 billion), was to be financed by equity of HK\$20.3 billion (US\$2.6 billion) and debts of HK\$73.0 billion (US\$9.4 billion). In addition, a "callable equity" of HK\$21.5 billion (US\$2.8 billion) was proposed to cover any cost increase or shortfall of funding between 1995 and 1997. This initial proposed financial plan was rejected by the Chinese Government because the

debt of HK\$73.0 billion (US\$9.4 billion) was considered excessive and it was feared that the “callable equity” would turn into debt after 1997.

In the second proposed financial plan, submitted in September 1992, the “callable equity” was removed and the total cost for the project was reduced to HK\$83.2 billion (US\$10.7 billion). The proposal included HK\$40 billion (US\$5.1 billion) in equity from proceeds from the sale of land near the airport. This second proposed financial plan was also rejected by the Chinese Government because it involved using HK\$20 billion (US\$2.6 billion) that would normally go into the Hong Kong Special Administrative Region (SAR) Land Fund.² The Chinese Government interpreted this second proposal as spending in advance of full funding.

The third proposed financial plan was submitted in June 1993. This third financial plan suggested that China could keep its share of HK\$20 billion (US\$2.6 billion) in the Land Fund, but the debt would be increased by the same amount. However, due to the delay of construction, the total costs were raised to HK\$90.3 billion (US\$11.6 billion), with debt increased to HK\$45 billion (US\$5.8 billion). The increase in debt was not approved by the Chinese Government.

The fourth and final proposed financial plan was submitted in February 1994. The total project cost was reduced to HK\$83.3 billion (US\$10.7 billion). The debt to finance the cost was set at HK\$23 billion (US\$2.9 billion) and equity was increased to HK\$60.3 billion (US\$7.7 billion). The Chinese Government approved the fourth financial proposal by signing the “Financial Arrangements for the New Airport at Chek Lap Kok and the Airport Railway” in 1994 (Lai, 1998).

In the end, the Hong Kong Government contributed equity of HK\$36.7 billion (US\$4.7 billion) and borrowed HK\$11.7 billion (US\$1.5 billion) from a consortium of 48 local and international banks. The loan had to be refinanced in 2001. In addition, the Hong Kong Monetary Authority managed a HK\$5.0 billion (US\$ 0.64 billion) program that helped to establish confidence in the airport’s other borrowing programs (Taube, 1999). The total cost for the Airport Core Program, including the Tsing Ma Bridge, the road-rail link, freeways, tunnels, and an express train, was approximately HK\$155.3 billion (US\$19.9 billion). The Airport Railway cost HK\$34 billion (US\$4.4 billion). The Hong Kong Government funded two-thirds of the cost through an HK\$23.7 billion (US\$3.0 billion) equity injection into the MTRC, while the MTRC covered the remaining cost through debt and operating profits.

Tsing Ma Bridge

As mentioned in Section 2.3, the Tsing Ma Bridge was built by the Anglo-Japanese Construction Joint Venture. The group’s bid of HK\$922 million (US\$118 million) was 52 percent higher than a HK\$608 million (US\$77.8 million) bid submitted by Hyundai Engineering & Construction Co., a South Korean-led consortium.

According to the International Herald Tribune, the Hong Kong Government designated four international consortiums as fiscally and technically competent to bid on the Tsing Ma Bridge project. The Anglo-Japanese Construction Joint Venture and Hyundai Engineering, whose main subcontractor was a Chinese construction firm, were the two lowest. Hong Kong officials asked Hyundai for additional financial security, which included a HK\$703 million (US\$90 million) working capital fund and a HK\$2 billion (US\$0.26 billion) irrevocable letter of credit. “The Hyundai officials agreed to the extra HK\$703 million (US\$90 million) fund, but refused to supply the letter of credit calling the request an ‘insult.’” It was argued that Hyundai Engineering’s financial situation deteriorated following the initial qualification round, which forced the Hong Kong Government to ask for further guarantees (Zuckerman, 1992).

² The SAR Government Land Fund was established on August 13, 1986 to facilitate the management of the Hong Kong SAR’s share of revenue obtained from land sales made from the time the Joint Declaration of Hong Kong and China was enforced in May 1985 until the establishment of the Hong Kong SAR in July 1997.

The project was funded by the Hong Kong Government through paid equity, deferral of dividends, and granting of land at full market value for property development (Lai, 2006). Figure 3 shows the Tsing Ma Bridge at night.

Figure 3: Tsing Ma Bridge in the Evening



Source: Sevela at Wikimedia Commons

Tsing Ma Control Area

Funding for highway maintenance works in the TMCA is provided by toll revenues of the Lantau Link, which are collected by Tsing Ma Management Limited on behalf of the government. Under the MOM contract, scheduled maintenance works during the 6-year term contract are covered by the fixed management fee paid to Tsing Ma Management Limited. For unscheduled maintenance works, Tsing Ma Management is reimbursed for the expenses incurred plus a supervision fee.

3.2. Contingency Management

Airport Program control procedures required that all Hong Kong Government-funded projects must submit all funding requests through NAPCO prior to the normal administrative approval process in order to ensure that such requests were within the baseline scope and budget constraints. The policy also required that proposed additions to the scope and new cost items had to be offset by reductions in other scope and cost items in the same project area. This was implemented through a formal analysis of project trends, where all potential changes to the baseline scope, schedule, and costs had to be identified by the project manager and reported to NAPCO prior to implementation.

The baseline plan set out a clear definition of the scope and budget of each Airport Program project, as well as milestone and interface schedules to execute them. The individual project and contract scopes, schedules, and budgets were developed by the project managers within the framework of the overall Airport Program baseline plan. The baseline plan also included appropriate amounts of contingency funds to account for reasonable unforeseen circumstances. Each contract also included contingencies to cover design development and contract-related variances in budget.

4. ASSESSMENT AND CONCLUSIONS

4.1. Institutional Context

As part of the larger Airport Core Program, the Tsing Ma Bridge was built as a gateway to Hong Kong and was developed as part of the extensive transport network that was needed to connect Hong Kong with the new Hong Kong International Airport on Chek Lap Kok. All elements of the transport network for the Airport Core Program were funded entirely by the Hong Kong Government.

The major challenge for the Hong Kong Government was to put into place, in a very short timeframe, the critical transportation infrastructure involving all modes that would connect Hong Kong to the Chinese Mainland and the rest of the world after reunification with China in 1997. Because the financial plans for the Airport Core Program and the Tsing Ma Bridge extended beyond the time of reunification, it was important to gain agreement with the PRC government in order to reduce the risks for concessionaires.

The roadway and rail elements of the Tsing Ma Bridge are maintained and operated by two entities, one controlled by the government and the other by a private corporation. The maintenance and operations of the roadway on the Tsing Ma Bridge are managed by Tsing Ma Management Limited under a MOM contract administered by the Hong Kong Government. All rail operations are maintained by the MTRCL, a private, publicly listed corporation. Thus, coordination between the two is critical, especially in the event of emergencies causing vehicular traffic to be diverted to the lower portion of the bridge.

4.2. Issues, Strategies, and Lessons Learned

There were many issues that affected the timely and cost-effective completion of the Tsing Ma Bridge. The issues ranged from a tight schedule, to complete construction and financial planning, to coordination with many stakeholders and associated political impacts, as outlined below.

- **Early coordination.** Prohibitively high land prices and financing costs, and the need to construct the Airport Core Program prior to July 1997 required that the duration of construction had to be kept to a minimum. These conditions necessitated coordination of early financial planning among the project's public sponsors, which led to an eventual agreement on the fourth attempt to draft an acceptable financial plan for the program. Early planning and greater oversight in light of an accelerated schedule was essential.
- **Flexibility.** In light of the imminent transfer of Hong Kong from the British Government to the PRC in July 1997, there was a need for flexibility in dealing with the many key stakeholders each having different sensitivities and authority. There were also differences in stakeholder criteria that required four financial plan iterations to arrive at a plan that was acceptable to all public parties to the deal.
- **Lowest bidder not selected.** The low bid was not selected, because project sponsors opted for a best-value basis for contractor selection. While the decision to choose a higher bidder may have been a political decision in which the Hong Kong Government favored British firms versus a South Korean-led team, other observers have suggested that the choice not to select the lowest bidder was based on the perception that the financial situation had deteriorated following the initial qualification round, which caused the Hong Kong Government to ask for further guarantees. The low bidder did not provide financial guarantees that were acceptable to the Hong Kong Government.
- **Design-bid-build approach.** The overall planning for the Tsing Ma Bridge was completed in 1983 and the contract for the bridge was ready for bid. However, the project was suspended in order to evaluate other aspects of the overall Airport Core Program and to finalize the financial plan. The contract to construct the bridge was awarded in 1992 after other elements of the Airport Core Program were planned, but 2 years before the PRC approved the full financial plan for the

overall program. This was necessary to complete the bridge by the required deadline before transfer of Hong Kong to the PRC.

- **Public owned and operated versus privatization.** The MTRCL was initially set up and operated by the Hong Kong Government to provide a sufficient public transportation option for its residents. From the beginning, it was treated and operated like a government entity. This resulted in a slow response by the government to rapidly changing market conditions and demands. While the organization was able to generate a consistent profit level, it lacked the incentive and the capability to compete with other service options. In 2000, the MTRCL was partially privatized to bring equity capital and business best practices to the project.
- **MTRCL fare structure.** Because the MTRCL was privatized in 2000 and is publicly traded on the Hong Kong Stock Exchange, it must maintain a certain rate of return to its shareholders. In addition, because the MTRCL receives subsidies from the Hong Kong Government, it needs to ensure sufficient funds are available for operational requirements and interest payments on its capital investment loans. This requires the company to set a fare structure that meets its financial objectives and operational requirements, which has resulted in a higher fare structure than its bus counterparts. The higher fare structure has created a certain degree of social concern, especially for low-income residents. It has been argued that the initially public-funded MTRC should provide a service that is affordable for the majority of people in Hong Kong.
- **Public funding.** Publicly funding the transportation network associated with the new Hong Kong International Airport provided more certainty that construction of the full transport network serving the new airport would be completed on time (i.e., prior to the transfer of Hong Kong to the PRC in July 1997), and without the need for protracted negotiations with contractors that might otherwise have been necessary under BOT arrangements, which could have jeopardized schedule adherence for the entire Airport Core Program.

4.3. Implications for the Tappan Zee Bridge Project

There are a number of parallels between the Tsing Ma Bridge project and the TZB project, including:

- **Both projects include rail.** While the TZB does not currently accommodate rail service, it is being considered during the planning process for the reconstructed bridge. For the new Tsing Ma Bridge, rail was a prerequisite for the Airport Core Program transportation network where there are high traffic volumes and a greater reliance on rail passenger service. With a daily patronage of more than 2.3 million passengers, the Airport Core Program rail system is one of the most intensively used mass transit railway systems in the world.
- **The site characteristics of each bridge require complex engineered designs.** The Tsing Ma Bridge was constructed to withstand strong winds associated with the occurrence of a typhoon. Similarly, the TZB needs to be constructed to withstand an earthquake.
- **Both projects involve multiple stakeholders.** As with the Tsing Ma Bridge, there are multiple public sector stakeholder sponsors with different sensitivities, objectives, and criteria for success or acceptability to consider in negotiations on project scope, design, and financing for the new TZB. With control over Hong Kong being transferred from the British government to China and with the Hong Kong Government financing a large part of the Airport Core Program, primarily the highway network, project sponsors needed to obtain Chinese government approval of the long-term financial plans and contract agreements before proceeding with the entire Airport Core Program.
- **Both bridges are tolled.** Both bridges have one-way tolls that economize on the toll collection function and improve operational safety. This is easier to justify for the Tsing Ma Bridge because it serves a series of connected islands leading to the new airport where there is only one route in and out. In this instance, all inbound vehicles must use the same bridge facility for outbound trips from Lantau Island and the new airport on Chek Lap Kok Island.

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- **The complexity of each project requires the consideration of alternative financial plans.** When considering a PPP, there is a need to consider alternative financial plans until a set of funding and financing arrangements are acceptable to all public sponsor agencies, and private provider firms when considering a PPP.
 - **The Tsing Ma Bridge was part of a much larger plan of projects.** The Tsing Ma Bridge, while a mega-project in itself, was part of a much larger program of projects aimed at regional integration due to an impending intergovernmental/international transfer of governance responsibility after 99 years of British authority. The TZB is a single project that ties together portions of New York and New Jersey on the west side of the Hudson River to portions of New York and New England on the east side of the river.

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Figure 1: Thierry from Le Plessis Robinson, France via Wikimedia Commons,
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Woodrow Wilson Bridge Project Case Study

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New York State
Thruway
Authority

Woodrow Wilson Bridge Project

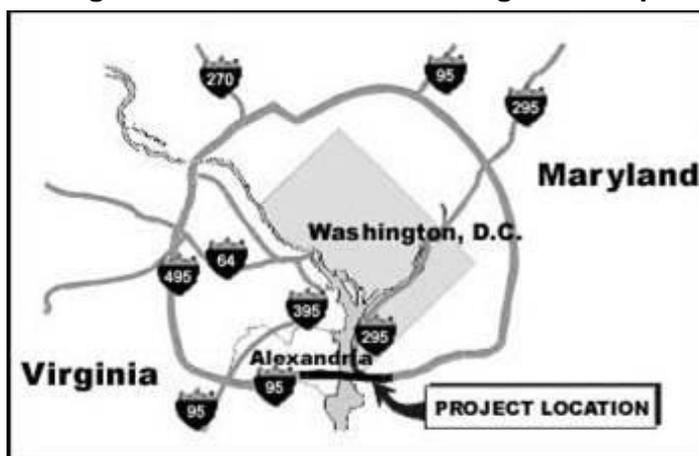
Public Private Partnership Delivery	Construction/ Development Period	Concession Period	Contract Value	Status
Design-Bid-Build	2001–2012	N/A	\$2.5 billion	First span opened to two-way traffic, original bridge torn down, and second span under construction

SUMMARY

The Woodrow Wilson Bridge (WWB) is a critical link in the Interstate-95 (I-95) corridor that stretches from Maine to Florida, carrying this vital highway across the Potomac River from Maryland to Virginia just south of the nation’s capital, Washington, D.C. Figure 1 provides a site map for the WWB project, showing its strategic position on the I-95/I-495 Beltway that surrounds Washington, D.C., and its importance to the mobility of the entire region.

Opened in 1961, the original six-lane bridge has long passed its 75,000 daily vehicle capacity, carrying more than 200,000 vehicles daily in heavy congestion during much of the day, especially in the morning and evening peak periods. After 11 years of planning and debate over environmental concerns and financial responsibility for the bridge, the Federal government, Maryland, Virginia, and the District of Columbia came to an agreement to share the costs of replacing the aging original bridge with a new, 12-lane dual-span bridge, including parallel bascule drawbridges to accommodate vessels of more than 70 feet.

Figure 1: Woodrow Wilson Bridge Site Map



Source: WWB Project

In return for the Federal government committing just over \$1.5 billion in “Special” funds or 62 percent of the total project cost of \$2.5 billion, Maryland and Virginia agreed to equally share the costs of future operations and maintenance of the new, expanded (12-lane) bridge and related approach facilities. They also agreed, along with the District of Columbia, to contribute to the capital cost of the new bridge project from state and regular Federal funding sources. The new 1.2-mile dual-span bridge will include four general purpose lanes, one high-occupancy vehicle (HOV)/express bus/transit lane, and one merging/diverging lane in each direction. The project also includes improvements to four major interchanges, two on each side of the Potomac River, to facilitate traffic movements to and from the replacement bridge and the nearby highway network. The resulting facility will significantly increase the throughput capacity of the WWB due to the extra travel lanes and the provision of special purpose lanes to serve vehicles with significantly higher ridership capacity.

The southern-most bridge facility opened to traffic in June 2006, carrying traffic in both directions. This enabled the original bridge to be demolished in the fall of 2006 while construction of the parallel bridge facility began on foundations built at the same time that the foundations were constructed for the new bridge already opened.

Slated for completion in 2012, the WWB project is one of the largest and most complex undertakings in the Washington, D.C. metropolitan area. However, through careful planning, a flexible partnering approach to contractor management, effective maintenance of traffic, and due diligence financial reporting, the project is on schedule and close to its original budget. The project has also introduced a number of environmental, construction, and traffic mitigation strategies while keeping the traveling public and local communities informed about project status and developments through various ongoing public outreach and communication techniques.

In comparing the WWB project to the Tappan Zee Bridge (TZB)/I-287 Corridor project, there are several aspects of this project, key lessons learned, and strategies used that are worthy of note:

- The WWB project is similar to the TZB project in terms of size, complexity, environmental sensitivity, community concerns, and critical need for replacement.
- Both facilities represent essential components of the regional and local highway system and are important linkages in the nation's Interstate Highway System.
- Both projects contemplate the possible incorporation of rail transit services. The WWB project includes a special purpose lane in each direction intended for high-capacity vehicles (such as HOV, Express, or bus rapid transit [BRT]) or at a later time as a dedicated rail transit line. The TZB project is also considering the possibility of adding rail transit (such as commuter rail or light rail) to the facility to boost capacity.
- The WWB project required several iterations of environmental study, including one Draft Environmental Impact Statement (DEIS), two supplemental DEIS reports, a Final Environmental Impact Statement (FEIS), and a supplemental FEIS before the project received the Record of Decision (ROD) enabling it to proceed.
- WWB project sponsors have remained vigilant in tracking and reporting the costs of the project as it has evolved from planning through development. In annual updates of the initial financial plan issued in 2001, project sponsors have identified changes in project costs and opportunities to balance the increases with reductions to keep the project within a reasonable price range as it has progressed.
- WWB financial plans and annual updates are consistent with the guidelines issued last year by the Federal Highway Administration (FHWA) for financial reporting of mega-projects of at least \$500 million in size. FHWA considers the financial reports produced by the WWB project sponsors to be model financial plans and annual updates.
- Project managers recognized early during WWB project development that a partnering process needed to be in place so that problems could be resolved as quickly as possible. In addition, an outside facilitator specializing in the construction industry organized regular project update workshops with contractors, prepared agendas and meeting minutes, and oversaw collection and reporting of partnering rating surveys. The partnering process has proven to be very successful in facilitating trust among the public agency sponsors and the private sector contractors, promoting professionalism in the project partnership relationships and minimizing claims and disputes that could have significantly delayed the project in meeting its schedule milestones.

At the midpoint of the overall project delivery schedule, about 62 percent of the total projected costs of the WWB project had been expended as of September 2006. Current estimates place the final total project cost at \$2.476 billion, within 1.4 percent of the cost estimate contained in the initial financial plan issued in 2001. Continued tracking and annual reporting of changes in project costs, funding, and schedule and ways to address variances will help keep the project on schedule and within budget until project completion in late 2012.

1. PROJECT OVERVIEW

1.1. Project Description

The WWB project is a \$2.5 billion bridge replacement project on the I-95/I-495 Capital Beltway surrounding Washington, D.C. The bridge is one of seven highway facility crossings over the Potomac River within the Washington, D.C. metropolitan area that link Virginia and Maryland. The 1.2-mile bridge consists of two parallel spans that carry I-95 over the Potomac River, located just south of the City of Alexandria, as shown in Figure 2. The bridge spans include parallel drawbridges to permit navigational passage of high-level vessels.

Figure 2: Woodrow Wilson Bridge Alignment



Source: WWB Project

The original WWB is being replaced with two parallel bridge facilities, each with a bascule-style drawbridge with a maximum clearance of 70 feet when closed, 20 feet higher than the original bridge. One bridge facility will carry eastbound traffic over the Potomac River and the other bridge facility will carry westbound traffic. Figure 3 illustrates how the replacement bridge will look from the Virginia side, with the bascule drawspans open to navigational traffic.

Figure 3: Illustration of Completed Bridge From the Virginia Side



Source: WWB Project

The replacement bridge is being constructed approximately 30 feet south of the existing bridge. Each bridge will include four general purpose lanes, one HOV/express bus/transit lane, and one merging/diverging lane. The project also includes improvements to four major interchanges, as shown in Figure 2, with two on each side of the Potomac River to facilitate traffic movements to and from the replacement bridge and the nearby highway network.

The southern-most bridge facility opened to traffic in June 2006, carrying traffic in both directions. This enabled the original bridge to be demolished in the fall of 2006 and construction to begin on the parallel facility whose foundations were built at the same time as the bridge facility already opened. Figure 4 shows the southern span under two-way operations prior to demolition of the original bridge (to the left of the picture).

Figure 4: Two-Way Operation of Southern Span of the New Woodrow Wilson Bridge

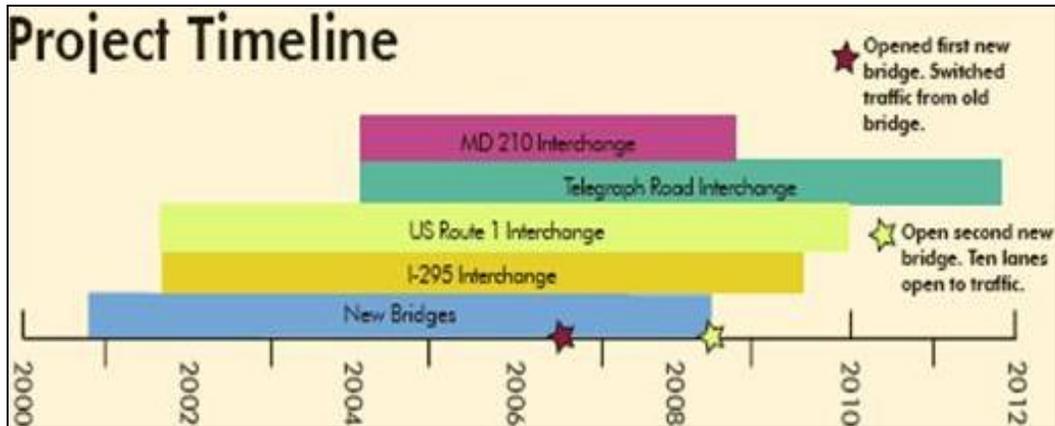


Source: WWB Project

Replacement of the WWB responds to two critical issues: the advanced deterioration of the aging facility and the increasing demands placed upon it by commuter and interstate traffic volumes that far exceed its original design capacity. The project is jointly directed by the FHWA, Virginia Department of Transportation (VDOT), Maryland State Highway Administration (MSHA), and the District of Columbia Department of Public Works (DCPW).

The overall schedule to replace the bridge and complete the adjacent interchanges is 11 years, extending from 2001 to late 2012, as shown in Figure 5.

Figure 5: WWB Project Schedule



Source: WWB Project

1.2. Project History

The construction of the WWB, originally named the Jones Point Bridge, was first authorized in 1954 by an act signed by President Dwight D. Eisenhower to provide for two bridges over the Potomac River. The act provided that the Federal government would construct the bridge and required Maryland and Virginia to build the approaches and interchanges leading up to the bridge. In 1956, President Eisenhower signed Public Law 84-534 transferring responsibility for the project from the Interior Department to the Secretary of Commerce, whose department included the Bureau of Public Roads. President Eisenhower also signed Public Law 84-535 renaming the bridge the Woodrow Wilson Memorial Bridge.

In 1961, President John F. Kennedy signed Public Law 87-358, which mandated that the WWB be maintained and operated at the expense of the States of Maryland and Virginia and the District of Columbia. That same year, Maryland, Virginia, and the District of Columbia entered into an agreement in which maintenance responsibilities and expenses were divided among the three jurisdictions.

Construction of the bridge began in 1958 and was completed in 1961. Figure 6 shows how the WWB appeared when it was new, in 1962. The six-lane bridge was 5,900 feet long, with a 25-foot deep shipping channel located about 500 feet from the Virginia shoreline, and a high-level bascule drawspan over the channel that allowed large marine traffic to pass. The drawspan had 50 feet of vertical navigational clearance when closed and 175 feet of horizontal navigational clearance. About 2,000 feet of the bridge was over land in Virginia because the shipping channel was close to the Virginia shoreline. The bridge was designed to handle approximately 75,000 vehicles per day.

Since 1964, the majority of the I-95/I-495 Capital Beltway has been expanded to eight lanes. The only remaining six-lane sections of the I-95 portion of the Beltway are the WWB and the north and south approaches to the bridge from U.S. Route 1 in Virginia and from I-295 in Maryland (for a distance of 2.1 miles, excluding the WWB). In addition, there is a 3-mile section of the I-495 portion of the Beltway linking it to I-270 in Maryland. As a result of significant growth in the region, traffic volume on the bridge has increased to more than 200,000 vehicles per day, exceeding the bridge's original design capacity by 167 percent. Traffic congestion on the Capital Beltway is exacerbated by bottlenecks created where the eight-lane portion of Beltway narrows to six lanes, an increase in accident rates, and the fact that the bridge had to be raised about 260 times a year to accommodate river traffic. The increase in congestion also contributed to a decline in air quality in the region.

Figure 6: Original Woodrow Wilson Bridge in 1962



Source: WWB Project

2. PROJECT DEVELOPMENT

2.1. Authorizing Legislation

The issue of ownership and maintenance responsibilities re-emerged in the late 1970s when the bridge began to deteriorate and required extensive repairs. According to the FHWA (2007), FHWA officials reviewed the legislative background and found that none of the legislation enacted during the planning and construction phase addressed ownership of the bridge. “The FHWA officials realized that the WWB was the property of the FHWA—the only part of the Interstate System owned by the Agency.” The issue of ownership was resolved under the Federal-Aid Highway Act of 1981 (Public law 97-134). The Act authorized \$60 million for the reconstruction, resurfacing, restoration, or rehabilitation of the WWB provided that the Secretary of Transportation, the states, and the District executed an agreement for future maintenance and rehabilitation of the bridge. The new maintenance agreement was approved in 1982 and stated the terms under which the State of Maryland, Commonwealth of Virginia, and District of Columbia would be willing to accept title to the bridge (FHWA 2007).

The new maintenance agreement was approved in 1985. It provided that the jurisdictions would take title of the bridge upon successful completion of the \$60 million project. It also stipulated that the Federal government would seek more funds for the bridge for any future construction or reconstruction that was needed. In 1989, a draft agreement was completed to transfer title to the bridge. However, the three jurisdictions did not execute it because the agreement called for them to assume responsibility for a bridge that they determined was in need of much additional work, including a possible replacement.

In 1991, with the passage of the Intermodal Surface Transportation Enhancement Act (ISTEA), a \$15 million general fund authorization and approximately \$30 million contract authority were provided for repairs to the bridge. The next major action was in 1995 when Congress enacted the Woodrow Wilson Memorial Bridge Authority Act as part of the National Highway System Designation Act. The act created the Woodrow Wilson Bridge Authority, an interstate compact of Maryland, Virginia, and the District of Columbia, that stipulated who was to take title to the bridge. It also provided for the reconstruction of the project and negotiation between the U.S. Department of Transportation (USDOT) and the area jurisdictions as to what the ultimate cost, design, and Federal share of the bridge would be.

In 1998, the Transportation Equity Act for the 21st Century (TEA-21) was passed. In it, Congress recognized Federal responsibility of the bridge and authorized \$900 million over 6 years for construction of the bridge. TEA-21 prohibited the use of Federal funds for construction on the WWB project until the jurisdictions agreed on a new owner for the bridge. As part of the ownership agreement, TEA-21 required an approved finance plan prior to the construction of the bridge. However, based on preliminary financial analyses of the bridge alternatives, the states concluded that \$900 million provided inadequate funding for the project and secured a commitment from the Federal government to develop a plan to fund the remaining costs of the bridge. After several alternative funding arrangements were considered in the ongoing project financial planning process, the Federal government proposed to include a \$600 million advanced authorization in the next highway funding reauthorization bill. In FY 2001, the Woodrow Wilson Memorial Bridge Act was amended to include an additional \$600 million for the bridge replacement, thereby raising the Federal commitment to the project to \$1.5 billion. For their part, the states committed to the remaining project costs, amounting to \$900 million.

2.2. Environmental Review Process

In 1988, the FHWA, Maryland, Virginia, and the District of Columbia initiated a study to address the bridge's operational and structural deficiencies. The FHWA published a Notice of Intent to prepare a DEIS in 1990. The DEIS evaluated eight alternatives to improve the WWB and the I-95 approach roadway network between Telegraph Road in Virginia and Indian Head Highway in Maryland. There were six alternatives to replace the bridge and improve the adjacent interchanges, one that would require repairs and upgrade of the existing bridge, and the no-build alternative. Each of the bridge replacement alternatives proposed eight lanes for general traffic, two HOV lanes, and two auxiliary lanes.

In 1992, the FHWA formed an Independent Review Committee (IRC) to review the DEIS and identify potential issues that might be challenged in court. The IRC found the DEIS to be adequate, but identified deficiencies including "failure to sufficiently address construction impacts, failure to critically analyze the assumption that HOV lanes would be added to the Beltway, and failure to evaluate additional regional impacts." The IRC also noted that the National Historic Preservation Act (NHPA) Section 106 analysis "had not yet been initiated" (Slater 1999).

The FHWA also formed a Coordination Committee composed of elected officials and senior government executives from the local jurisdictions to coordinate project development. The committee conducted an aggressive public involvement program to solicit suggestions for project alternatives. Through the public involvement program and an initial screening process, the committee eliminated alternatives that were determined to be beyond the scope of the study, technically infeasible, or incompatible with the project's purpose and need. The six remaining build alternatives were evaluated, and the results were published in two supplemental DEIS reports issued in January and July 1996. The build alternatives differed in form (e.g., bridge or tunnel) and location of the river crossing.

In May 1996, the FHWA requested that the National Capital Region Transportation Planning Board (TPB) determine regional air quality conformity for the proposed bridge replacement with 12 lanes, but "opening with 10 lanes until the conditions for multimodal regional travel are reached" (Slater 1999). After the conformity assessment was approved, the Coordination Committee selected a Preferred Alternative and began to prepare the FEIS. The FEIS, which was released in 1997, omitted the 10-lane alternatives because they could not satisfactorily address the transportation needs of the region. The FHWA reviewed the FEIS and produced an ROD in November 1997. The ROD identified the Selected Alternative and key features that should continue to be included in the project design.

In 1998, the City of Alexandria and three organizations—the Coalition for a Sensible Bridge, the Historic Alexandria Foundation, and the Alexandria Historic Restoration and Preservation Commission—filed a lawsuit against the FHWA. The lawsuit alleged that FHWA did not comply with applicable environmental and historic laws and regulations when it chose the Selected Alternative for the WWB project. The lawsuit asserted that the FEIS did not adequately evaluate a 10-lane bridge option.

A settlement was reached with the City of Alexandria and USDOT on March 1, 1999. However, similar common ground could not be found with the other organizations involved in the suit. The U.S. District Court issued a ruling on April 15, 1999 against the FHWA. Although the FHWA believed that the 1997 FEIS sufficiently addressed all feasible and prudent alternatives, it initiated studies and investigations to identify a range of potential 10-lane mainline alternatives and corresponding interchange configurations to facilitate the mainline options. A supplemental FEIS was completed in 2000, fulfilling the project's environmental documentation requirements.

The final design remained the same as the 1997 Selected Alternative, which consisted of eight general use lanes to match the existing Capital Beltway, two HOV/express bus/transit lanes, and two merging/diverging lanes to ease traffic entering and exiting the Capital Beltway.

The final design also widened the second of the parallel bridges to be built by 14 feet to accommodate a pedestrian-bicycle path on the north side of the bridge. Looking to the north, Figure 7 portrays how this extension will appear when the second bridge is completed and fully operational.

Figure 7: Pedestrian and Bicycle Extension to New Woodrow Wilson Bridge



Source: WWB Project

2.3. Public Involvement, Communication, and Commuter Assistance

As mentioned above, the Coordination Committee conducted an extensive public outreach program starting in 1992. Elements of the program included the following:

- Public and interagency meetings
- Workshops and symposiums
- Site tours, information sessions, and speakers bureau to describe projects and status

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- A community center the public could visit to review project documents and make suggestions or complaints
 - Project fact-sheets focused on specific issues and developments
 - Toll-free information telephone line to provide construction updates, major traffic flow changes and lane closures, and community news
 - Proactive traffic management plan to avoid construction during peak travel periods and to promptly clear incidents
 - Connections Newsletter describing construction progress and project developments in mailed or electronic versions, accessible on the project web site described below
 - A project web site (www.wilsonbridge.com) that has been maintained throughout the life of the project. The web site includes the following information:
 - The overall WWB project description and status report
 - “Bridge Bucks,” which is an incentive program that provides \$50 monthly in transit passes (Metrorail, buses, or organized vanpools) for a period of 1 year for those who need to travel through the project corridor to get to and from work or school
 - “Mission Possible, Keep You Moving” program providing traveler information on:
 - Commuter and employer solutions
 - Current traffic conditions (real-time traffic, lane closures, traveler information)
 - Regional travel solutions
 - Clearing traffic incidents
 - Bridge openings
 - Mariner's alerts
 - Construction program (including the I-495/U.S. Route 1 Interchange project)
 - Project and neighborhood news
 - Environmental aspects
 - Civil rights and disadvantaged business enterprise (DBE) programs
 - Project scrapbook and video

2.4. Procurement Approach

The project sponsors used the traditional design-bid-build approach to project delivery, in part due to the full funding of the project by the Federal government and the adjoining states. The project was divided into multiple components based on the specialized functional requirements for each part of the development effort. Each of these components is described below.

Bridge Design

The procurement process started with a design competition in January 1998. The competition called for a movable bridge design of the bascule type that would satisfy local aesthetic requirements. The bridge had to be based on arches in the tradition of other notable Potomac River bridges further upstream. Design proposals were submitted by seven joint venture teams. The design proposals were reviewed by a WWB selection committee composed of 15 members from a variety of public and private backgrounds and chaired by former Maryland Governor Harry Hughes. Four finalists were selected to submit two designs each. The four teams submitted a total of seven designs.

The team of DeLeuw, Cather & Co. and Steinman, Boynton, Gronquist & Birdsall submitted the winning design, which called for parallel spans, each six lanes wide, built on box girders and v-shaped piers that appear as arches. See Figure 8 for a rendering of the winning WWB design, shown from the Maryland side of the bridge from the south.

Figure 8: New Woodrow Wilson Bridge From the Maryland Side



Source: WWB Project

Bridge Construction

Construction contracts were advertised in the classified sections of construction/engineering trade media, such as the Engineering News Record. Prior to advertising, the project team conducted outreach to qualified contractors worldwide. Project specifications/plans were made available to potential bidders for a nominal price to cover the cost of duplication. The project team provided group briefings for interested contractors to present contracts and to call attention to specific contractual aspects. Special outreach was also conducted to disadvantaged business enterprises.

Contractor bids were due on a specific date and time. Sealed bids were physically opened at a bid opening and an “apparent” low bidder was identified. The apparent winner’s proposal was then more closely examined to make certain it met contract specifications and other conditions. Typically completed in a few days, this process also allowed non-winners to challenge the apparent low bidder’s submission. A legal process was in place to quickly handle bid challenges. After the low bidder’s proposal was verified as correct, various required submissions were made by the low bidder and necessary legal documents were prepared. Upon execution of all required documents, the contract was formally awarded. The contractor then received a “Notice to Proceed,” which triggered mobilization and actual construction.

The bridge construction program was split into three main phases: dredging the riverbed, building the foundations, and constructing the actual bridge and approach roads. Each phase is described in the following sections.

Dredging Phase

The dredging contract provided for dredging 330,000 cubic yards of river soil to create a channel for construction equipment to safely access the locations for the foundations to be built through a submerged aquatic vegetation (SAV) bed. MSHA received four bids for the initial dredging contract, ranging from \$14.5 million to \$23.7 million. The low-bid contractor for this phase was Weeks Marine, Inc. The dredging contract was completed in March 2001.

Foundations Phase

The second phase, the foundations contract, involved placing foundations in place so that they did not conflict with the existing bridge and bulkhead improvements in certain areas for the construction staging areas. MSHA received five bids for the contract, ranging from \$125.4 million to \$134.5 million. The low-bid contractor for this phase was the joint venture team of Tidewater Construction Co., Kiewit Construction Co., and Clarke Construction Group Inc. of Virginia Beach. The foundations contract was completed in June 2003.

Bridge Construction Phase

The final phase, and the most contentious, was the building of the bridge itself. The contract was to include the balance of the foundations, pre-stressed concrete v-shaped piers, steel box girders, control center, concrete deck, electrical controls, signs, and lighting. Maryland officials initially bid the project as a single contract in 2001. The officials received one bid in the amount of \$860 million, more than 70 percent above MSHA's estimate of \$487 million. As a result, the bid was rejected and the procurement was cancelled, pending restructuring the request for construction proposals.

The MSHA team recruited an IRC composed of industry experts to advise the team on reducing the cost of the bridge construction and making the proposal request more attractive to prospective bidders to increase competition and reduce bid prices. The committee recommended splitting the project into three contracts—one for the bascule section; a second for the mostly overland segment from the Virginia shore to the bascule; and a third piece, mostly over water, from Maryland to the drawspan. The three-contract procurement plan produced the desired results. Maryland officials received five bids for the bascule section, seven bids for the overland section, and four bids for the Maryland-to-drawspan section. In addition, the three lowest bids came in at a total of \$496 million, only slightly more than the original project cost estimate.

Potomac River Bridge—Bascule Span Contract

Five bids were received for the Potomac River Bridge—Bascule Span contract ranging from \$184.9 million to \$244.7 million. The low bidder, the joint venture of American Bridge Co. and Edward Kraemer & Sons Inc., was awarded the contract to build the bascule portion of the bridge. The winning bid was 11 percent above MSHA's \$168 million estimate. Figure 9 shows construction of the bascule drawspan sections of the bridge.

Figure 9: Bridge Bascule Construction



Source: WWB Project

Potomac River Bridge—Virginia Approach Span Contract

Seven bids, ranging from \$115.5 million to \$157.9 million, were received on the Potomac River Bridge—Virginia Approach Span contract. The Potomac River Bridge—Virginia Approach Span contract was awarded to the low bidder, Virginia Approach Constructors. The bid was below the \$160 million estimate

and had the effect of reducing the bid cost for the bridge by 8 percent below the estimated budget at that time. The contract involved the construction of seven of the bridge's new 18 spans, six of which were on land in Alexandria's Jones Point Park.

Potomac River Bridge–Maryland Approach Span Contract

The Potomac River Bridge–Maryland Approach Span contract involves construction of the bridge from Maryland over water to the drawspan near the Alexandria shore. It involves construction of 10 of the 18 bridge spans. MSHA received four bids that ranged from \$191.5 million to \$213.3 million. The Maryland Approach Span contract was awarded to the low bidder, Potomac Constructors.

Original Bridge Demolition

Following the completion of the first bridge span on the south side of the project, all traffic on the old bridge was transferred to the eight lanes on the new span. This permitted the demolition of the original bridge to the north of the second bridge span, which was already under construction, without interrupting traffic during demolition. Figure 10 shows a dramatic night-time picture of the demolition activity on the original bridge in 2005.

Figure 10: Original Bridge Demolition at Hunting Point Alexandria, VA



Source: Trevor Wrayton, VDOT, WWB Project

Interchange Construction

As noted earlier, the WWB project includes the reconstruction of four major interchanges at I-295 and MD-210 to the east of the bridge in Maryland, and at Telegraph Road and U.S. Route 1 to the west of the bridge on the Virginia side. These related but critical elements of the project were necessary to facilitate free-flowing and safe connections between the newly expanded bridge and the surrounding highway and road networks. The four interchange projects are described below.

I-295 Interchange

The I-295 Interchange project involves the complete reconstruction of the existing interchange beginning at the Maryland abutment for the Potomac River Bridge and extending east approximately 1 mile. The

project will provide ramps to the north (to/from D.C.) along I-295, connections to the “S-curve” ramps for MD-210 access, and direct connections to the waterfront and Beltway parcels at National Harbor. There are four contracts associated with this phase of the project. Contract values range from \$9.4 million to \$93.2 million. The 2006 cost estimate for this project is \$299.5 million. Figure 11 shows the I-295 interchange facility under construction.

Figure 11: I-295 Interchange on the Maryland Side



Source: Photo by Tom Saunders, VDOT, WWB Project

MD-210 Interchange

The MD-210 Interchange project involves the complete reconstruction of the existing interchange beginning west of the existing Bald Eagle Road Bridge and extending east 1.2 miles to near Livingstone Road. Ramps at MD-210 will be reconstructed in the northwest, northeast, and southeast quadrants, providing access between the local lanes and MD-210/Oxen Hill Road. Reconstruction of the MD-210 Interchange will include the provision of a grade-separated new interchange at MD-210/Oxon Hill Road, including loop ramps in the southeast and southwest quadrants of this intersection.

Bald Eagle Road over the Beltway will be reconstructed to provide pedestrian/bicyclist and vehicular access to Oxon Hill children’s farm. There are three contracts associated with the MD-210 Interchange project. Contract values range from \$18.7 million to \$59.4 million. The 2006 cost estimate for this project is \$167.4 million.

Telegraph Road Interchange

The Telegraph Road Interchange project involves the complete reconstruction of the existing interchange to include ramp improvements, bridge widening/lengthening, and widening of the I-95/I-495 mainline roadway section from 2.08 miles west of Telegraph Road to 0.5 miles to the east. Improvements along Telegraph Road will include roadway reconstruction, bridge reconstruction, intersection improvements, and utility relocations from Duke Street on the north to Lenore Lane to the south. There are three contracts associated with the Telegraph Road Interchange project. Contract values range from \$3.0 million to \$228.0 million. The 2006 cost estimate for this project is \$364.2 million.

U.S. Route 1 Interchange

The U.S. Route 1 Interchange project involves the complete reconstruction of the existing interchange to include replacement of all ramp movements, the addition of ramp connections to future HOV lanes, a ramp connection to Eisenhower Valley at Mill Road, retaining walls, sound barrier walls, an extensive ground improvement program along north and south limits of the mainline roadways, electrical transmission tower relocation, bridge replacement, and widening of the I-95/I-495 mainline roadway section from 0.91 miles west of U.S. Route 1 to the west abutment of the Potomac River Bridge at Royal Street.

Improvements along U.S. Route 1 will include roadway widening and reconstruction, bridge reconstruction, intersection improvements, and utility relocations from Franklin Street on the north to Huntington Avenue to the south. Environmental mitigation improvements include the Urban Deck over the I-95/I-495 mainline at Washington Street, improvements to Jones Point Park, and creation of “onsite” wetlands at several locations adjacent to the interchange.

There are eight contracts for the U.S. Route 1 interchange in Virginia. Contract values range from \$111,000 for demolition to \$146.6 million. The 2006 cost estimate for this project is \$604.0 million. Figure 12 shows construction of the U.S. Route 1 project interchange.

Figure 12: U.S. Route 1 Interchange on the Virginia Side



Source: Tom Saunders, VDOT, WWB Project

Intelligent Transportation System

A \$1.5 million contract was also awarded to MASTEC North America, Inc. for an Intelligent Transportation System (ITS) to provide traffic information and incident response. The ITS includes variable message signs, closed circuit television (CCTV), and radio alert signs to improve VDOT's operations control center's ability to facilitate incident and traffic management (RoadTraffic-Technology.com).

3. PROJECT COSTS AND FINANCING

The total cost for the new Potomac River Bridge, four reconstructed interchanges, parkland improvements, and community enhancements is currently estimated at \$2.5 billion. The 7.5-mile long project area will include the I-95/I-495 Capital Beltway from west of the VA-241 Telegraph Road interchange in Virginia to east of the MD-210 Indian Head Highway interchange in Maryland.

3.1. Project Cost Components by Project Sponsor

A breakdown of the latest 2006 cost estimates by state, including the Federal contribution administered through the respective state transportation agencies, is provided in Figure 13. Maryland project costs total \$1.3 billion; Virginia project costs total \$1.2 billion; and District costs total \$15.7 million. These figures are based on the latest 2006 Financial Plan Annual Update for the WWB project, approved by the FHWA in March 2007.

Figure 13: Woodrow Wilson Bridge Project 2006 Cost Estimates

Project	Cost Estimate (millions)
Maryland Costs	
Potomac River Crossing (12-lane twin-span bridge)	\$824.2
I-295 Interchange	\$299.5
MD-210 Interchange	\$167.4
Other ¹	\$23.5
Maryland Total	\$1,314.6
Virginia Costs	
U.S. Route 1 Interchange	\$604.0
Telegraph Road Interchange	\$364.2
Other ²	\$177.7
Virginia Total	\$1,146.0
District of Columbia I-295	\$15.7
Total	\$2,476.3

Source: Woodrow Wilson Bridge Project 2006 Financial Plan Annual Update

¹Includes General Engineering Consultant and congestion management system (CMS).

²Includes General Engineering Consultant and VDOT Staff, CMS, and project contingency.

For the most part, the states have received bids that have come in under the engineer's estimate 28 times out of 34 and approximately 5 percent under the 2001 initial financial plan budget. The states believe that the trend was likely due to the recent downturn in the regional and national economy, which resulted in decreased labor and materials costs. Thus, contractors are far more competitive than they were 2 to 3 years ago, according to the Woodrow Wilson Bridge Project 2006 Financial Plan Annual Update.

3.2. Funding

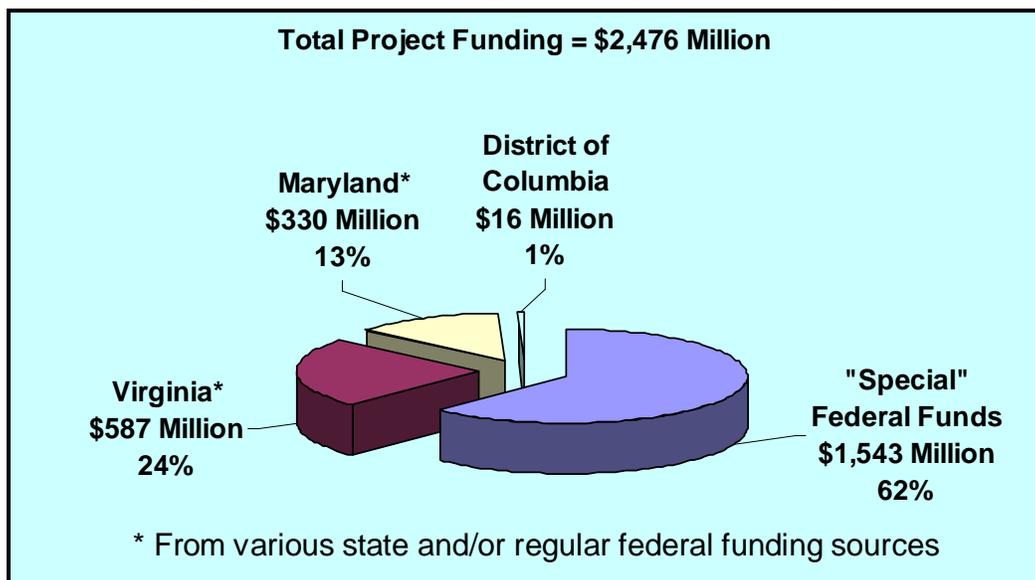
Federal funding participation for the WWB project is the largest funding source, with the remainder of the funding coming from Maryland and Virginia. All eligible bridge components are 100 percent funded by special Federal funds. The D.C. I-295 project is 90 percent Federally funded. Currently, the WWB project has received committed special Federal funds totaling \$1.543 billion from the sources listed below, based on the 2006 Finance Plan Annual Update:

- Woodrow Wilson Bridge Memorial Act of 1995—\$60 million.
- Federal Highway Trust Funds authorized in TEA-21 in October 1998—\$898.5 million was authorized with a \$828.9 million obligation limitation.
- Revenue Aligned Budget Authority (RABA)—\$56.1 million.
- Federal general funds—\$598.7 million approved in FY 2001, Public Law 106-346.

The states will use regular state and/or Federal funds to fund the remaining projects after these “Special” Federal funds are exhausted.

In accordance with the ROD, the Commonwealth of Virginia and the State of Maryland are required to commit the balance of funding that will be needed to complete the project elements in each state. Virginia’s 2006 estimate is \$1,146 million, and Maryland’s 2006 estimate is \$1,315 million. Virginia will require \$587 million in addition to the special Federal funds available, and Maryland will require an additional \$330 million. Figure 14 illustrates the breakdown of the principal funding sources for the WWB project, based on the latest financial plan update.

Figure 14: 2006 Funding Summary for WWB Project



Source: Woodrow Wilson Bridge Project 2006 Financial Plan Annual Update

Funding sources that each state could use include, but are not limited to the following:

- Regular Federal aid apportionments
- Federal discretionary programs
- Other Federal funds
- Bond revenues
- Other state funding sources

Each of the funding sources is subject to the Federal authorization/appropriation and state appropriation processes. Virginia has committed a large portion of VDOT's Interstate and National Highway System (NHS) funds, plus funds from revenues earned from various real estate assets within the project limits. The state is making an effort to minimize statewide impacts and balance overall available funding with other statewide priorities. Maryland has been using funds provided for the MSHA capital program, especially those provided from MDOT's Interstate and NHS funds and other funding categories appropriated in the 1990s from various Federal and state capital appropriation bills. The 10 percent city match for the District of Columbia originated from the District of Columbia Highway Trust Fund.

3.3. Financial Planning

Financial planning for the WWB project began with the initiation of the environmental review process in 1988 and extended through the subsequent years with the issuance of the DEIS in 1992, two supplemental DEIS reports in 1996, the FEIS in 1997, and the supplemental FEIS in 2000. The financial considerations involved in these various EIS studies focused on project costs and the impacts on these costs of environmental mitigation requirements. A year after the supplemental FEIS was approved, the initial financial plan for the WWB project was issued in 2001. The project financial plan has been updated each year to reflect any changes in the costs and funding allocation for the project, due to changes in project scope, site conditions, or inflationary impacts on material costs. The initial financial plan serves as the baseline against which project cost adherence is measured for the entire WWB project.

The latest annual update of the WWB financial plan was issued on February 9, 2007, and approved on March 20, 2007. Based on this document, the current budget estimate for the WWB project is \$2.476 billion, of which expenditures incurred as of September 2006 amounted to \$1.531 billion or 62 percent of the total project cost (Woodrow Wilson Bridge Project 2006 Financial Plan Annual Update). Figure 15 lists the timing for release of the annual updates to the WWB project financial plan, along with the changes in estimated total project cost since the WWB initial financial plan was issued in 2001.

As shown in Figure 15, the total project cost has not deviated from the initial estimate by more than 5 percent over the past 6 years. The latest estimate is within 1.4 percent of the initial cost estimate with most of the \$34 million difference due to inflationary cost increases on the Telegraph Road Interchange and the transfer of the cost of right-of-way previously paid for by another VDOT project during the past year.

Figure 15: Financial History of Woodrow Wilson Project Budget Estimates

Project Financial Plan	Plan Approval Date	Total Project Budget
Initial Financial Plan	September 2001	\$2.442 Billion
2002 Financial Plan Update	March 2003	\$2.564 Billion
2003 Financial Plan Update	March 2004	\$2.427 Billion
2004 Financial Plan Update	February 2005	\$2.449 Billion
2005 Financial Plan Update	April 2006	\$2.444 Billion
2006 Financial Plan Update	March 2007	\$2.476 Billion

Source: Woodrow Wilson Bridge Project 2006 Financial Plan Annual Update, February 9, 2007

In July 2006, FHWA issued draft guidelines for the preparation of financial plans for large-scale projects. These guidelines define a project financial plan as: “a comprehensive document that reflects the project’s cost estimate and revenue structure and provides a reasonable assurance that there will be sufficient financial resources available to implement and complete the project as planned. A Financial Plan provides a description of how a project will be implemented over time by identifying project costs and the financial resources to be utilized in meeting those costs. The plan should clearly explain the assumptions

about both cost and revenue upon which the plan is based. In addition, the annual updates to the plan will enable decision makers to track the financial progress of the project over time by highlighting significant deviations from the initial financial plan and the subsequent annual updates and explaining the mitigating actions taken to adjust for those deviations. In essence, the financial plan process is a subset of the overall Project Management Plan that is required for every major project.”¹

For each mega-project, the draft guidelines require an initial financial plan consisting of the following five chapters:

1. Cost Estimate
2. Implementation Plan
3. Financing and Revenues
4. Cash Flow
5. Risk Identification and Mitigation Factors

The FHWA guidelines also require annual financial plan updates focusing on the following:

- Cost and Revenue History
- Cost and Revenue Trends
- Summary of Significant Cost Reductions
- Summary of Significant Cost Increases

FHWA’s draft guidelines for mega-project financial reporting include a list of principles for the preparation of financial forecasts relating to proposed major projects. FHWA leadership also suggests that financial considerations regarding projected project costs and revenue sources be considered early in the project planning process to ensure the project has the potential to be financially feasible by identifying cash flow issues, assessing cost and revenue risks, and developing shortfall mitigation measures.

The contents of the WWB project financial plan annual updates are consistent with the requirements set by the FHWA regarding financial reporting for mega-projects costing more than \$500 million. Figure 16 lists the sections of the Woodrow Wilson Bridge Project 2006 Financial Plan Annual Update to illustrate what is expected in such a report based on FHWA’s financial reporting guidelines referenced above.

¹ In 2005, Section 1904(a)(2) of the Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (SAFETEA-LU) amended 23USC106(h) by reducing the threshold for the submission of a Major Project annual financial plan to \$500 million or more. SAFETEA-LU also added a new Section, 23USC106(i), which required recipients of Federal financial assistance for projects with a total cost of between \$100 million and up to \$500 million to prepare an annual financial plan. A memorandum was issued on December 8, 2005, Project Financial Plan Requirements under SAFETEA-LU, which provided details for implementing the Finance Plan requirements. That memorandum and the FHWA Financial Plan Guidance issued in May 2000 are superseded by the issuance of Draft Guidance for Financial Plans by FHWA in July 2006.

Figure 16: Table of Contents for WWB 2006 Financial Plan Annual Update

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Source: Woodrow Wilson Bridge Project 2006 Financial Plan Annual Update, February 9, 2007

4. PROGRAM ASSESSMENT

4.1. Institutional Context

The unique institutional framework for the WWB project both helped and hindered the advancement of this project. A number of these institutional and contextual issues are discussed below:

- Federal ownership responsibilities.** The WWB is unique in that this is the only bridge on the Interstate Highway System or the National Highway System that the Federal government—and not the states—owned and for which it supported the bridge’s operation and maintenance. This raised a number of issues regarding funding responsibilities not only for the bridge replacement, but also for any cost overruns incurred in completing the project, improvements to the four nearby interchanges, and future bridge operations and maintenance. It took significant time during the 1990s to finally resolve the differences between the Federal government and the states involved in

the project regarding ownership and funding responsibilities for the bridge project and future maintenance and operations of the bridge.

- **National, regional, and local interest.** The WWB is a critical link in the highway system serving the nation's capital, the mid-Atlantic region, and nationwide interstate system. It serves as an important link in the I-95 highway that carries much of the East Coast auto and truck traffic. The high volume of traffic using the bridge each day is a testament to its transportation and strategic importance. However, the deteriorating condition of this 46-year-old bridge coupled with its severe capacity limitations posed a threat to the mobility of local commuters, regional and national freight movements, and interstate business and recreational travelers along the I-95 corridor.
- **Strategic significance of the bridge to military mobilization.** In the aftermath of the event on September 11, 2001, the importance of the WWB was further realized as a key route serving Andrews and Bolling Air Force Bases and other strategic sites in the Washington, D.C. metropolitan area for military mobilization and response and for emergency evacuation. This project, along with the nearby reconstruction of the Springfield Interchange between I-95, I-395, and I-495, helps to provide the necessary capability to continue to serve this vital national interest.
- **Navigational access to the Alexandria waterfront and other commercial and military sites north of the bridge.** Most of the bridges crossing the Potomac River near Washington, D.C. have relatively low clearances, without provision for raising the bridge spans to accommodate vessels of heights greater than 50 feet. One of the key features of the replacement bridge was the retention of a drawspan capability using a bascule design to enable ships that exceed the 70-foot maximum clearance of the fixed portion of the new WWB to continue up the Potomac River.
- **Proximity to the nation's capital and strong political champions.** Being located within sight of the nation's capital enabled this critical transportation link to gain the attention of champions within Congress, among the Virginia and Maryland congressional delegations, and among the highway transportation agencies at the Federal and state levels. Many worthy transportation projects languish for years without gaining adequate public funding to proceed. The sheer scale and complexity of this project and its high cost might have doomed prospects for gaining sufficient financial, political, and institutional support to deliver the project in a reasonable timeframe and survive the many legal and environmental challenges that were made against the project. The project was challenged by a number of well-organized community, environmental, and historic preservation groups that are well positioned in the nation's capital. However, the following enabled these challenges to be overcome: the urgent need for replacing and expanding the capacity of the bridge, the inclusion of several related projects to improve and expand the capacity and operational safety of several major interchanges near the bridge, the strength of the groups supporting the project, and the willingness of project sponsors to listen to and to try to accommodate public concerns about the project. These placed the project on a solid political and institutional foundation, which when combined with adequate financial commitments by Federal and state governments to fully fund the project, assured its success in moving forward to ultimate completion.
- **Due diligence through annual updates of the project financial plan.** The project sponsors have remained vigilant in tracking and reporting the costs of the project as it has evolved from planning to development. Through annual updates of the initial financial plan issued in 2001, project sponsors have identified changes in project costs and opportunities to balance the increases with reductions to keep the project within a reasonable price range as it has progressed. These efforts are consistent with the guidelines issued last year by FHWA for financial reporting of mega-projects at least \$500 million in size. FHWA considers the reports produced by the project sponsors for the WWB project to be model financial plans and annual updates.

4.2. Major Issues and Strategies

During the planning and development of the WWB project, a number of issues arose that required cooperative efforts among the participating public sponsoring agencies and the private sector contractors to keep the overall project on schedule and within reasonable budget range. These issues and the strategies used to address them are discussed below:

- **Future responsibilities for bridge operations and maintenance.** Over the past four decades during which time the Federal government retained ownership of the WWB, four agencies shared responsibility for maintaining and operating the original WWB. The District Department of Transportation (DDOT) has maintained the drawspan, MSHA has maintained the bridge structure, VDOT has supplied water and electrical power to the bridge, and the U.S. Coast Guard has exercised authority over the raising and lowering of the drawspan. After the original bridge is replaced, this arrangement will change. TEA-21 specifically prohibited the use of Federal funds for construction of the WWB until the jurisdictions agreed on a new owner for the bridge. In August 2001, a bi-state ownership agreement was signed by Maryland and Virginia whereby the two states will assume ownership responsibilities for the new WWB, with each state equally sharing the costs of operating, maintaining, and repairing the new bridge facilities when construction is completed in 2012.
- **Evolution of funding and financing the bridge replacement project.** TEA-21 also required an approved finance plan, which identified costs and funding sources, as a provision of the ownership agreement. The project team updated the financial plan annually so that they could monitor the cost and revenue structure during project construction and provide a reasonable assurance that sufficient financial resources would be available to implement and complete the project as planned. In addition, Maryland and Virginia both have processes in place to ensure that agencies receive invoices in the correct amounts.
- **Sensitive environmental location of the WWB.** The WWB spans the Potomac River just south of Old Town Alexandria. This location has environmental significance from a noise, air, and historic preservation perspective, in addition to its crossing of a navigable waterway with various aquatic and other species in close proximity to the site. To mitigate these issues, the project included efforts to enhance the environmental quality of the area, including:
 - 140 acres of tree reforestation in Prince William County, Maryland
 - 146 acres of wetland restoration and creation in Virginia, Maryland, and the District
 - 22 acres of submerged aquatic vegetation planting (river grasses) in the lower Potomac River
 - 5 acres of juvenile fish habitat through stream bank stabilization and breakwaters in Fairfax County, Virginia
 - Fish re-stocking and blockage removal in the Anacostia and Potomac River tributaries in Maryland and the District
 - American bald eagle habitat preservation, including an 84-acre bald eagle sanctuary in Prince George’s County, Maryland
 - Fish reefs in the Chesapeake Bay made from concrete components of the demolished original WWB
- **Legal action against the project.** In January 1998, the City of Alexandria and three organizations—the Coalition for a Sensible Bridge, the Historic Alexandria Foundation, and the Alexandria Historic Restoration and Preservation Commission—filed a lawsuit against the FHWA. The lawsuit alleged that FHWA did not comply with applicable environmental and historic laws and regulations in selecting the bridge design. The city also claimed that a 10-lane alternative bridge design was not sufficiently considered during the environmental process. FHWA settled the suit with the city in March 1999. However, the other organizations involved in the suit did not agree with the settlement terms and in April, a Federal judge issued a decision against FHWA. The Court found that FHWA did not:

-
- Comply with all requirements of NEPA, including not adequately analyzing the 10-lane bridge option
 - Identify protected properties under the National Historic Preservation Act and the Department of Transportation Act, Section 4(f)
 - Comply with the requirements of the Clean Air Act

FHWA appealed the first two Court decisions in February 1999. FHWA did not appeal the third, indicating that it would provide the necessary analyses to comply with the requirements of the Clean Air Act.

Pending the appeal, the Secretary of Transportation directed FHWA to prepare a supplemental EIS to evaluate both the 10-lane and 12-lane alternatives as a contingency plan in case the appeal was lost. This would ensure that the project schedule would not be delayed as much as it would if the review was not done until after the appellate Court decision. In December 1999, a three-judge Federal appeals panel ruled that plans for the 12-lane option could go forward as scheduled. The panel agreed with project transportation planners that the 10-lane alternative would not have sufficiently met the region's long-term traffic and safety needs.

- **Proximity to multiple modal facilities.** The WWB lies in the path to one of the major approaches to Ronald Reagan Washington National Airport while serving as a major link between Virginia and Maryland for commuters and long-distance travelers and trucks. An innovative project phasing approach and traffic maintenance plan were used to avoid interfering with the flow of automobiles, trucks, airplanes, and vessels that either use the bridge corridor or cross it during the period of constructing the new bridge. This was accomplished by staging construction of the new bridge spans to allow one span to be completed that could carry vehicles in both directions before the original bridge was removed. As a result, traffic continued to flow after the original bridge was demolished and while the second bridge was being built on foundations installed at the same time as those for the first bridge span. This also reduced construction time and cost.
- **Effects of project cost inflation on project cost and funding requirements from respective sponsoring Federal and state agencies.** Between 1996 and April 2001, cost estimates for the WWB project fluctuated from \$1.89 billion to \$2.19 billion. FHWA reviewed the status of the WWB project in August 2001 and concluded that the cost fluctuations were due to several issues:
 - The April 2001 cost estimate was underestimated by approximately \$287 million because cost assumptions for inflation and right-of-way were overly optimistic and reductions made to decrease a previous cost estimate were not justified. Additional variables that were difficult to predict, such as additional environmental and archaeological protection, fluctuating energy prices, and lawsuits, also contributed to project cost increases.
 - The states did not identify specific funding sources that would be provided between 2007 and 2012. The sources of funding were not identified because they would come in years beyond those outlined in their 6-year transportation improvement plans. The finance plan was revised to identify funding to cover the cost estimate agreed to by FHWA and the states in these later years of the project schedule.
 - In the June 2001 initial finance plan, the states proposed to phase portions of the interchange work due to a funding shortfall. The phasing involved moving work on and off the books so that the reported cost of the project would not exceed available funding. The states did not count work for the interchanges in the finance plan because it would be completed in the future by the individual states with funding that had not yet been identified. FHWA required the states to account for all planned work and to identify the specific funding sources that would be used to pay for the work.

Once these issues were resolved, total project cost estimates have remained within a modest 5 percent range relative to the initial finance plan of 2001. The current cost variance is only 1.4 percent over the 2001 total cost estimate.

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- **Steel prices.** The cost of steel, one of the key material components of the WWB project, soared after the terrorist attacks in 2001 and as a result of the rapid growth in the demand for steel by China and India due to their huge infrastructure development programs over the past several years. Maryland sought ideas from its steel fabricators, contractors, and others to control the costs and risks associated with steel price inflation. The outcome was a pact reached for the Maryland approach and bascule project elements, under which contractors agreed to absorb increases up to 7 percent above the unit price of steel at the time of the bid. The state agreed to cover increases above 7 percent, up to a cap of \$4 million on the bascule drawspan and \$9 million on the Maryland approach element to reduce contractor risk associated with fluctuating steel prices.

VDOT contracts have optional escalation clauses that allow for price increases up to a certain maximum percentage to be passed on to VDOT. For example, VDOT construction contracts allow construction companies to receive up to an additional 3 percent of funding if the price of steel goes up from one month to the next by up to 3 percent. If the price of steel goes down by up to 3 percent relative to the contracted unit price in a later period, the contractor has to pay back VDOT the resulting savings up to 3 percent. To be eligible for the cost adjustment, contractors must submit a monthly list of all steel products needed to demonstrate the change in unit prices.

- **Partnering process.** Project managers recognized early during project development that a partnering process needed to be in place so that problems could be resolved as quickly as possible. The partnering process MSHA created included three elements:
 - Recognizing common interests
 - Providing for disciplined communication
 - Measuring team effectiveness

An outside facilitator specializing in the construction industry organized regular project update workshops with contractors, prepared agendas and meeting minutes, and oversaw collection and reporting of partnering rating surveys. Each month, workshop attendees were required to fill out a rating form to evaluate how the partnering program was progressing. The survey measured five standard criteria:

- Safety
- Issue resolution
- Maintenance of traffic
- Erosion and sediment control
- Material cleanup

Up to 11 additional criteria tailored to each contract's situation were also included. The partnering process has proven to be very successful in facilitating trust among the public agency sponsors and the private sector contractors, promoting professionalism in the project partnership relationships, and minimizing claims and disputes that could have significantly delayed the project in meeting its schedule milestones.

- **Bonding for disadvantaged business enterprises.** A primary impediment for DBEs seeking to participate in the WWB project was difficulty in accessing capital and obtaining bonding given the size of the project contracts. To eliminate this barrier, the project team worked with the USDOT Office of Small and Disadvantaged Business Utilization to provide resources and financial assistance to certified DBEs working on the WWB project. The program has assisted DBE firms in their efforts to obtain bid, payment, and performance bonds and short-term working capital to become part of the project delivery team for various portions of the overall project.
- **Early move incentive program.** During the WWB project design phase, VDOT determined that one tower apartment and three garden apartment buildings had to be vacated and demolished to make room for the expanded I-95/I-495 Capital Beltway immediately adjacent to the new WWB. The acquisition and demolition of the properties required the relocation of approximately 333

residential units. A specialized relocation firm was hired to assist VDOT in the relocation process and given an aggressive schedule for relocating displaced tenants.

Under the original project schedule, goodwill contacts were to begin on June 1, 2000, and all tenants were to have offers for replacement housing payments (RHPs) presented by September 1, 2000. Between 25 and 30 RHP offers needed to be made each month to maintain the project schedule. However, because of various political and environmental factors, VDOT was unable to maintain the original schedule for acquiring the properties and relocating the residents. Once VDOT acquired the property in April 2001, it revised the schedule and the relocation company began to make RHP offers to the tenants.

To aid in meeting the revised schedule, VDOT introduced a non-negotiable, voluntary Early Move Incentive Program for the affected tenants. The program stated that any tenant in residence on April 2, 2001, who moved within 30 days of receiving an RHP offer would be entitled to a \$4,000 incentive. If the resident chose to move between 31 and 60 days of receiving an RHP offer, that person would be entitled to a \$2,000 incentive. The incentive payments were in addition to the relocation assistance benefits offered to displaced tenants of the affected buildings. To ensure that the information was transmitted to all residents, VDOT delivered announcements individually to all occupants in the affected properties. Out of the 333 residential units affected, 298 (almost 90 percent) of the tenants took advantage of the incentive program.

The VDOT relocation incentives successfully relocated residents from 333 apartment units in 7 months—less time than originally scheduled. Even though the incentive program cost the project about \$1.2 million, VDOT was able to more than offset this outlay by direct savings realized from the accelerated schedule of the relocations. Key factors that produced savings from the Early Move Incentive Program, based on information provided by VDOT in 2001, include the following:

- Construction schedule-related savings of about \$6 million.
- Reduced property management overhead costs for the condemned properties during the relocation period.
- Met the overall project schedule such that the relocation effort did not delay the opening of the new WWB. If the relocation process had delayed the opening of the new bridge, VDOT could have been assessed a daily \$50,000 penalty by the State of Maryland until the new span was accessible.
- The program developed good will between the tenants and VDOT and serves as a model for future resident relocation programs.

5. CONCLUSIONS

5.1. Status of the WWB Project

The replacement of the WWB is a mammoth undertaking that will span 22 years, with the first 11 years consumed by project planning and impact mitigation and the second 11 years devoted to constructing a significantly larger new bridge, demolishing the old bridge, and rebuilding and expanding two major interchanges near each approach to the bridge. Slated for completion in 2012 at a total cost of \$2.5 billion, the project is one of the largest and most complex undertakings in the Washington, D.C. metropolitan area. However, through careful planning, a flexible partnering approach to contractor management, effective maintenance of traffic techniques, and due diligence reporting of project financial and completion status, the project is on schedule and close to its original budget. The project has also introduced a number of environmental, construction, and traffic mitigation strategies while keeping the traveling public and local communities informed about project status and developments through various ongoing public outreach and communication techniques.

At the midpoint of the overall project delivery schedule, about 62 percent of the total projected costs of the project had been expended as of September 2006. Current estimates place the final total project cost at \$2.476 billion, within 1.4 percent of the cost estimate contained in the initial financial plan issued in 2001. Continued tracking and annual reporting of changes in project costs, funding, and schedule and ways to address variances will help keep the project on schedule and within budget until project completion in 2012.

5.2. Lessons Learned and Conclusions

- **Break mega-project down into smaller contracts to increase competition and lower bid prices.** In the early planning stages of a mega-project, break it down into smaller contracts. The advantage is that more contractors of varying sizes will be able to present bids, and their surety and bonding requirements will be proportionately lower and more achievable. From the owner's perspective, this approach requires greater procurement and contract administrative efforts by the project sponsors as the contract administration tasks and project coordination efforts multiply with the number of contracts.
- **Contract term flexibility.** Make terms of the contracts more flexible to allow for greater contractor innovation in making the project delivery more cost-effective.
- **Manageability.** Ensure that a contract is manageable and that it balances responsibilities and risks through incentives and penalties based on performance relative to the terms of the various contracts.
- **Early outreach.** Reach out to the construction industry early and often to promote and maintain interest in the project. The team for the WWB project, which has 23 prime contractors and 119 subcontractors, found that a weekly 30-minute teleconference is an efficient means of reviewing a status report. The teleconference is accompanied by an agenda and an update for each contract that includes a brief description of current progress, planned activities for the upcoming 30 days, potential community impacts, issues and concerns, and key interface dates.
- **Maintaining schedule.** Contractors for the Maryland approach agreed to a \$75,000 per day penalty for missing deadlines. A similar deal is in the works for the Virginia approach.
- **Early move incentive.** One lesson learned from the Early Move Incentive Program was that modest monetary incentives can expedite relocation efforts for mutual benefit to those being relocated and the sponsoring agency. Many of those displaced elected to move to be assured that they could claim the incentive. Others elected to move at the end of their lease term, and some moved before receiving an RHP offer. The schedule for making RHP computations and offers was altered to accommodate individuals who wanted to move immediately. This required reallocating staff on the right-of-way team to accommodate "early movers," which resulted in a more compressed schedule to clear the right-of-way (VDOT Right-of-Way Group, 2001).
- **Political leadership and support.** The Federal funding arrangement that made the project possible required the strong support of political leaders.
- **The WWB project required several iterations of environmental study.** This included one DEIS, two supplemental DEIS reports, an FEIS, and a supplemental FEIS before the project received the ROD enabling it to proceed. The lesson here is to adjust the plan as environmental and other issues arise to arrive at an acceptable plan.
- **Evolution of a defined financial plan with flexible funding terms (to accommodate changing financial conditions and risks).** By updating the financial plan each year, the project team was able to monitor the cost and revenue structure during project construction and provide a reasonable assurance that sufficient financial resources would be available to implement and complete the project as planned. In annual updates of the initial financial plan issued in 2001, project sponsors have identified changes in project costs and opportunities to balance the increases with reductions to keep the project within a reasonable price range as it has progressed.

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- **WWB project sponsors have vigilantly reported project costs from planning through development.** WWB financial plans and annual updates are consistent with the guidelines issued last year by FHWA for financial reporting of mega-projects at least \$500 million in size. The FHWA considers the financial reports produced by the WWB project sponsors to be model financial plans and annual updates, which may be important if the TZB project uses Federal funds.

5.3. Implications for the Tappan Zee Bridge Project

In comparing the WWB project to the TZB project, there are several aspects of the project, key lessons learned, and strategies used in the WWB project that are worthy of note.

Similarities

- The WWB project is similar to the TZB project in terms of size, complexity, environmental sensitivity, community concerns, and critical need for replacement.
- Both projects have a large number of jurisdictional and institutional stakeholders to coordinate in order for the projects to proceed successfully. In the case of the WWB project, sponsorship responsibility is shared by two states, the District of Columbia, and the Federal government. Supervisory agencies include MDOT/MSHA and VDOT. While the TZB is located in one state and owned and operated by the New York State Thruway Authority, transportation improvements related to the bridge upgrade project may involve partnerships with other agencies, including the Metropolitan Transportation Authority and the New York State Department of Transportation.
- Both facilities represent essential components of the regional and local highway system and constitute important linkages in the nation's Interstate Highway System. The WWB is located at the midpoint of I-95. It is a vital connection within the Washington region's transportation system and the entire I-95 Northeast Corridor. The WWB is an essential link for moving goods from Maine to Miami. Similarly, the TZB serves east-west travelers on the Interstate system linking New York and the Midwest to New England and linking counties west of the Hudson River to counties east of the river, including New York City where it provides a key route for commuters. As a result, both bridges are significantly congested during peak periods.
- Both projects contemplate the possible incorporation of rail transit services. The WWB project includes a special purpose lane in each direction intended for high-capacity vehicles (such as HOV, Express, or BRT) or at a later time as a dedicated rail transit line. The TZB project is also considering the possibility of adding rail transit (such as commuter rail or light rail) to the facility to boost capacity.

Differences

- The WWB remains without any form of tolling, whereas the TZB already has tolls as a key funding source.
- The WWB project is in close proximity to the nation's capital and therefore close to the key decision-makers, including Congress and USDOT, regarding Federal transportation funding and programming. The TZB project is critical to the State of New York and its surrounding region, but is located away from the seats of power in the state—Albany and New York City.
- The WWB project is using entirely public funding from traditional transportation program sources, having received one of the largest allocations of Federal funding for a single project at a time when such funding was still available. The TZB project is coming at a time when traditional sources of public funding for capital transportation projects is quite scarce and alternative funding/financing approaches and project delivery approaches may be necessary to develop adequate financial resources to complete the project.

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Image References

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www.wilsonbridge.com

Review of Current Federal Requirements for Financial Plans for Major Highway Infrastructure Projects

Prepared for the:

New York State Department of Transportation

Metro-North Railroad

New York State Thruway Authority



New York State
Department of Transportation



Metro-North
Railroad



Thruway
Authority

EXECUTIVE SUMMARY

The Federal Highway Administration's (FHWA's) Major Project Guidance, and the Environmental Assessment process each require financial analysis in order for the Tappan Zee Bridge (TZB)/I-287 Corridor project to advance. Described more fully in the body of this Technical Memorandum, the following discussion outlines some of main financial planning requirements. The scope is not intended to be exhaustive, but to highlight ways that early financial analysis supports successful planning and program implementation of the Tappan Zee program.

FHWA Major Projects

Because all alternatives under consideration exceed the \$500 million threshold identified in the January 2007 Guidance from FHWA, the FHWA Major Project financial plan requirements apply to the TZB project:

- The financial plan should describe the major responsibilities, financial and otherwise, of the various parties involved in the project and contain evidence of agreements or commitments.
- The financial plan for the TZB project should be coordinated with the statewide long-range transportation plan and the State Transportation Improvement Plan (STIP) in order to permit evaluation of the project's impact on the state's overall transportation capital program. Funding for the TZB project is not currently included in the New York Metropolitan Transportation Commission's (NYMTC's) Long-Range Plan (LRP).
- The Major Project financial plan will not be approved if it includes a state or local revenue source requiring future legislative action, excluding the regular annual budget process. If the financial plan calls for funding mechanisms other than existing revenue streams to meet the non-Federal share of the project cost or cash flow requirements, the "likelihood of implementing the mechanisms must be thoroughly analyzed" (page 10). These mechanisms include toll increases not currently authorized, contributions from third parties, or new taxes.
- In cases where a Major Project is funded jointly by FHWA and FTA it is expected that the project owner, generally the state transportation agency, will submit a single financial plan meeting the requirements of both Federal agencies to the FHWA Division Office for review and approval.

Environmental Assessment

- The financial plan included in the Environmental Impact Statement (EIS) must outline realistic scenarios for funding the project, including potential fund sources and amounts anticipated from each source. If public-private partnerships (PPPs) are under consideration, the financial plan should outline the necessary steps, such as legislative requirements, timeline to accomplish, and success/examples of other states' legislation.
- The TZB project must be in the fiscally constrained LRP prior to issuance of the Record of Decision (ROD).
- The technical analysis required to support the findings of the environmental review process under National Environmental Policy Act (NEPA) and New York State Environmental Quality Review Act (SEQRA) should include a wide array of social, economic, and environmental factors in terms of short- and long-term, direct and indirect, and, secondary and cumulative effects. The assumptions underlying the financing and delivery of the project can have a significant influence on how the proposed project is likely to impact the human and natural environment. One of the closest linkages is between travel demand and circulation, which is influenced by the customer preferences in response to pricing. Similarly, construction impacts, including the differences in impacts resulting from different construction durations needed to accommodate different cash flow scenarios as well as the timing and phasing of construction, must be developed in a way that is consistent with the financial plan. Successful project planning requires the integration of the travel

demand analysis work with the traffic and revenue analysis that underlies the financial plan in order to avoid costly rework and project delays.

Other Considerations

One final consideration relates to the potential of the TZB project to qualify as a Priority Project under Federal Executive Order 13274, Environmental Stewardship and Transportation Infrastructure Project Reviews. Designation as a Priority Project enables expedited and streamlined environmental review processes through a variety of mechanisms, including designation of a Cabinet-level project champion. The criteria for selecting priority projects are those that:

- Are of national or regional significance
- Have a high level of support among local transportation authorities and elected officials
- Have the potential to be unduly delayed by Federal agency review or coordination

1. PURPOSE

This Technical Memorandum reviews and assesses the current Federal requirements for financial plans for major highway and transit infrastructure projects. Such an assessment is critical to successful planning and program implementation of the TZB project. This is especially the case given the size of the project, the likelihood that multiple Federal and state funding partners will be required, and the need to steer the project's development through the review and evaluation process of multiple agencies. This memorandum considers the following areas where the Federal requirements apply to financial planning¹:

- FHWA Major Project Guidance
- NEPA and SEQRA
- Environmental Streamlining and Risk Management

The discussion below begins with an outline of how FHWA Guidance on Financial Plans for Major Projects is changing due to Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (SAFETEA-LU) and where and how the major project financial plan is interconnected with other planning requirements.

The next sections summarize the interrelationships among environmental review requirements and the financial planning and analysis needed to support the Federal project development process for the TZB project. Environmental requirements under NEPA and SEQRA are discussed as a basis for program management recommendations regarding the applicability, scope, and timing of the financial planning and analysis activities needed to support the development of the Alternatives Analysis and EIS:

In addition, observations relative to how the scope and timing of financial planning and analysis activities relate to environmental streamlining and environmental risk management as part of the overall Federal project development process are discussed. Recommendations and next steps relative to the interface between the environmental review process and the financial planning and analysis appropriate to support the project development process for the TZB project are also provided.

2. FHWA MAJOR PROJECT GUIDANCE

The purpose of Congress and FHWA in requiring financial plans for major projects is to ensure that there is a steady stream of information on the costs and revenues of these projects as they advance from the planning to the implementation stages of development. Therefore, FHWA has expanded its oversight role relative to the financial management of such large projects. This is largely in response to several notable mega-projects where lack of financial reporting and controls throughout the project development process contributed to multibillion-dollar overruns. While initial financial plans are not required until the ROD is issued and the project is ready for authorization of Federal funds for right-of-way acquisition or construction, FHWA "best practices" financial planning guidance encourages financial planning to begin as early as possible in the planning process.

In May 23, 2000, FHWA issued a memorandum containing guidance that defines the content and format of financial plans.² The initial financial plan and subsequent annual updates should be submitted by the project owner, typically the state transportation agency (STA) or the project sponsoring agency. The plan

¹ In selected projects, financial planning may sometimes also intersect with the analysis of environmental justice considerations and the requirements of Executive Order 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low Income Populations; and Title VI of the Civil Rights Act. These are not considered in this individual memorandum.

² FHWA Finance Plan Guidance, FHWA Infrastructure, May 23, 2000.

is submitted to the FHWA Division Office; staff of both the Headquarters and the Division office may be involved in the review.

2.1. FHWA Major Projects Requirements and SAFETEA-LU

FHWA's Financial Plan Guidance for Major Projects has been updated to comply with the new requirements contained in the latest reauthorization bill, SAFETEA-LU. A key change from previous practice was contained in Section 1904(a)(2) which reduced the project cost threshold for Major Projects from \$1 billion to the current \$500 million. Draft FHWA Guidance on Financial Planning was released for review in July 2006; final guidance was released in January 2007.³ The January 2007 Guidance supersedes previous documents. Any project with a cost exceeding \$500 million is now required to develop a financial plan and submit annual updates for FHWA review.

2.2. FHWA Finance Plan Requirements

To ensure that Major Projects that receive Federal funding are being properly managed, the FHWA Finance Plan Guidance suggests that the initial financial plan be prepared for all major projects "as early in the project development process as practical," noting that "in some cases preparation of the financial plan could begin during the environmental phase."⁴ The focus on an early start to financial planning is carried forward in the January 2007 Guidance, which notes that the "Initial Financial Plan should be prepared as early in the project development process as is practical" (page 4).

The FHWA Finance Plan Guidance requires the following five sections be included in the initial financial plan for all major projects in addition to an introductory description of the project:

- **Cost Estimate.** For major cost elements of each project segment by year of the project.
- **Implementation Plan.** Schedule of annual activities and milestones throughout the project development process, including risk factors.
- **Financing and Revenues.** Source and level of project funding projected to be available and obligated to the project over its development and financing life cycle. Funds must be designated as committed or as anticipated amounts and where they are identified in the fiscally constrained STIP/TIP/LRP of the state.
- **Cash Flow.** Annual cash outlays by project activity, showing the temporal relationship between sources and uses of the project.
- **Risk Identification and Mitigation Factors.** Identifies risks to project completion and revenue sufficiency and various strategies available to mitigate these risks.

Each section should describe the assumptions used to develop the project cost estimates, revenue forecasts (including inputs, methodology, and any independent validation or sensitivity testing of the forecasts), and cash flow, including inflation rates used to portray all financial information in year-of-expenditure terms. The plan should also describe the major responsibilities, financial and otherwise, of the various parties involved in the project and contain evidence of agreements or commitments.

The financial plan for the Major Project should be coordinated with the statewide long-range transportation plan and the STIP in order to permit evaluation of the project's impact on the state's overall transportation capital program.

The initial financial plan should also include as attachments underlying documentation for the projections of costs and revenues, including traffic and revenue studies, feasibility studies, and economic forecasts.

³ FHWA Financial Plans Guidance, January 2007.

⁴ FHWA Financial Plan Guidance, When Should the Financial Plan Be Prepared, May 23, 2000, page 3.

They should also be included in annual updates if they represent material updates from the information submitted with the initial financial plan.

The initial finance plan must be updated annually. The annual update contains the five sections described above as well as data covering the cost history; a presentation of cost and revenue trends to identify any surplus or shortfall and discussion of their effect on the cash flow; a discussion of any cost reductions during the past year; the likelihood of such reductions in the future; and identification of any significant cost increases, defined as \$10 million or more as compared to both the estimated cost in the past year or projected for the future.

Conversations with the Major Projects staff indicate that the Woodrow Wilson Bridge Financial Plan represents a best practice for the industry. Two features particularly recommend it. First, the financial planning effort started early, well before the time when an ROD was anticipated. Financial planning ran concurrently with the environmental process, but was kept separate in order to avoid undue influence on the evaluation and selection of alternatives. Second, the plan was tailored to the needs of the project and its constituency; it did not simply fulfill the minimum Federal requirements. This latter point is echoed in the language of the current guidance. In describing the requirement that the Chief Executive Officer of the sponsoring agency certify the financial plan, the guidance states that “[t]hese documents are the Project Owners’ opportunities to present the details of the project to its constituency as well as meeting the Federal requirements for financial plan submission” (page 6).

Of special note for the TZB project, the guidance directly addresses the case where a Major Project is funded jointly by FHWA and FTA. The guidance indicates that “it is expected that the Project Owner, generally the state transportation agency, will submit a single Financial Plan meeting the requirements of both Federal agencies to the FHWA Division Office for review and approval. The Major Projects Team will assist in coordinating with FTA to reach this goal” (page 3). Applicability, Scope, and Timing

2.3. Applicability to the Tappan Zee Project

Because all alternatives under consideration exceed the \$500 million threshold identified in the January 2007 Guidance from FHWA, FHWA Major Project financial plan requirements apply to the TZB project.

Given the complexity of the TZB project as well as the indication that the newly revised Major Projects guidance will require a single, integrated financial plan that meets the needs of FTA and FHWA, early and consistent progress on the financial plan is prudent. Of note, the initial financial plan submitted must identify a schedule for future annual updates. The guidance indicates that these annual updates may be timed with the beginning of the state’s fiscal year or the Federal fiscal year as convenient, rather than the anniversary of the approval of the initial financial plan.

Similarly, the requirement that the financial plan for the Major Project be coordinated with the statewide long-range transportation plan and the STIP suggests that financial planning begin in earnest prior to receiving the ROD. The financial plan should indicate where funding sources are identified and that the project fund obligations and expenditures are consistent with the fiscally constrained STIP/TIP/Long-Range Plan (pages 8-9). The guidance indicates that the Financial Plan review will examine the project’s impact on the state’s overall transportation capital program to ensure that the project will not interfere with the state’s ability to deliver the balance of its program (page 9).

The financial plan will not be approved if it includes a state or local revenue source requiring future legislative action, excluding the regular annual or biennial budget process. This is particularly true if the financial plan calls for funding mechanisms other than existing revenue streams to meet the non-Federal share of the project cost or cash flow requirements. These mechanisms include toll increases not currently authorized, contributions from third parties, or new taxes. In total, this underscores that considerable financial planning must take place before the initial financial plan is even submitted, suggesting an early start to identifying the funding issues associated with the project.

3. FINANCIAL PLANNING AND ANALYSIS TO SUPPORT ENVIRONMENTAL REVIEW UNDER NEPA AND SEQRA

As a project that will rely on Federal and state funding sources for implementation, the TZB is subject to the requirements of both the Federal environmental review process NEPA, as well as the New York State environmental review process, SEQRA. NEPA and SEQRA are both decision-support processes designed to foster public disclosure and discussion of the trade-offs between human environmental impacts such as social or economic factors and those of the natural environment associated with various potential project solutions to address a defined problem and need.

The results of financial planning and analysis can affect several aspects of the environmental review process under NEPA and SEQRA:

- Legal sufficiency with respect to meeting the requirements of applicable Federal and state responsibilities under NEPA and SEQRA and related Federal and state environmental statutes, regulations, and policies to ensure a robust, defensible environmental review process
- The definition and documentation of the project purpose and need in terms of transportation and financial capacity
- The assumptions underlying the framing and definition of alternatives to be evaluated in terms of policies and physical attributes
- The technical evaluation and impact assessment that provides the basis to choose among alternatives and ultimately to select a preferred course of action
- The disclosure required in support of the public involvement and agency coordination process in a responsible, defensible manner in order to manage public opinion, build consensus, and support informed public decision-making

The relationship of financial planning and analysis to each of these components is summarized in the following text, along with implications regarding the applicability, scope, and timing of the conduct of financial planning and analysis.

3.1. Meeting NEPA and SEQRA Requirements

FHWA and FTA view the environmental review process under NEPA as “one-stop shopping,” often referred to as the NEPA “umbrella.” Under both NEPA and SEQRA, to the extent possible all environmental investigations, reviews, and consultations are to be coordinated as a single process, and compliance with all applicable environmental requirements must be reflected in the environmental document. As part of this process, alternative courses of action are to be evaluated and decisions made in the best overall public interest based upon a balanced consideration the following factors:

- The need for safe and efficient transportation
- The social, economic, and environmental impacts (the major types of factors specifically identified in the Act) of the proposed transportation improvement
- Consistency with national, state, and local environmental protection goals

These considerations are reflective of the environmental protection established by state and Federal laws, and require a comprehensive consideration of the trade-offs among different values and interests combined with broad public disclosure and discussion. Human factors such as economic and social considerations or impacts are as important to this environmental review as are the considerations related to the natural environment. Consequently, to conduct a comprehensive analysis of the relative benefits and impacts of the alternatives under consideration, economic factors—including project costs and funding sources—need to be included in the environmental review process and be provided as the basis

for decision-making. This issue becomes even more critical for the TZB project that contemplates different scenarios regarding the use of tolling and the potential for use of both public and private funding.

3.2. Alternatives Definition

The timing and the scope of the financial planning and analysis has the potential to significantly affect the definition and development of alternatives, and therefore should be fully integrated into the environmental review process. The critical interfaces include:

- The definition of the No Build and Baseline Alternatives. These alternatives both rely on financial planning and capacity assumptions. Because these alternatives form the basis of comparison for the build alternatives, if the underlying assumptions are incorrect, the subsequent analysis of the build alternatives will be incorrect. Early exploration of likely funding sources can be helpful in affirming the assumptions that should characterize these alternatives, while surfacing any “gaps” or areas that require clarification in time to take remedial actions or change the basis of the assumptions.
- The configuration or footprint of the alternatives to be evaluated, which can be influenced as a result of the toll collection mechanism and desired lane configuration, both of which can be dependent upon factors including affordability, investor preferences, and demand.
- The timing, phasing, and duration of the proposed construction scenario for each alternative, which is directly related to project financing and delivery methods.
- The determination of what constitutes a reasonable range of alternatives, which by definition under NEPA and Council on Environmental Quality regulations includes those alternatives that are “available and capable of being done.” Early financial analysis and funding scenarios can assist in determining which alternatives are actually available and capable of being done.

3.3. Impact Assessment

The technical analysis required to support the findings of the environmental review process under NEPA and SEQRA encompass a variety of potential types of impacts in terms of short- and long-term direct, indirect, secondary, and cumulative effects. The assumptions underlying the financing and delivery of the project can also influence how the proposed project is likely to impact the human and natural environment. This is particularly true of, but not limited to, the following impact assessment areas:

- Travel demand, which is influenced by the costs that must be borne by the customer, and the sensitivity of the customer to those costs
- Traffic and circulation, which can be altered in terms of volume and distribution as a result of customer preferences in response to pricing
- Community impacts associated with travel demand and any changes in traffic volumes and circulation patterns
- Economic and fiscal impacts including effects on jobs and the tax base
- Environmental justice and equity, including the change in trips made by minority populations or by low-income populations, diversion and redistribution of trips made by these populations to other modes, and the comparison of effects of service to these populations relative to the general public
- Construction impacts, including the differences in impacts resulting from different construction durations needed to accommodate different cash flow scenarios and the timing and phasing of construction
- Secondary and cumulative effects, including limitations on funding to implement other improvements and potential associated delays in benefits, and effects on businesses that could result from changes in travel patterns

The financial plan included in the Draft Environmental Impact Statement (DEIS) must outline realistic scenarios for funding the project, including potential fund sources and amounts anticipated from each source. If PPPs are under consideration, the financial plan should outline the necessary steps, such as legislative requirements, timeline to accomplish, and success/examples of other states' legislation. The financial plan should address all the alternatives under consideration in the DEIS, although a detailed analysis of every alternative is not required. For example, if the financial plan covers the most expensive alternative, this demonstrates that less costly alternatives will be covered financially. For the Final EIS (FEIS), the financial plan should be revised to address the Locally Preferred Alternative (LPA) in detail. The financial plan should be revised on a regular basis; FTA and FHWA can review the financial plan prior to submittal of the full DEIS.

Changes to the financial assumptions used as the basis for these analyses can cause project implementation delays because of the need to reevaluate impacts, resulting in the need to revise technical studies and to conduct public outreach and agency coordination to support additional analysis and disclose the findings. The time and cost delays can be significant, because of the interrelationships among many of these impact assessment areas and the sometimes sequential nature of the analysis, such as the use of traffic volumes as an input to air quality analysis. This risk can be mitigated through more detailed financial planning and analysis earlier in the NEPA/SEQRA review process.

3.4. Public Involvement and Agency Coordination

NEPA and SEQRA both require public and agency participation and open disclosure of findings of the environmental review process to interested parties. As a result of the high level of public interest in project costs, throughout the NEPA/SEQRA review for the TZB project, it is highly likely that elected officials and the general public alike will consistently raise issues related to project affordability and how that affordability should influence which alternative should be selected for implementation. In addition, the stakeholder, resource, and regulatory agencies participating in the environmental review process also can benefit from early knowledge regarding funding options, because some options may increase or reduce their level of responsibility relative to making environmental findings. An example of one such agency is the U.S. Army Corps of Engineers, which as part of its NEPA requirements in discharging its responsibilities under the Clean Water Act will be required to rigorously assess alternatives relative to the project purpose and need, as well as economic factors including project costs, prior to issuing the permits required for project implementation.

3.5. Applicability, Scope, and Timing

Given the unique scale and scope of the TZB project, Federal, state, and local decision-making during environmental review could benefit from the incorporation of financial planning and analysis early in the project development process. Rather than deferring the financial planning and analysis until after an alternative is selected, conduct of these activities concurrently with the development of the DEIS would be a more effective approach for the following reasons:

- NEPA and SEQRA require public disclosure and documentation of the impacts to both the human and natural environment and the associated trade-offs, including costs and how the project will be financed.
- The proposed financial plan and how that funding will be achieved has a direct bearing on the assumptions used for all alternatives considered during the environmental review process, including the No Build Alternative, and Build Alternatives. Conduct of early financial planning and analysis would allow incorporation of findings directly into the alternatives definition and assist in avoiding the need for supplemental analyses and documentation under NEPA and SEQRA due to changes in assumptions either late in the environmental review process or subsequent to the ROD.
- In addition to affecting the definition of alternatives, the financial assumptions used in the DEIS will also drive the evaluation of those alternatives. Technical analysis areas most sensitive to these

assumptions will involve travel demand estimation, traffic/circulation, air quality, economic/fiscal impacts, environmental justice, and secondary and cumulative effects.

- NEPA and SEQRA both require that the public be given an opportunity to comment on proposed projects and that the comments must be addressed as part of the environmental review process. It is likely that elected officials and the general public will want to consider their options in light of affordability issues and will need to be provided with funding scenarios in enough detail to enable them to understand and support their choices.
- Early public discussion of potential financing options will provide stakeholder, resource, and regulatory agencies with the ability to clarify expected roles and responsibilities and to make use of the elapsed time during the environmental review process to anticipate and plan for their respective actions within their agencies and with the public.

4. ENVIRONMENTAL STREAMLINING AND RISK MANAGEMENT

Many of the NEPA requirements for the TZB project are the same as those for any USDOT-sponsored project, but the introduction of tolling and the potential for PPPs introduce additional complexities and give rise to additional challenges and opportunities. These challenges and opportunities are linked to the regional long-range transportation planning process that preceded initiating the NEPA/SEQRA review, as well as the financing and procurement process, which could occur concurrently or follow the NEPA process. To overcome these challenges and maximize these opportunities, it is essential to develop a NEPA/SEQRA review process that meets environmental stewardship objectives in a streamlined manner, one that maintains flexibility while minimizing the potential for schedule and budget risks that could adversely impact project implementation. A critical ingredient to achieving this goal involves conducting the financial planning and analysis early when developing the DEIS so that time and resources are not wasted on alternatives that do not meet the project purpose and need, or which are not available and capable of being done.

The early conduct of financial planning and analysis and consideration of different funding scenarios has the potential to support environmental streamlining objectives, and manage risk during the project development process for the TZB project for the following reasons:

- Advancing the discussion of funding scenarios during the environmental review process provides the participating agencies with the ability to better coordinate decision-making under NEPA with fiscal constraints and financial capacity. Coordinating the two processes reduces the risk of revisiting assumptions made or re-opening alternatives considered during the NEPA process in order to develop a financial plan once an alternative has been selected for implementation.
- Developing a financial plan when evaluating alternatives assists stakeholder agencies in understanding and acting upon potential future commitments, roles, and responsibilities and in developing a solid basis for project governance.
- According to the December 2004 USDOT Report to Congress on Public-Private processes, the private sector is reticent to invest in transportation projects early in the project's life because of the vagaries of the project development process and the uncertainties associated with the environmental review process. Early financial analysis can assist in mitigating such private sector concerns by avoiding duplicating efforts that typically results from deferring financial planning to later in the NEPA review process, and by introducing information into the public realm that communicates the project is "real."
- Stabilizing financial planning assumptions early during the NEPA review will increase the robustness of the policy, procedural, and technical aspects of the DEIS, creating a defensible administrative record and environmental findings.
- The findings of the financial planning and analysis have the potential to greatly affect the dismissal, retention, and ultimately selection of alternatives for the project. Therefore, these need

to be addressed as part of the DEIS in order to provide appropriate public disclosure and adequate opportunity for the public to comment.

- Disclosing financial scenarios can jump-start the procurement process by taking advantage of the recent changes in SAFETEA-LU that make it possible to complete the entire procurement process, including the issuance of the Request for Proposal (RFP) and the selection of a private-sector partner before completing of the NEPA process. Thus, it is possible to accelerate the project development process.

One final consideration relates to the potential of the TZB project to qualify as a Priority Project under Executive Order 13274. Designation as a Priority Project enables expedited and streamlined environmental review processes through a variety of mechanisms, including designation of a Cabinet-level project champion. The criteria for the selection of priority projects are those that:

- Are of national or regional significance
- Have a high level of support among local transportation authorities and elected officials
- Have the potential to be unduly delayed by Federal agency review or coordination

One of the indicators of a high level of support is the commitment of funding resources. Hence the early completion of a financial plan could be an important factor in assisting the TZB project to achieve this designation should the project stakeholders chose to nominate the project.

5. CONCLUSION

The analysis presented above supports the recommendations that the environmental review process for and overall implementation of the TZB would benefit from conducting financial planning and analysis concurrently with the DEIS. As discussed above, such an approach has numerous benefits with respect to the following:

- Promoting compliance with FHWA's requirement that the Major Project financial plan meet the requirements of FTA and FHWA if both agencies provide funds
- Ensuring coordination with the state's STIP/TIP/LRP as required by FHWA's Major Project Guidance
- Ensuring consistency with Federal and state environmental review requirements under NEPA and SEQRA
- Leveraging opportunities for environmental streamlining should the project qualify as a Priority Project and reducing the risk of reopening alternatives or redoing technical work as project assumptions are revised.

A variety of sources were reviewed or consulted in developing the findings and recommendations presented in this section including:

- Federal and state environmental laws, regulations, and guidance
- Draft FHWA Guidance for Financial Plans (July 2006)
- Revised FHWA Guidance for Financial Plans (January 2007)
- USDOT Reports to Congress
- Environmental documentation prepared for projects considering alternative delivery and non-traditional project financing methods
- AASHTO Center for Environmental Excellence publications
- Practitioners specializing in USDOT NEPA activities

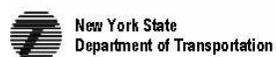
Assessment of Third-Party Approvals Required to Implement the Project

Prepared for the:

New York State Department of Transportation

Metro-North Railroad

New York State Thruway Authority



EXECUTIVE SUMMARY

This Technical Memorandum outlines Federal, state, and other third-party approvals that may be required to implement the various public and private sector project delivery options being evaluated as part of the planning process to advance the Tappan Zee Bridge/I-287 Corridor Project, including design-build, design-build-operate-maintain, and concession arrangements.

Federal Programs

Federal approvals will be required either as a result of the use of direct grants, loans, or credit support under Title 23 or Title 49 of the United States Code (U.S.C.), or due to the fact that the bridge and connecting portions of the Thruway are on the Interstate system.

Provisions enacted in the Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (SAFETEA-LU) and its predecessors now encourage and support innovative procurement and finance methodologies by providing special procurement rules and procedures, easing of restrictions on collection of tolls on Interstate highways and use of toll revenues, providing financial assistance through Transportation Infrastructure Finance and Innovation Act of 1998 (TIFIA) credit instruments and tax-exempt Private Activity Bonds (PABs), and streamlining the Federal Transit Administration (FTA) approvals under its Public-Private Partnership (PPP) Pilot Program. However, agencies should be aware of the following:

- Unless the project sponsors select a traditional design-bid-build project delivery method, the procurement processes will need to comply with the Federal Highway Administration's (FHWA's) "Design-Build Rule" if the project receives any amount of Federal funding under Title 23. While state-approved PPP procedures are generally permitted, their use will be subject to FHWA's review and approval. The Design-Build Rule permits a contract to be awarded prior to final National Environmental Policy Act (NEPA) approval, but final design and construction may not commence until such approvals are obtained.
- The agencies may be able to obtain waivers of statutory and regulatory restrictions set forth in Title 23 under FHWA's Special Experimental Project 15 (SEP-15) program.
- While Federal law generally restricts toll collection on Interstate highways, there is an exception that would permit Federal funds to reconstruct or restore the bridge and tolled portions of the Thruway, subject to the execution of a Section 129 toll agreement with FHWA, that can accommodate PPP arrangements and without requiring repayment of Federal funds.
- Laws and regulations governing FTA grant programs permit innovative procurement methodologies. However, traditional FTA discretionary grant approval processes are onerous and time-consuming. FTA's new Public-Private Partnership Pilot Program will provide streamlined approval processes and potential waiver of certain financial conditions for transit projects that involve greater private sector risk sharing.

Project Revenue Bond Financing

The bridge and highway portions of the project could be financed through the issuance of bonds secured by toll revenues, without any statutory limitations on amounts or requirements for third-party or voter approval. A separate report will assess the potential impact on financing for the project of the New York State Thruway Authority's (NYSTA's) current debt structure and bond covenants. A "standalone" financing would require restructuring of outstanding debt.

If the financing involves a long-term lease or operating agreement, this report also describes how the private participants could obtain an allocation from the U.S. Secretary of Transportation of a portion of the \$15 billion in PABs authorized by SAFETEA-LU. Debt issued for the project could also take advantage of support provided through TIFIA. We note the need for additional state law authority for the issuance of PABs, or for the authorization of single-purpose non-profit entities for purposes of project financing.

State Law Authorizations

To implement any type of alternative procurement methodology and take advantage of Federal PPP programs, New York law must be substantially modified. Changes in New York law, similar to those included in design-build and PPP legislation proposed in 2006, are required to authorize, among other things:

- Design-build contracting pursuant to two-step procurement processes
- Award of contracts based on “best value” determination
- Contracts for long-term operation and maintenance
- Comprehensive agreements with private parties for a broad range of transportation services, including financing through long-term leases or concessions
- Grant of rights to collect tolls to private entities, subject to approval of the public agency

Impact on Labor and Local Contractors

Concerns are commonly expressed regarding the use of design-build contracting and other forms of PPPs on local contractors and public agency employees. This report reviews a recent FHWA report on the impact of design-build contracting on the work allocated to small businesses. Survey results suggest small businesses are playing a comparable role for design-build projects as for design-bid-build projects, and that the design-build project delivery process is not preventing small businesses from participating in design-build projects to a comparable degree.

Any outsourcing of operations and maintenance under a PPP arrangement could also impact NYSTA or Metropolitan Transportation Authority (MTA) employees. Outsourcing implications under state and Federal law and existing labor contracts, as well as how other PPP projects have been structured to take into account labor interests are discussed. The discussion also covers “responsible contractor policies” that are being adopted by certain newly created private infrastructure investment funds.

1. INTRODUCTION

This Technical Memorandum outlines third-party governmental approvals and related matters that would be required to implement the various public and private sector project delivery options which could be considered.¹ These include:

- (a) The agency owner financing the project from Federal, state, and local transportation fund sources and using one or more private contractors to design the project and one or more private contractors to build the project (design-bid-build), with the agency owner operating the project.
- (b) The agency owner financing the project from Federal, state, and local transportation fund sources and using one or more private contractors to design and build (design-build) the project, with the agency operating the project.
- (c) NYSTA or New York State Department of Transportation (NYSDOT) financing the project from Federal, state, and local transportation fund sources and using one or more private sector contractor(s) to design, build, operate, and maintain the project (DBOM).
- (d) NYSTA or NYSDOT using project revenue financing and engaging one or more private contractors to design and build (design-build) the project, with NYSTA or NYSDOT operating the project.
- (e) Not-for-profit concession (e.g., a 63-20 corporation) using project revenue financing and engaging one or more private sector contractor(s) to design, build, operate, and maintain the project (DBOM).
- (f) For-profit concession (or franchise) using project revenue financing to design, build, operate, maintain, and finance (DBOMF) the project.
- (g) "Publicly controlled" concession (e.g., the public entity retains at least a 51 percent controlling interest in the facility) using project revenue financing to design, build, operate, maintain, and finance (DBOMF) the project.

These alternative project delivery methods and innovative financing methods require special approvals at both the Federal and state levels.

Federal Approvals

The requirements for approvals are reviewed under the assumption that whatever project delivery method is selected, there is likely to be Federal financial involvement. This may be either in the form of direct grants or loans under Title 23 or Title 29 of the U.S.C., or through credit support provided through the TIFIA program. Even without such Federal financial support, the fact that the bridge and connecting portions of the Thruway are on the Interstate system will necessitate Federal involvement.

Beginning with the enactment of the Intermodal Surface Transportation Efficiency Act of 1991 (ISTEA), and continuing through the Transportation Equity Act for the 21st Century (TEA-21) and SAFETEA-LU, Federal laws and implementing regulations and procedures have been continually modified to accommodate innovative procurement and finance methodologies. Section 2 provides an overview of: current Federal laws and regulations relating to design-build and other forms of PPP procurement processes; Federal restrictions on use of toll revenues and proceeds of monetization of tollroad assets; procedures related to TIFIA financing and PABs; and the FTA's new Public-Private Partnership Pilot Program.

State Authority

Any financing and project delivery method must, in the first instance, be authorized by state law. Currently, New York law does not contemplate the use of any procurement procedure other than traditional design-bid-build by NYSTA, MTA, or NYSDOT. Changes in law proposed by the governor of New York in 2006 would have authorized each of these agencies to use design-build contracting and to

¹ Additional research and analysis of issues described in the report may be required, as circumstances warrant.

enter into various forms of PPPs. With that proposal as a point of reference, key changes in law required to implement the alternative procurement and finance methods listed above are identified.

Project Revenue Bond Financing

Special approvals or limitations that would be required to finance the project with toll revenue bonds are addressed. (A separate report will assess NYSTA's current debt structure and bond covenants.) The procedures to obtain PAB allocation from the U.S. Department of Transportation (USDOT) under SAFETEA-LU, the availability under state law of authority for the issuance of such bonds, and provisions for accessing credit support under the TIFIA program are also discussed.

Impact on Labor and Local Contractors

Concerns are commonly expressed regarding the use of design-build contracting and other forms of PPPs on local contractors and public agency employees. This report reviews a recent FHWA report on the impact of design-build contracting on the work allocated to small businesses and describes Federal rules relating to subcontracting.

Any outsourcing of operations and maintenance under a PPP arrangement could also impact NYSTA or MTA employees. These outsourcing implications under state law and existing labor contracts are described briefly. If the expansion of transit lines as part of the project were accomplished under a DBOM or other PPP arrangement, Section 13(c) of the Federal Transit Act may also be implicated.

2. FEDERAL HIGHWAY RULES APPLICABLE TO INNOVATIVE PROJECT DELIVERY

Over the past 15 years, the public sector has increasingly looked to design-build and PPPs as a project delivery methodology for critical projects. Due to the accelerated delivery and cost certainty made possible by design-build, design-build contracting has proven to be an essential component of user fee-based revenue bond financing of new standalone transportation projects. The guarantees that these contracts provide that a project will be finished by a date certain and within budget are deemed critical by bond rating agencies in assessing project risk. Project revenue bond financings for publicly operated projects supported by design-build contracts include those for the Alameda Corridor, Colorado's E-470, Orange County's San Joaquin and Eastern Toll Roads, Virginia's Pocahontas Parkway, and the \$3.9 billion Central Texas Turnpike Project.² Private financings supported by design-build contracts include those for State Route 91 (SR-91) in Orange County, California; the Las Vegas Monorail; and the Southbay Expressway (SR-125) in San Diego County, California.

USDOT has recognized that design-build and PPPs play a valuable role in developing and expanding transportation infrastructure and has adopted regulations applicable to Federally funded projects using these delivery methodologies. The use of Federal funds under Title 23 or Title 49 for either the highway or transit portions of the project would add these Federal requirements relating to procurement and finance. The sections below discuss FHWA rules that have special application to the use of alternative project delivery mechanisms, including design-build, DBOM, concessions and related structures. Also discussed is FHWA's SEP-15 program, which permits the waiver of certain Title 23 requirements to advance project delivery.

² See, "Design-Build Critical to New Tollroad Financings," by Karen J. Hedlund, Tollways, Spring 2006, page 26.

2.1. FHWA's Design-Build Rule

2.1.1. General

TEA-21 authorized the use of design-build contracting for qualified projects.³ It should be noted that TEA-21 defined the term "design-build" to include the entire spectrum of project delivery options identified above. TEA-21 required the U.S. Secretary of Transportation to issue design-build regulations for the Federal-aid highway program.⁴ FHWA issued the Design-Build Rule in late 2002.⁵ Consistent with the TEA-21 definition of design-build, the rule addresses design-build-maintain, design-build-operate, design-build-finance, and other contracts that include services in addition to design-build, and franchise and concession agreements are included if they provide for the franchisee or concessionaire to develop the project that is the subject of the agreement.⁶

Provisions in the rule prohibiting transportation agencies from proceeding with design-build and public-private procurements prior to issuance of NEPA approval for the underlying project proved problematic, particularly for public-private projects, and FHWA adopted SEP-15 to allow agencies to obtain case-by-case waivers from this requirement (see Section 2.2 below). Language in SAFETEA-LU required FHWA to revise its rules to allow agencies to proceed with design-build procurements, award and execute design-build contracts, and issue notices to proceed with preliminary design work prior to the conclusion of the NEPA process.⁷ The final revisions to the Design-Build Rule are expected to be published early this summer. A draft revision issued in mid-2006 was the subject of extensive comment.⁸ For purposes of this report, references to the Design-Build Rule are to the January 9, 2003 final rule as proposed to be amended by the draft revisions issued in mid-2006, and references to Code of Federal Regulations (CFR) sections are to the proposed revisions to those sections included in the draft revisions.

The Design-Build Rule sets forth the criteria and procedures to be used by FHWA in approving the use of design-build contracting. It addresses a number of issues relating to the procurement process, as well as how the NEPA process relates to the design-build process.

Unless the agencies select a traditional design-bid-build project delivery method, the Design-Build Rule will apply to the project if it receives any amount of Federal funding.⁹

2.1.2. Procurement Requirements for "Standard" Design-Build Projects

In drafting the Design-Build Rule, FHWA distinguished between "standard" design-build contracts, where the agency contracts with a single entity for design and construction of a project, and PPPs, where the public agency would typically contract with a private sector developer and where the developer often does not itself perform the design-build work but instead contracts it out to a third party.

In the private sector, design-builders are frequently selected based solely on qualifications, with the design-build price negotiated after the selected contractor completes preliminary design. However, in the public sector the Design-Build Rule does not permit this approach to be taken, and specifically requires the procurement to include a price competition, subject only to the exception discussed in footnote 19 below concerning contracts awarded prior to final NEPA approval. The procurement requirements applicable to "standard" design-build contracts under the Design-Build Rule were based on the

³ TEA-21, Pub. L. No. 105-178, §1307, 112 Stat. 107, 229-231 (1998).

⁴ Id.

⁵ 67 Fed. Reg. 75902 and 23 CFR Part 636, issued December 10, 2002 and effective January 9, 2003. A copy of the original Design-Build Rule is attached hereto as Exhibit A-1.

⁶ 23 CFR 636.103.

⁷ This language was included to allow agencies to avoid the need to go through the SEP-15 process and obtain special approval.

⁸ 71 FR 30100; see Exhibit A-2 attached hereto for the proposed SAFETEA-LU revisions and an analysis of the proposed revised rule.

⁹ See Section 4.5 below for a related discussion addressing "federalizing" a project or a portion thereof.

requirements applicable to Federal agencies using design-build. They are intended to allow the procuring agency to consider proposer qualifications in the selection process and to provide incentives to the proposers to take full advantage of the opportunities for innovation associated with design-build, while ensuring that price is also a selection factor.¹⁰ The Design-Build Rule recommends use of a two-step process, with a short list of the most qualified firms determined in the first step, and issuing a Request for Proposal (RFP) that identifies the end result parameters and establishes design criteria in the second step. Proposers then develop design proposals that optimize their construction abilities and incorporate innovative ideas for the purpose of reducing cost and/or enhancing project quality. The contract is awarded at the conclusion of the proposal evaluation and selection process to the proposer offering the “best value” to the contracting agency.¹¹

2.1.3. Procurement Procedures for PPPs

PPPs are specifically exempted from the procurement requirements applicable to “standard” design-build contracts, and instead are subject to the provisions stated in 23 CFR 636.119. There are significant differences between Section 636.119 and the section included in the draft revisions to the Design-Build Rule issued in mid-2006.

Section 636.119 (as proposed to be amended) provides that in order for a project being developed under a public-private agreement to be eligible for Federal-aid funding (including traditional Federal-aid funds and direct loans, loan guarantees, lines of credit, or other forms of credit assistance under TIFIA¹²), the contracting agency must have awarded the contract to the public-private entity through a competitive process that complies with applicable state procurement law.¹³ However, the use of state-approved procedures will be subject to FHWA’s approval, including the Request for Qualifications (RFQ) and RFP documents and the public-private agreement. All solicitation and procurement procedures must be fair and transparent to all proposers.¹⁴

The Design-Build Rule requires a “best value” selection process to be used in procuring PPP agreements, but specifically states that price does not have to be considered.¹⁵ If the PPP agreement includes construction of any facilities, however, the contracting agency is required to take appropriate steps to evaluate the reasonableness of the price for final design and construction and to obtain concurrence regarding price reasonableness from FHWA.

In addition, the contracting agency must ensure such public-private projects comply with all non-procurement requirements of U.S.C. Title 23 regardless of the form of the FHWA funding (traditional Federal-aid funding or credit assistance). This includes compliance with all FHWA policies such as environmental and right-of-way requirements and compliance with such construction contracting requirements as Buy America and Davis-Bacon minimum wage rate requirements (see Section 4 below).

2.1.4. Timing of Procurements Relative to the Final NEPA Decision

The Design-Build Rule permits a contracting agency to issue an RFP, award a design-build contract (including PPP agreements), and issue a Notice to Proceed (NTP) for preliminary design work¹⁶ before

¹⁰ 23 CFR 636.201.

¹¹ For a discussion of FHWA’s view of innovative contracting techniques, including design-build, see Statement of James D. Ray, Chief Counsel and Acting Administrator of FHWA, Hearing on Innovative Contracting in Public-Private Partnerships Before the Committee on Transportation and Infrastructure, Subcommittee on Highways and Transit, U.S. House of Representatives, April 17, 2007, at <http://transportation.house.gov/Media/File/Highways/20070417/Ray.pdf>.

¹² See discussion in Section 5.3 below relating to TIFIA.

¹³ 23 CFR 636.119(a). Thus, the requirements of 23 CFR 636.201 through 23 CFR 636.514 would not apply.

¹⁴ Ibid.

¹⁵ 23 CFR 636.119(a)(vi).

¹⁶ “Preliminary design work” means “all design activities necessary to complete the NEPA alternatives analysis and review process as outlined in 23 CFR 771.105, 771.111, and 771.113.”

the NEPA process is complete.¹⁷ Contracting agencies will be required to receive FHWA's concurrence prior to proceeding with any of the above activities.¹⁸ Final design¹⁹ activities or construction activities will be prohibited prior to the completion of the NEPA process (i.e., issuance of a Categorical Exclusion classification, an approved Finding of No Significant Impact [FONSI], or an approved Record of Decision as defined in 23 CFR 771.113(a)).

If a contracting agency wishes to award a design-build contract before the NEPA process is complete, the evaluation and award criteria to be used need not include total contract price as a proposal evaluation factor. Instead, the evaluation and award criteria for such contracts may be based on qualitative considerations. However, the subsequent approval of final design and construction activities will be contingent upon a determination of price reasonableness by the contracting agency and FHWA.²⁰

Moreover, as to any resulting design-build contract, the contracting agency will be required to implement project development procedures and incorporate design-build contract provisions that (1) prevent the design-builder (or developer) from proceeding with final design activities and physical construction prior to the completion of the NEPA process; (2) ensure that no commitment is made to any alternative under evaluation in the NEPA process; (3) ensure that the comparative merits of all alternatives presented in the NEPA document, including the no-build alternative, will be evaluated; (4) ensure that all environmental and mitigation measures identified in the NEPA decision document will be implemented; and (5) include contract termination provisions in the event that the no-build alternative is selected.²¹

2.1.5. SAFETEA-LU Stewardship Agreement

FHWA and NYSDOT entered into a SAFETEA-LU Stewardship Agreement (the "Agreement") effective as of December 19, 2006, for the purpose of administering the Federal-Aid Highway Program (FAHP) in the State of New York. The Agreement provides basic policy concepts and approaches rather than specific procedures. Although the Agreement delegates to NYSDOT many of FHWA's Title 23 oversight roles and approval responsibilities for design, plans, specifications, estimates, contract awards, and inspection of projects, it specifies that FHWA will retain these roles and responsibilities for projects on Interstates with a value of \$5 million or more.²² Because the TZB project qualifies as such a project, FHWA will exercise its full oversight and approval responsibilities on the project as described in the Agreement and this memorandum.

2.2. SEP-15

In October 2004, FHWA established SEP-15 to encourage transportation agencies in seeking to attract private sector investment, innovation, efficiency, and new revenue streams for U.S. transportation infrastructure.²³ This program offers agencies the opportunity to ask FHWA to waive statutory and regulatory restrictions impeding the project delivery process.²⁴

SEP-15 recognizes two important realities: (1) the number of requests for relief from Federal requirements designed for traditional delivery is growing; and (2) many projects combine more than one kind of innovation and therefore the resulting requests should be handled comprehensively at one time in expedited fashion. The objective of SEP-15 is "to identify for trial evaluation and documentation PPP approaches that advance the efficient delivery of transportation projects while protecting the environment

¹⁷ 23 CFR 636.109(a).

¹⁸ 23 CFR 636.109(c).

¹⁹ "Final design" means "any design activities following preliminary design. Final design activities are not necessary to complete the NEPA process as outlined in 23 CFR 771."

²⁰ 23 CFR 636.302(a)(1).

²¹ 23 CFR 636.109(b).

²² See Table I on page 4 of the Agreement, a copy of which is attached hereto as Exhibit B.

²³ 69 FR 59983.

²⁴ For a recent review of the use of the SEP-15 process, see Statement of James D. Ray, cited at footnote 10, above.

and the taxpayers,” with the ultimate goal of obtaining legislation authorizing those public-private innovations that have proven most useful.

SEP-15 addresses four key components of project delivery: (1) contracting, (2) environmental requirements, (3) right-of-way acquisition, and (4) project finance:

- (1) **Innovative contracting and early development process.** One of the key issues highway agencies have been raising with FHWA is the desire to bring a private sector partner into a project early in the project development process, before cost competition is viable. Historically, FHWA has been concerned that entering into a PPP at this point means that the sponsoring agency does not obtain the benefit of price competition in selecting the private partner.

However, FHWA has a growing understanding that requiring selection to be based on a lump-sum price precludes state and local agencies from capturing benefits associated with contractor involvement in the early planning stages of a project. Accordingly, FHWA will waive these controls if the applicant establishes alternative procedures that will ensure an appropriate level of public oversight and control, allow transportation agencies to negotiate pricing to the extent allowed by applicable state and local law, and establish price reasonableness through a cost analysis or other appropriate methodology.

- (2) **Compliance with environmental and planning laws.** SEP-15 can be used to allow private sector developers to play a role in the environmental approval process to the extent permitted under NEPA and other environmental laws. Applicants under SEP-15 can seek FHWA approval to take actions relating to environmental analysis that deviate from FHWA procedures so long as the process followed complies with NEPA and with other state and Federal environmental and planning laws and regulations.²⁵ Examples include:

- Allowing a project developer to conduct environmental analysis and prepare NEPA documents subject to direction and oversight by the state DOT in cooperation with FHWA. The state DOT, in cooperation with FHWA, will be responsible for demonstrating that the NEPA document is objective by carefully reviewing the document with in-house experts or consultant advisors hired by the state DOT.
- Using a “tiered” environmental process.
- Using innovative ways to include the public and other agencies in various phases of planning and project development.

- (3) **Right-of-way acquisition.** The SEP-15 program also invites innovations in acquisition of right-of-way—one of the most significant risks affecting the delivery schedule and project cost for transportation projects. For example, FHWA may be willing to modify existing right-of-way certification requirements to allow early acquisition of right-of-way, thus protecting transportation corridors from conflicting land uses and preserving the possibility of joint development initiatives. Any such proposals must be “environmentally neutral” and must ensure that landowners and tenants receive fair compensation, relocation assistance, and other statutory benefits.

- (4) **Project finance and joint development.** SEP-15 focuses on financing innovations specifically associated with PPPs. FHWA anticipates that the TIFIA program will continue to be a key element of the plan of finance for many PPPs, but also wants to encourage other types of innovative financing. A separate TIFIA application must still be submitted, but SEP-15 may be used for experimentation in TIFIA procedures.

For example, the Texas Department of Transportation (TxDOT) recently obtained a SEP-15 approval to obtain approval of a TIFIA facility that could be made available to any of the project proposers for the State Highway 121 (SH-121) project. See discussion at Section 5.3 below.

²⁵ The Design-Build Rule obviates the need to seek a waiver under SEP-15 to issue an RFP or enter into a contract prior to issuance of a Record of Decision (ROD).

FHWA recognizes that significant revenue potential may be realized from joint use of a transportation facility, such as airspace development. Under existing law, specific requirements apply to sale or lease of real property acquired with Federal funds, including ensuring that the amount realized represents fair market value. The SEP-15 notice states that the requirement to charge fair market value can be waived in limited circumstances.

SEP-15 proposals must be submitted to the appropriate FHWA Division Office for processing. Localities and private transportation ventures may be included as project sponsors, but the state DOT must be included as an applicant. If an application is approved, FHWA and project sponsors will enter into an Early Development Agreement establishing parameters for key elements such as project planning and design, environmental review, right-of-way acquisition, procurement methods, regulatory compliance, timelines, financing, construction, and operation.

2.3. Use of Federal Funds on Tolloed Interstates

2.3.1. Existing Tolloed Bridges and Toll Highways

Section 301 of Title 23 of the U.S.C. prohibits the collection of tolls on all highways constructed with Federal-aid (Title 23) funds. However, Section 129(a)(1)(B) allows Federal-aid funds to be used for “reconstructing, resurfacing, restoring, and rehabilitating a toll highway, bridge, or tunnel (including a toll highway, bridge, or tunnel subject to an agreement entered into under this section or section 119(e) as in effect on the day before the date of the enactment of the Intermodal Surface Transportation Efficiency Act of 1991) or approach thereto.” This subsection should allow Federal funds to be used to reconstruct or restore the bridge and the tolloed portions of the Thruway, subject to the execution of a toll agreement with FHWA pursuant to Section 129(a)(3).

A Section 129 agreement²⁶ includes a commitment to use toll revenues received from operation of the facility to “be used first for debt service, for reasonable return on investment of any private person financing the project, and for the costs necessary for the proper operation and maintenance of the toll facility.”²⁷

2.3.2. Untolloed Interstates—Available Programs

Interstate highways that are not exempt from the prohibition under Section 129 may be tolloed under a number of programs expanded or initiated under SAFETEA-LU, including the Express Lanes Demonstration Program, Value Pricing Pilot Program, and Interstate Reconstruction Pilot Program. These are further described in Exhibit D. Where a tolloed Interstate includes non-tolloed segments, FHWA advice should be sought as to whether the imposition of tolls on the non-tolloed segments requires tolling authority under one of these provisions.

2.3.3. Concessions—Restriction on Use of Concession Payments

If the agencies proceed with some form of concession arrangement, Section 156 of Title 23 of the U.S.C. will be applicable. Section 156(a) states that “a State shall charge, at a minimum, fair market value for the sale, use, lease, or lease renewal (other than for utility use and occupancy or for a transportation project eligible for assistance under this title) of real property acquired with Federal assistance made available from the Highway Trust Fund (other than the Mass Transit Account).” Section 156(c) provides that the

²⁶ An example of such an agreement is attached hereto as Exhibit C.

²⁷ Note that for projects that were originally authorized under Section 119(e), the statute contemplates that the Section 119(e) agreement may be modified to incorporate the Section 129 commitments in lieu of the repayment obligation that would otherwise apply under Section 119(e), as was set forth in paragraph 3 of the July 19, 1982 Agreement between NYSTA, NYSDOT, and FHWA.

“Federal share of net income from the revenues obtained by a State under subsection (a) shall be used by the State for projects eligible under this title.”²⁸

With respect to the Section 156(a) fair market value requirement, as long as the project is procured pursuant to a competitive process, any rental payment(s) made to the agencies under the concession agreement will likely be deemed to meet the fair market value test.²⁹ As to the Section 156(c) requirement regarding use of rental proceeds, the agencies must ensure that at least the Federal share of net income derived from any rental or concession payment is used for Title 23 purposes, i.e., transportation improvements on other sections of the Thruway or other Title 23-eligible projects.

Accordingly, to the extent the agencies wish to complete the project in separate phases and/or through separate contracts in order to avoid many of the Federal requirements discussed in this memorandum, the agencies should structure the project procurement, financing, and performance consistent with the principles discussed above.

3. FTA

3.1. FTA Rules Governing Innovative Procurement

Innovative procurement methodologies are relatively well accommodated by laws and regulations governing FTA grant programs. There are no special requirements in Title 49 relating to design-build transit projects similar to those incorporated in Title 23 §112(b) with respect to highway projects.³⁰ However, the Intermodal Surface Transportation Efficiency Act (ISTEA) of 1991 directed FTA to implement a “turnkey demonstration program” contemplated to include the finance, design, building, operation, or maintenance of a transit system or segment or any combination thereof.³¹ FTA then selected five projects for evaluation: the Los Angeles Union Station Intermodal Terminal; San Francisco Airport Extension; Hudson-Bergen LRT; Tren Urbano in San Juan, Puerto Rico; and the Baltimore MTA’s 7.5-mile Central Light Rail.³²

FTA’s current policy as reflected in the Circular on Third Party Contracting Requirements allows for a variety of procurement strategies, including among other things low-bid/sealed bidding, competitive proposal/RFPs, and qualifications-based procurement where the preponderance of the work is design professional services.³³ The guidance provides that design-build services should be awarded either with low-bid or competitive proposal procedures. FTA’s Best Practices Procurement Manual encourages agencies to use a “best value” selection process for the selection of a “turnkey” contractor, but does not mandate that the design-build price be a factor in the selection process, and specifically encourages agencies to incorporate a negotiation phase in the procurement.³⁴

3.2. FTA PPP Pilot Program (“Penta-P”)

On January 19, 2007, FTA published a notice in the Federal Register containing the definitive terms of the Public-Private Partnership Pilot Program (the “Pilot Program”) authorized by Congress in SAFETEA-LU.³⁵ The Pilot Program was established to demonstrate the advantages and disadvantages of PPPs for

²⁸ Neither the statute nor interpreting FHWA regulations define “Federal share” or “net income.”

²⁹ See October 27, 2005 FHWA Memorandum to Raymond J. McCormick, FHWA Division Administrator, re: Delaware DOT’s SEP-15 Application concerning the Delaware Turnpike Lease and Concession Project, a copy of which is attached hereto as Exhibit E.

³⁰ See discussion in Section 2.1, above.

³¹ 49 USC §5326.

³² Described at http://www.fta.dot.gov/printer_friendly/publications_4191.html.

³³ FTA C 4220.1E, Section 9.

³⁴ FTA Best Practices Procurement Manual §6.1.4.

³⁵ Public-Private Partnership Pilot Program, 72 Fed. Reg. 2,583 (January 19, 2007).

certain new fixed guideway capital projects funded by FTA. The U.S. Secretary of Transportation may select up to three projects (Pilot Projects) to participate in the Pilot Program.

The Pilot Program will study projects that, among other things, use procurement methods that integrate risk-sharing and streamline project development, engineering, construction, operation, and maintenance. As noted by FTA, the PPPs used in the transit industry have primarily taken the form of design-build and DBOM procurements, which typically do not involve a significant long-term equity investment by the private partner or require the private partner to take ridership or revenue risk. The terms of the Pilot Program are clearly designed to encourage more private risk-taking and investment in fixed guideway transit projects than is found in typical design-build and DBOM procurements. The specific selection criteria include:

- The number of project elements for which the private partner is responsible
- The risk allocation with respect to the cost and ridership projections for the project
- The extent to which equity capital and proceeds of the sale of development rights are contributed to the project and the terms on which such capital is contributed
- Whether the project is part of a congestion mitigation plan that incorporates system-wide congestion pricing
- The expected effects of the foregoing arrangements on the speed and quality of delivery and performance of the project and on the reliability of the projections of costs and benefits associated with the project

Projects selected under the Pilot Program will be eligible for a simplified and accelerated review process that is intended to substantially reduce the time and cost to the sponsors of New Starts³⁶ reviews. Some of the benefits of the Pilot Program may include:

- **New Starts rating adjustments.** Adjustments will be made in the project's cost-effectiveness rating to exclude any costs that will be paid for by equity capital, and in the project's "project justification" rating, determined by assigning a weighting of 20 percent to the status of the project as a Pilot Project.
- **Accelerated design approvals.** FTA will issue concurrent approvals for preliminary engineering and final design to commence, thus allowing the project to proceed with Final Design immediately upon completion of preliminary engineering without requiring additional approval.
- **Reduced user benefit reviews.** FTA will accept, without further review, certain transportation user benefits projections subject to the private partners assuming levels of risk with respect to such benefits on terms satisfactory to FTA, and will also implement other modifications to its process for reviewing user benefits.
- **FTA funding assurances.** FTA will issue a Letter of Intent setting forth its intention to obligate a specified amount of New Starts funds for the Pilot Project from future available budget authority specified in law, subject to the availability of appropriations.
- **Early contract incentives.** The program will encourage transit agencies and contractors to enter into public-private agreements prior to the award of a Full Funding Grant Agreement (FFGA), by streamlining the project development process to obtain an earlier Federal funding commitment, and the opportunity to earn higher returns in exchange for assuming the risk associated with achieving the cost estimates and/or ridership projections.

³⁶ The New Starts program authorized under 49 U.S.C. §5309 provides funds for construction of new fixed guideway systems or extensions to existing fixed guideway systems. A "fixed guideway system" refers to any transit service that uses exclusive or controlled rights-of-way or rails, entirely or in part. The term includes, for example, light rail, trolleybus, that portion of motor bus service operated on exclusive or controlled rights-of-way, and high-occupancy-vehicle (HOV) lanes (see http://www.fta.dot.gov/funding/grants/grants_financing_3590.html).

With regard to environmental matters, FTA has in the past discouraged grantees from proceeding with design-build procurements prior to receipt of final NEPA approval, but has on multiple occasions allowed such procurements to proceed. A Pilot Program project sponsor will be entitled to issue procurement documents (RFQs or RFPs) prior to conclusion of the NEPA process, but neither the procurement nor the contract may commit the project sponsor to any of the alternatives being evaluated, including the no-build alternative. Furthermore, both contract award and issuance of a NTP with preliminary engineering may occur prior to the issuance of final NEPA approval if the contract includes appropriate provisions preventing the contractor from proceeding with “final design” activities and physical construction prior to completion of the NEPA process.

The eligibility requirements for the Pilot Program include:

- All or part of the project is a new fixed guideway capital project and, with respect to the project, the project sponsor has not entered into an FFGA or project construction grant agreement with FTA.
- The project sponsor has submitted, with its application to the Pilot Program, a schedule and finance plan for the construction and operation of the project and an analysis of the costs, benefits, and efficiencies of the proposed public-private agreement.
- The public-private agreements are permitted under applicable state law and governing instruments.
- The recipient cannot advance the project without a PPP due to fiscal constraints.

4. GENERALLY APPLICABLE FEDERAL LAWS

4.1. Buy America

In Section 165 of the Surface Transportation Assistance Act of 1982, Congress required that all steel, cement, and manufactured products used in a project funded with money made available from the Federal-aid highway program or FTA grant monies must be manufactured in the United States.³⁷ Subsequently, Congress amended this provision to include iron products and to remove cement products from its application. An exception to the Buy America requirements may be made when the purchase of such materials would cost 25 percent more than foreign alternatives; if the cost of such materials does not exceed one-tenth of 1 percent of the total contract cost or \$2,500, whichever is greater; or if FHWA grants a waiver or other exceptions apply.³⁸

FTA has issued regulations implementing the Buy America requirements³⁹ and is currently in the process of preparing a proposed rulemaking to fully implement amendments to the regulations as required by SAFETEA-LU. It is anticipated that the proposed rules will address, among other things, the requirements for obtaining waivers from Buy America requirements.⁴⁰

³⁷ Surface Transportation Assistance Act of 1982, Pub. L. No. 97-424, §165, 96 Stat. 2097, 2136-2137 (1983).

³⁸ 23 CFR 635.410 and 41 U.S.C. §10(a) et seq.

³⁹ FTA's Buy America requirements are found in 49 USC 5323(j); implementing regulations are at 49 CFR Parts 661 and 663.

⁴⁰ See FTA's Notice of Proposed Rulemaking, 70 Fed. Reg. 71246, November 28, 2005, which would have addressed waiver issues, and FTA's Final Rule, 71 Fed. Reg. 14112, March 21, 2006 (49 CFR Parts 661 and 663), the preamble to which explained that due to the complexity and variety of recommendations received in public comments, FTA would only make non-controversial changes at that time. FTA issued a second NPRM on November 30, 2006, to address the remaining issues that were covered in the “non-controversial” final rule. The comment period on the more complex issues ended on February 28, 2007, and FTA has not yet issued the final rule. See also

4.2. Davis-Bacon

The application of the Davis-Bacon Act (the “Act”) to Federal-aid highway and transit contracts is prescribed by 23 U.S.C. §113 and 40 U.S.C. §276a et seq., respectively. The Act requires that each contract over \$2,000 for the construction, alteration, or repair of public buildings or public works to which the United States or the District of Columbia is a party contain a clause setting forth the minimum wages to be paid to various classes of laborers and mechanics employed under the contract. Under the provisions of the Act, contractors and their subcontractors are required to pay workers employed directly upon the site of the project no less than the local prevailing wage rates, as determined by the Secretary of Labor, paid on projects of a similar character.⁴¹

4.3. DBE Requirements

All Federal-aid projects are subject to the legislative and regulatory Disadvantaged Business Enterprise (DBE) requirements.⁴² FHWA must approve each state's DBE program and approve the methodology for calculating the overall goal as part of the approval of a state DBE program. The main objective of a DBE program is to ensure that small businesses owned and controlled by minorities, women, and other disadvantaged individuals have an equal opportunity to participate in DOT-funded contracts. Goals for DBE participation are established to serve the public interest in creating a level playing field on which DBEs can compete fairly. State DOTs are required to use race-neutral means (i.e., the award of a contract to a DBE prime contractor through customary competitive procurement procedures) of achieving their goals to the extent possible. When individual contract goals are set based on the existence of subcontracting opportunities for DBE participation, contractors must make good faith efforts to achieve the goal. A contractor cannot be denied award of the contract for failure to meet the DBE goal if adequate good faith efforts are documented.

It should be noted that USDOT rules recognize the need for alternative approaches to DBE compliance for design-build and PPP projects.⁴³

4.4. Surety Bonds and Waivers

Virtually all states have enacted what have become known as “Little Miller Acts,” similar to the Federal Miller Act (40 U.S.C. Section 3131 et seq.). These statutes require general contractors on public works projects to provide performance and payment bonds to secure the project. Public owners have recourse against the performance bond in the event the contractor defaults on the contract, and subcontractors and suppliers have recourse against the payment bond in the event the general contractor fails to pay them amounts that are due.⁴⁴

The Federal Miller Act provides some flexibility as to the penal amount of the bonds. For the performance bond, the Miller Act provides that the bond must be in an amount the contracting officer considers adequate for the protection of the government (40 U.S.C. §3131(b)(1)). For the payment bond, it requires that the bond be in the total amount payable under the contract, unless the contracting officer makes a written determination, supported with specific findings, that a payment bond in that amount is impractical (40 U.S.C. §3131(b)(2)). This recognizes that the surety market places limits on total bonding available to each contractor; increases the pool of contractors interested in competing for the project; and, permits the contracting officer to tailor the financial security requirement for larger projects based on an assessment

Hearing on Buy America Requirements in Federal Highways and Transit Programs Before United States House of Representatives, Subcommittee on Highways and Transit, April 24, 2007, <http://transportation.house.gov/hearings/hearingdetail.aspx?NewsID=151>.

⁴¹ 29 CFR Part 3 and 23 CFR 635.118.

⁴² 23 CFR 635.107 and 49 CFR Part 26.

⁴³ 49 CFR 26.53(e). See also http://onlinepubs.trb.org/onlinepubs/nchrp/nchrp_syn_343.pdf.

⁴⁴ The requirements for payment bonds on public projects are generally recognized as serving as a substitute for mechanics' lien rights of subcontractors and suppliers, because publicly owned property is generally exempt from mechanics' liens under the doctrine of sovereign immunity.

of the agency's potential maximum exposure in the event of default, which is generally much smaller than 100 percent of the contract price.

FTA's Circular on Third Party Contracting Requirements, FTA C 4220.1E, Section 11(b),⁴⁵ requires performance bonds in the amount of 100 percent of the contract price. For payment bonds, Section 11(c) of the circular establishes a sliding scale according to the size of the contract, requiring payment bonds in the amount of \$2.5 million for all contracts with a price of \$5 million or more being required. Section 11(d) of the circular allows the grantee to seek FTA approval for a bonding policy that does not meet these minimum requirements. FTA has granted waivers from the 100 percent bonding requirement in larger design-build and DBOM projects, including Colorado's \$1.1 billion T-REX project and New Jersey Transit's River LINE project.

Several considerations suggest that state and local transportation agencies ought to have greater flexibility with respect to financial security requirements in PPP projects. For very large projects, requiring private partners to provide surety bonds in the full amount of the contract price may have the effect of limiting the number of proposers that can compete for the project because the requirement may exceed the bonding capacity of many potential competitors. PPP projects typically establish a high "responsibility" threshold for the private partners, initially assessed during the procurement's short-listing process and re-assessed when final proposals are received. To qualify, proposers must demonstrate their financial and technical capabilities. This presents an important difference from traditional low-bid procurements, where the public sector usually considers a firm qualified if it is able to provide the required surety bonds. In addition, a standard requirement of PPP programs is that the private partners provide an additional layer of security in the form of parent company guarantees, whereby the parent company is liable for losses that result if the subsidiary that enters into the public-private agreement fails to faithfully perform its contract obligations. The private partners in PPPs can also be required to provide other alternative forms of security, such as letters of credit upon which the government may draw in the event of a default.

Moreover, most PPP contracts involve a wide range of services in addition to construction, often including design professional services, supply of equipment and rolling stock, and management services. Because the intent of the Miller Act-type statutes is only to secure performance of construction contractors, it may be inappropriate to require surety bonds to cover the non-construction services in PPP contracts. Accordingly, any New York PPP enabling legislation should allow the agencies considerable flexibility to deviate from 100 percent performance and payment bond requirements applicable to other contracts for public works. Ideally, the statutes should provide a simple exemption from those requirements and authorize the contracting agency to develop its own approach to financial security requirements that can be flexibly applied to the needs of each PPP project on a case-by-case basis. In this way, the interests of the parties, the project, and the public can all be weighed and advanced.

4.5. Federalization and Project Segmentation

Generally, FHWA accepts delineation of projects for the purpose of applying Federal contracting regulations and requirements on the basis of discrete contracts and scopes of work. If Federal funds are solely allocated and used for the scope of work under one contract, a discrete scope of work under another contract, although related to the overall project to be delivered, will not be required to comply with Federal contracting regulations and requirements, except for some Federal requirements (e.g., Uniform Relocation Assistance Act, NEPA, and Title VI) that would apply project-wide.⁴⁶

⁴⁵ http://www.fta.dot.gov/laws/circulars/leg_reg_4063.html.

⁴⁶ See Statement of Testimony of the Honorable J. Richard Capka, Administrator, FHWA, at Hearing on Buy America in Federal Highway and Transit Programs before the Subcommittee on Highways and Transit, U.S. House of Representatives, April 24, 2007, at <http://transportation.house.gov/Media/File/Highways/20070424/BuyAmerica%20Capka%20FINAL.pdf>.

5. INNOVATIVE FINANCING TOOLS

5.1. Toll Revenue Bond Financing

NYSTA finances most of the costs of its capital projects through the issuance of bonds secured by its toll revenues under Section 365 of the Public Authorities Law, which authorizes NYSTA to issue notes or bonds to achieve its “corporate purposes.”⁴⁷ There is no statutory limitation on the amount of bonds that may be issued, nor is there any third-party or voter approval required. If NYSTA elected to enter into a DBOM contract supported by traditional public toll revenue bond financing, other restrictions under the Federal tax laws would apply. Under certain circumstances, the agencies may issue tax-exempt bonds to finance projects that are operated by private entities, provided the operation and maintenance contracts comply with the so-called “management contract” provisions established by Federal tax regulations. These provisions generally restrict the length of such contracts (not to exceed 15 years) and the manner of compensation (fixed versus variable).

“Standalone” Financing

If the project were to be financed on a “standalone” basis, with financing secured solely from revenues of the TZB project, all outstanding NYSTA bonds would be required to be defeased and refinanced because NYSTA’s indenture generally does not permit assignment of any revenues securing its bonds to other debt. If such a restructuring were feasible, the highway portions of the project could be separately financed by NYSTA. However, the use of bond proceeds to finance the rail component of the project is not clear.

One alternative that could be considered would be the creation of a separate entity to finance both the rail and highway elements of the project. Several standalone toll road and rail projects in the United States have been financed through the creation of a non-profit corporation that issues tax-exempt bonds on behalf of a governmental sponsor to finance design and construction. The non-profit also undertakes to operate the project for the term of the bonds. The Pocahontas Parkway Association is an example of this approach, which was created to finance and build a new toll road where the state DOT did not have toll revenue bond issuing authority. The construction and financing of the Las Vegas Monorail was similarly undertaken by a non-profit corporation created under Nevada law. A separate memorandum on this financing methodology is attached as Exhibit F. Elsewhere, “joint powers agencies” have been created to provide a financing and operating entity with representation from several interested governmental bodies and that is focused solely on delivery of the project. The Alameda Corridor Transportation Authority and the Toll Corridor Authorities in Orange County, California, are examples of the latter.

Based on the initial review conducted for this task, it appears unlikely that the agencies could sponsor a non-profit corporation under the state not-for-profit corporation law to issue bonds without additional statutory authority.⁴⁸

5.2. Private Activity Bonds

As noted above, under Federal tax laws, the agencies may issue tax-exempt bonds to finance transportation facilities that are publicly owned and operated. However, until recently, public agencies could not issue tax-exempt bonds, the proceeds of which are loaned to private concessionaires that operate such facilities under long-term leases or operating agreements. A new provision of SAFETEA-LU now authorizes tax-exempt financing for qualified transportation projects that are used in the trade or business of private entities and that are repaid from such projects without the need to comply with the

⁴⁷ The information contained in Section 5 regarding restrictions contained in New York law and the NYSTA bond indentures is based on informal advice provided to the AECOM Team by Stanley Kramer, bond counsel to NYSTA, in April 2007.

⁴⁸ *Id.*

management contract rules. (It should be noted that under current state law, NYSTA is not authorized to act as a “conduit issuer” in connection with the issuance of private activity bonds.⁴⁹)

The new private activity bond provision may be used to finance (1) any surface transportation project receiving Title 23 funds⁵⁰; (2) a project for an international bridge or tunnel for which an international entity authorized under Federal or state law is responsible and that receives Title 23 funds; and (3) facilities for the transfer of freight from truck to rail or rail to truck (including any temporary storage facilities directly related to such transfers) that receives Federal assistance under Title 23 or Title 49. The primary Federal approval required is an allocation of the \$15 billion limitation placed on the outstanding amount of such bonds for all projects. The U.S. Secretary of Transportation makes the allocation.

In its January 5, 2006 notice, the office of the U.S. Secretary of Transportation described the process for applying for an allocation of private activity bonds, which is relatively straightforward. The application for an allocation should set forth sufficient information to enable the Secretary to determine the eligibility of the project for bond financing. The notice states that USDOT is not prescribing a particular form of application or requiring a specific set of information. However, USDOT is encouraging applicants to include certain information to facilitate USDOT’s consideration of the application, including: the amount requested, proposed date of issue, date of adoption of the resolution expressing the intent of the issuer to issue the bonds, a draft bond counsel opinion, description of the financing team, the borrower and the project to be financed, a project schedule, a statement of the anticipated financial structure, the source of Title 23 financing (which may include TIFIA credit assistance), and the status of project readiness.

Recently, TxDOT submitted an application for a private activity bond application for a toll road project that is the subject of a competitive procurement. TxDOT was able to obtain the allocation to be made available to the winning bidder by submitting a pro forma plan of finance based on project cost and revenue estimates.

In addition to receipt of an allocation of the private activity bond limit, projects financed with tax-exempt bonds must satisfy a host of other requirements. At least 95 percent of the proceeds of the bonds must be spent on qualified capital expenditures for the project and all bond proceeds must be spent within 5 years of the date of their issuance. Bonds may be issued only after the issuer or an authorized officer has conducted a duly noticed public hearing and only after approval by an elected body or official with jurisdiction over the project. Bond proceeds may not be used to acquire existing property without expenditures to rehabilitate the project in an amount equal to 100 percent of the amount of the principal amount of the bonds. The private entity using the bond proceeds may not use accelerated depreciation schedules when preparing their tax returns. Bonds may be issued only by a duly authorized state or local governmental unit, which raises an issue under state law that is discussed below.

In addition, the use of PABs to finance a non-Federalized activity should not, standing alone, Federalize the activity. PABs are different from Federal grants or Federal credit sources such as TIFIA (see general discussion in Section 5.3 below), because in both those cases the Federal Government is the source of the money, even if it is paid back. In contrast, although the Secretary of Transportation must approve the allocation of PABs to a project, their source is still a private party or parties, not the Federal Government. In addition, while FHWA guidance includes much discussion of TIFIA credit as a form of Federal assistance, there is no such discussion of PABs. Finally, the House Ways and Means Committee noted that the PABs provision “is not intended to expand the scope of any Federal requirement beyond its application under present law and does not broaden the application of any Federal requirement under present law in Title 49.” This appears to state that PABs in their own right will not impose Federal requirements on projects (but these projects will nevertheless need the use of Federal funds to qualify for PABs).

⁴⁹ Id.

⁵⁰ Transit projects may qualify only if they receive funds under Title 23.

5.3. TIFIA

5.3.1. Description of Program and Project Requirements

TIFIA (23 U.S.C. Sections 601 et seq.) is a Federal credit assistance program for eligible transportation projects of national or regional significance. Under the TIFIA program, public or private sponsors of transportation infrastructure may apply for loans or lines of credit or guaranties to finance large transportation projects that satisfy several criteria, including creditworthiness, the extent of private participation, project advancement, use of innovative technology, and the extent to which a project protects the environment. Credit assistance may not exceed 33 percent of “eligible project costs,” which include all capital costs, reserves, and capitalized interest expended within 3 years of filing of the TIFIA application. On a case-by-case basis, FHWA will look back to capture expenditures incurred prior to the 3-year period. Projects must comply with all applicable Federal requirements, which are more fully discussed above.

Repayment of TIFIA credit assistance may be secured by a dedicated revenue stream subordinate to other bond financing or private loans, provided that in the case of insolvency or bankruptcy the TIFIA lien “springs” to parity. One of the primary attractive features of a TIFIA loan is the deferred repayment provisions, allowing for no payments for the first 5 years, interest only for the next 5 years, with principal repayment along with deferred interest beginning in year 10. The final maturity of a TIFIA loan may not exceed 35 years from the date of substantial completion. TIFIA loans must be closed within 1 year of project completion. Refinancing of long-term debt with a TIFIA loan is permitted if such refinancing provides additional funding capacity for the completion, enhancement, or expansion of new transportation infrastructure.. Another attractive feature of the program is the low interest cost; TIFIA interest rates are based on rates for comparable maturities of U.S. Treasury Securities—State and Local Government Series.

The TIFIA program is administered by the U.S. Secretary of Transportation; the nine-member TIFIA Credit Council makes recommendations to the Secretary regarding the provision of TIFIA credit assistance. The Credit Council is assisted by the TIFIA Joint Program Office (JPO) that in turn hires outside legal and financial advisors.

5.3.2. TIFIA Application and Approval Process

The TIFIA application process begins with the filing of a Letter of Interest that describes the project in sufficient detail for FHWA to make a preliminary determination that the project would qualify for TIFIA assistance and is ready for development; the form of the Letter of Interest can be found at TIFIAcredit@dot.gov. Following this preliminary determination, the project sponsor submits a detailed TIFIA application setting forth the amount of TIFIA credit assistance requested, support for satisfaction of the statutory selection criteria, a plan of finance including revenue and cost estimates, and a proposed repayment schedule. The applicant must discuss project schedule including major milestones, such as the date for NEPA compliance, which is a condition to close on a TIFIA loan. The project must also be included in all state and Federal transportation planning and funding documents. The application must be accompanied by an investment grade rating opinion letter from at least one of the major rating agencies with regard to any senior lien debt.

Following submission of the TIFIA application, the project sponsor meets with USDOT representatives to make a formal presentation regarding the request for TIFIA assistance. The TIFIA JPO will retain an outside traffic and revenue consultant to provide a peer review of any traffic and revenue study submitted with the application. Based upon the TIFIA JPO’s findings, the TIFIA Credit Council makes its recommendation to the U.S. Secretary of Transportation regarding the selection of the project for TIFIA credit assistance and the amount of TIFIA assistance to be made available for the financing of the project. The Secretary executes a term sheet for project assistance that obligates Federal funds for the project.

The next step in the process requires negotiating a TIFIA credit agreement and ancillary documents, such as an intercreditor agreement between FHWA and the senior project lenders. The credit agreement will contain all of the terms and provisions for the making of the TIFIA loan, including amount, interest rate, repayment schedule, reserve requirements, debt service coverage ratios, events of default, and reporting requirements. TIFIA projects must follow the financial reporting required under the “mega-project guidelines” established by USDOT. The credit agreement will also set forth the conditions to closing the TIFIA loan, including receipt of an investment grade rating for any debt senior to the TIFIA loan.

TxDOT obtained a SEP-15 approval to make certain modifications to the application process in connection with the SH-121 Toll Project. TxDOT was seeking bids from proposers to design, finance, construct, operate, and collect tolls from the project under a competitive procurement process. The SEP-15 approval authorized TxDOT to act as the initial applicant for TIFIA credit assistance, which could be included in the financial proposals and assigned to the preferred bidder that would be responsible for completing the conditions necessary to achieve financial close.

6. STATE LAW AUTHORIZATION FOR INNOVATIVE PROCUREMENT AND FINANCE

6.1. Design-Build and PPP Contracting

New York law does not currently authorize the use of design-build contracting or other forms of PPPs in highway or transit projects. If the agencies want to significantly expand the range of procurement and contracting options available to deliver the project, design-build and PPP legislation of the type considered by the New York legislature in 2006⁵¹ would be needed to provide such authority. Key provisions of any design-build enabling legislation should include the matters discussed in Section 6.1.1. Section 6.1.2 summarizes the key provisions of the 2006 PPP legislation. A recent study of the impact of design-build on the public workforce also indicates that design-build contracting does not shift public professional engineering jobs from state agencies to the private sector.⁵²

6.1.1. Design-Build Legislation

- Enables the use of design-build in the construction of highways, structures, or appurtenant facilities for capital transportation projects.
- Sets forth a two-step procurement process that includes (1) an RFQ and subsequent short-listing and (2) a best-value determination based on proposals received from the short-listed proposers.
- Design-build contracts must include a clause that requires engineers, land surveyors, architects, and landscape architecture specialists to meet the relevant licensing requirements.
- Minority and women-owned business enterprise laws and goals shall apply to design-build projects.
- Design-build projects will be subject to applicable environmental laws, including Article 8 (Environmental Quality Review) of the Environmental Conservation Law and, where applicable, NEPA requirements.
- Includes flexibility with respect to surety bond requirements, as discussed in Section 4.4 above.

⁵¹ See Exhibit G for copies of the 2006 proposed legislation.

⁵² D. Gransberg and K. Molenaar, “The Impacts of Design-Build on the Public Work Force,” USC Keston Institute for Public Finance and Infrastructure Policy, Research Paper 07-01. This paper can be downloaded from <http://www.usc.edu/schools/sppd/keston/research/index.html>.

6.1.2. PPP Legislation

Transportation Services Agreements

NYSDOT and NYSTA are each authorized to enter into transportation services agreements with public and/or private entities to provide for the planning, acquisition, design, engineering, environmental analysis, construction, reconstruction, restoration, rehabilitation, establishment, improvement, renovation, extension, repair, management, operation, maintenance, development, and/or financing of transportation facilities⁵³ or transportation services.⁵⁴ MTA is authorized to enter into transportation services agreements with public and/or private entities to provide for a transportation services project.⁵⁵

Transportation Services Agreements—Receipt of Grants, Funds, etc.

The agencies are authorized to accept any appropriation, grant, or offer of funds or property or other forms of assistance for the purposes of these transportation services agreements.

Transportation Services Agreements—Use of Concession Agreements

The agencies are authorized to finance all or any part of their incurred costs or the costs to any public and/or private entity of any transportation facilities or transportation services project, including: financing through or accompanied by one or more leases or concessions of such project or any part thereof by or to such entity or entities and/or by or to the agencies or through or accompanied by one or more leasebacks of such project or any part thereof by or to such entity or entities or by or to the agencies.

Transportation Services Agreements—Authority to Charge User Fees

The agencies are authorized to collect user fees⁵⁶ for the use of transportation facilities or for the receipt of transportation services; provided, however, that such user fees may only be imposed in connection with transportation facilities that are currently subject to user fees and/or transportation facilities that are newly constructed or which are improved to increase capacity pursuant to a transportation services agreement.

Transportation Services Agreements—Pledge of User Fees

The agencies are authorized to pledge any user fee or convey any interest in property under the jurisdiction of the agencies to a public and/or private entity pursuant to the terms of a transportation services agreement.

⁵³ “Transportation facilities” for NYSDOT projects means “transportation infrastructure and related facilities or systems, including, but not limited to, highways, railroads, airports, transit facilities, buses, ferries, bridges, tunnels, tracks, vehicles, ports, rolling stock, equipment, parking facilities, transit stations, bus stations, intermodal centers, terminals, rest areas, transportation management and information systems, intelligent transportation systems, user fee collection systems, land use control and development, fuel storage, energy systems, security systems, seismic control systems, utility relocation, and rights-of-way associated with each mode or facility.”

“Transportation facilities” for NYSTA projects defines this term by referencing an already existing definition in preexisting New York law.

⁵⁴ “Transportation services” means “any transportation-related services, including, but not limited to, the provisions for the movement of people, vehicles, goods or information on, by or through the use of transportation facilities and shall include services provided pursuant to joint services agreements and transportation services agreements.”

⁵⁵ “Transportation services project” means “the planning, acquisition, design, engineering, environmental analysis, construction, reconstruction, restoration, rehabilitation, establishment, improvement, renovation, extension, repair, management, operation, maintenance, development and/or financing of transportation facilities or transportation services, including, but not limited to, agreements relating to the distribution of fare and toll payment media and electronic payment devices, and the setting, collection and settlement of user fees pursuant to one or more transportation services agreements.”

⁵⁶ “User fees” means “the rates, tolls, fares, rentals or fees or other charges including any adjustments or modifications thereto imposed for or associated with the use and operation of all or a portion of a transportation facility or for the receipt of transportation services pursuant to a transportation services agreement and any other lease or concession revenue derived therefrom.”

Powers and Duties of the Private Entity—Imposition of User Fees

No user fees may be imposed by the private entity without the prior written approval of the applicable agency.

Powers and Duties of the Private Entity—Right to Develop, Maintain, and/or Operate Facility

As to NYSDOT projects, the private entity has the right to develop, maintain and/or operate the transportation facility. It appears that private entities contracting with NYSTA and MTA would not have the right solely to maintain facilities.

Condemnation and Operation in the Event of a Default

The agencies have the right to acquire a transportation facility when the relevant public or private partner is in default.

Criteria for Accepting Proposals

Best Value Determination. Each agency may enter into a transportation services agreement with the public and/or private entity that has submitted a solicited proposal that is determined to be the best value to the state, considering such factors as (1) a public need for the proposed transportation facility or transportation services; (2) the compatibility of the proposed transportation facility or transportation service within the existing transportation system and with the transportation plans of the state and of any affected local jurisdictions; (3) the reasonableness of estimated costs, benefits, and liabilities of the proposed transportation facility and/or of the delivery of the transportation services; (4) the feasibility of the financing of the development, construction, implementation, and/or operation of the proposed transportation facility or delivery of the transportation services; (5) the qualifications, experience, and financial capacity of the public and/or private entity providing the transportation facility and/or transportation services; and (6) whether the proposed transportation facility or transportation services satisfies any other criteria established in the solicitation.

6.2. Intergovernmental Agreements

If the project were to include rail facilities that would occupy a portion of the bridge, the agencies may wish to consider use of a single design-build contract for design and construction of some or all of both elements. This was the approach taken by the Colorado Department of Transportation (CDOT) and the Denver Regional Transportation Authority (RTD) for the T-REX project. In 2001 CDOT/RTD jointly awarded a \$1.186 billion design-build multimodal contract, the first design-build contract in the United States combining major highway and light rail transit elements. The project involved improving approximately 17 miles of Interstate highways in the Denver metropolitan area and added approximately 19 miles of new light rail transit line, including 13 new stations. By putting transit and highway construction under one contract CDOT and RTD achieved significant time and cost savings by avoiding potential conflicts that could have resulted from having separate contractors working in the same right-of-way.

CDOT and RTD formally entered this working relationship through execution of an Intergovernmental Agreement (IGA). The IGA outlined the responsibilities of each agency, a project description, an explanation of the design-build concept, and the proposed method of financing the project. The agreement also outlined the development of specifications for the project, the composition of the team to select the design-build contractor, and how the project would comply with state and Federal laws regarding DBEs. FHWA and FTA also developed a unique agreement regarding their work on T-REX. Their Interagency Agreement outlined guiding principles and designated responsibilities for each of the agencies. In this agreement, FHWA and FTA agreed to “cooperatively work together to seamlessly

implement the U.S. Department of Transportation ... procedures that pertain to the Transportation Expansion Project in a manner that embodies the 'One DOT' approach."⁵⁷

Other portions of the project may require additional agreements among the agencies. For example, there is an existing agreement between NYSTA and NYSDOT regarding portions of I-287 that are operated by the Thruway but for which NYSDOT has responsibility for capital projects.⁵⁸

7. IMPACT ON LOCAL CONTRACTORS AND AGENCY EMPLOYEES

7.1. Impact on Local Contractors

One of the concerns that has been raised by design-build contracting is that small firms may be negatively impacted because they may not be able to participate in design-build projects, particularly as the lead or prime contractor, due to the large size and scale of the projects, more stringent qualification requirements, and higher bonding requirements. However, information obtained for a January 2006 FHWA report to Congress entitled "Design-Build Effectiveness Study" indicated that the percentage of design-build project costs going to small businesses are almost the same, on average, as the amount under the traditional design-bid-build approach.⁵⁹

The survey results indicated that design-build contracts spread more of the design work among subcontractors than comparable design-bid-build contracts, which should be a positive feature for small business enterprises. Specifically, for design-build projects, an average of 60 percent of design work was subcontracted, with the remaining 40 percent handled as direct hire (self-performance by the design-builder or its core team members). In addition, an average of 75 percent of construction work was directly hired, and 25 percent was subcontracted.

While the size of prime contractor firms may have been somewhat larger for design-build projects than for design-bid-build projects (though not always so), the size of subcontractor firms was essentially the same. To the extent that small businesses are currently involved in the design and construction of design-bid-build projects, similar opportunity appears to exist for design-build projects, particularly in the role of subcontractor. These results suggest that small businesses are playing a comparable role for design-build projects as for design-bid-build projects, and that the design-build project delivery process is not preventing small businesses from participating in design-build projects to a comparable degree.

Under FHWA rules, if a design-bid-build project delivery method is used, the selected contractor will be required to perform with its own organization⁶⁰ contract work amounting to not less than 30 percent (or a greater percentage if specified elsewhere in the contract) of the total original contract price,⁶¹ excluding any specialty items designated by the state.⁶² Specialty items⁶³ may be performed by subcontract, and the amount of any such specialty items performed may be deducted from the total original contract price before computing the amount of work required to be performed by the contractor's own organization.

⁵⁷ See "T-Rex Fact Book" on <http://www.trexproject.com/>.

⁵⁸ Email correspondence from Susan Kugler, NYSDOT to Toni Horst, AECOM, April 27, 2007.

⁵⁹ This study can be found at <http://www.fhwa.dot.gov/reports/designbuild/designbuild.pdf>.

⁶⁰ "Its own organization" includes only workers employed and paid directly by the prime contractor and equipment owned or rented by the prime contractor, with or without operators. This term does not include employees or equipment of a subcontractor, assignee, or agent of the prime contractor.

⁶¹ The contract amount includes the cost of material and manufactured products that are to be purchased or produced by the contractor under the contract provisions.

⁶² 23 CFR 635.116 (a).

⁶³ "Specialty Items" are limited to work that requires highly specialized knowledge, abilities, or equipment not ordinarily available in the type of contracting organizations qualified and expected to bid on the contract as a whole and in general are limited to minor components of the overall contract.

In the case of a design-build project, the above requirement does not apply.⁶⁴ At the discretion of the state DOT, however, a minimum percentage of work that must be performed by the design-builder may be established.⁶⁵ The term “design-builder” may include any firms that are equity participants in the design-builder, their sister and parent companies, and their wholly owned subsidiaries. No procedure, requirement, or preference shall be imposed that prescribes minimum subcontracting requirements or goals (other than those necessary to meet the DBE program requirements of 49 CFR Part 26).⁶⁶

7.2. Labor Contracts

In considering any contract with a private entity that involves long-term operation and maintenance of the project, existing labor contracts and applicable state law must be addressed.

7.2.1. NYSTA

NYSTA is required by the Taylor Law⁶⁷ and its current collective bargaining agreements to negotiate with two distinct collective bargaining units⁶⁸ over the terms and conditions of employment. Among other things, the Taylor Law and its interpretive administrative and case law require that NYSTA may not outsource “exclusive bargaining unit work” without first negotiating with the unions. It is our understanding that toll collection and many maintenance activities constitute “exclusive bargaining unit work.”⁶⁹

As a general matter, if NYSTA relinquishes operation and control of any portion of its property, the requirement to negotiate with the unions would not apply.⁷⁰ Whether entering into some form of concession agreement would be considered relinquishment of operation and control of bridge or other facilities would need to be determined by the New York Public Employment Relations Board and/or the New York state court. Even if it were adjudicated that NYSTA no longer had “operation and control” of the facilities subject to a concession, the concessionaire would remain subject to applicable New York and Federal labor laws protecting the rights of its employees to unionize.

7.2.2. MTA

If the project were to include either a DBOM contract for the rail line extension or a full private financing arrangement, existing New York law and labor agreement affecting MTA would have to be examined.

In addition, public transportation agencies such as MTA must commit to existing labor protection agreements in their expenditure of Federal funding. This requirement, found in Section 13(c) of the Federal Transit Act (and codified at 49 U.S.C. 5333(b)), requires that expenditures that would result in new service or expansion of existing service must be made in a way that does not reduce existing labor protection agreements. Specifically, this provision requires such agreements to include information that may be necessary for:

- The preservation of rights, privileges, and benefits (including continuation of pension rights and benefits) under existing collective bargaining agreements or otherwise
- The continuation of collective bargaining rights

⁶⁴ 23 CFR 635.116 (d).

⁶⁵ Ibid.

⁶⁶ Ibid. FTA regulations do not require grantee third-party contracts to include any minimum percentage of work to be performed by the prime contractor or any subcontractors. Grantees have the discretion to structure their FTA-funded contracts as they choose.

⁶⁷ See Public Employees Fair Employment Act, Article 14, of the New York State Civil Service Law.

⁶⁸ One unit consists of supervisory employees represented by the Civil Service Employees Association, and the other unit consists of toll takers and maintenance workers represented by the International Brotherhood of Teamsters.

⁶⁹ This understanding is based on an April 20, 2007 phone discussion with Tom Fitzgerald, NYSTA Human Resources.

⁷⁰ See Town of Brookhaven, 28 PERB ¶ 3010.

- The protection of individual employees against a worsening of their positions related to employment
- Assurances of employment to employees of acquired mass transportation systems
- Assurances of priority of reemployment of employees whose employment is ended or who are laid off
- Paid training or retraining programs

The public transit agency must apply Federal labor protection provisions to any contracted activity with a private partner if it intends to seek reimbursement from Federal funds. Where transit employees have existing rights, the rights are to be protected. With respect to collective bargaining rights, if they pre-existed Federal assistance, then they must continue. However, if there was no pre-existing collective bargaining right or obligation, no such rights or obligations are imposed by 13(c).⁷¹ Thus, 13(c) requirements may have a significant impact on projects extending existing transit facilities or using employees from existing operations, but should have less impact on entirely new projects.

7.2.3. PPP Legislative Solutions

Various public entities electing to privatize operations and maintenance activities or entire infrastructure assets (e.g., airports and turnpikes) have developed ways of addressing the problems raised by existing labor agreements. For example, with respect to the pending privatization of Midway Airport in Chicago pursuant to a long-term lease, state legislation was passed requiring, among other things, that:

- The lessee must offer employment under substantially similar terms and conditions to the employees of the lessor who were employed at the airport at the time of the lease.
- The lessor must offer employment in another department, division, or unit of the lessor, under substantially similar terms and conditions, to employees of the lessor who were employed at the airport at the time of the lease.
- As to airport employees who are not members of an existing bargaining unit, the lessee shall negotiate in good faith with any union that seeks to represent its employees for a labor neutrality and card check procedure agreement that provides for the determination of the existence of majority support for a bargaining agent by means of a card check procedure and which prohibits coercion or intimidation of employees by either the employer or the union.
- As to airport employees who were members of a bargaining unit, the lessee and any subcontractor retained by the lessee to perform such work at the airport shall be required to pay to those employees an amount not less than the economic equivalent of the standard of wages and benefits enjoyed by the lessor's employees who previously performed that work.⁷²

Similar provisions may also be found in prior agreements involving the privatization of the operations and maintenance of Indianapolis International Airport and City of Indianapolis wastewater treatment facilities.⁷³

7.2.4. “Responsible Contractor Policies” of Investment Funds

Some multi-employer and public employee retirement funds have encouraged private funds that propose to invest pension fund money in major transportation infrastructure projects such as the project to adopt “responsible contractor policies” providing certain protections to employees of the subject transportation facility that is the subject of a PPP transaction. An example of one such policy is shown in the following excerpt:

⁷¹ Legal Research Digest, Transit Cooperative Research Program, sponsored by FTA, June 1995, No. 4, http://onlinepubs.trb.org/onlinepubs/tcrp/tcrp_lrd_04.pdf.

⁷² See Illinois Local Government Facility Lease Act, Public Act 94-0750, a copy of which is attached hereto as Exhibit H.

⁷³ Copies of the relevant provisions of these agreements are attached hereto as Exhibit I.

Furthermore, in circumstances where the fund is working with a state, local, or municipal agency to establish PPPs and/or to bid on public offers for the sale, lease, or management of public assets, the fund shall endeavor in good faith to recognize the important role and contribution of public employees to the development and operation of such assets. In particular, the fund shall make good faith efforts to ensure that such transaction minimize any potentially adverse impacts on employees. These efforts may include working directly with public employees, government officials, or collective bargaining groups, as appropriate, in order to take such actions as may be within the fund's control to mitigate such potentially adverse effects.⁷⁴

8. CONCLUDING REMARKS

As seen above, Federal laws and regulations governing highway and transit funding now provide sufficient flexibility to accommodate a broad range of PPP arrangements, ranging from the use of design-build contracting to private concessions. In addition, SAFETEA-LU has expanded the authority to collect tolls on Interstates for the purposes of project financing and has provided for the issuance of tax-exempt private activity bonds for certain surface transportation facilities.

New York state law would need to be substantially modified to authorize the agencies to take advantage of many innovative procurement and financing vehicles that Federal law now supports. In drafting such laws, concerns related to small contractors and labor relations should be carefully addressed.

⁷⁴ Language provided by a private infrastructure fund on a confidential basis.

Analysis of Bond Resolutions and Covenants Associated with the Tappan Zee Bridge Project

Prepared for the:

**New York State Department of
Transportation**

Metro-North Railroad

New York State Thruway Authority



**New York State
Department of Transportation**



**Metro-North
Railroad**



**Thruway
Authority**

Introduction

The current debt structure and bond covenants of the New York State Thruway Authority (“NYSTA”) or “Thruway Authority” were reviewed to identify issues that could arise if sponsoring agencies were to debt finance all or a portion of the Project. In particular, the examination focused on:

- The implications of the covenants contained in the existing bond resolutions if any of the agencies sponsored and insured additional debt to finance the Project in whole or in part; and
- The implications with respect to the current NYSTA debt and bond covenants if the geographic scope of NYSTA were to be redefined and responsibility for the Project were to be assigned to another entity.

This memorandum describes the background of the NYSTA, the types of debt and issuances, the results of the analysis and the implications on financing for the Project.

Background

Public benefit corporations or public authorities play an important role in delivering public services by providing a business-like organizational structure under which user fee-supported debt can be financed. The New York State Constitution, which was adopted in 1938, gave full recognition to the existence of public benefit corporations and their ability to issue debt to support their corporate purpose. Moreover, debt issuances by public authorities do not represent legal obligations of the state. The ability of the public authorities to issue debt is important because the New York State Constitution limits the debt of the state by requiring public approval in a referendum for a bond issue. Public authorities are not bound to this requirement since these bonds do not constitute state obligations. This distinction is relevant when analyzing the different types of debt that the NYSTA issues to finance projects.

The NYSTA was created in 1950 through the New York State Thruway Authority Act (“Authority Act”). It currently operates the 641-mile New York State Thruway (“Thruway”) as well as New York’s 524-mile canal system.

The Thruway Authority currently issues four types of debt:

- General Revenue Bonds;
- Local Highway and Bridge Service Contract Bonds;
- State Personal Income and Tax Revenue Bonds (transportation); and
- Highway and Bridge Trust Fund Bonds.

The General Revenue Bonds have a lien on the tolls, rents, and other fees derived from the operation of the Thruway. The other types of debt rely exclusively on non-toll revenue sources from the State such as dedicated taxes, trust fund monies, and service contract revenues, all subject to State appropriations. Only the General Revenue Bonds currently pertain to financing projects on the Thruway system. The other bonds finance projects for the State’s highway and bridge program and grants to local governments for transportation capital projects, and do not have any lien or any covenants against the assets of the Thruway Authority. Therefore, based

on the analysis, it appears that, only the general revenue bond resolution imposes covenants and liens on the Thruway Authority's operations and revenues.¹

In 2007, the Thruway Authority had revenues of \$581.7 million and net revenue of \$238.8 million. With debt service of \$135.8 million, the Thruway Authority had a debt service coverage ratio of 1.79x. As of July 31, 2008, the Thruway Authority had \$2.38 billion in outstanding General Revenue Bonds.²

Definitions

In order to gain a better understanding of some of the provisions in the General Revenue Bond Resolution, it is necessary to review some of the important definitions:

- **1992 General Revenue Bond Resolution:** This resolution reaffirmed the NYSTA's role in maintaining and operating the Thruway as a toll road and also gave it additional responsibility for maintaining the state canal system and providing limited financial assistance to six other projects.
- **Additional Bonds Test:** This test identifies criterion under which additional bonds can be issued for the Facilities (defined below). In summary, it must meet the following three requirements:
 - 1) Net Revenue Requirement must be met for 12 consecutive calendar months out of the 18 previous months;
 - 2) The Net Revenue Requirement must be met for the Test Period (next five years or second year after completion of Additional Project) based on an estimate by an independent consultant; and
 - 3) The Net Revenues in the last fiscal year of the Test Period must be equal to or greater than the maximum annual debt service in all the bonds outstanding.
- **Facilities:** "Facilities" include all of the Thruway's assets as they existed when the 1992 General Revenue Bond Resolution was adopted, except for the Cross Westchester Expressway (I-287), which is not tolled. The projects constituting the Facilities can be increased by adding Additional Projects (described next). The original Facilities at the signing of the 1992 General Revenue Bond Resolution along with the Cross Westchester Expressway are known as the "Original Project".
- **Additional Project:** "Additional Projects" are projects added to the Original Project that have met certain financial requirements, and are under the NYSTA's jurisdiction, which includes the exclusive ability to set tolls, rates, and other charges. The ability to issue debt for the Facilities is limited by the Additional Bonds Test (defined above).
- **Other Authority Project:** As part of the 1992 General Revenue Bond Resolution, the state expanded the NYSTA's responsibility by including the oversight of the state canal system and the six other transportation projects. These projects are known as the "Other Authority Projects". To issue debt for the Other Authority Projects, debt issued must meet the Additional Bonds Test and the debt service on the Other Authority Project

¹ New York State Thruway Authority, General Revenue Bond Resolution. Adopted August 3, 1992, as amended on January 5, 2007.

² New York State Thruway Authority, Monthly Financial Statement, July 2008.

debt must be less than or equal to 20% of the historic Net Revenues (as described below).

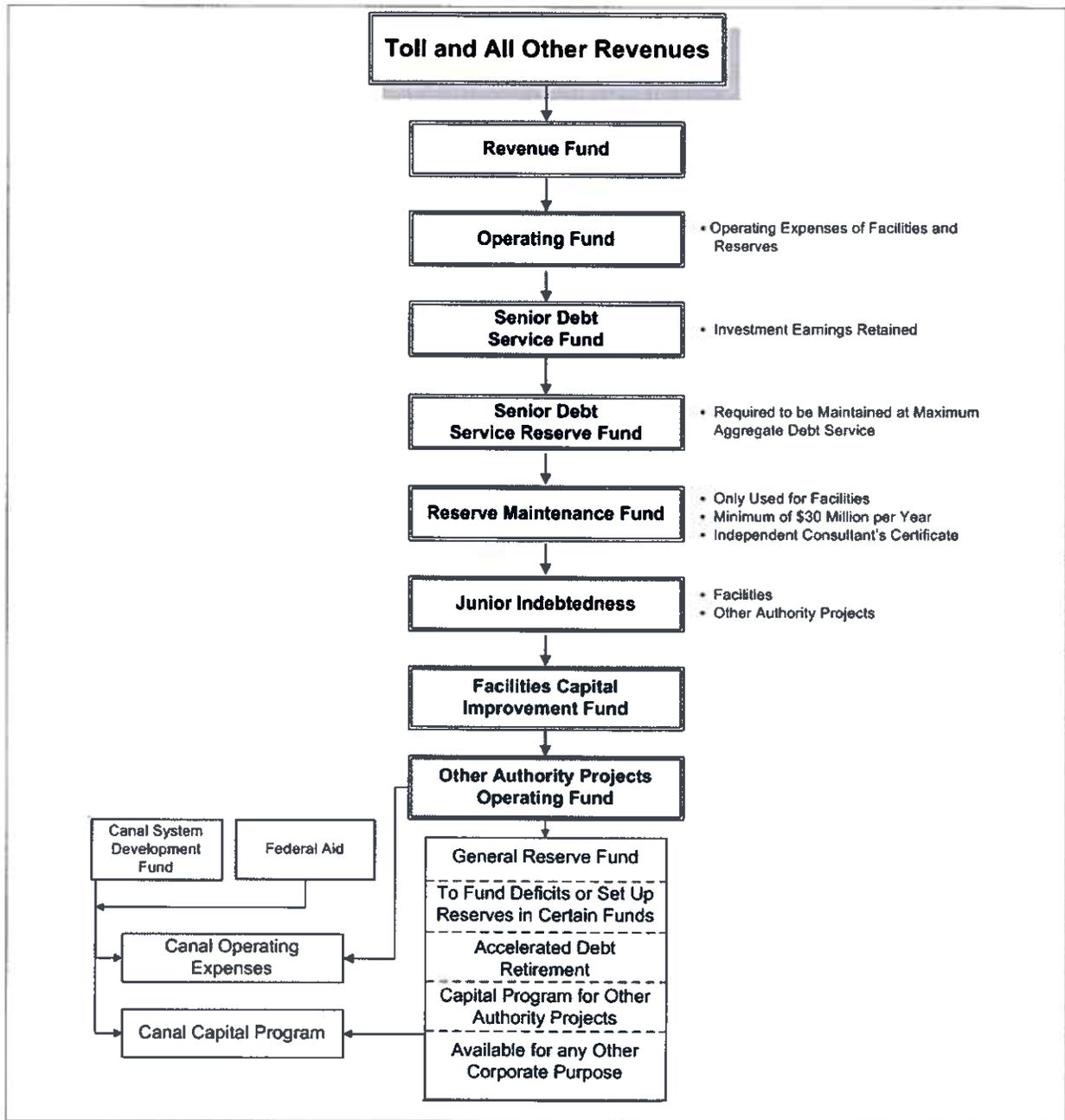
- **Bonds:** Any bond payable from amounts in the Senior Debt Service Fund.
- **Revenues:** Revenues include all toll revenues and other income derived from the Facilities, investment income in certain scenarios, and proceeds from certain insurance policies. Revenues do not include gifts or grants that the NYSTA may have received from local, state or Federal sources. Specifically, Revenues do not include income generated from the Other Authority Projects.
- **Net Revenues:** Net Revenues are Revenues after payment for operating expenses, operating reserves and provisions.
- **Net Revenue Requirement:** The Net Revenue Requirement is one of the requirements for the Thruway Authority to issue additional bonds. The Net Revenue Requirement states that the Net Revenues have to be greater than the sum of the Aggregate Debt Service, Reserve Maintenance Payments and Junior Indebtedness, or 1.2 times the Aggregate Debt Service. Moreover it is important to note that the Thruway Authority's Fiscal Management Guidelines which were adopted by the Board requires debt service coverage of 1.5x.

Flow of Funds

Figure 1 on the following page provides the Flow of Funds for the Thruway Authority. Operating Expenses are first paid from the Operating Fund before Senior Debt Service. The money used to pay for the debt service on the Bonds is deposited into a Senior Debt Service Fund. The investment earnings earned from the fund are retained within the fund itself. Revenues are then used to fund any shortfall in the Senior Debt Service Reserve Fund, which is maintained at the maximum Aggregate Debt Service for any 12-month period. Revenue is then deposited to fund any shortfalls in the Reserve Maintenance Fund maintained at a pre-determined level to fund pay-as-you-go capital expenditures for any 12-month period, subject to Federal tax law. Next, Revenues would flow to the Junior Indebtedness Fund to meet any obligation therein (there is currently no Junior Indebtedness outstanding).

Remaining funds flow to pay for the canal expenses, or for the General Reserve Fund, which can then be used to pay for accelerated debt retirement or for subordinated debt or any lawful corporate purposes.

Figure 1: NY State Thruway Flow of Funds Diagram



Constraints and Their Implications on the Financing of the Project

As part of the analysis of the powers and restrictions of the Thruway Authority to finance new projects, it is important to understand certain constraints that exist from the Authority Act and the General Revenue Bond Resolution. The provisions in the Authority Act and the General Revenue Bond Resolution that will affect any future financing for the Project include:

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- **Non-Thruway Authority Cannot Build a Competing Bridge:** Under Section 373 of the Authority Act, the state has agreed that no additional bridge or tunnel will be built across the Hudson River between the Bear Mountain Bridge and the boundary lying between New York and New Jersey at the West Side of the Hudson River as long as obligations of the bonds of the Thruway Authority are outstanding. While this would prevent a non-Thruway Authority entity from building a bridge, it would not prevent the Thruway Authority from beginning construction on a new bridge, subject to the Additional Bonds Test to raise funds. Moreover, an extensive rehabilitation of the Tappan Zee Bridge would also be permitted as it is an improvement of the current bridge.
 - **Selling or Leasing Property:** Section 607 of the General Revenue Bond Resolution restricts the Thruway Authority from selling, leasing, mortgaging or encumbering any part of the Facilities that generate toll revenues. The Thruway Authority can, however, “lease or make contracts or grant licenses for the operation of or grant easements or other rights with respect to any part of the Facilities”, as long as that action does not impede the operation or maintenance of the Facilities by the Authority.³
 - **Surcharge Revenue:** Section 609 of the General Revenue Bond Resolution allows a “surcharge for any location.” That Surcharge Revenue would become a part of the Revenues and would be subject to the Flow of Funds, as shown in Exhibit 1.⁴ The Thruway Authority could create a new surcharge for a specific purpose and those funds could fund the Tappan Zee Bridge project as long as the surcharge would go into the general revenue pool and then, if not required for any other higher pledged corporate purpose, could be pledged to subordinated debt or pay as you go capital for Tappan Zee or any other lawful project.
 - **Maximum Debt Term:** Under the Act, the maximum length of any debt issued by the Thruway Authority is limited to 40 years.
 - **Pledge of Revenues:** The tolls, revenues, and other income of the Facilities (including the Tappan Zee Bridge) are pledged to current bondholders. As a result, toll revenues cannot be stripped and assigned to secure other debt obligations.
 - **Public-Private Partnership (PPP) Authority:** The State of New York’s Public-Private Partnership authorization is limited. The building block of most public-private partnerships (PPPs) is the ability to enter into design-build contracts, and the ability to enter into a long term lease arrangement with a private party. These and other abilities to successfully execute PPPs are not available to the Thruway Authority or the NYSDOT under current New York Law.

Summary

The Thruway Authority has over \$2 billion of General Revenue Bonds currently outstanding that have supported capital projects for the road and the bridges in the system, however, it is expected that the current debt capacity of the system is not sufficient to finance a new Tappan Zee Bridge. The current bonds have a number of provisions to maintain their creditworthiness. However, these conditions and covenants prevent or impede certain financing options to build

³ General Revenue Bond Resolution, page 37.

⁴ General Revenue Bond Resolution, page 38.

the Project. Significant constraints include that a non-Thruway Authority cannot build a bridge to compete with the Tappan Zee Bridge, that the Authority cannot sell or lease Thruway assets, as well as, the State of New York has limited PPP capabilities.

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§ 635.122 Participation in progress payments.

* * * * *

(c) In the case of a design-build project, the STD must define its procedures for making progress payments on lump sum contracts in the Request for Proposal document.

16. Amend § 635.309 by adding paragraph (p) to read as follows:

§ 635.309 Authorization.

* * * * *

(p) In the case of a design-build project, the following certification requirements apply:

(1) The FHWA's project authorization (authorization to advertise or release the Request for Proposals document) will not be issued until the following conditions have been met:

(i) All projects must conform with the statewide and metropolitan transportation planning requirements (23 CFR part 450).

(ii) All projects in air quality nonattainment and maintenance areas must meet all transportation conformity requirements (40 CFR parts 51 and 93).

(iii) The NEPA review process has been concluded. (See 23 CFR 636.109).

(iv) The Request for Proposals document has been approved.

(v) A statement is received from the STD that either all right-of-way, utility, and railroad work has been completed or that all necessary arrangements will be made for the completion of right of way, utility, and railroad work.

(vi) If the STD elects to include right-of-way, utility, and/or railroad services as part of the design-builder's scope of work, then the Request for Proposals document must include:

(A) A statement concerning scope and current status of the required services, and

(B) A statement which requires compliance with the Uniform Relocation and Real Property Acquisition Policies Act of 1970, as amended, and 23 CFR part 710.

(2) During a conformity lapse, a design-build project (including right-of-way acquisition activities) may continue if, prior to the conformity lapse, the NEPA process was completed and the project has not changed significantly in design scope, the FHWA authorized the design-build project and the project met transportation conformity requirements (40 CFR parts 51 and 93).

(3) Changes to the design-build project concept and scope may require a modification of the transportation plan and transportation improvement program. The project sponsor must comply with the metropolitan and statewide transportation planning

requirements in 23 CFR part 450 and the transportation conformity requirements (40 CFR parts 51 and 93) in air quality nonattainment and maintenance areas, and provide appropriate approval notification to the design-builder for such changes.

17. Amend § 635.411 by adding paragraph (f) to read as follows:

§ 635.411 Material or product selection.

* * * * *

(f) In the case of a design-build project, the following requirements apply: Federal funds shall not participate, directly or indirectly, in payment for any premium or royalty on any patented or proprietary material, specification, or process specifically set forth in the Request for Proposals document unless the conditions of paragraph (a) of this section are applicable.

18. Amend § 635.413 by revising the section heading and adding paragraph (e) to read as follows:

§ 635.413 Guaranty and warranty clauses.

* * * * *

(e) In the case of a design-build project, the following requirements will apply instead of paragraphs (a) through (d) of this section.

(1) General project warranties may be used on NHS projects, provided:

(i) The term of the warranty is short (generally one to two years);

(ii) The warranty is not the sole means of acceptance;

(iii) The warranty must not include items of routine maintenance which are not eligible for Federal participation; and,

(iv) The warranty may include the quality of workmanship, materials and other specific tasks identified in the contract.

(2) Performance warranties for specific products on NHS projects may be used at the STD's discretion. If performance warranties are used, detailed performance criteria must be provided in the Request for Proposal document.

(3) The STD may follow its own procedures regarding the inclusion of warranty provisions on non-NHS Federal-aid design-build contracts.

(4) For best value selections, the STD may allow proposers to submit alternate warranty proposals that improve upon the warranty terms in the RFP document. Such alternate warranty proposals must be in addition to the base proposal that responds to the RFP requirements.

19. Add Part 636 to read as follows:

PART 636—DESIGN-BUILD CONTRACTING

Subpart A—General

- Sec.
- 636.101 What does this part do?
- 636.102 Does this part apply to me?
- 636.103 What are the definitions of terms used in this part?
- 636.104 Does this part apply to all Federal-aid design-build projects?
- 636.105 Is the FHWA requiring the use of design-build?
- 636.106 What type of projects may be used with design-build contracting?
- 636.107 Does the definition of a qualified project limit the use of design-build contracting?
- 636.108 How does the definition of a qualified project apply to ITS projects?
- 636.109 How does the NEPA review process relate to the design-build procurement process?
- 636.110 What procedures may be used for solicitations and receipt of proposals?
- 636.111 Can oral presentations be used during the procurement process?
- 636.112 May stipends be used?
- 636.113 Is the stipend amount eligible for Federal participation?
- 636.114 What factors should be considered in risk allocation?
- 636.115 May I meet with industry to gather information concerning the appropriate risk allocation strategies?
- 636.116 What organizational conflict of interest requirements apply to design-build projects?
- 636.117 What conflict of interest standards apply to individuals who serve as selection team members for the owner?
- 636.118 Is team switching allowed after contract award?
- 636.119 How does this part apply to a project developed under a public-private partnership?

Subpart B—Selection Procedures, Award Criteria

- 636.201 What selection procedures and award criteria may be used?
- 636.202 When are two-phase design-build selection procedures appropriate?
- 636.203 What are the elements of two-phase selection procedures for competitive proposals?
- 636.204 What items may be included in a phase-one solicitation?
- 636.205 Can past performance be used as an evaluation criteria?
- 636.206 How do I evaluate offerors who do not have a record of relevant past performance?
- 636.207 Is there a limit on short listed firms?
- 636.208 May I use my existing prequalification procedures with design-build contracts?
- 636.209 What items must be included in a phase-two solicitation?
- 636.210 What requirements apply to projects which use the modified design-build procedure?
- 636.211 When and how should tradeoffs be used?
- 636.212 To what extent must tradeoff decisions be documented?

Subpart C—Proposal Evaluation Factors

- 636.301 How should proposal evaluation factors be selected?
- 636.302 Are there any limitations on the selection and use of proposal evaluation factors?
- 636.303 May pre-qualification standards be used as proposal evaluation criteria in the RFP?
- 636.304 What process may be used to rate and score proposals?
- 636.305 Can price information be provided to analysts who are reviewing technical proposals?

Subpart D—Exchanges

- 636.401 What types of information exchange may take place prior to the release of the RFP document?
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Authority: Sec. 1307 of Pub. L. 105-178, 112 Stat. 107; 23 U.S.C. 101, 109, 112, 113, 114, 115, 119, 128, and 315; 49 CFR 1.48(b).

Subpart A—General**§ 636.101 What does this part do?**

This part describes the FHWA's policies and procedures for approving design-build projects financed under title 23, United States Code (U.S.C.). This part satisfies the requirement of section 1307(c) of the Transportation Equity Act for the 21st Century (TEA-21), enacted on June 9, 1998. The contracting procedures of this part apply to all design-build project funded under title 23, U.S.C.

§ 636.102 Does this part apply to me?

(a) This part uses a plain language format to make the rule easier for the general public and business community to use. The section headings and text, often in the form of questions and answers, must be read together.

(b) Unless otherwise noted, the pronoun "you" means the primary recipient of Federal-aid highway funds, the State Transportation Department (STD). Where the STD has an agreement with a local public agency (or other governmental agency) to administer a Federal-aid design-build project, the term "you" will also apply to that contracting agency.

§ 636.103 What are the definitions of terms used in this part?

Unless otherwise specified in this part, the definitions in 23 U.S.C. 101(a) are applicable to this part. Also, the following definitions are used:

Adjusted low bid means a form of best value selection in which qualitative aspects are scored on a 0 to 100 scale expressed as a decimal; price is then divided by qualitative score to yield an "adjusted bid" or "price per quality point." Award is made to offeror with the lowest adjusted bid.

Best value selection means any selection process in which proposals contain both price and qualitative components and award is based upon a combination of price and qualitative considerations.

Clarifications means a written or oral exchange of information which takes place after the receipt of proposals when award without discussions is contemplated. The purpose of clarifications is to address minor or clerical revisions in a proposal.

Communications are exchanges, between the contracting agency and offerors, after receipt of proposals, which lead to the establishment of the competitive range.

Competitive acquisition means an acquisition process which is designed to foster an impartial and comprehensive evaluation of offerors' proposals,

leading to the selection of the proposal representing the best value to the contracting agency.

Competitive range means a list of the most highly rated proposals based on the initial proposal rankings. It is based on the rating of each proposal against all evaluation criteria.

Contracting agency means the public agency awarding and administering a design-build contract. The contracting agency may be the STD or another State or local public agency.

Deficiency means a material failure of a proposal to meet a contracting agency requirement or a combination of significant weaknesses in a proposal that increases the risk of unsuccessful contract performance to an unacceptable level.

Design-bid-build means the traditional project delivery method where design and construction are sequential steps in the project development process.

Design-build contract means an agreement that provides for design and construction of improvements by a contractor or private developer. The term encompasses design-build-maintain, design-build-operate, design-build-finance and other contracts that include services in addition to design and construction. Franchise and concession agreements are included in the term if they provide for the franchisee or concessionaire to develop the project which is the subject of the agreement.

Design-builder means the entity contractually responsible for delivering the project design and construction.

Discussions mean written or oral exchanges that take place after the establishment of the competitive range with the intent of allowing the offerors to revise their proposals.

Fixed price/best design means a form of best value selection in which contract price is established by the owner and stated in the Request for Proposals document. Design solutions and other qualitative factors are evaluated and rated, with award going to the firm offering the best qualitative proposal for the established price.

Intelligent Transportation System (ITS) services—means services which provide for the acquisition of technologies or systems of technologies (e.g., computer hardware or software, traffic control devices, communications link, fare payment system, automatic vehicle location system, etc.) that provide or contribute to the provision of one or more ITS user services as defined in the National ITS Architecture.

Modified design-build means a variation of design-build in which the

contracting agency furnishes offerors with partially complete plans. The design-builders role is generally limited to the completion of the design and construction of the project.

Organizational conflict of interest means that because of other activities or relationships with other persons, a person is unable or potentially unable to render impartial assistance or advice to the owner, or the person's objectivity in performing the contract work is or might be otherwise impaired, or a person has an unfair competitive advantage.

Prequalification means the contracting agency's process for determining whether a firm is fundamentally qualified to compete for a certain project or class of projects. The prequalification process may be based on financial, management and other types of qualitative data. Prequalification should be distinguished from short listing.

Price proposal means the price submitted by the offeror to provide the required design and construction services.

Proposal modification means a change made to a proposal before the solicitation closing date and time, or made in response to an amendment, or made to correct a mistake at any time before award.

Proposal revision means a change to a proposal made after the solicitation closing date, at the request of or as allowed by a contracting officer, as the result of negotiations.

Qualified project means any design-build project with a total estimated cost greater than \$50 million or an intelligent transportation system project greater than \$5 million (23 U.S.C. 112 (b)(3)(C)).

Request for Proposals (RFP) means the document that describes the procurement process, forms the basis for the final proposals and may potentially become an element in the contract.

Request for Qualification (RFQ) means the document issued by the owner in Phase I of the two-phased selection process. It typically describes the project in enough detail to let potential offerors determine if they wish to compete and forms the basis for requesting qualifications submissions from which the most highly qualified offerors can be identified.

Short listing means the narrowing of the field of offerors through the selection of the most qualified offerors who have responded to an RFQ.

Single-phase selection process means a procurement process where price and/or technical proposals are submitted in response to an RFP. Short listing is not used.

Solicitation means a public notification of an owner's need for information, qualifications, or proposals related to identified services.

Stipend means a monetary amount sometimes paid to unsuccessful offerors.

Technical proposal means that portion of a design-build proposal which contains design solutions and other qualitative factors that are provided in response to the RFP document.

Tradeoff means an analysis technique involving a comparison of price and non-price factors to determine the best value when considering the selection of other than the lowest priced proposal.

Two-phase selection process means a procurement process in which the first phase consists of short listing (based on qualifications submitted in response to an RFQ) and the second phase consists of the submission of price and technical proposals in response to an RFP.

Weakness means a flaw in the proposal that increases the risk of unsuccessful contract performance. A significant weakness in the proposal is a flaw that appreciably increases the risk of unsuccessful contract performance.

Weighted criteria process means a form of best value selection in which maximum point values are pre-established for qualitative and price components, and award is based upon high total points earned by the offerors.

§ 636.104 Does this part apply to all Federal-aid design-build projects?

The provisions of this part apply to all Federal-aid design-build projects within the highway right-of-way or linked to a Federal-aid highway project (*i.e.*, the project would not exist without another Federal-aid highway project). Projects that are not located within the highway right-of-way, and not linked to a Federal-aid highway project may utilize State-approved procedures.

§ 636.105 Is the FHWA requiring the use of design-build?

No, the FHWA is neither requiring nor promoting the use of the design-build contracting method. The design-build contracting technique is optional.

§ 636.106 What type of projects may be used with design-build contracting?

You may use the design-build contracting technique for any qualified or non-qualified project which you deem to be appropriate on the basis of project delivery time, cost, construction schedule and/or quality.

§ 636.107 Does the definition of a qualified project limit the use of design-build contracting?

(a) No, the use of the term "qualified project" does not limit the use of design-build contracting. It merely determines the FHWA's procedures for approval. The FHWA Division Administrator may approve the design-build method for "qualified projects" which meet the requirements of this part.

(b) The FHWA Division Administrator may also approve other design-build projects (which do not meet the "qualified projects" definition) by using Special Experimental Projects No. 14 (SEP-14), "Innovative Contracting Practices,"¹ provided the project meets the requirements of this part. Projects which do not meet the requirements of this part (either "qualified or non-qualified" projects) must be submitted to the FHWA Headquarters for concept approval.

§ 636.108 How does the definition of a qualified project apply to ITS projects?

For the purpose of this part, a Federal-aid ITS design-build project meets the criteria of a "qualified project" if:

(a) A majority of the scope of services provides ITS services (at least 50 percent of the scope of work is related to ITS services); and

(b) The estimated contract value exceeds \$5 million.

§ 636.109 How does the NEPA review process relate to the design-build procurement process?

In terms of the design-build procurement process:

(a) The RFQ solicitation may be released prior to the conclusion of the NEPA review process as long as the RFQ solicitation informs proposers of the general status of the NEPA process.

(b) The RFP must not be released prior to the conclusion of the NEPA process. The NEPA review process is concluded with either a Categorical Exclusion classification, an approved Finding of No Significant Impact, or an approved Record of Decision as defined in 23 CFR 771.113(a).

(c) The RFP must address how environmental commitments and mitigation measures identified during the NEPA process will be implemented.

¹ Information concerning Special Experimental Project No. 14 (SEP-14), "Innovative Contracting Practices," is available on FHWA's home page: <http://www.fhwa.dot.gov>. Additional information may be obtained from the FHWA Division Administrator in each State.

§ 636.110 What procedures may be used for solicitations and receipt of proposals?

You may use your own procedures for the solicitation and receipt of proposals and information including the following:

- (a) Exchanges with industry before receipt of proposals;
- (b) RFQ, RFP and contract format;
- (c) Solicitation schedules;
- (d) Lists of forms, documents, exhibits, and other attachments;
- (e) Representations and instructions;
- (f) Advertisement and amendments;
- (g) Handling proposals and information; and
- (h) Submission, modification, revisions and withdrawal of proposals.

§ 636.111 Can oral presentations be used during the procurement process?

(a) Yes, the use of oral presentations as a substitute for portions of a written proposal can be effective in streamlining the source selection process. Oral presentations may occur at any time in the acquisition process, however, you must comply with the appropriate State procurement integrity standards.

(b) Oral presentations may substitute for, or augment, written information. You must maintain a record of oral presentations to document what information you relied upon in making the source selection decision. You may decide the appropriate method and level of detail for the record (e.g., videotaping, audio tape recording, written record, contracting agency notes, copies of offeror briefing slides or presentation notes). A copy of the record should be placed in the contract file and may be provided to offerors upon request.

§ 636.112 May stipends be used?

At your discretion, you may elect to pay a stipend to unsuccessful offerors who have submitted responsive proposals. The decision to do so should be based on your analysis of the estimated proposal development costs and the anticipated degree of competition during the procurement process.

§ 636.113 Is the stipend amount eligible for Federal participation?

(a) Yes, stipends are eligible for Federal-aid participation. Stipends are recommended on large projects where there is substantial opportunity for innovation and the cost of submitting a proposal is significant. On such projects, stipends are used to:

- (1) Encourage competition;
- (2) Compensate unsuccessful offerors for a portion of their costs (usually one-third to one-half of the estimated proposal development cost); and

(3) Ensure that smaller companies are not put at a competitive disadvantage.

(b) Unless prohibited by State law, you may retain the right to use ideas from unsuccessful offerors if they accept stipends. If stipends are used, the RFP should describe the process for distributing the stipend to qualifying offerors.

§ 636.114 What factors should be considered in risk allocation?

(a) You may consider, identify, and allocate the risks in the RFP document and define these risks in the contract. Risk should be allocated with consideration given to the party who is in the best position to manage and control a given risk or the impact of a given risk.

(b) Risk allocation will vary according to the type of project and location, however, the following factors should be considered:

(1) Governmental risks, including the potential for delays, modifications, withdrawal, scope changes, or additions that result from multi-level Federal, State, and local participation and sponsorship;

(2) Regulatory compliance risks, including environmental and third-party issues, such as permitting, railroad, and utility company risks;

(3) Construction phase risks, including differing site conditions, traffic control, interim drainage, public access, weather issues, and schedule;

(4) Post-construction risks, including public liability and meeting stipulated performance standards; and

(5) Right-of-way risks including acquisition costs, appraisals, relocation delays, condemnation proceedings, including court costs and others.

§ 636.115 May I meet with industry to gather information concerning the appropriate risk allocation strategies?

(a) Yes, information exchange at an early project stage is encouraged if it facilitates your understanding of the capabilities of potential offerors. However, any exchange of information must be consistent with State procurement integrity requirements. Interested parties include potential offerors, end users, acquisition and supporting personnel, and others involved in the conduct or outcome of the acquisition.

(b) The purpose of exchanging information is to improve the understanding of your requirements and industry capabilities, thereby allowing potential offerors to judge whether or how they can satisfy your requirements, and enhancing your ability to obtain quality supplies and services, including

construction, at reasonable prices, and increase efficiency in proposal preparation, proposal evaluation, negotiation, and contract award.

(c) An early exchange of information can identify and resolve concerns regarding the acquisition strategy, including proposed contract type, terms and conditions, and acquisition planning schedules. This also includes the feasibility of the requirement, including performance requirements, statements of work, and data requirements; the suitability of the proposal instructions and evaluation criteria, including the approach for assessing past performance information; the availability of reference documents; and any other industry concerns or questions. Some techniques to promote early exchanges of information are as follows:

(1) Industry or small business conferences;

(2) Public hearings;

(3) Market research;

(4) One-on-one meetings with potential offerors (any meetings that are substantially involved with potential contract terms and conditions should include the contracting officer; also see paragraph (e) of this section regarding restrictions on disclosure of information);

(5) Presolicitation notices;

(6) Draft RFPs;

(7) Request for Information (RFI);

(8) Presolicitation or preproposal conferences; and

(9) Site visits.

(d) RFIs may be used when you do not intend to award a contract, but want to obtain price, delivery, other market information, or capabilities for planning purposes. Responses to these notices are not offers and cannot be accepted to form a binding contract. There is no required format for an RFI.

(e) When specific information about a proposed acquisition that would be necessary for the preparation of proposals is disclosed to one or more potential offerors, that information shall be made available to all potential offerors as soon as practicable, but no later than the next general release of information, in order to avoid creating an unfair competitive advantage. Information provided to a particular offeror in response to that offeror's request must not be disclosed if doing so would reveal the potential offeror's confidential business strategy. When a presolicitation or preproposal conference is conducted, materials distributed at the conference should be made available to all potential offerors, upon request.

§ 636.116 What organizational conflict of interest requirements apply to design-build projects?

(a) State statutes or policies concerning organizational conflict of interest should be specified or referenced in the design-build RFQ or RFP document as well as any contract for engineering services, inspection or technical support in the administration of the design-build contract. All design-build solicitations should address the following situations as appropriate:

(1) Consultants and/or sub-consultants who assist the owner in the preparation of a RFP document will not be allowed to participate as an offeror or join a team submitting a proposal in response to the RFP. However, a contracting agency may determine there is not an organizational conflict of interest for a consultant or sub-consultant where:

(i) The role of the consultant or sub-consultant was limited to provision of preliminary design, reports, or similar "low-level" documents that will be incorporated into the RFP, and did not include assistance in development of instructions to offerors or evaluation criteria, or

(ii) Where all documents and reports delivered to the agency by the consultant or sub-consultant are made available to all offerors.

(2) All solicitations for design-build contracts, including related contracts for inspection, administration or auditing services, must include a provision which:

(i) Directs offerors attention to this subpart;

(ii) States the nature of the potential conflict as seen by the owner;

(iii) States the nature of the proposed restraint or restrictions (and duration) upon future contracting activities, if appropriate;

(iv) Depending on the nature of the acquisition, states whether or not the terms of any proposed clause and the application of this subpart to the contract are subject to negotiation; and

(v) Requires offerors to provide information concerning potential organizational conflicts of interest in their proposals. The apparent successful offerors must disclose all relevant facts concerning any past, present or currently planned interests which may present an organizational conflict of interest. Such firms must state how their interests, or those of their chief executives, directors, key project personnel, or any proposed consultant,

contractor or subcontractor may result, or could be viewed as, an organizational conflict of interest. The information may be in the form of a disclosure statement or a certification.

(3) Based upon a review of the information submitted, the owner should make a written determination of whether the offeror's interests create an actual or potential organizational conflict of interest and identify any actions that must be taken to avoid, neutralize, or mitigate such conflict. The owner should award the contract to the apparent successful offeror unless an organizational conflict of interest is determined to exist that cannot be avoided, neutralized, or mitigated.

(b) The organizational conflict of interest provisions in this subpart provide minimum standards for STDs to identify, mitigate or eliminate apparent or actual organizational conflicts of interest. To the extent that State-developed organizational conflict of interest standards are more stringent than that contained in this subpart, the State standards prevail.

§ 636.117 What conflict of interest standards apply to individuals who serve as selection team members for the owner?

State laws and procedures governing improper business practices and personal conflicts of interest will apply to the owner's selection team members. In the absence of such State provisions, the requirements of 48 CFR Part 3, Improper Business Practices and Personal Conflicts of Interest, will apply to selection team members.

§ 636.118 Is team switching allowed after contract award?

Where the offeror's qualifications are a major factor in the selection of the successful design-builder, team member switching (adding or switching team members) is discouraged after contract award. However, the owner may use its discretion in reviewing team changes or team enhancement requests on a case-by-case basis. Specific project rules related to changes in team members or changes in personnel within teams should be explicitly stated by the STD in all project solicitations.

§ 636.119 How does this part apply to a project developed under a public-private partnership?

(a) In order for a project being developed under a public-private agreement to be eligible for Federal-aid funding (including traditional Federal-aid funds, direct loans, loan guarantees,

lines of credit, or some other form of credit assistance), the contracting agency must have awarded the contract to the public-private entity through a competitive process that complies with applicable State and local laws.

(b) If a contracting agency wishes to utilize traditional Federal-aid funds in a project under a public-private agreement, the applicability of Federal-aid procurement procedures will depend on the nature of the public-private agreement.

(1) If the public-private agreement establishes price and an assignment of risk, then all subsequent contracts executed by the developer are considered to be subcontracts and are not subject to Federal-aid procurement requirements.

(2) If the public-private agreement does not establish price and an assignment of risk, the developer is considered to be an agent of the owner, and the developer must follow the appropriate Federal-aid procurement requirements (23 CFR part 172 for engineering service contracts, 23 CFR part 635 for construction contracts and the requirements of this part for design-build contracts) for all prime contracts (not subcontracts).

(c) The STD must ensure such public-private projects comply with all non-procurement requirements of 23 U. S. Code, regardless of the form of the FHWA funding (traditional Federal-aid funding or credit assistance). This includes compliance with all FHWA policies such as environmental and right-of-way requirements and compliance with such construction contracting requirements as Buy America, Davis-Bacon minimum wage rate requirements, for federally funded construction or design-build contracts under the public-private agreement.

Subpart B—Selection Procedures, Award Criteria**§ 636.201 What selection procedures and award criteria may be used?**

You should consider using two-phase selection procedures for all design-build projects. However, if you do not believe two-phase selection procedures are appropriate for your project (based on the criteria in § 636.202), you may use a single phase selection procedure or the modified-design-build contracting method. The following procedures are available:

Selection procedure	Criteria for using a selection procedure	Award criteria options
(a) Two-Phase Selection Procedures (RFQ followed by RFP).	§ 636.202	Lowest price, Adjusted low-bid (price per quality point), meets criteria/low bid, weighted criteria process, fixed price/best design, best value.
(b) Single Phase (RFP)	Project not meeting the criteria in § 636.202 ...	All of the award criteria in item (a) of this table.
(c) Modified Design-Build (may be one or two phases).	Any project	Lowest price technically acceptable.

§ 636.202 When are two-phase design-build selection procedures appropriate?

You may consider the following criteria in deciding whether two-phase selection procedures are appropriate. A negative response may indicate that two-phase selection procedures are not appropriate.

- (a) Are three or more offers anticipated?
- (b) Will offerors be expected to perform substantial design work before developing price proposals?
- (c) Will offerors incur a substantial expense in preparing proposals?
- (d) Have you identified and analyzed other contributing factors, including:
 - (1) The extent to which you have defined the project requirements?
 - (2) The time constraints for delivery of the project?
 - (3) The capability and experience of potential contractors?
 - (4) Your capability to manage the two-phase selection process?
 - (5) Other criteria that you may consider appropriate?

§ 636.203 What are the elements of two-phase selection procedures for competitive proposals?

The first phase consists of short listing based on a RFQ. The second phase consists of the receipt and evaluation of price and technical proposals in response to a RFP.

§ 636.204 What items may be included in a phase-one solicitation?

- You may consider including the following items in any phase-one solicitation:
- (a) The scope of work;
 - (b) The phase-one evaluation factors and their relative weights, including:
 - (1) Technical approach (but not detailed design or technical information);
 - (2) Technical qualifications, such as—
 - (i) Specialized experience and technical competence;
 - (ii) Capability to perform (including key personnel); and
 - (iii) Past performance of the members of the offeror's team (including the architect-engineer and construction members);

(3) Other appropriate factors (excluding cost or price related factors, which are not permitted in phase-one);

- (c) Phase-two evaluation factors; and
- (d) A statement of the maximum number of offerors that will be short listed to submit phase-two proposals.

§ 636.205 Can past performance be used as an evaluation criteria?

(a) Yes, past performance information is one indicator of an offeror's ability to perform the contract successfully. Past performance information may be used as an evaluation criteria in either phase-one or phase-two solicitations. If you elect to use past performance criteria, the currency and relevance of the information, source of the information, context of the data, and general trends in contractor's performance may be considered.

(b) Describe your approach for evaluating past performance in the solicitation, including your policy for evaluating offerors with no relevant performance history. You should provide offerors an opportunity to identify past or current contracts (including Federal, State, and local government and private) for efforts similar to the current solicitation.

(c) If you elect to request past performance information, the solicitation should also authorize offerors to provide information on problems encountered on the identified contracts and the offeror's corrective actions. You may consider this information, as well as information obtained from any other sources, when evaluating the offeror's past performance. You may use your discretion in determining the relevance of similar past performance information.

(d) The evaluation should take into account past performance information regarding predecessor companies, key personnel who have relevant experience, or subcontractors that will perform major or critical aspects of the requirement when such information is relevant to the current acquisition.

§ 636.206 How do I evaluate offerors who do not have a record of relevant past performance?

In the case of an offeror without a record of relevant past performance or for whom information on past performance is not available, the offeror may not be evaluated favorably or unfavorably on past performance.

§ 636.207 Is there a limit on short listed firms?

Normally, three to five firms are short listed, however, the maximum number specified shall not exceed five unless you determine, for that particular solicitation, that a number greater than five is in your interest and is consistent with the purposes and objectives of two-phase design-build contracting.

§ 636.208 May I use my existing prequalification procedures with design-build contracts?

Yes, you may use your existing prequalification procedures for either construction or engineering design firms as a supplement to the procedures in this part.

§ 636.209 What items must be included in a phase-two solicitation?

(a) You must include the requirements for technical proposals and price proposals in the phase-two solicitation. All factors and significant subfactors that will affect contract award and their relative importance must be stated clearly in the solicitation. Use your own procedures for the solicitation as long as it complies the requirements of this part.

(b) At your discretion, you may allow proposers to submit alternate technical concepts in their proposals as long as these alternate concepts do not conflict with criteria agreed upon in the environmental decision making process. Alternate technical concept proposals may supplement, but not substitute for base proposals that respond to the RFP requirements.

§ 636.210 What requirements apply to projects which use the modified design-build procedure?

(a) Modified design-build selection procedures (lowest price technically

acceptable source selection process) may be used for any project.

(b) The solicitation must clearly state the following:

(1) The identification of evaluation factors and significant subfactors that establish the requirements of acceptability.

(2) That award will be made on the basis of the lowest evaluated price of proposals meeting or exceeding the acceptability standards for non-cost factors.

(c) The contracting agency may forgo a short listing process and advertise for the receipt of proposals from all responsible offerors. The contract is then awarded to the lowest responsive bidder.

(d) Tradeoffs are not permitted, however, you may incorporate cost-plus-time bidding procedures (A+B bidding), lane rental, or other cost-based provisions in such contracts.

(e) Proposals are evaluated for acceptability but not ranked using the non-cost/price factors.

(f) Exchanges may occur (see subpart D of this part).

§ 636.211 When and how should tradeoffs be used?

(a) At your discretion, you may consider the tradeoff technique when it is desirable to award to other than the lowest priced offeror or other than the highest technically rated offeror.

(b) If you use a tradeoff technique, the following apply:

(1) All evaluation factors and significant subfactors that will affect contract award and their relative importance must be clearly stated in the solicitation; and

(2) The solicitation must also state, at a minimum, whether all evaluation factors other than cost or price, when combined, are—

(i) Significantly less important than cost or price; or

(ii) Approximately equal to cost or price; or

(iii) Significantly less important than cost or price.

§ 636.212 To what extent must tradeoff decisions be documented?

When tradeoffs are performed, the source selection records must include the following:

(a) An assessment of each offeror's ability to accomplish the technical requirements; and

(b) A summary, matrix, or quantitative ranking, along with appropriate supporting narrative, of each technical proposal using the evaluation factors.

Subpart C—Proposal Evaluation Factors

§ 636.301 How should proposal evaluation factors be selected?

(a) The proposal evaluation factors and significant subfactors should be tailored to the acquisition.

(b) Evaluation factors and significant subfactors should:

(1) Represent the key areas of importance and emphasis to be considered in the source selection decision; and

(2) Support meaningful comparison and discrimination between and among competing proposals.

§ 636.302 Are there any limitations on the selection and use of proposal evaluation factors?

(a) The selection of the evaluation factors, significant subfactors and their relative importance are within your broad discretion subject to the following requirements:

(1) You must evaluate price in every source selection where construction is a significant component of the scope of work.

(2) You must evaluate the quality of the product or service through consideration of one or more non-price evaluation factors. These factors may include (but are not limited to) such criteria as:

(i) Compliance with solicitation requirements;

(ii) Completion schedule (contractual incentives and disincentives for early completion may be used where appropriate); or

(iii) Technical solutions.

(3) At your discretion, you may evaluate past performance, technical experience and management experience (subject to § 636.303(b)).

(b) All factors and significant subfactors that will affect contract award and their relative importance must be stated clearly in the solicitation.

§ 636.303 May pre-qualification standards be used as proposal evaluation criteria in the RFP?

(a) If you use a prequalification procedure or a two-phase selection procedure to develop a short list of qualified offerors, then pre-qualification criteria should not be included as proposal evaluation criteria.

(b) The proposal evaluation criteria should be limited to the quality, quantity, value and timeliness of the product or service being proposed. However, there may be circumstances where it is appropriate to include

prequalification standards as proposal evaluation criteria. Such instances include situations where:

(1) The scope of work involves very specialized technical expertise or specialized financial qualifications; or

(2) Where prequalification procedures or two-phase selection procedures are not used (short listing is not performed).

§ 636.304 What process may be used to rate and score proposals?

(a) Proposal evaluation is an assessment of the offeror's proposal and ability to perform the prospective contract successfully. You must evaluate proposals solely on the factors and subfactors specified in the solicitation.

(b) You may conduct evaluations using any rating method or combination of methods including color or adjectival ratings, numerical weights, and ordinal rankings. The relative strengths, deficiencies, significant weaknesses, and risks supporting proposal evaluation must be documented in the contract file.

§ 636.305 Can price information be provided to analysts who are reviewing technical proposals?

Normally, technical and price proposals are reviewed independently by separate evaluation teams. However, there may be occasions where the same experts needed to review the technical proposals are also needed in the review of the price proposals. This may occur where a limited amount of technical expertise is available to review proposals. Price information may be provided to such technical experts in accordance with your procedures.

Subpart D—Exchanges

§ 636.401 What types of information exchange may take place prior to the release of the RFP document?

Verbal or written information exchanges (such as in the first-phase of a two-phase selection procedure) must be consistent with State and/or local procurement integrity requirements. See § 636.115(a) for additional details.

§ 636.402 What types of information exchange may take place after the release of the RFP document?

Certain types of information exchange may be desirable at different points after the release of the RFP document. The following table summarizes the types of communications that will be discussed in this subpart. These communication methods are optional.

Type of information exchange	When	Purpose	Parties involved
(a) Clarifications	After receipt of proposals	Used when award without discussions is contemplated. Used to clarify certain aspects of a proposal (resolve minor errors, clerical errors, obtain additional past performance information, etc.).	Any offeror whose proposal is not clear to the contracting agency.
(b) Communications	After receipt of proposals, prior to the establishment of the competitive range.	Used to address issues which might prevent a proposal from being placed in the competitive range.	Only those offerors whose exclusion from, or inclusion in, the competitive range is uncertain. All offerors whose past performance information is the determining factor preventing them from being placed in the competitive range.
(c) Discussions (see Subpart E of this part).	After receipt of proposals and after the determination of the competitive range.	Enhance contracting agency understanding of proposals and offerors understanding of scope of work. Facilitate the evaluation process.	Must be held with all offerors in the competitive range.

§ 636.403 What information may be exchanged with a clarification?

(a) You may wish to clarify any aspect of proposals which would enhance your understanding of an offeror's proposal. This includes such information as an offeror's past performance or information regarding adverse past performance to which the offeror has not previously had an opportunity to respond. Clarification exchanges are discretionary. They do not have to be held with any specific number of offerors and do not have to address specific issues.

(b) You may wish to clarify and revise the RFP document through an addenda process in response to questions from potential offerors.

§ 636.404 Can a competitive range be used to limit competition?

If the solicitation notifies offerors that the competitive range can be limited for purposes of efficiency, you may limit the number of proposals to the greatest number that will permit an efficient competition. However, you must provide written notice to any offeror whose proposal is no longer considered to be included in the competitive range. Offerors excluded or otherwise eliminated from the competitive range may request a debriefing. Debriefings may be conducted in accordance with your procedures as long as you comply with § 636.514.

§ 636.405 After developing a short list, can I still establish a competitive range?

Yes, if you have developed a short list of firms, you may still establish a competitive range. The short list is based on qualifications criteria. The competitive range is based on the rating of technical and price proposals.

§ 636.406 Are communications allowed prior to establishing the competitive range?

Yes, prior to establishing the competitive range, you may conduct communications to:

- (a) Enhance your understanding of proposals;
- (b) Allow reasonable interpretation of the proposal; or
- (c) Facilitate your evaluation process.

§ 636.407 Am I limited in holding communications with certain firms?

Yes, if you establish a competitive range, you must do the following:

- (a) Hold communications with offerors whose past performance information is the determining factor preventing them from being placed within the competitive range;
- (b) Address adverse past performance information to which an offeror has not had a prior opportunity to respond; and
- (c) Hold communications only with those offerors whose exclusion from, or inclusion in, the competitive range is uncertain.

§ 636.408 Can communications be used to cure proposal deficiencies?

(a) No, communications must not be used to:

- (1) Cure proposal deficiencies or material omissions;
- (2) Materially alter the technical or cost elements of the proposal; and/or
- (3) Otherwise revise the proposal.

(b) Communications may be considered in rating proposals for the purpose of establishing the competitive range.

§ 636.409 Can offerors revise their proposals during communications?

(a) No, communications shall not provide an opportunity for an offeror to revise its proposal, but may address the following:

(1) Ambiguities in the proposal or other concerns (e.g., perceived deficiencies, weaknesses, errors, omissions, or mistakes); and

(2) Information relating to relevant past performance.

(b) Communications must address adverse past performance information to which the offeror has not previously had an opportunity to comment.

Subpart E—Discussions, Proposal Revisions and Source Selection

§ 636.501 What issues may be addressed in discussions?

In a competitive acquisition, discussions may include bargaining. The term bargaining may include: persuasion, alteration of assumptions and positions, give-and-take, and may apply to price, schedule, technical requirements, type of contract, or other terms of a proposed contract.

§ 636.502 Why should I use discussions?

You should use discussions to maximize your ability to obtain the best value, based on the requirements and the evaluation factors set forth in the solicitation.

§ 636.503 Must I notify offerors of my intent to use/not use discussions?

Yes, in competitive acquisitions, the solicitation must notify offerors of your intent. You should either:

- (a) Notify offerors that discussions may or may not be held depending on the quality of the proposals received (except clarifications may be used as described in § 636.401). Therefore, the offeror's initial proposal should contain the offeror's best terms from a cost or price and technical standpoint; or

(b) Notify offerors of your intent to establish a competitive range and hold discussions.

§ 636.504 If the solicitation indicated my intent was to award contract without discussions, but circumstances change, may I still hold discussions?

Yes, you may still elect to hold discussions when circumstances dictate, as long as the rationale for doing so is documented in the contract file. Such circumstances might include situations where all proposals received have deficiencies, when fair and reasonable prices are not offered, or when the cost or price offered is not affordable.

§ 636.505 Must a contracting agency establish a competitive range if it intends to have discussions with offerors?

Yes, if discussions are held, they must be conducted with all offerors in the competitive range. If you wish to hold discussions and do not formally establish a competitive range, then you must hold discussions with all responsive offerors.

§ 636.506 What issues must be covered in discussions?

(a) Discussions should be tailored to each offeror's proposal. Discussions must cover significant weaknesses, deficiencies, and other aspects of a proposal (such as cost or price, technical approach, past performance, and terms and conditions) that could be altered or explained to enhance materially the proposal's potential for award. You may use your judgment in setting limits for the scope and extent of discussions.

(b) In situations where the solicitation stated that evaluation credit would be given for technical solutions exceeding any mandatory minimums, you may hold discussions regarding increased performance beyond any mandatory minimums, and you may suggest to offerors that have exceeded any mandatory minimums (in ways that are not integral to the design), that their proposals would be more competitive if the excesses were removed and the offered price decreased.

§ 636.507 What subjects are prohibited in discussions, communications and clarifications with offerors?

You may not engage in conduct that:

- (a) Favors one offeror over another;
- (b) Reveals an offeror's technical solution, including unique technology, innovative and unique uses of commercial items, or any information that would compromise an offeror's intellectual property to another offeror;
- (c) Reveals an offeror's price without that offeror's permission;

(d) Reveals the names of individuals providing reference information about an offeror's past performance; or

(e) Knowingly furnish source selection information which could be in violation of State procurement integrity standards.

§ 636.508 Can price or cost be an issue in discussions?

You may inform an offeror that its price is considered to be too high, or too low, and reveal the results of the analysis supporting that conclusion. At your discretion, you may indicate to all offerors your estimated cost for the project.

§ 636.509 Can offerors revise their proposals as a result of discussions?

(a) Yes, you may request or allow proposal revisions to clarify and document understandings reached during discussions. At the conclusion of discussions, each offeror shall be given an opportunity to submit a final proposal revision.

(b) You must establish a common cut-off date only for receipt of final proposal revisions. Requests for final proposal revisions shall advise offerors that the final proposal revisions shall be in writing and that the contracting agency intends to make award without obtaining further revisions.

§ 636.510 Can the competitive range be further defined once discussions have begun?

Yes, you may further narrow the competitive range if an offeror originally in the competitive range is no longer considered to be among the most highly rated offerors being considered for award. That offeror may be eliminated from the competitive range whether or not all material aspects of the proposal have been discussed, or whether or not the offeror has been afforded an opportunity to submit a proposal revision. You must provide an offeror excluded from the competitive range with a written determination and notice that proposal revisions will not be considered.

§ 636.511 Can there be more than one round of discussions?

Yes, but only at the conclusion of discussions will the offerors be requested to submit a final proposal revision, also called best and final offer (BAFO). Thus, regardless of the length or number of discussions, there will be only one request for a revised proposal (i.e., only one BAFO).

§ 636.512 What is the basis for the source selection decision?

(a) You must base the source selection decision on a comparative assessment of proposals against all selection criteria in the solicitation. While you may use reports and analyses prepared by others, the source selection decision shall represent your independent judgment.

(b) The source selection decision shall be documented, and the documentation shall include the rationale for any business judgments and tradeoffs made or relied on, including benefits associated with additional costs. Although the rationale for the selection decision must be documented, that documentation need not quantify the tradeoffs that led to the decision.

§ 636.513 Are limited negotiations allowed prior to contract execution?

Yes, after the source selection but prior to contract execution, you may conduct limited negotiations with the selected design-builder to clarify any remaining issues regarding scope, schedule, financing or any other information provided by that offeror. You must comply with the provisions of § 636.507 in the exchange of this information.

§ 636.514 How may I provide notifications and debriefings?

You may provide pre-award or post-award notifications in accordance with State approved procedures. If an offeror requests a debriefing, you may provide pre-award or post-award debriefings in accordance with State approved procedures.

PART 637—CONSTRUCTION INSPECTION AND APPROVAL

20. The authority citation for part 637 is revised to read as follows:

Authority: Sec. 1307, Pub. L. 105-178, 112 Stat. 107; 23 U.S.C. 109, 114, and 315; 49 CFR 1.48(b).

PART 637—[AMENDED]

21. In part 637 revise all references to "State highway agency's" to read "State transportation department's"; revise the acronyms "SHA" and "SHAs" to read "STD" and "STDs", respectively; and revise the references to "non-SHA" to read "non-STD".

22. Amend § 637.207 by adding paragraph (a)(1)(iv) and paragraph (b) to read as follows:

§ 637.207 Quality assurance program.

- (a) * * *
- (1) * * *
- (iv) In the case of a design-build project on the National Highway

Draft Revised Design-Build Rule

In consideration of the foregoing, the FHWA proposes to amend parts 630, 635, and 636 of title 23, Code of Federal Regulations, as follows:

PART 630--PRECONSTRUCTION PROCEDURES

1. Revise the authority citation for part 630 to read as follows:

Authority: Sec. 1503 of Public Law 109-59, 119 Stat. 1144; 23 U.S.C. 106, 109, 115, 315, 320, and 402(a); 23 CFR 1.32 and 49 CFR 1.48(b).

2. Amend 23 CFR 630.106 by adding paragraph (a)(7) to read as follows:

Sec. 630.106 Authorization to proceed.

(a) * * *

(7) For design-build projects, the execution of the project agreement and authorization to proceed shall not occur until after the completion of the NEPA process. However, preliminary engineering activities may be authorized in accordance with this section.

* * * * *

PART 635--CONSTRUCTION AND MAINTENANCE

3. Revise the authority citation for part 635 to read as follows:

Authority: Sec. 1503 of Public Law 109-59, 119 Stat. 1144; 23 U.S.C. 101 (note), 109, 112, 113, 114, 116, 119, 128, and 315; 31 U.S.C. 6505; 42 U.S.C. 3334, 4601 et seq.; Sec. 1041(a), Public Law 102-240, 105 Stat. 1914; 23 CFR 1.32; 49 CFR 1.48(b).

4. Amend 23 CFR 635.112(i) by revising paragraph (i)(1); by redesignating paragraphs (i)(2) and (i)(3) as (i)(3) and (i)(4), respectively; and by adding a new paragraph (i)(2) to read as follows:

Sec. 635.112 Advertising for bids and proposals.

* * * * *

(i) * * *

(1) When a Request for Proposals document is issued after the NEPA

process is complete, the FHWA Division Administrator's approval of the Request for Proposals document will constitute the FHWA's project authorization and the FHWA's approval of the STD's request to release the document. This approval will carry the same significance as plan, specification and estimate approval on a design-bid-build Federal-aid project.

(2) Where a Request for Proposals document is issued prior to the completion of the NEPA process, the FHWA's approval of the document will only constitute the FHWA's approval of the STD's request to release the document.

5. Revise Sec. 635.413(e)(1)(i) to read as follows:

Sec. 635.413 Guaranty and warranty clauses.

(e) ***

(1) ***

(i) The term of the warranty is short (generally one to two years); however, projects developed under a public-private agreement may include warranties that are appropriate for the term of the contract or agreement.

PART 636--DESIGN-BUILD CONTRACTING

6. Revise the authority citation for part 636 to read as follows:

Authority: Sec. 1503 of Public Law 109-59, 119 Stat. 1144; Sec. 1307 of Public Law 105-178, 112 Stat. 107; 23 U.S.C. 101, 109, 112, 113, 114, 115, 119, 128, and 315; 49 CFR 1.48(b).

Subpart A--General

7. Amend Sec. 636.103 by placing all definitions in alphabetical order, by adding the definitions of "developer," "final design," "preliminary design," "price reasonableness," and "public-private agreement," and by revising the definition of "qualified project" as follows:

Sec. 636.103 What are the definitions of terms used in this part?

Developer means each entity with whom the contracting agency has

executed a public-private agreement for the development, design, construction, financing, operation, and maintenance of one or more projects under a public-private partnership. Depending on the context of the public-private agreement, the term "developer" may include affiliated entities of the developer.

Final design means any design activities following preliminary design. Final design activities are not necessary to complete the NEPA process as outlined in 23 CFR 771.

Preliminary design means all design activities necessary to complete the NEPA alternatives analysis and review process as outlined in 23 CFR 771.105, 771.111, and 771.113.

Price reasonableness means the determination that the price of the work for any project or series of projects is not excessive and is a fair and reasonable price for the services to be performed.

Public-private agreement means an agreement between a public agency and a private party under which the private party shares in the responsibilities, risks and benefits of constructing a project. Such agreement may involve an at-risk equity investment by the private party in the project.

Qualified project means any design-build project (including intermodal projects) funded under Title 23 U.S.C. which meets the requirements of this Part and for which the contracting agency deems to be appropriate on the basis of project delivery time, cost, construction schedule and/or quality.

8. Revise Sec. 636.106 to read as follows:

Sec. 636.106 Is the FHWA's Special Experimental Project No. 14-- "Innovative Contracting" (SEP-14) approval necessary for a design-build project?

No, if a design-build project meets the requirements of this part, SEP-14 approval is not required. However, when the FHWA believes it is appropriate, SEP-14 is available for the experimental evaluation of techniques that do not meet the requirement of this part.

9. Revise Sec. 636.107 to read as follows:

Sec. 636.107 May contracting agencies use geographic preference in Federal-aid design-build or public-private partnership projects?

No. Contracting agencies must not use geographic preferences (including contractual provisions, preferences or incentives for hiring, contracting, proposing or bidding) on Federal-aid highway projects. Contracting agencies

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shall conduct procurements in a manner that prohibits the use of statutorily or administratively imposed in-State or local geographical preferences in the evaluation and award of projects.

Sec. 636.108 [Removed and Reserved]

10. Remove and reserve Sec. 636.108.

11. Revise Sec. 636.109 to read as follows:

Sec. 636.109 How does the NEPA process relate to the design-build procurement process?

The purpose of this section is to ensure that there is an objective NEPA process, that public officials and citizens have the necessary environmental impact information for federally funded actions before actions are taken, and that design-build proposers do not assume an unnecessary amount of risk in the event the NEPA process results in a significant change in the proposal. Therefore, with respect to the design-build procurement process:

(a) The contracting agency may:

(1) Issue an RFQ solicitation prior to the conclusion of the NEPA process as long as the RFQ solicitation informs proposers of the general status of NEPA review;

(2) Issue an RFP after the conclusion of the NEPA process;

(3) Issue an RFP prior to the conclusion of the NEPA process as long as the RFP informs proposers of the general status of the NEPA process and that no commitment will be made as to any alternative under evaluation in the NEPA process, including the no-build alternative;

(4) Proceed with the award of a design-build contract prior to the conclusion of the NEPA process; and

(5) Issue notice to proceed with preliminary design pursuant to a design-build contract that has been awarded prior to the completion of the NEPA process.

(b) If the contracting agency proceeds to award a design-build contract prior to the conclusion of the NEPA process, then:

(1) The design-build contract must include appropriate provisions preventing the design-builder (or developer) from proceeding with final

design activities and physical construction prior to the completion of the NEPA process (contract hold points or another method of issuing multi-step approvals must be used);

(2) The design-build contract must include appropriate provisions ensuring that no commitment is made to any alternative being evaluated in the NEPA process and that the comparative merits of all alternatives presented in the NEPA document, including the no-build alternative, will be evaluated;

(3) The design-build contract must include appropriate provisions ensuring that all environmental and mitigation measures identified in the NEPA decision document will be implemented;

(4) The design-builder (or developer) must not prepare the NEPA decision document or have any decisionmaking responsibility with respect to the NEPA process;

(5) Any consultant who prepares the NEPA decision document must be selected by and subject to the exclusive direction and control of the contracting agency;

(6) Preliminary design work performed by the design-builder (or developer) may be used in the NEPA analysis; and

(7) The design-build contract must include termination provisions in the event that the no-build alternative is selected.

(c) The contracting agency must receive prior FHWA concurrence before issuing the RFP, awarding a design-build contract and proceeding with preliminary design work under the design-build contract. Should the contracting agency proceed with any of the activities specified in this section before the completion of the NEPA process (with the exception of preliminary design, as provided in paragraph (d) of this section), the FHWA's concurrence merely constitutes the FHWA acquiescence that any such activities complies with Federal requirements and does not constitute project authorization or obligate Federal funds.

(d) The FHWA's authorization and obligation of preliminary engineering funds prior to the completion of the NEPA process is limited to preliminary design activities. After the completion of the NEPA process, the FHWA may issue an authorization to proceed with final design and construction and obligate Federal funds for such purposes.

12. Amend Sec. 636.116 by adding paragraph (c) to read as follows:

Sec. 636.116 What organizational conflict of interest requirements apply to design-build projects?

* * * * *

(c) If the NEPA process has been completed prior to issuing the RFP, the contracting agency may allow a consultant and/or subconsultant who prepared the NEPA document to submit a proposal in response to the

RFP.

13. Revise Sec. 636.119 to read as follows:

Sec. 636.119 How does this Part apply to public-private agreements?

(a)(1) For public-private agreements, the contracting agency may use State-approved procurement procedures to procure the services of the developer and the requirements of 23 CFR 636.201 through 23 CFR 636.514 are optional. The use of State-approved procedures for the procurement of the developer is contingent upon the following:

(i) The State's procedures are approved by the FHWA,
(ii) The RFQ or RFP solicitations must be submitted to the FHWA for review and approval,

(iii) The procedures must be fair and transparent to all proposers,
(iv) If an unsolicited proposal is received, the contracting agency must offer adequate public notice and advertisement for competing proposals before considering an individual proposal for award,

(v) The appropriate RFQ or RFP document must clearly describe the contracting agency's conditions and procedures for sharing any proposer's ideas with other proposers during any phase of the negotiation process and whether a proposer's ideas may be incorporated into the project, even though that proposer was unsuccessful in obtaining the contract;

(vi) The selection of a developer is made on the basis of a best value selection, except that price does not have to be a consideration. Evaluation and selection criteria may include, but are not limited to, the degree and scope of work to be performed, services to be provided, ability to perform such work or services, responsibilities or risks that are to be shared, and the equity or total investment that may be contributed; and

(vii) The contracting agency submits the public-private agreement to FHWA for concurrence along with a timetable showing the major steps in the procurement process, a summary of the rationale for the selection, and a description of any major changes made during any negotiations.

(2) No procedure or requirement shall be approved under paragraph (a)(1) of this section which, in the judgment of the FHWA, may operate to unnecessarily restrict competition, is unfair, or may result in a process that is not transparent.

(b) For any public-private agreement that provides for the possibility of the physical construction of one or more projects by the developer, the public-private agreement must include a provision requiring the contracting agency to review the price reasonableness of the estimate provided by the developer to provide final design

services and/or physically construct any project involving Federal funds.

(1) The price reasonableness determination shall be made pursuant to a process provided for in the public-private agreement that includes a comparison of the developer's estimate to an estimate prepared by the contracting agency. Both parties may meet to discuss the differences in the estimates and make appropriate revisions. The estimates prepared under this paragraph shall be prepared on an open-book basis with respect to both the contracting agency and the developer.

(2) The contracting agency's determination of price reasonableness shall be submitted to the FHWA for concurrence.

(3) If the contracting agency cannot reach an agreement on price reasonableness with the developer, or if the FHWA does not concur, then the contracting agency shall proceed to procure the work with another firm pursuant to parts 172, 635, and 636 of this title, as appropriate.

(c) The contracting agency must ensure Federal-aid projects developed under a public-private partnership comply with all non-procurement requirements of 23 U.S. Code, regardless of the form of the FHWA funding (traditional Federal-aid funding or credit assistance). This includes compliance with all FHWA policies and requirements, such as environmental and right-of-way requirements and compliance with all applicable construction contracting requirements such as Buy America, Davis-Bacon prevailing wage rate requirements, etc.

12. Revise Sec. 636.302(a)(1) to read as follows:

Sec. 636.302 Are there any limitations on the selection and use of proposal evaluation factors?

(a) * * *

(1) You must evaluate price in every source selection where construction is a significant component of the scope of work. However, where the contracting agency elects to release the final RFP and award the design-build contract before the conclusion of the NEPA process (see Sec. 636.109), then the following requirements apply:

(i) It is not necessary to evaluate total contract price;

(ii) The evaluation of proposals and award of the contract may be based on qualitative considerations;

(iii) The subsequent approval of final design and construction activities will be contingent upon a finding of price reasonableness by the contracting agency;

(iv) In determining price reasonableness, the contracting agency and design-builder may negotiate the price, which shall be done on an open-book basis by both the design-builder and contracting agency; and

(v) The contracting agency's finding of price reasonableness is subject to FHWA concurrence.

[FR Doc. E6-8002 Filed 5-24-06; 8:45 am]

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FHWA Changes to Design-Build Rule Fall Short of PPP Needs

By Nancy C. Smith, Christine D. Ryan and Brandon J. Davis

The "Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users" or "SAFETEA-LU"^[1] required FHWA to issue modifications to its design-build regulations to implement provisions in SAFETEA-LU enhancing the ability of public agencies to use design-build and public-private partnerships for development of transportation infrastructure. The Notice of Proposed Rulemaking for the proposed modifications was issued on May 25, 2006.^[2]

The most significant change of concern to the innovative contracting community concerns the ability of transportation agencies to take certain preliminary actions prior to receipt of NEPA approval for a project.^[3] Despite language in TEA-21^[4] indicating Congressional intent to allow public agencies to enter into design-build contracts and to allow certain work to proceed under such contracts before completion of the NEPA process, the design-build rule adopted by FHWA in 2002 prohibited issuance of requests for proposals prior to NEPA approval, thereby also prohibiting agencies from entering into contracts until after issuance of the approval. This has been particularly problematic for public-private partnerships, where the parties often expect the private sector partner to be involved in the project definition process. The regulatory prohibition has given rise to a series of applications for special approvals under Special Experimental Project 15.

SAFETEA-LU Requirements

Section 1503 of SAFETEA-LU mandated revisions to the regulations applicable to design-build contracts, making it clear that transportation agencies have the ability to proceed with certain actions prior to receipt of final NEPA approval. The Secretary was directed to issue revised regulations within 90 days, and was specifically directed not to preclude agencies from taking the following actions prior to receipt of final NEPA approval: (1) issuing requests for proposals; (2) proceeding with awards of design-build contracts; or (3) issuing notices to proceed with preliminary design work under design-build contracts.

General Comments on Proposed Rule

Although the proposed revisions would increase procurement flexibility for design-build contracts and public-private partnerships in certain respects, they fall far short of expectations in others. Most importantly, although the proposed modifications satisfy the first two directives listed in the previous paragraph, it includes a restrictive definition of preliminary design, which is likely to present significant problems for innovative contracting if not changed. If not modified, the proposed rule would impose restrictions not found in case law, would ignore two Congressional directives to FHWA to allow flexibility to the states in this area, and would represent a giant step backwards for innovative contracting.

In addition, the revisions add several new "hold" points requiring FHWA approvals, including approval of the RFQ and state procurement procedures, authorization to proceed with preliminary design, and concurrence in price reasonableness

determinations.

Issues that we believe FHWA should reconsider fall into the following categories:

- First and foremost, the definition of what actions may (or may not) be taken by the design-builder/developer prior to NEPA approval
- The extent to which FHWA approvals are required over the course of the procurement and contract
- Whether NEPA consultants and subconsultants may participate on developer teams
- Imposition of new legal standards on the procurement process
- Circumstances under which a price reasonableness analysis is required
- Level of FHWA involvement in price reasonableness determination

Definitions of Preliminary Design and Final Design

FHWA specifically requested comments on the proposed definition of preliminary design. We submit to our readers the following proposed revisions to this definition and to the definition of final design, for their comment and consideration:

Draft Rule	Proposed revision
<p>Preliminary design means all design activities necessary to complete the NEPA alternatives analysis and review process as outlined in 23 CFR 771.105, 771.111, and 771.113.</p>	<p>Preliminary design means services provided by or for design professionals prior to commencement of final design of a project, for the purpose of (a) defining the project alternatives, (b) otherwise supporting completion of the NEPA alternatives analysis and review process as outlined in 23 CFR 771.105, 771.111, and 771.113, (c) supporting permit applications, or (d) reducing project risks for the final design and construction phase of the project. Preliminary design activities may include geotechnical investigations, utility surveys, hazardous materials assessments and other investigative activities, and production of reports. The term specifically excludes any activity that would constitute an irreversible or irretrievable commitment of resources which has the effect of foreclosing the formulation or implementation of any reasonable and prudent alternatives.</p>
<p>Final design means any design activities following preliminary design. Final design activities are not necessary to complete the NEPA process as outlined in 23 CFR 771.</p>	<p>Final design means preparation of final construction plans and detailed technical specifications required for performance of construction work.</p>

Organizational Conflicts and NEPA

With the advent of public-private partnerships, concerns regarding organizational

conflicts of interest relating to NEPA have escalated. Such conflicts have been a controversial topic over the years, due to a belief that it is inappropriate for anyone who has an interest in the outcome of the NEPA analysis to play a part in NEPA decision-making. In response to these concerns, the draft revisions would specifically prohibit design-builders/developers from undertaking responsibility for preparing the NEPA decision document. See Sections 636.109(b)(4) and 636.116 (c) of the proposed rule.

The authors believe that as a general matter it is preferable to allow public agencies flexibility to make determinations regarding organizational conflict issues on a case-by-case basis, in accordance with NEPA and applicable case law, instead of imposing requirements by regulation that are not mandated by law.

Other Comments

Our specific comments can be downloaded from the link at the end of this e-alert.

Request to E-Alert Readers

FHWA will accept comments on the proposed rule through July 24, 2006. Comments can be mailed or hand delivered to the U.S. Department of Transportation, Dockets Management Facility, Room PL-401, 400 Seventh Street, SW., Washington, DC 20590-0001, or can be submitted electronically at <http://dmses.dot.gov/submit> or by fax to (202) 493-2251. Comments can also be submitted via the eRulemaking Portal at <http://www.regulations.gov>. All comments should reference FHWA Docket No. FHWA-2005-22477.

For a copy of the proposed rule, please click [here](#). For a copy of our current draft comments on the proposed rule, please click [here](#).

For more information, please contact Nancy Smith at (213) 612-7837 / nsmith@nossaman.com, Christine Ryan at (512) 370-4978 / cryan@nossaman.com or Brandon Davis at (213) 612-7894 / bdavis@nossaman.com.

[1] Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy For Users, Pub. L. No. 109-59, 119 Stat. 1144 (2005).

[2] Design-Build Contracting, 71 Fed. Reg. 30,100 (May 25, 2006) (to be codified in Parts 630, 635 and 636 of 23 C.F.R.).

[3] For additional information regarding these issues, please refer to articles by Ms. Smith published in the November 2001 and January 2003 editions of Public Works Financing.

[4] Transportation Equity Act for the 21st Century, Pub. L. No. 105-178, § 1307, 112 Stat. 107, 229-31 (1998).

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FHWA/NYS DOT SAFETEA-LU Agreement

I. Background and Introduction

Congress has charged the Federal Highway Administration (FHWA) with administering the Federal-Aid Highway Program (FAHP) under *Title 23*, and other associated laws. In addition, the FHWA's responsibility for administering the FAHP has been clearly outlined in the following legislation: the *Intermodal Surface Transportation Efficiency Act* (ISTEA) of 1991; the *Transportation Equity Act for the 21st Century* (TEA-21) of 1998; and, the *Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users* (SAFETEA-LU) of 2005. These laws allow States to assume certain delegated responsibilities for FHWA in certain *National Environmental Policy Act* approvals and in the design, construction, award and inspection of certain Federal-aid projects.

The FHWA, New York State Department of Transportation (NYSDOT), and other highway program funds recipients have jointly administered the FAHP in New York State for many years. All parties have been tasked with carrying out the FAHP through the efficient and effective use of federal funds to help accomplish national, mutual, or local goals – to maintain a national highway network, improve its operation and safety, and provide for national security while protecting and improving the environment. Stewardship efforts include oversight and approval actions, as well as many day-to-day actions that are routinely performed by the aforementioned parties to ensure that the FAHP is administered in regulatory compliance and in ways that enhance the value of the program funds authorized by Congress. The following Agreement formalizes the roles and responsibilities of the FHWA and NYSDOT to address how the FAHP will be administered in New York State.

II. Intent and Purpose of Agreement

The Federal Highway Administration (FHWA) and the New York State Department of Transportation (NYSDOT) enter into this Agreement, effective as of December 19, 2006, for the purpose of administering the FAHP in New York State. Although this Agreement replaces the former FHWA/NYS DOT TEA-21 Agreement, it incorporates many of the principles found therein. In addition to defining the Title 23 roles and responsibilities of the FHWA and NYSDOT, this Agreement defines methods of oversight, control documents, and performance indicators, which will be used to efficiently and effectively deliver the Federal-aid program in New York State.

This Agreement provides basic policy concepts and approaches rather than specific procedures. Specific procedures are provided in manuals, policy statements, bulletins, standards, rules and regulations, and other publications listed in Appendix A. The *Project Approval Matrix*, Appendix B, lists specific project actions and the basis of delegation that are not identified in the main portion of the SAFETEA-LU Agreement, or Appendix A.

The provisions of the Agreement do not modify the FHWA's non-*Title 23* program oversight and project approval responsibilities for activities required under the *Clean Air Act*; the *National Environmental Policy Act of 1969 (NEPA)* and other related environmental laws and statutes; the *Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970*; and the *Civil Rights Act of 1964* and related statutes.

Notwithstanding the Agreement, the FHWA retains overall responsibility for all aspects of the FAHP, does not preclude the FHWA's right to access and review Federal-aid projects at any time, and does not replace the provisions of Title 23, U.S.C.

III. Authority for Delegation

The principal statutory and regulatory basis for development, administration, and oversight of Federal-aid projects are Title 23, United States Code (U.S.C.), Transportation and Appropriations Act, and the Code of Federal Regulations (CFR), in particular 23 and 49 CFRs. The specific statutory basis for the delegation of Title 23 duties addressed by this Agreement is found under 23 U.S.C. 106. Additionally, pursuant to New York State statutes and the delegation by the Governor of the State of New York, the Commissioner of NYSDOT is designated by the Governor to act on New York State's behalf for the following Federally aided highway programs:

- Congestion Mitigation and Air Quality Improvement (CMAQ),
- Interstate Maintenance (IM),
- National Highway System (NHS),
- Highway Bridge Program (HBP),
- Appalachian Development Highway System,
- Federal Lands Highways,
- National Corridor Planning and Development and Coordinated Border Infrastructure Program,
- Construction of Ferry Boats and Ferry Facilities,
- High Priority Projects Program (HPPP),
- Surface Transportation Program (STP),
- Transportation Enhancement Program (TEP),
- Emergency Relief (ER),
- National Scenic Byways Program,
- Highway Safety Improvement Program (HSIP),
 - Railway Highway Crossing,
 - High Risk Rural Roads (HRRR),
- Safe Routes to Schools (SRTS),
- Transportation, Community, and System Preservation Program (TCSP),
- State Planning and Research Program, and the
- Statewide and Metropolitan Planning Program.

The Commissioner of NYSDOT is also authorized under NYS Highway Law Section 80 to categorically use monies available under Federal-aid Highway Acts, in accordance with State appropriations thereof, for the broad variety of highway and other transportation purposes.

IV. NYSDOT and FHWA Roles and Responsibilities

A. General

The FHWA, in cooperation with the NYSDOT and local recipients, will continue to provide stewardship and oversight of the FAHP through general actions and concurrences in its day-to-day activities, including improvements to program procedures, training, technical assistance, and development and deployment of new technologies, as well as routine program/project approval. Each of these activities contributes to the intent that the FAHP operates with integrity and for the public's maximum benefit. Additionally, the FHWA still places the utmost importance on the integrity of the National Highway System and the actions that occur therein.

NYSDOT will assume FHWA's Title 23 oversight role and approval responsibilities for design, plans, specifications, estimates, contract awards and inspection of projects consistent with statutes and regulations and as specified in Table I, Appendix A, Appendix B, Appendix D, and Appendix E of this Agreement. This includes responsibility for ensuring that projects are developed and constructed in full compliance with Federal requirements, and that necessary corrective action is taken when actions and approvals are found to be in non-compliance with applicable Federal requirements. FHWA is available for consultation in such matters or may unilaterally become involved in determining corrective action.

When eligibility for Federal participation in the programming, development, and construction of Federal-aid projects is in question, NYSDOT will consult with FHWA. FHWA and NYSDOT may also agree to unique or special procedures in Federal-aid programs on either a program or project basis.

B. Project Categories and Agency Roles

Table I identifies the project types the FHWA retains oversight on and those that have been delegated to NYSDOT. A detailed list of delegated project approvals related to these project types is provided in Appendix B.

This Agreement assigns FHWA/NYSDOT approval roles for Federal-aid projects based on consideration of risk, environmental class, and scope of work. Through this approach, it is envisioned that the FHWA and NYSDOT will be able to better allocate their collective resources in delivering the FAHP in New York State. This approach will also provide the FHWA the opportunity to have full oversight responsibilities for projects with higher risk and cost regardless of highway system classification.

Table I - Title 23 Project Approval Summary

Highway System Type	Project Type	FHWA Approval	NYSDOT Approval
Interstate	≥ \$5 million ¹	X	
	< \$5 million ¹		X
Non-Interstate	≥ \$100 million ²	X	
	Major and unusual structures ³	X	
	Freeways on new location	X	
	EIS Projects	X	
	Appalachian Highways (Rt 15)	X	
	Route 17 segments to be designated as I-86	X	
	All others		X
ITS Projects	Interstate ⁴	X	
	Non-Interstate ⁴	X	

¹ Estimated construction cost based on current Engineer's Estimate. NYSDOT assumes oversight on all 1R, element specific, VPP, sign replacement, Type II (retrofit) noise abatement, rest area, pavement marking, and guardrail replacement contracts no matter what the contract amount is. For a full list of element specific work types, refer to Appendix 7 in NYSDOT's Project Development Manual.

² Based on cost to complete design, right-of-way, and construction stages.

³ This project category includes tunnels and the following bridge types: segmental, cable-stayed, suspension, and movable. It also includes the four major East River Bridges and the East River Bridge Preventive Maintenance contracts in New York City.

⁴ FHWA assumes oversight on all ITS projects and elements according to the FHWA NY Division Policy for Implementing ITS Projects. See Appendix D.

General agency responsibilities pertaining to the categories of Federal-aid projects are described below.

1. All Projects

FHWA will retain approval authority for all project actions required under non-Title 23 provisions (NEPA, Civil Rights, Buy America, etc.), except as provided by the Programmatic CE Agreement that was approved in July 1996 (see Appendix E).

2. Interstate Projects

FHWA will retain approval authority for all Interstate projects \geq \$5 Million except for project types listed in Table I and for approval actions identified in Appendix B.

3. Non-Interstate Projects

The FHWA delegates to and NYSDOT assumes the approval authority for design, plans, specifications, estimates, contract awards and inspections under Title 23 for Federal-aid projects as permitted by 23 U.S.C. 106, as listed in Table I, and as identified in Appendix B.

4. Local Projects

Pursuant to 23 CFR 635.105 and 23 U.S.C. 106, NYSDOT may delegate to project sponsors the approval authority for design, acquisition of right-of-way, bid advertisement, opening and award, construction and administration of contracts for projects eligible for Federal-aid funding in accordance with its "Procedures for Locally Administered Federal-Aid Projects". A project sponsor is defined as a county, city, town, village or other public agency, public authority or nonprofit organization that is authorized and designated under an agreement with NYSDOT to design, acquire right-of-way, advertise, open bids, award, and administer contracts for federal-aid projects.

Upon delegating these duties, the NYSDOT shall provide the necessary review and approval to assure that sub-recipients of Federal funds have adequate supervision, project delivery systems, and sufficient accounting control to comply with Federal requirements. Delegation of specific approval responsibilities to project sponsors will not relieve NYSDOT of its overall stewardship responsibilities of the FAHP.

V. Methods of Stewardship/Oversight

The FHWA and NYSDOT may individually or jointly initiate process/program reviews and evaluations of the FAHP. The reviews can be conducted by individuals or teams and can be performed using FHWA Division Office staff, NYSDOT staff, using combinations of peers from other FHWA or State agencies, other stakeholder groups, or organizations. FHWA and NYSDOT management will jointly develop an annual work plan to identify specific stewardship and oversight techniques, which will be used to evaluate the FAHP in New York State. This plan, which will also include specific performance indicators (see Section VII, Performance Indicators), will be adopted by the beginning of each federal fiscal year and will include the following techniques:

- a. Program Assessments – This technique may take many forms including joint risk assessments, self-assessments and program assessments. All of these tools are based on the common concepts of identifying strengths, weaknesses and opportunities and the identification and sharing of “best” practices to continually improve the program.
- b. Program Reviews – These reviews are a thorough analysis of key program components and the processes employed by the NYSDOT in managing the program. The reviews are conducted to 1) ensure compliance with Federal requirements; 2) identify opportunities for greater efficiencies and improvements to the program; and/or 3) identify exemplary practices. They can be referred to, or known as, program improvement reviews, program assessments, process reviews, program/product evaluations, or continuous process improvement initiatives.
- c. Program Management – This includes the daily stewardship of Federal-aid programs, including project and program oversight and program assistance. Program management ensures Federal program requirements are met while proactively seeking opportunities to add value in the course of routine program approval actions, participating on joint task forces, joint committees and joint quality improvement teams, and aiding and assisting the State and other transportation stakeholders in answering questions on program issues. FHWA division offices manage programs by completing required program level activities, promoting new program initiatives and concepts and continually assessing the program through routine involvement in program activities.

VI. Control Standards

NYSDOT will comply with the provisions of 23 U.S.C., 23 CFR, and 49 CFR, as appropriate, through the administration of State laws, regulations, standards, and directives. NYSDOT will develop Federal-aid projects in accordance with the standards and guides identified in 23 CFR part 625, as well as other FHWA policies identified in the Federal Register, and/or NYSDOT policies, procedures and standards approved by the FHWA (where necessary). NYSDOT policies, procedures and standards are provided in manuals and guidance as identified in

Appendix A. Additions to Appendix A will occur as additional policies and guidance are developed by program areas, in consultation with FHWA, and implemented by NYSDOT.

VII. Performance Indicators

Specific performance indicators will be used to track the health of the FAHP and will be generated, reassessed, and/or revised, as appropriate, at least on an annual basis. Furthermore, the indicators will be incorporated into the annual work plan, which was discussed under Section V, Methods of Stewardship/Oversight. These indicators will be used to track performance trends, assess the overall delivery of the Federal-aid program, identify opportunities, and implement measures to bring about improvements in the processes and methods of oversight. The first set of indicators will be formulated by 02/01/07, included in Appendix C, and applicable to the FAHP in FFY '07.

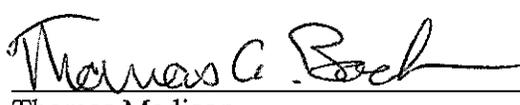
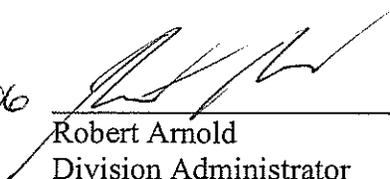
VIII. Implementation

The pertinent NYSDOT policies and procedures for accomplishing the intent of this Agreement are listed in the Appendices.

This Agreement supersedes the FHWA/NYSDOT TEA-21 Agreement that was executed between the FHWA and NYSDOT in December 1999. This Agreement will take effect as of the effective date stated in Section I and, upon execution, will apply to all new Federal-aid projects and all existing Federal-aid projects under design that have not yet been authorized for construction. Federal-aid projects under construction will retain their current exemption classification through completion.

FHWA and NYSDOT agree to periodic reviews of this Agreement to reflect changes in Federal or State laws, regulations, and requirements. Changes to the Agreement will require an updated version of the agreement and the approval of the signatory agencies. However, since changes will continually occur to the contents of the documents referenced in Appendix A, and acknowledging that policy and guidance updates developed and implemented by NYSDOT program areas are made in consultation with FHWA, changes to the contents of the documents in Appendix A will not require an updated Agreement. Addition and deletion of documents to Appendix A will be automatically incorporated into the signed agreement as amendments through written correspondence between NYSDOT and FHWA.

APPROVED AND EXECUTED:

	
<u>12/19/06</u>	<u>12-19-06</u>
Thomas Madison	Robert Arnold
Commissioner	Division Administrator
New York State Department of Transportation	Federal Highway Administration
Albany, NY	Albany, NY

**AGREEMENT BETWEEN NORTH CAROLINA TURNPIKE AUTHORITY,
NORTH CAROLINA DEPARTMENT OF TRANSPORTION, AND FEDERAL
HIGHWAY ADMINISTRATION FOR FEDERAL PARTICIPATION IN A
PORTION OF THE NORTHERN WAKE EXPRESSWAY IN WAKE AND
DURHAM COUNTIES, THE TRIANGLE PARKWAY, AND THE WESTERN
WAKE EXPRESSWAY**

This Agreement, made and entered into this the 6th day of December, 2006, by and between the North Carolina Turnpike Authority, an agency of the State of North Carolina (hereinafter referred to as "NCTA"), the North Carolina Department of Transportation (hereinafter referred to as "NCDOT"), and the Federal Highway Administration, United States Department of Transportation (hereinafter, referred to as "FHWA").

WITNESSETH

WHEREAS, pursuant to N.C. Gen. Stat. § 136-18, the NCDOT has certain powers and authorities for the construction and maintenance of highways; and

WHEREAS, pursuant to N.C. Gen. Stat. § 136-89.180, et seq., the NCTA has certain powers and authority for the construction, operation, and maintenance of toll roads and bridges; and

WHEREAS, NCDOT is causing to be constructed, with federal participation, a portion of the Northern Wake Expressway in Wake and Durham Counties, extending from I-40 southwest to N.C. 55 which is not yet open to traffic and is authorized by state law, N.C. Gen. Stat. § 136-89.187, to be converted to a toll facility; and

WHEREAS, NCTA desires to construct a toll facility currently known as the Triangle Turnpike, on a new location in Wake and Durham Counties from I-40 (at NC 147) to Northern Wake Expressway between NC-54 and NC-55 near Research Triangle Park; and

WHEREAS, NCTA desires to construct a continuation of the toll facility currently known as the Triangle Turnpike, on new location in Wake County from NC-55 Bypass near Holly Springs to NC-55 near Research Triangle Park; and

WHEREAS, 23 U.S.C. § 129(a)(1) permits federal participation in the initial construction of toll highways and in preliminary studies to determine the feasibility of a toll facility for which federal participation is authorized; and

WHEREAS, NCTA and FHWA have agreed to be bound by, and comply with provisions of 23 U.S.C. § 129(a), for the projects listed herein; and

WHEREAS, 23 U.S.C. § 129(3) provides in part:

(3) Limitations on use of revenues. -- “. . . [A]ll toll revenues received from operation of the toll facility will be used first for debt service, for reasonable return on investment of any private person financing the project, and for the costs necessary for the proper operation and maintenance of the toll facility, including reconstruction, resurfacing, restoration, and rehabilitation. If the State certifies annually that the tolled facility is being adequately maintained, the State may use any toll revenues in excess of amounts required under the preceding sentence for any purpose for which Federal funds may be obligated by a State under this title.”

NOW THEREFORE, NCTA, NCDOT, and FHWA agree as follows:

1. The NCTA/NCDOT agree that the toll revenues from the operation of any of above described projects will be used first for debt service, for reasonable return on investment of any private person financing the project, and for the costs necessary for the proper operation and maintenance of the toll facility, including reconstruction, resurfacing, restoration, and rehabilitation, as provided in 23 U.S.C. § 129(a)(3).
2. In accordance with 23 U.S.C. § 129(a), NCTA/NCDOT hereby certify that they can and will comply with the following requirements of 23 U.S.C. § 129(a)(3):

NCTA agrees to certify annually that the toll facility is being adequately maintained. NCTA/NCDOT are entitled to use any toll revenues in excess of amounts required under 23 U.S.C. § 129(a)(3) for any purpose for which federal funds may be obligated by a State under Title 23 of the United States Code.

3. NCTA/NCDOT agree, upon reasonable notice, to make all their records pertaining to the toll facility subject to audit by FHWA. NCTA/NCDOT agree to annually audit the individual project records for compliance with the provisions of this agreement and report the results thereof to FHWA. In lieu of the NCTA/NCDOT performing said audit, a report of an independent auditor furnished to FHWA by NCTA/NCDOT may satisfy the requirements of this section.
4. This agreement will be prepared in triplicate originals so that each signatory will have an original agreement.

IN WITNESS WHEREOF, NCTA, NCDOT, and FHWA hereunto have caused this Agreement to be duly executed in duplicate as of this day and year first written above.

ATTEST:



Director of Finance and
Administration

NORTH CAROLINA TURNPIKE
AUTHORITY



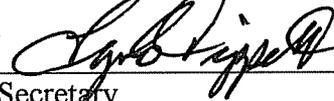
Executive Director

ATTEST:



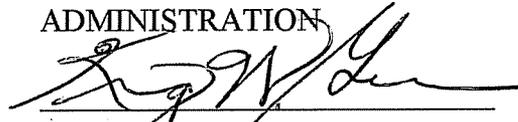
Director of Finance and
Administration

NORTH CAROLINA DEPARTMENT
OF TRANSPORTATION



Secretary

FEDERAL HIGHWAY
ADMINISTRATION



Associate Administrator for
Infrastructure

Exhibit D

FHWA's Office of Operations is responsible for coordinating all tolling and pricing programs under the Federal-aid Highway Program and SAFETEA-LU. The Office of Operations has formed a working group known as the "Tolling and Pricing Team" to act as a clearinghouse to assist public authorities by directing them to the most appropriate program (or programs) among the many options available.

As a preliminary step in obtaining tolling authority, states and other qualifying transportation agencies must submit an Expression of Interest to FHWA regarding a potential toll project under any of the FHWA tolling programs discussed below.¹ The Tolling and Pricing Team will review all Expressions of Interest for the various tolling and pricing opportunities contained in current law, but does not have responsibility to approve or disapprove specific projects. That responsibility remains with the respective FHWA program office responsible for administering each specific tolling and pricing program.

Express Lanes Demonstration Program

The Express Lanes Demonstration Program ("ELDP") was created under Section 1604(b) of SAFETEA-LU.² Its purpose is to manage congestion, reduce emissions in non-attainment areas and to finance expansion (in order to reduce congestion) by building one or more additional lanes on the Interstate System. Only 15 projects will be able to toll through the ELDP. To qualify, potential demonstration projects must satisfy the purpose of the program listed above, and the facility must be an "Eligible Toll Facility."³

Tolls under the ELDP must vary by time of day or level of traffic to manage congestion or improve air quality (variable pricing). Tolls from the tolled facility must first be used for (1) debt service, (2) to provide a reasonable return on investment for any private financing and (3) operation and maintenance costs. With an annual certification that the facility is adequately maintained, toll revenues left after satisfying (1) through (3) can be used for any other Title 23 or Title 49 purpose.

States must regularly monitor and report the achievement (or progress toward achievement) of project performance goals. The level of detail and frequency of such reporting is still in doubt, but it is likely that this information would need to be reported on an annual basis. The tolling agreement signed with FHWA to obtain tolling authority under this program would terminate at the State's discretion; which in effect gives the tolling agreement an unlimited term.

¹ SAFETEA-LU; Opportunities for State and Other Qualifying Agencies to Gain Authority to Toll Facilities Constructed Using Federal Funds, 71 Fed. Reg. 965 (Jan. 6, 2006).

² SAFETEA-LU, §1604(b), 119 Stat. 1144, 1250 – 53 (2005).

³ "Eligible Toll Facility" is a facility that (i) was an existing toll facility when SAFETEA-LU was enacted, (ii) is modified/constructed after the enactment of SAFETEA-LU or (iii) if it is a new lane added to a previously non-tolled facility, only the new lane.

Value Pricing Pilot Program

The Value Pricing Pilot Program (“VPPP”) was initially created by Section 1012(b) of ISTEA and has been amended by both TEA-21 and SAFETEA-LU. Projects that qualify under this program should reduce congestion, improve system performance and promote mobility through value pricing. Participation in the VPPP is limited to 15 states, local governments or other public authorities. There is no limit on the total number of potential VPPP projects.

Tolls implemented under the VPPP must be variably priced in order to achieve the purpose of the program as described above. This program explicitly allows for the use of tolling on the Interstate System. Although the enabling legislation for the VPPP only requires that revenues generated by a VPPP project be used for projects eligible for assistance under Title 23 of the U.S. Code, FHWA’s VPPP template tolling agreement includes additional toll revenue requirements.⁴ Because FHWA has tried to push these additional toll revenue restrictions in the past, it is possible that FHWA would continue to request them in a VPPP tolling agreement for the Project even though these restrictions are not specifically required by the VPPP enabling legislation.

Reporting requirements vary depending on the type of value pricing project. The exact reporting requirements would be set forth under the VPPP tolling authorization agreement. At a minimum, a State DOT would likely be required to report traffic volumes, toll revenues and similar information to FHWA every two years. The VPPP enabling legislation does not limit the term of any VPPP tolling agreements. Additionally, the FHWA template tolling agreement for VPPP projects does not include an end date for tolling authorization.

Interstate System Reconstruction and Rehabilitation Pilot Program

The Interstate System Reconstruction and Rehabilitation Pilot Program was initially created by Section 1216(b) of TEA-21.⁵ Its purpose is to provide a means by which a state may collect tolls on a highway, bridge or tunnel on the Interstate System for the purpose of reconstructing and rehabilitating Interstate highway corridors that could not otherwise be adequately maintained or functionally improved without the collection of tolls. This program is limited to 3 pilot projects. Each of the pilot projects must be located in a different state. FHWA has filled two of the program slots with projects in Virginia and Missouri; leaving a single slot available.

Unlike the VPPP and ELDP discussed above, this program does not require variable tolling. Tolls from the tolled facility must, (1) be used for debt service, (2) to

⁴ The VPPP template tolling agreement would require a State DOT to use Project toll revenues for “operating costs of the project (including project implementation costs; mitigation measures to deal with adverse financial effects on low-income drivers; the proper maintenance of the facility; any reconstruction, rehabilitation, restoration, or resurfacing of the facility; any debt service incurred in implementing the project; a reasonable return on investment of any private entity financing the project) and other projects eligible for assistance under title 23, United States Code.”

⁵ TEA-21, §1216(b), 112 Stat. 107, 212 - 214 (1998).

provide a reasonable return on investment for any private financing and (3) operation and maintenance costs. Unlike the ELDP (which shares these three revenue restrictions) and the VPPP, the enabling legislation for the Interstate System Reconstruction and Rehabilitation Pilot Program does not address the use of excess toll revenues for other projects.

The TEA-21 enabling legislation does not include any specific reporting requirements. The enabling legislation does, however, require regular audits to be conducted in order to ensure compliance with the toll revenue usage requirements discussed below. Projects authorized under this program have an unlimited term. In a 1999 Federal Register notice, FHWA clarified that toll projects under this program must be tolled for a minimum of 10 years.⁶

⁶ TEA-21; Implementation Guidance for the Interstate System Reconstruction and Rehabilitation Pilot Program; Solicitation for Candidate Proposals, 64 Fed. Reg. 6734 (Feb. 10, 1999).

Memorandum

Subject: SEP 15 Application
Lease and Concession of Delaware Turnpike

Date: October 27, 2005

From: Michael T. Saunders
Program Manager

RECEIVED

NOV 07 2005

Reply to
Attn. of:
HOA-3

To: Raymond J. McCormick
Division Administrator
Dover, DE

RUMMEL, KLEPPER & KAHL, LLP

We have completed our review of Delaware DOT's (DelDOT) "Delaware Turnpike Lease and Concession Project-Request for SEP-15 Approval", as transmitted by your September 13, 2005 memorandum. Based on our understanding of the proposal as it relates specifically to the lease and concession of the Delaware Turnpike, we have concluded that no deviations from current law are proposed and SEP-15 approval is not required.

However, as noted below, the proposal states that DelDOT may include in the lease other parts of the Delaware Interstate system and that these segments may be operated and maintained by the concessionaire under the lease. This is not permitted under Title 23 or the current toll agreement, and a SEP-15 waiver should be sought if DelDOT is interested in doing this.

We have the following comments on the proposal:

Use of Rent Proceeds: Based on the description of how the rent proceeds will be used, it appears that DelDOT will use up to 95% of the proceeds for Title 23 purposes. This would satisfy the purposes of 23 U.S.C. 156. Since the Turnpike will be leased pursuant to a competitive process, the Rent payable under the lease is deemed to meet the "fair market value" test in Section 156(a). There is no requirement for FHWA approval of a State's lease or sale of Federally funded real property unless the transaction is for less than fair market value.

Use of Toll Proceeds: As stated in DelDOT's application, 23 U.S.C. 129(a)(3) requires that all toll revenues received from the operation of the relevant toll facility be used first for debt service, for reasonable return on investment for any private person financing the project and for the costs necessary for the operation and maintenance of the toll facility, including reconstruction, restoration, and rehabilitation. That section further provides that a State may use any toll revenues in excess of the amounts required ... for any purpose for which Federal funds may be obligated by a State under Title 23.



The lease provision appears to satisfy the requirements of 23 U.S.C. 129(a)(3) and the FHWA/DeIDOT toll agreement.

Please note that under 23 U.S.C. 129(a)(3) our toll agreement can only be with a State Department of Transportation or other public authority that may have jurisdiction over the facility. FHWA cannot enter into an agreement with a private party, although this would be possible with a SEP-15 waiver. It is unclear if such a change is being requested here, but we believe in any case that it is not necessary to amend the toll agreement in this regard. There is nothing in the agreement or the law which prevents DeIDOT from assigning the revenues to a third party as long as the revenues are used in accordance with 23 U.S.C. 129.

Lease Terms: The application recognizes the Federal regulations set forth in 23 CFR 710.407(a) that require that any lease of property financed with Federal funds contain provisions to ensure the safety and integrity of the facility. While the Lease has not been completed, the application includes a commitment by DeIDOT to include a number of provisions that, if included, will satisfy this requirement.

We recommend that the lease specifically cite any environmental maintenance commitments that might have been made with respect to the Turnpike, if applicable. These might include: mowing restrictions for endangered plants or nesting birds, or maintaining drainage structures in a particular manner.

Also, we recommend that the lease specify the process to be utilized for raising tolls, since low income populations might be disproportionately impacted by toll increases or a change in toll collection procedures that might eliminate cash payments.

Environmental Impact: As stated in the application, and as provided in 23 CFR 710.403(c), a State Transportation Department must evaluate the environmental effects of disposal and leasing actions requiring FHWA approval as provided in 23 CFR 771.

If, as is anticipated, FHWA approval is not needed for the lease transaction, then FHWA environmental approval would not be needed. If FHWA approval is needed for the lease transaction, then the FHWA will make an appropriate environmental determination in accordance with 23 CFR 771. It appears that the action would qualify as a categorical exclusion under this regulation.

Other Comments: It is stated in the application that DeIDOT may include in the lease other parts of the Delaware Interstate system including the non-tolled portion of Interstate 95 from Route 141 to the Delaware/Pennsylvania state line, Interstate 295 and Interstate 495 ("Additional Leased Facilities"). The application further states that the lease will require that the Concessionaire make additional improvements to the Turnpike and maintain the Turnpike and the "Additional Leased Facilities", and will be responsible for financing such improvements and operation and maintenance costs from its own funds or revenues from its operation of the Turnpike.

Pursuant to 23 USC 129, the toll revenues must first be applied to the debt service, operations and maintenance, and return on private investment for projects on the facility (i.e. the Delaware Turnpike). Any excess revenues can be used for Title 23 eligible projects, but this does not

include operations and maintenance. Thus, DeIDOT's proposed use of these funds for this purpose on facilities other than the Delaware Turnpike is not permitted under Title 23 or the current toll agreement.

If application is made, we would consider granting a SEP-15 waiver to enable the use of the toll revenues from the Delaware Turnpike for the operation and maintenance of these other facilities.



The Use of “63-20” Nonprofit Corporations In Infrastructure Facility Development

By Karen J. Hedlund, Esq.

May 2001

I. ADVANTAGES OF NONPROFIT CORPORATIONS IN DEVELOPMENT OF INFRASTRUCTURE FACILITIES

The use of nonprofit corporations (sometimes referred to as “63-20 Corporations”) in structuring public/private infrastructure financings has recently attracted a great deal of attention. Its use is being promoted as a way to preserve the ability for a project to be financed with tax-exempt bonds, while maintaining for both the public and private participants most of the benefits of private development.

Nonprofit corporations have long been used as a vehicle to finance the construction of public buildings, including hospitals, court houses and schools. Historically, such projects have been accomplished through the use of nonprofit corporations in order to avoid statutory debt limitations and other restrictions. More recently, private developers in association with public agencies around the country have begun to utilize the nonprofit structure to develop major transportation projects, particularly those involving innovative contracting and public-private partnerships. Examples include Virginia’s Pocahontas Parkway, South Carolina’s Southern Connector, the new Las Vegas Monorail, and the proposed Tacoma Narrows Bridge and California’s SR 125 toll road projects.

The advantages of using a nonprofit sponsor to undertake a public/private partnership include, among other things: (a) the ability to create a governing structure that includes representatives from both the public and private sectors; (b) facilitating the transfer to the private sector of significant project risk while preserving the ability to finance the project through the issuance of tax-exempt debt if necessary; (c) insulating public agency sponsors from financial or other liability; (d) giving an affected community more direct control over key decisions and key project aspects; (e) the ability to receive and utilize federal, state and local government grants or loan proceeds; (f) enabling participation by other non-profit organizations; (g) avoiding the need for special legislation to implement a project; and (h) combining the relative strengths of the public sector with the private sector’s value added efficiency and innovation in ideas.

II. BASIC CHARACTERISTICS

A nonprofit corporation is a private, nonstock corporation that may be formed under the nonprofit corporation act of a state. The formation does not require special legislation, nor does it require a referendum in the local or sponsoring jurisdiction. A nonprofit corporation may be formed for any lawful purpose other than for pecuniary profit, including, without limitation, any charitable, benevolent, educational, civic, or scientific purpose. No dividends are paid and no part of the income or profit of a nonprofit corporation may be distributed to its members, trustees or officers. Nonprofit corporations are regulated by the State Attorney General for compliance with the nonprofit corporation act, by state tax authorities for compliance with the requirements relating to their state income tax exemption and by the Internal Revenue Service for compliance with the requirements relating to their federal income tax exemption, and the issuance of tax-exempt debt.

When public agency members authorize the formation of a nonprofit corporation, such members can restrict the purposes or powers of the nonprofit in its certificate of incorporation. The corporation may have members, and each member may be given the right to appoint one or more trustees. The provisions of these articles of incorporation and the bylaws of the corporation may not be amended without the approval of the board of trustees.

III. FORMATION OF A NONPROFIT CORPORATION

A nonprofit corporation is formed in the same manner as business corporation. One or more individuals, corporations or corporate entities may act as incorporators of a nonprofit corporation by executing and filing in the office of the Secretary of State a certificate of incorporation. The completion of the organization of the corporation includes the adoption of bylaws and the appointment of trustees and officers. The method of electing or appointing trustees may be set out in the certificate of incorporation or in the bylaws, and may include election or appointment by members or classes of members or by the board itself.

The initial bylaws of a nonprofit corporation are adopted by the board at its organizational meeting. Thereafter, the board has the power to make, alter and repeal bylaws unless that power is reserved to the members (if the corporation has members) in the certificate of incorporation or the bylaws. The members may prescribe in the bylaws that any bylaw made by them shall not be altered or repealed by the board.

IV. GOVERNANCE OF A NONPROFIT

Individual members of the board of trustees may be appointed by members as provided in the Bylaws of the corporation. It is also possible to include private sector representatives on the board, including directors designated by major contracting entities, chamber of commerce and other stakeholders. Thus, members on the board of a nonprofit could be designated by local mayors or city councils, regional or state agencies as appropriate.

Members of the board may serve with or without compensation, but in all events may be reimbursed for reasonable expenses. Directors and officers can also be indemnified by the corporation against third party claims as long as their individual acts were not in breach of duty of loyalty to the corporation, not in good faith or involve a knowing violation of law or the receipt of an improper personal benefit.

Members of a nonprofit corporation are usually, by statute, immune from personal liability for the debts, liabilities or obligations of the corporation.

V. POWERS AND OPERATIONS OF A NONPROFIT CORPORATION

A nonprofit corporation may have broad powers to undertake activities related to its purpose, including (1) the power to sue and be sued, (2) to take and hold by lease, gift, purchase or grant any real or personal property necessary or desirable for carrying out the purposes of the corporation and to purchase, lease or otherwise acquire, own, use and otherwise deal in real or personal property, (3) to sell, convey, mortgage, create a security interest in, lease, exchange, transfer and otherwise dispose of its property and assets, (4) make contracts and guarantees and incur liabilities, borrow money, issue bonds and secure any of its obligations by mortgage or security interest in its property, franchises and income, and (5) participate with others in any corporate entity, partnership, limited partnership, joint venture, or other association, or in any transaction or arrangement which the participating corporation would have power to conduct by

itself, and (6) have an exercise all other powers necessary to convenient to effect any of the purposes for which the corporation is organized.

An nonprofit would thus have the power to:

- acquire a project site and develop it through contracts with private contractors for the design and construction of the project facilities;
- enter into agreements with public and/or private entities for financing of the facilities; and
- enter into agreements with third parties for operation or use of the project facilities.

VI. FINANCING OF THE PROJECT; ISSUANCE OF TAX-EXEMPT DEBT

The use of a nonprofit project sponsor could facilitate the qualification of the project to receive public funds since the revenues of the project will not inure to any private party. It may also be possible for the nonprofit to issue public or privately-placed debt if the nonprofit can enter into fixed and certain, long-term contracts for the use of the facility.

Such debt may be issued on a tax-exempt basis, which would result in significant savings in financing costs to the project. Notwithstanding the fact that the nonprofit corporation is a private corporation, it may qualify to issue tax-exempt debt if it satisfies certain IRS requirements, including those set forth in Rev. Rul. 63-20 and Rev. Proc. 82-26, as follows:

- a) The corporation must engage in activities which are essentially "public in nature."
- b) It must be not organized for profit.
- c) The corporate income must not inure to any private person.
- d) The State or political subdivision must have a "beneficial interest" in the corporation while the indebtedness remains outstanding.
- e) The corporation must be approved by the State or the political subdivision, which must also approve the specific obligations issued by the corporation.
- f) Unencumbered legal title in the financed facilities must vest in the governmental unit after the bonds are paid.

The rules for determining whether the governmental unit has the requisite "beneficial interest" in the nonprofit corporation are likewise quite straightforward.

- a) The governmental unit must have exclusive beneficial possession and use of at least 95% of the fair market value of the facilities; *or*
- b) If the nonprofit corporation has exclusive beneficial use and possession of 95% of the fair market value of the facilities, the governmental unit appoints 80% of the members of the board of the corporation and has the power to remove and replace members of the board; *or*
- c) The governmental unit has the right at any time to get unencumbered title and exclusive possession of the financed facility by defeasing (paying off or providing for payment of) the bonds.

VII. CONTRACTUAL ARRANGEMENTS

In a project financed through a "63-20" nonprofit corporation, the non-profit corporation, rather than the private developer, will generally be the nominal owner and operator of the project. It is the party that will, from inception or by assignment, own the franchise or other development rights to develop the project; it may be the contracting party with respect to the design, construction and supply contracts; and it will almost always be the party that contracts for maintenance and operations.

The key agreements will be as follows:

Franchise or Development Agreement

Under most State privatization laws, the franchise or development agreement is the central contract under which the State or local transportation agency will grant to a private party rights to develop the toll road, rail line or other transportation project. The franchise may be awarded in response to an RFP from the government agency or as a result of negotiations with respect to an unsolicited proposal.

The parties to the franchise agreement can be (i) the governmental unit (the "Agency") and the private project proposer (the "Developer") or (ii) the Agency and the nonprofit corporation. If the Developer is the initial franchisee, it will usually assign the franchise or development agreement to the nonprofit corporation prior to closing the financing.

The franchise or development agreement will typically address the following issues, among others:

- geographic extent of development rights
- protection from competitive facilities
- standards for design, construction, operation and maintenance
- contract requirements
- right of way acquisition
- flow of funds
- interoperability
- bonding, insurance and indemnification
- defaults, remedies and termination, and
- lenders rights.

Project Development Agreement

The Project Development Agreement, sometimes called a Management Agreement, is the agreement between the nonprofit corporation and the Developer. This entity is sometimes structured as a limited liability company owned by the design and construction firms interested in building and/or operating the project.

Under the Project Development Agreement, a private Project Manager may act as the agent of the nonprofit corporation to negotiate and oversee the design and construction contracts (usually a design/build contract) as well as the operating and maintenance contracts. This is also the entity that will be responsible for all pre-closing tasks, such as permitting and preliminary design.

Design/Build Agreement

If the project is to be built under a design/build procurement, this contract may be entered into between the nonprofit corporation and the entity or joint venture undertaking both design and construction responsibilities. Design/build arrangements can enhance the financing because of their fixed price and completion date guarantees. (Affiliations between the Developer/Project Manager and the Design/Build team can raise conflict of interest questions that have to be appropriately analyzed, especially when the private parties have no equity at risk in the project.)

Operations and Maintenance Agreements

For tollroad projects, a toll operations agreement will be between the nonprofit corporation and a private toll operating entity, which may or may not have responsibility for maintenance of the roadway as well. These contracts must be structured to comply with the IRS "management contract" rules which restrict the term of the agreement and the ability to award incentive compensation. In some projects, the transportation agency may assume some or all maintenance responsibilities.

For a rail or transit project, the nonprofit corporation would enter into an operating contract with a private operating company. Long-term maintenance could also be part of the design-build contract.

Trust Indenture and Financing Agreements

The nonprofit corporation will issue the project debt pursuant to a trust indenture between the corporation and a trustee for the bondholders. (No other tax-exempt issuer need be involved, since the "63-20" nonprofit itself issues the debt "on behalf of" the governmental unit.) If the government is making a financial contribution or loaning any money into the project, there may also be a separate financing agreement with the Agency or a state infrastructure bank. Contractors or other private entities providing subordinated debt may also be a party the Financing Agreement.

The Trust Indenture will contain rate covenants for protection of bondholders. Either the Trust Indenture or the Financing Agreement will also contain conditions to disbursement of bond proceeds.

The trustee may or may not have a security interest in real or personal property associated with the project. The lender's basic security will be the rights of the nonprofit corporation to operate the project and collect toll revenues or fares for the franchise period under the franchise agreement.

VIII. ISSUES FOR GOVERNMENTAL UNIT: CONTROL V. LIABILITY

In a "63-20" project, the Agency may face a dilemma. If the Agency wants the nonprofit corporation to perform as its true "alter ego," it may want to take steps to insure it has the ability to exercise direct control. It could do this through reserving the right to appoint directors, or requiring Agency representation on the board. Doing so, however, may subject the Agency to legal or political liability in the event the project incurs financial difficulties. As a result, many public agencies elect to minimize their formal involvement with the nonprofit corporation, treating the nonprofit corporation as if it were a private party.

Nevertheless, the Agency may desire to exercise the same degree of control over the private parties as it would were there not this intervening entity. Typically this is done by giving the Agency rights under the franchise agreement with respect to approval of contracts and subcontracts entered into by the nonprofit corporation. How strong the approval rights are may depend largely on whether the Agency or the state infrastructure bank is making its own financial contribution to the project. In addition, the Agency may require the nonprofit corporation and its contractors to meet various conditions prior to commencement of construction or acceptance of the facility upon completion. The Agency will also want detailed reporting during both construction and operations.

IX. ISSUE FOR DEVELOPER: PROTECTING RIGHTS TO MANAGE DEVELOPMENT AND CONSTRUCTION

Typically the Developer will play the lead role in negotiating all the project agreements, without much substantive participation by the nonprofit corporation. The Developer will generally seek very broad authority vis a vis the nonprofit corporation to manage development, construction and operation under the Management Agreement. The Agency, on the other had, is going to want to ensure that all the substantive responsibilities of the nonprofit corporation under the franchise agreement are backed by obligations of the private contracting parties under the Management Agreement, the Design/Build Contract and the Operating and Maintenance Agreements, including provision of performance bonds and guarantees.

X. ISSUES FOR NONPROFIT: AVOIDING PERSONAL LIABILITY

The initial primary concern of the nonprofit corporation is avoiding liability, particularly personal liability of its board members. They may try to obtain broad indemnification from both the Agency and the private parties. Officers and director's insurance is advisable, but sometimes difficult to get for a start-up entity. The nonprofit corporation should be represented by separate counsel, which may be the bond counsel responsible for drafting the trust indenture. The nonprofit corporation will also need some source of financial support for any pre-closing costs that are not contingent. This can come from the private entities or from the Agency.

Over the long-term, this entity will need some staffing. In some transactions, this can be provided by the Agency, which can give the Agency no small measure of practical control over the affairs of the nonprofit corporation. Alternatively, its duties will be carried out through the Developer/Project Manager, acting as its agent under the Management Agreement.

XI. CONCLUSION

To insure the long-term success of a 63-20 financing, the role of the nonprofit corporation must be properly understood by all the parties, including the private project sponsors as well as the authorizing governmental agency. Unlike certain prior uses of "63-20" corporations to facilitate public financings, in a public/private venture, the nonprofit corporation will not just be a passive financing conduit. It will have long-term construction and operating responsibilities.

The fact that it is not formally under the control of either the governmental unit or any private party, means that all of the parties need to pay strict attention to their contractual rights under all the project documents. And further, since in a tax-exempt transaction, the private party has no long term equity interest in the project to protect, it is important that the project contracts grant the public agency participant an appropriate measure of supervision and control throughout the life of the project.

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PART K

38 Section 1. Legislative intent. It is desirable to authorize the
39 department of transportation and the thruway authority to deliver a
40 limited number of projects through the use of design-build. Design-build
41 project delivery is a proven method for the delivery of transportation
42 projects. The federal government has authorized the use of design-build
43 for federal-aid transportation projects and over thirty other states
44 have authorized design-build contracts. The use of design-build could
45 result in faster, less-costly project delivery. Although design-bid-
46 build will remain the most appropriate method to deliver most transpor-
47 tation projects, this act will allow the department of transportation
48 and the thruway authority to evaluate the most appropriate use of
49 design-build through a pilot program.

50 § 2. The highway law is amended by adding a new section 38-a to read
51 as follows:

52 § 38-a. Design-build delivery. Notwithstanding the provisions of
53 section thirty-eight of this article, section one hundred thirty-six-a
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1 of the state finance law, section seventy-two hundred ten of the educa-
2 tion law, and the provisions of any other law to the contrary:

3 1. The commissioner, in accordance with the provisions of this
4 section, is authorized to contract for the design and construction of
5 highways, structures, or appurtenant facilities with a single entity
6 (which may be a team comprised of separate entities) for a maximum of
7 twelve capital transportation projects designated by the commissioner at
8 the discretion of the commissioner. Contracts entered into pursuant to
9 the provisions of this section shall be referred to as "design-build
10 contracts".

11 2. An entity selected by the department to enter into a design-build
12 contract shall be selected through a two-step method, as follows:

13 (a) Step one. Generation of a list of entities that have demonstrated
14 the general capability to perform the design-build contract. Such list
15 shall consist of a specified number of entities, as determined by the
16 commissioner, and shall be generated based upon the department's review
17 of responses to a publicly advertised request for qualifications. The
18 department's request for qualifications shall include a general
19 description of the project, the maximum number of entities to be
20 included on the list, and the selection criteria to be used in generat-
21 ing the list. Such selection criteria shall include the qualifications
22 and experience of the design and construction team, organization, demon-
23 strated responsibility, ability of the team or of a member or members of
24 the team to comply with applicable requirements, including the
25 provisions of articles one hundred forty-five, one hundred forty-seven
26 and one hundred forty-eight of the education law, past record of compli-
27 ance with the labor law, and such other qualifications the commissioner
28 deems appropriate which may include but are not limited to project
29 understanding, financial capability and/or record of performance. The
30 department shall evaluate and rate all entities responding to the
31 request for qualifications. Based upon such ratings, the department
32 shall list the entities that shall receive a request for proposals in
33 accordance with paragraph (b) of this subdivision.

34 (b) Step two. Selection of the proposal which is the best value to the
35 state. The department shall issue a request for proposals to the enti-
36 ties listed pursuant to paragraph (a) of this subdivision. If such an
37 entity consists of a team of separate entities, the entities that
38 comprise such a team must remain unchanged from the entity as listed
39 pursuant to paragraph (a) of this subdivision unless otherwise approved
40 by the department. The request for proposals shall set forth the

41 project's scope of work, and other requirements, as determined by the
42 commissioner. The request for proposals shall specify the criteria to be
43 used to evaluate the responses. Such criteria shall include the
44 proposal's cost, the quality of the proposal's solution, the qualifica-
45 tions and experience of the design and construction team, and other
46 factors deemed pertinent by the department, which may include, but shall
47 not be limited to, the proposal's project implementation, ability to
48 complete the work in a timely and satisfactory manner, maintainability
49 of the completed project, maintenance of traffic approach, and community
50 impact. Any contract awarded pursuant to this section shall be awarded
51 to a responsible entity that submits the proposal, which, in consider-
52 ation of these and other specified criteria deemed pertinent to the
53 project, offers the best value to the state, as determined by the
54 commissioner.

55 3. Any contract entered into pursuant to this section shall include a
56 clause requiring that any professional services regulated by articles
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1 one hundred forty-five, one hundred forty-seven and one hundred forty-
2 eight of the education law shall be performed by a professional licensed
3 in accordance with such articles.

4 4. Construction for each project undertaken by the commissioner pursu-
5 ant to this section shall be deemed a "public work" to be performed in
6 accordance with the provisions of article eight of the labor law, and
7 subject to enforcement of prevailing wage requirements by the New York
8 state department of labor.

9 5. Each contract entered into by the commissioner pursuant to this
10 section shall comply with the objectives and goals of minority and
11 women-owned business enterprises pursuant to article fifteen-A of the
12 executive law and, for projects receiving federal aid, shall comply with
13 applicable federal requirements for disadvantaged business enterprises.

14 6. Projects undertaken by the commissioner pursuant to this section
15 shall be subject to the requirements of article eight of the environ-
16 mental conservation law, and, where applicable, the requirements of the
17 national environmental policy act.

18 7. The submission of a proposal or responses pursuant to subdivision
19 two of this section or the execution of a design-build contract pursuant
20 to this section shall not be construed to be a violation of section
21 sixty-five hundred twelve of the education law.

22 § 3. The public authorities law is amended by adding a new section
23 359-b to read as follows:

24 § 359-b. Design-build delivery. Notwithstanding any other provisions
25 of law to the contrary: 1. The authority, in accordance with the
26 provisions of this section, is authorized to contract for the design and
27 construction of highways, structures, or appurtenant facilities with a
28 single entity (which may be a team comprised of separate entities) for a
29 maximum of five capital transportation projects designated by the
30 authority, at the discretion of the authority. Contracts entered into
31 pursuant to the provisions of this section shall be referred to as
32 "design-build contracts".

33 2. An entity selected by the authority to deliver a project through a
34 design-build procedure shall be selected through a two-step method, as
35 follows:

36 (a) Step one. Generation of a list of entities that have demonstrated
37 the general capability to perform the design-build contract. Such list
38 shall consist of a specified number of entities, as determined by the
39 authority, and shall be generated based upon the authority's review of
40 responses to a publicly advertised request for qualifications. The
41 request for qualifications shall include a general description of the
42 project, the maximum number of entities to be included on the list, and
43 the selection criteria to be used in generating the list. Such selection

44 criteria shall include the qualifications and experience of the design
45 and construction team, organization, demonstrated responsibility, abili-
46 ty of the team or of a member or members of the team to comply with
47 applicable requirements, including the provisions of articles one
48 hundred forty-five, one hundred forty-seven and one hundred forty-eight
49 of the education law, past record of compliance with the labor law, and
50 such other qualifications the authority deems appropriate which may
51 include, but are not limited to project understanding, financial capaci-
52 ty and/or record of performance. The authority shall evaluate and rate
53 all entities responding to the request for qualifications. Based upon
54 such ratings, the authority shall list the entities that shall receive a
55 request for proposals in accordance with paragraph (b) of this subdivi-
56 sion.

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1 (b) Step two. Selection of the proposal which is the best value to the
2 authority. The authority shall issue a request for proposals to the
3 entities listed pursuant to paragraph (a) of this subdivision. If such
4 an entity consists of a team of separate entities, the entities that
5 comprise such a team must remain unchanged from the entity as listed
6 pursuant to paragraph (a) of this subdivision unless otherwise approved
7 by the authority. The request for proposals shall set forth the
8 project's scope of work, and other requirements, as determined by the
9 authority. The request for proposals shall specify the criteria to be
10 used to evaluate the responses. Such criteria shall include the
11 proposal's cost, the quality of the proposal's solution, the qualifica-
12 tions and experience of the design and construction team, and other
13 factors deemed pertinent by the authority, which may include, but shall
14 not be limited to, the proposal's project implementation, ability to
15 complete the work in a timely and satisfactory manner, maintainability
16 of the completed project, maintenance of traffic approach, and community
17 impact. Any contract awarded pursuant to this section shall be awarded
18 to a responsible entity that submits the proposal which, in consider-
19 ation of these and other specified criteria deemed pertinent to the
20 project, offers the best value to the authority.

21 3. Any contract entered into pursuant to this section shall include a
22 clause requiring that any professional services regulated by articles
23 one hundred forty-five, one hundred forty-seven and one hundred forty-
24 eight of the education law shall be performed by a professional licensed
25 in accordance with such articles.

26 4. Construction for each project undertaken by the authority pursuant
27 to this section shall be deemed a "public work" to be performed in
28 accordance with the provisions of article eight of the labor law, and
29 subject to enforcement of prevailing wage requirements by the New York
30 state department of labor.

31 5. Each contract entered into by the authority pursuant to this
32 section shall comply with the objectives and goals of minority and
33 women-owned business enterprises pursuant to article fifteen-A of the
34 executive law and, for projects receiving federal aid, shall comply with
35 applicable federal requirements for disadvantaged business enterprises.

36 6. Projects undertaken by the authority pursuant to this section shall
37 be subject to the requirements of article eight of the environmental
38 conservation law, and, where applicable, the requirements of the
39 national environmental policy act.

40 7. The submission of a proposal or responses pursuant to subdivision
41 two of this section or the execution of a design-build contract pursuant
42 to this section shall not be construed to be a violation of section
43 sixty-five hundred twelve of the education law.

44 § 4. No later than 5 years after the effective date of this act, the
45 commissioner of transportation and the thruway authority shall prepare a
46 report to the governor and to the senate and assembly transportation

47 committees evaluating the use of the design-build process for highway
48 projects. Such report shall be prepared in consultation with represen-
49 tatives of the construction and design consultant professions, laborers
50 and others and may subsequently be supplemented in the same manner, as
51 deemed appropriate by the commissioner and the thruway authority.
52 § 5. This act shall take effect immediately.

53 PART L

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1 Section 1. The transportation law is amended by adding a new article
2 23 to read as follows:

3 ARTICLE 23

4 TRANSPORTATION DEVELOPMENT PARTNERSHIPS

5 Section 500. Definitions.

6 501. Authority of the commissioner.

7 501-a. Transportation facilities and transportation services.

8 502. Consideration and solicitation of proposals.

9 503. Criteria for acceptance of proposals.

10 504. General provisions.

11 505. Agreements.

12 506. Condemnation and operation in the event of a default.

13 507. Federal, state and local assistance.

14 508. Police powers; violations of law.

15 509. Powers and duties of the private entity.

16 510. Confidentiality.

17 511. Severability clause.

18 § 500. Definitions. As used in this article, unless a different mean-
19 ing appears from the context, the following terms shall mean:

20 1. "Private entity" means any natural person, association, corpo-
21 ration, limited liability company, partnership, firm, business trust,
22 joint venture, not for profit entity, fund or other private business
23 entity.

24 2. "Public entity" means the state, the federal government, any other
25 state, any bi-state authority or commission, any multi-state authority
26 or commission, any multi-national authority or commission, any nation,
27 any province, or any agency, commission, public authority, public bene-
28 fit corporation, political subdivision or municipality of any thereof,
29 or any other governmental entity, or any combination of any thereof.

30 3. "Transportation facilities" means transportation infrastructure and
31 related facilities or systems, including, but not limited to, highways,
32 railroads, airports, transit facilities, buses, ferries, bridges,
33 tunnels, tracks, vehicles, ports, rolling stock, equipment, parking
34 facilities, transit stations, bus stations, intermodal centers, termi-
35 nals, rest areas, transportation management and information systems,
36 intelligent transportation systems, user fee collection systems, land
37 use control and development, fuel storage, energy systems, security
38 systems, seismic control systems, utility relocation, and rights-of-way
39 associated with each mode or facility.

40 4. "Transportation services" means any transportation-related
41 services, including, but not limited to, the provisions for the movement
42 of people, vehicles, goods or information on, by or through the use of
43 transportation facilities and shall include services provided pursuant
44 to joint services agreements and transportation services agreements.

45 5. "Transportation services agreement" shall mean any agreement
46 entered into by the commissioner pursuant to subdivision one of section
47 five hundred one of this article.

48 6. "Transportation services project" shall mean the planning, acquisi-
49 tion, design, engineering, environmental analysis, construction, recon-
50 struction, restoration, rehabilitation, establishment, improvement,

51 renovation, extension, repair, management, operation, maintenance,
52 development and/or financing of transportation facilities or transporta-
53 tion services, including, but not limited to, agreements relating to the
54 distribution of fare and toll payment media and electronic payment
55 devices, and the establishment and collection of user fees, pursuant to
56 one or more transportation services agreements.

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1 7. "User fees" mean the rates, tolls, fares, rentals or fees or other
2 charges including any adjustments or modifications thereto imposed for
3 or associated with the use and operation of all or a portion of a trans-
4 portation facility or for the receipt of transportation services pursu-
5 ant to a transportation services agreement and any other lease or
6 concession revenue derived therefrom.

7 § 501. Authority of the commissioner. Notwithstanding the provisions
8 of any law to the contrary, the commissioner is authorized to:

9 1. enter into transportation services agreements, on such terms and
10 conditions as the commissioner deems appropriate and subject to the
11 approval of the director of the budget, and in accordance with section
12 one hundred twelve of the state finance law, with public and/or private
13 entities to provide for, or in support of, or associated with, the plan-
14 ning, acquisition, design, engineering, environmental analysis,
15 construction, reconstruction, restoration, rehabilitation, establish-
16 ment, improvement, renovation, extension, repair, management, operation,
17 maintenance, development and/or financing of transportation facilities
18 or transportation services, including, but not limited to, agreements
19 relating to the distribution of fare and toll payment media and elec-
20 tronic payment devices, and the establishment and collection of user
21 fees;

22 2. accept any appropriation, grant or offer of funds or property or
23 other forms of assistance for the purposes of this article from any
24 public and/or private entity and to comply with the terms and conditions
25 thereof;

26 3. accept, pursuant to the terms of a transportation services agree-
27 ment entered into pursuant to subdivision one of this section or other-
28 wise, property or any interests therein and transportation facilities to
29 be maintained as part of the state's transportation system. Any such
30 interest in transportation facilities so acquired shall be deemed to
31 have been acquired by the commissioner pursuant to section thirty of the
32 highway law;

33 4. utilize any of the powers or authority of the commissioner to
34 achieve the purposes of this article;

35 5. finance all or any part of the costs to the department or to any
36 public and/or private entity of any transportation facilities or trans-
37 portation services project, including financing through or accompanied
38 by one or more leases or concessions of such project or any part thereof
39 by or to such entity or entities and/or by or to the department or
40 through or accompanied by one or more leasebacks of such project or any
41 part thereof by or to such entity or entities or by or to the depart-
42 ment;

43 6. utilize the commissioner's eminent domain powers pursuant to the
44 highway law and the eminent domain procedure law, on such terms and
45 conditions as the commissioner deems appropriate, to acquire property
46 required for transportation facilities or transportation services
47 projects that are the subject of transportation services agreements with
48 the commissioner pursuant to this section; and

49 7. provide for the collection of user fees for the use of transporta-
50 tion facilities or for the receipt of transportation services pursuant
51 to this article; provided, however, that such user fees, tolls or other
52 charges may only be imposed in connection with transportation facilities
53 that are currently subject to user fees, tolls or other charges, and/or

54 transportation facilities which are newly constructed or which are
55 improved to increase capacity pursuant to a transportation services
56 agreement entered into pursuant to this article.

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1 § 501-a. Transportation facilities and transportation services.
2 Transportation facilities and transportation services provided pursuant
3 to a transportation services agreement shall not be subject to the
4 provisions of any local law, land use review requirements, real property
5 tax or any other local tax.

6 § 502. Consideration and solicitation of proposals. Notwithstanding
7 any provision of law to the contrary, the commissioner is authorized to
8 publicly solicit proposals from public and/or private entities for the
9 provision of transportation services or for a transportation facility to
10 be acquired, designed, constructed, restored, rehabilitated, estab-
11 lished, improved, renovated, extended, repaired, operated, maintained,
12 developed and/or financed pursuant to a transportation services agree-
13 ment between the commissioner and such an entity or entities. Such
14 solicitation shall include a request for such information as the commis-
15 sioner deems necessary to evaluate responses to the solicitation.

16 § 503. Criteria for acceptance of proposals. Notwithstanding any
17 provision of law to the contrary, the commissioner may enter into a
18 transportation services agreement with the public and/or private entity
19 which, pursuant to section five hundred two of this article, has submit-
20 ted a solicited proposal that is determined by the commissioner to be
21 the best value to the state considering the following:

22 1. a public need for the proposed transportation facility or transpor-
23 tation services;

24 2. the compatibility of the proposed transportation facility or trans-
25 portation service and the scheduling of its development or implementa-
26 tion and its connections to or role within the existing transportation
27 system and the compatibility with the transportation plans of the state
28 and of any affected local jurisdictions;

29 3. the reasonableness of estimated costs, benefits and liabilities of
30 the proposed transportation facility and/or of the delivery of the
31 transportation services;

32 4. the feasibility of the financing of the development, construction,
33 implementation and/or operation of the proposed transportation facility
34 or delivery of the transportation services;

35 5. the qualifications, experience, and financial capacity of the
36 public and/or private entity providing the transportation facility
37 and/or transportation services; and

38 6. whether the proposed transportation facility or transportation
39 services satisfies any other criteria established by the commissioner in
40 the solicitation made pursuant to section five hundred two of this arti-
41 cle.

42 § 504. General provisions. 1. Nothing in this article shall be
43 construed to require the commissioner to accept any proposal, or enter
44 into any agreement with any public and/or private entity.

45 2. Nothing in this article shall be deemed to limit the applicability
46 of existing powers and authority of the commissioner or to require the
47 commissioner to advance any project through the provisions of this arti-
48 cle.

49 3. Notwithstanding any provision of law to the contrary, the depart-
50 ment may pledge any user fee or convey any interest in property under
51 the jurisdiction of the department to a public and/or private entity
52 pursuant to the terms of a transportation services agreement entered
53 into pursuant to subdivision one of section five hundred one of this
54 article.

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1 4. Nothing in this article shall be construed as a waiver of or limi-
2 tation upon the sovereign immunity of the state or any instrumentality
3 thereof.

4 5. The commissioner is hereby authorized to promulgate any rules and
5 regulations deemed necessary or desirable for the implementation of this
6 article.

7 6. Projects undertaken by the commissioner pursuant to this article
8 shall be subject to the requirements of article eight of the environ-
9 mental conservation law, and, where applicable, the requirements of the
10 national environmental policy act.

11 § 505. Agreements. Notwithstanding any provision of law to the contra-
12 ry, the commissioner, through transportation services agreements entered
13 into pursuant to this article, may provide for:

14 1. The planning, acquisition, design, engineering, environmental anal-
15 ysis, construction, reconstruction, rehabilitation, restoration, estab-
16 lishment, improvement, renovation, extension, repair, management, opera-
17 tion, maintenance, development and/or financing of transportation
18 facilities and the provision of transportation services by a single
19 public or private entity or combination of public and private entities;

20 2. User fees and the pledge of all or any portion thereof in
21 connection with any financing thereon consistent with existing contracts
22 or resolutions relating thereto; and

23 3. The crossing of any street, highway, railroad, canal or navigable
24 water course or right-of-way, or other roadway so long as the crossing
25 does not unreasonably interfere with the reasonable use thereof.

26 § 506. Condemnation and operation in the event of a default. In the
27 event a public or private entity defaults on its obligations under a
28 transportation services agreement entered into pursuant to subdivision
29 one of section five hundred one of this article, the commissioner is
30 hereby authorized but not required to acquire, in the name of the people
31 of the state, all or any portion of any transportation facility and/or
32 operation constructed or under construction by such public or private
33 entity, with any damages suffered to the state as a result of such
34 default being an offset to the compensation provided for the acquisition
35 of the transportation facility. The commissioner may also terminate the
36 transportation services agreement and exercise any other rights or reme-
37 dies which may be available to the department at law or in equity. In
38 the event of such acquisition and notwithstanding any provision of law
39 to the contrary, the department is hereby authorized, but is not
40 required, to operate and maintain the facility, including the imposition
41 and collection of applicable user fees.

42 § 507. Federal, state and local assistance. 1. Notwithstanding any
43 provision of law to the contrary, the commissioner, in relation to
44 transportation services agreements entered into pursuant to this arti-
45 cle, may:

46 (a) Take any action to obtain federal, state or local assistance for a
47 transportation facility or transportation service that serves the
48 purposes of this article and may enter into any contracts required to
49 receive such assistance. The commissioner may use such assistance for
50 the implementation of the transportation services agreements entered
51 into pursuant to this article.

52 (b) Agree to make grants or loans or other forms of assistance for the
53 development and/or operation of the transportation facility or provision
54 of the transportation service from time to time from amounts received
55 from the federal, state, or any local government, or any agency or
56 instrumentality thereof.

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1 2. Nothing in this article or in a transportation services agreement
2 entered into pursuant to this article shall be deemed to enlarge, dimin-
3 ish or affect the authority, if any, concerning the debt capacity of the

4 state or any other public entity.

5 § 508. Police powers, violations of law. Notwithstanding any
6 provisions of law to the contrary:

7 1. All police officers of the state and of each affected local juris-
8 isdiction, shall have the same powers and jurisdiction within the limits
9 of such transportation facility as they have in their respective areas
10 of jurisdiction and such police officers shall have access to the trans-
11 portation facility at any time for the purpose of exercising such powers
12 and jurisdiction. This authority does not extend to the private offices,
13 buildings, garages, and other improvements of a private entity to any
14 greater degree than the police power extends to any other private build-
15 ings and improvements.

16 2. To the extent the transportation facility is a highway, road,
17 bridge, tunnel, overpass, or similar transportation facility for motor
18 vehicles, the traffic and motor vehicle laws generally applicable to
19 facilities under the jurisdiction of the department shall apply to
20 conduct on the transportation facility. Punishment for offenses shall be
21 as prescribed by law for conduct occurring on similar transportation
22 facilities in the state.

23 § 509. Powers and duties of the private entity. Notwithstanding any
24 provisions of law to the contrary:

25 1. The private entity shall have all power allowed by law generally to
26 a private entity having the same form of organization as the private
27 entity and shall have the power to develop, maintain and/or operate the
28 transportation facility or provide the transportation service and impose
29 user fees and/or enter into service contracts or other agreements in
30 connection with the use thereof. No user fees may be imposed by the
31 private entity without the prior written approval of the commissioner.

32 2. The private entity may own, lease or acquire any other right to use
33 or develop, maintain and/or operate the transportation facility or
34 provide the transportation service.

35 3. In operating the transportation facility or providing the transpor-
36 tation service, the private entity may make classifications according to
37 reasonable categories for assessment of user fees; provided such private
38 entity gets all approvals required by the terms of the transportation
39 agreement.

40 § 510. Confidentiality. Any request for proposal or agreement entered
41 pursuant to this article shall make provision for the protection of
42 interests and rights in intellectual property and trade secrets.

43 § 511. Severability clause. If any section, clause or provision of
44 this article shall be determined to be unconstitutional or be ineffec-
45 tive in whole or in part, to the extent that it is not unconstitutional
46 or ineffective, it shall be valid and effective and no other section,
47 clause or provision shall, on account thereof, be deemed invalid or
48 ineffective.

49 § 2. The public authorities law is amended by adding a new section 388
50 to read as follows:

51 § 388. Transportation development partnerships. Notwithstanding any
52 other provisions of law to the contrary:

53 1. As used in this section, unless a different meaning appears from
54 the context, the terms:

55 (a) "Private entity" means any natural person, association, corpo-
56 ration, limited liability company, partnership, firm, business trust,

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1 joint venture, not-for-profit entity, fund or other private business
2 entity.

3 (b) "Public entity" means the state, the federal government, any other
4 state, any bi-state authority or commission, any multi-state authority
5 or commission, any multi-national authority or commission, any nation,
6 any province, or any agency, commission, public authority, public bene-

7 fit corporation, political subdivision or municipality of any thereof,
8 or any other governmental entity, or any combination of any thereof.

9 (c) "Transportation facilities" means the thruway system as defined in
10 section three hundred fifty-one of this title.

11 (d) "Transportation services" means any transportation-related
12 services, including, but not limited to, the provisions for the movement
13 of people, vehicles, goods or information on, by or through the use of
14 transportation facilities and shall include services provided pursuant
15 to joint services agreements and transportation services agreements.

16 (e) "Transportation services agreement" shall mean any agreement
17 entered into by the authority pursuant to paragraph (a) of subdivision
18 two of this section.

19 (f) "Transportation services project" shall mean the planning, acqui-
20 sition, design, engineering, environmental analysis, construction,
21 reconstruction, restoration, rehabilitation, establishment, improvement,
22 renovation, extension, repair, management, operation, maintenance,
23 development and/or financing of transportation facilities or transporta-
24 tion services, including, but not limited to, agreements relating to the
25 distribution of fare and toll payment media and electronic payment
26 devices, and the establishment and collection of user fees, pursuant to
27 one or more transportation services agreement.

28 (g) "User fees" mean the rates, tolls, fares, rentals or fees or other
29 charges including any adjustments or modifications thereto imposed for
30 or associated with the use and operation of all or a portion of a trans-
31 portation facility or for the receipt of transportation services pursu-
32 ant to a transportation services agreement and any other lease or
33 concession revenue derived therefrom.

34 2. Notwithstanding the provisions of any law to the contrary, the
35 authority is authorized, as additional corporate purposes thereof, to:

36 (a) solicit proposals for and enter into transportation services
37 agreements, on such terms and conditions as the authority deems appro-
38 priate, with public and/or private entities to provide for, or in
39 support of, or associated with, the planning, acquisition, design, engi-
40 neering, environmental analysis, construction, reconstruction, restora-
41 tion, rehabilitation, establishment, improvement, renovation, extension,
42 repair, management, operation, maintenance, development and/or financing
43 of transportation facilities or transportation services, including, but
44 not limited to, agreements relating to the distribution of fare and toll
45 payment media and electronic payment devices, and the establishment and
46 collection of user fees;

47 (b) accept any appropriation, grant, or offer of funds or property or
48 other forms of assistance for the purposes of this section from any
49 public and/or private entity and to comply with the terms and conditions
50 thereof;

51 (c) accept, pursuant to the terms of a transportation services agree-
52 ment, property or any interest therein and transportation facilities to
53 be maintained as part of the thruway system. Any such interest in trans-
54 portation facilities so acquired shall be deemed to have been acquired
55 by the authority or at the authority's request pursuant to this title;

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1 (d) utilize any of its powers or authority to achieve the purposes of
2 this section including but not limited to the power to issue bonds,
3 notes and other obligations;

4 (e) finance all or any part of the costs to the authority or to any
5 public and/or private entity of any transportation facilities or trans-
6 portation services project, including financing through or accompanied
7 by one or more leases or concessions of such project or any part thereof
8 by or to such entity or entities and/or by or to the authority or any of
9 its subsidiaries or affiliates or through or accompanied by one or more
10 leasebacks of such project or any part thereof by or to such entity or

11 entities or by or to the authority or any of its subsidiaries or affil-
12 iates; and

13 (f) utilize the authority's eminent domain powers, pursuant to
14 sections three hundred fifty-eight and three hundred fifty-eight-a of
15 this title, on such terms and conditions as the authority deems appro-
16 prate, to acquire property required for transportation facilities or
17 transportation services projects.

18 3. Notwithstanding any provision of law to the contrary, the authority
19 may enter into an agreement with the public and/or private entity which
20 has submitted the solicited proposal that is determined by the authority
21 to be the best value to the authority considering the following:

22 (a) a public need for the proposed transportation facility or trans-
23 portation services;

24 (b) the compatibility of the proposed transportation facility or
25 transportation service and the scheduling of its development or imple-
26 mentation and its connections to or role within the existing thruway
27 system and the compatibility with the transportation plans of the
28 authority and of any state or local jurisdictions;

29 (c) the reasonableness of estimated costs, benefits and liabilities of
30 the proposed transportation facility and/or of the delivery of the
31 transportation services;

32 (d) the feasibility of the financing of the development, construction,
33 implementation and/or operation of the proposed transportation facility
34 or delivery of the transportation services;

35 (e) the qualifications, experience, and financial capacity of the
36 public and/or private entity providing the transportation facility
37 and/or transportation services; and

38 (f) whether the proposed transportation facility or transportation
39 services satisfies any other criteria established by the authority in
40 the solicitation made pursuant to this section.

41 4. (a) Nothing in this section shall be construed to require the
42 authority to make any solicitation, accept any proposal or enter into
43 any agreement with any public and/or private entity.

44 (b) Nothing in this section shall be deemed to (1) limit the authori-
45 ty's existing powers and authority, (2) require the authority to accept
46 any project through the provisions of this section, (3) require the
47 authority to enter into any agreements pursuant to this section, or (4)
48 require the authority to take any action that would contradict or impair
49 any existing authority contract or agreement with its bondholders or
50 other entities.

51 (c) Notwithstanding any provision of law to the contrary, the authori-
52 ty may convey any property, or interest therein, in which the authority
53 has an interest to a public and/or private entity pursuant to the terms
54 of a transportation services agreement.

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1 (d) The authority is hereby authorized to promulgate any rules and
2 regulations deemed necessary or desirable for the implementation of this
3 section.

4 (e) Projects undertaken by the authority pursuant to this article
5 shall be subject to the requirements of article eight of the environ-
6 mental conservation law, and, where applicable, the requirements of the
7 national environmental policy act.

8 5. Notwithstanding any provision of law to the contrary, transporta-
9 tion services agreements entered into pursuant to this section may
10 provide for:

11 (a) The planning, acquisition, design, engineering, environmental
12 analysis, construction, reconstruction, restoration, rehabilitation,
13 establishment, improvement, renovation, extension, repair, management,
14 operation, maintenance, development and/or financing of transportation
15 facilities and the provision of transportation services by a single

16 public or private entity or combination of public and private entities;
17 (b) The imposition by the authority, or the establishment by the
18 public and/or private entity with which the authority contracts pursuant
19 to this section, of user fees and the pledge of all or any portion ther-
20 eof in connection with any financing thereon consistent with existing
21 contracts or resolutions relating thereto; and

22 (c) The crossing of any street, highway, railroad, canal or navigable
23 water course or right-of-way, or other roadway so long as the crossing
24 does not unreasonably interfere with the reasonable use thereof.

25 6. In the event a public or private entity defaults on its obligations
26 under a transportation services agreement entered into pursuant to para-
27 graph (a) of subdivision two of this section, the authority is hereby
28 authorized but not required to acquire all or any portion of any trans-
29 portation facility constructed or under construction or development by
30 or in conjunction with such public or private entity, with any damages
31 suffered to the authority as a result of such default being an offset to
32 the compensation provided for the acquisition of the transportation
33 facility. The authority may also terminate the transportation services
34 agreement and exercise any other rights or remedies which may be avail-
35 able to it at law or in equity. In the event of such acquisition and
36 notwithstanding any provision of law to the contrary, the authority is
37 hereby authorized, but not required, to operate and maintain the trans-
38 portation facility, including the imposition and collection of applica-
39 ble user fees.

40 7. Notwithstanding any provisions of law to the contrary, the authori-
41 ty, through transportation services agreements may:

42 (a) take any action to obtain federal, state or local assistance for a
43 transportation facility or transportation service that serves the public
44 purpose of this chapter and may enter into any contracts required to
45 receive such federal assistance. The authority may use such assistance
46 for the implementation of the transportation services agreements entered
47 into pursuant to this article; and

48 (b) agree to make grants or loans or other forms of assistance for the
49 development and/or operation of the transportation facility or provision
50 of the transportation service from time to time from amounts received
51 from the federal, state, or local government, or any agency or instru-
52 mentality thereof.

53 8. Nothing in this section or in a transportation services agreement
54 entered into pursuant to this section shall be deemed to enlarge, dimin-
55 ish or affect the authority, if any, otherwise possessed by the authori-

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1 ty to take action that would impact the debt capacity of the state or
2 any other public entity.

3 9. Notwithstanding any provisions of law to the contrary:

4 (a) the private entity shall have all power allowed by law generally
5 to a private entity having the same form of organization as the private
6 entity and shall have the power to develop and/or operate the transpor-
7 tation facility or provide the transportation service and impose user
8 fees and/or enter into service contracts or other agreements in
9 connection with the use thereof. No user fees may be imposed by the
10 private entity without the authority's prior written approval;

11 (b) the private entity may own, lease or acquire any other right to
12 use or develop and/or operate the transportation facility or provide the
13 transportation service; and

14 (c) in operating the transportation facility or providing the trans-
15 portation service, the private entity may make classifications according
16 to reasonable categories for assessment of user fees provided such
17 private entity get necessary approval in accordance to the terms of the
18 transportation services agreement.

19 10. Any request for proposal or agreement entered pursuant to this

20 section shall make provision for the protection of interests and rights
21 in intellectual property and trade secrets.

22 11. If any clause or provision of this section shall be determined to
23 be unconstitutional or be ineffective in whole or in part, to the extent
24 that it is not unconstitutional or ineffective, it shall be valid and
25 effective and no other clause or provision shall, on account thereof, be
26 deemed invalid or ineffective.

27 § 3. The public authorities law is amended by adding a new section
28 1270-g to read as follows:

29 § 1270-g. Transportation development partnerships. Notwithstanding
30 any other provisions of law to the contrary:

31 1. As used in this section, unless a different meaning appears from
32 the context, the terms:

33 (a) "Private entity" means any natural person, association, corpo-
34 ration, limited liability company, partnership, firm, business trust,
35 joint venture, not-for-profit entity, fund or other private business
36 entity;

37 (b) "Public entity" means the state, the federal government, any other
38 state, any bi-state authority or commission, any multi-state authority
39 or commission, multi-national authority or commission, any nation, any
40 province, or any agency, commission, public authority, public benefit
41 corporation, political subdivision or municipality of any thereof, or
42 any other governmental entity, or any combination of any thereof;

43 (c) "Transportation facilities" shall have the meaning set forth in
44 subdivision fourteen of section twelve hundred sixty-one of this title
45 and shall include, in addition, any project authorized by subdivision
46 nine of section five hundred fifty-three of this chapter;

47 (d) "Transportation services" means any transportation-related
48 services, including, but not limited to, the provisions for the movement
49 of people, vehicles, goods or information on, by or through the use of
50 transportation facilities and shall include services provided pursuant
51 to joint services agreements and transportation services agreements;

52 (e) "Transportation services agreement" shall mean any agreement
53 entered into by the authority pursuant to paragraph (a) of subdivision
54 two of this section;

55 (f) "Transportation services project" shall mean the planning, acqui-
56 sition, design, engineering, environmental analysis, construction,

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1 reconstruction, restoration, rehabilitation, establishment, improvement,
2 renovation, extension, repair, management, operation, maintenance,
3 development and/or financing of transportation facilities or transporta-
4 tion services, including, but not limited to, agreements relating to the
5 distribution of fare and toll payment media and electronic payment
6 devices, and the setting, collection and settlement of user fees pursu-
7 ant to one or more transportation services agreements;

8 (g) "User fees" mean the rates, tolls, fares, rentals, fees or other
9 charges including any adjustments or modifications thereto imposed for
10 or associated with the use and operation of all or a portion of a trans-
11 portation facility or for the receipt of transportation services pursu-
12 ant to the transportation services agreement and any other lease or
13 concession revenue derived therefrom.

14 2. Notwithstanding the provisions of any law to the contrary, the
15 authority is authorized, in addition to its other rights and powers not
16 inconsistent with the provisions of this section, on behalf of itself
17 and/or any of its subsidiaries and affiliates, to:

18 (a) solicit proposals for and enter into transportation services
19 agreements, on such terms and conditions as the authority deems appro-
20 priate, with public and/or private entities to provide for, or in
21 support of, or associated with, a transportation services project;

22 (b) accept any appropriation, grant or offer of funds or property or

23 other forms of assistance for the purposes of this article from any
24 public and/or private entity and to comply with the terms and conditions
25 thereof;

26 (c) accept, pursuant the terms of a transportation services agreement,
27 any property (or any interest therein), including, but not limited to,
28 any such interests in transportation facilities and any property trans-
29 ferred from the city of New York, acting by its mayor alone, needed or
30 useful for or in connection with any transportation services project;

31 (d) issue its notes or bonds, including notes and bonds issued pursu-
32 ant to section twelve hundred seventy-d of this title, to finance all or
33 any part of the costs of any transportation services project;

34 (e) finance all or any part of the costs to the authority or to any
35 public and/or private entity of any transportation facilities or trans-
36 portation services project, including financing through or accompanied
37 by one or more sales or leases or concessions of such project or any
38 part thereof by or to such entity or entities and/or by or to the
39 authority or any of its subsidiaries or affiliates or through or accom-
40 panied by one or more leasebacks of such project or any part thereof by
41 or to such entity or entities or by or to the authority or any of its
42 subsidiaries or affiliates;

43 (f) utilize any of its powers or authority or the power and authority
44 of any of its subsidiaries and affiliates in furtherance of the purposes
45 of this section; and

46 (g) utilize the authority's eminent domain powers, pursuant to the
47 eminent domain procedure law, on such terms and conditions as the
48 authority deems appropriate, to acquire property required for transpor-
49 tation facilities or transportation services projects.

50 3. For any part of a transportation services project located within
51 the city of New York, neither the provisions of section one hundred
52 ninety-seven-c of the New York city charter, relating to a uniform land
53 use review procedure, nor the provisions of any other local law of the
54 city of New York of like or similar tenor or import shall apply to the
55 acquisition of any real property (or any interest therein) for the
56 purposes of any transportation services project by the authority or its

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1 designee then owned by the city nor to the transfer to the authority or
2 its designee for such purposes of the right of use, occupancy, control
3 or possession of any real property (or interest therein), whether pres-
4 ently owned or hereafter acquired by the city; provided in each such
5 case, however, that if at the time of such proposed acquisition or
6 transfer the real property which is the subject of such acquisition or
7 transfer is not then being utilized for a transit or transportation
8 purpose or is not an insubstantial addition to such property contiguous
9 thereto;

10 (a) the authority shall, unless a submission with respect to such
11 property has previously been made and approved as herein provided,
12 submit to the community board for the community district in which such
13 property is located, data with respect to the proposed use of such prop-
14 erty and to the design of any facility proposed to be constructed there-
15 on;

16 (b) such community board shall inform the city council of the city of
17 New York, with copies to the city planning commission of the city of New
18 York and the authority, of its views and recommendations with respect
19 thereto within forty-five days of such submission, and if the community
20 board shall fail to so inform the city council within such period it
21 shall be deemed to have recommended the proposal; and

22 (c) the city council shall, within forty-five days of the recommenda-
23 tion of the community board, approve or disapprove such acquisition or
24 transfer, and if the city council shall fail to act within such period
25 it shall be deemed to have approved the same.

26 4. Each transportation services project shall be considered to be a
27 facility, operation or property of the authority for purposes of all of
28 the provisions of this title, including, but not limited to, the special
29 treatment of such facilities, operations and properties under subdivi-
30 sions eight, eleven and twelve of section twelve hundred sixty-six of
31 this title and the exemptions set forth in section twelve hundred seven-
32 ty-five of this title. A transportation services project shall not be
33 considered a transit project for purposes of this title.

34 5. Notwithstanding any provision of law to the contrary, the authority
35 may enter into a transportation services agreement with the public
36 and/or private entity which has submitted the solicited proposal that is
37 determined by the authority to be the best value to the authority
38 considering the following:

39 (a) a public need for the proposed transportation facility or trans-
40 portation services;

41 (b) the compatibility of the proposed transportation facility or
42 transportation service and the scheduling of its development or imple-
43 mentation and its connections to or role within the existing transporta-
44 tion system and the compatibility with the transportation plans of the
45 authority and of any state or local jurisdictions;

46 (c) the reasonableness of estimated costs, benefits and liabilities of
47 the proposed transportation facility and/or of the delivery of the
48 transportation services;

49 (d) the feasibility of the financing of the development, construction,
50 implementation and/or operation of the proposed transportation facility
51 or delivery of the transportation services;

52 (e) the qualifications, experience, and financial capacity of the
53 public and/or private entity providing the transportation facility
54 and/or transportation services; and

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1 (f) whether the proposed transportation facility or transportation
2 services satisfies any other criteria applied by the authority in the
3 solicitation made pursuant to this section.

4 6. (a) Nothing in this section shall be construed to require the
5 authority to accept any proposal, make any solicitation or request for
6 competitive proposals, or enter into any agreement with any public
7 and/or private entity.

8 (b) Nothing in this section shall be deemed to:

9 (1) supersede or limit the applicability of the authority's existing
10 powers and authority;

11 (2) require the authority to accept any project through the provisions
12 of this section;

13 (3) require the authority to enter into any agreements hereunder; or

14 (4) require the authority to take any action that would contradict or
15 impact an existing authority contract or agreement with its bondholders.

16 (c) Notwithstanding any provision of law to the contrary, the authori-
17 ty may convey any property or interest therein, in which the authority
18 or any of its affiliates or subsidiaries has an interest to a public
19 and/or private entity pursuant to the terms of a transportation services
20 agreement.

21 (d) The authority is hereby authorized to promulgate any rules and
22 regulations deemed necessary or desirable for the implementation of this
23 section.

24 7. Notwithstanding any provision of law to the contrary, transporta-
25 tion services agreements entered into pursuant to this section may
26 provide for:

27 (a) the planning, acquisition, design, engineering, environmental
28 analysis, construction, reconstruction, restoration, rehabilitation,
29 establishment, improvement, renovation, extension, repair, management,
30 operation, maintenance, development and/or financing of transportation

31 facilities and transportation service projects and the provision of
32 transportation services by a single public or private entity or combina-
33 tion of public and private entities;

34 (b) the establishment, levy and collection of user fees and the pledge
35 of all or any portion thereof in connection with any financing thereon
36 consistent with existing contracts or resolutions relating thereto as
37 the authority may deem necessary, convenient or desirable; and

38 (c) the crossing of any street, highway, railroad, canal, navigable
39 water course or right-of-way, or other roadway so long as the crossing
40 does not unreasonably interfere with the reasonable use thereof.

41 8. In the event a public or private entity defaults on its obligations
42 under a transportation services agreement, the authority is hereby
43 authorized but not required to acquire all or any portion of any trans-
44 portation services project constructed by or in conjunction with such
45 public or private entity, with any damages suffered to the authority as
46 a result of such default being an offset to the compensation provided
47 for the acquisition of the transportation services project. The authori-
48 ty may also terminate the transportation services agreement and exercise
49 any other rights or remedies which may be available to it at law or in
50 equity. In the event of such acquisition and notwithstanding any
51 provision of law to the contrary, the authority is hereby authorized,
52 but not required, to operate and maintain the transportation services
53 facility, including the imposition and collection of applicable user
54 fees.

S. 6459

39

A. 9559

1 9. Notwithstanding any provision of law to the contrary, the public
2 entity, through transportation services agreements entered into pursuant
3 to this article, may:

4 (a) take any action to obtain federal, state or local assistance for a
5 transportation facility or transportation service that serves the public
6 purpose of this section and may enter into any contracts required to
7 receive such federal assistance; and

8 (b) agree to make grants or loans or other forms of assistance for the
9 development and/or operation of the transportation facility or provision
10 of the transportation service from time to time from amounts received
11 from the federal, state, or local government, or any agency or instru-
12 mentality thereof.

13 10. Nothing in this section or in a transportation services agreement
14 entered into pursuant to this section shall be deemed to enlarge, dimin-
15 ish or affect the authority, if any, otherwise possessed by the respon-
16 sible public entity to take action that would impact the debt capacity
17 of the state or the affected jurisdictions.

18 11. Notwithstanding any provisions of law to the contrary:

19 (a) the private entity shall have all power allowed by law generally
20 to a private entity having the same form of organization as the private
21 entity and shall have the power to develop and/or operate the transpor-
22 tation facility or provide the transportation service and impose user
23 fees and/or enter into service contracts in connection with the use
24 thereof. No user fees may be imposed by the private entity without the
25 authority's prior written approval;

26 (b) the private entity may own, lease or acquire any other right to
27 use or develop and/or operate the transportation facility or provide the
28 transportation service; and

29 (c) in operating the transportation facility or providing the trans-
30 portation service, the private entity may make classifications according
31 to reasonable categories for assessment of user fees provided they get
32 necessary approval in accordance to the terms of the transportation
33 services agreement.

34 12. Any request for proposal or agreement entered pursuant to this
35 section shall make provision for the protection of interests and rights

36 in intellectual property and trade secrets.

37 13. If any clause or provision of this section shall be determined to
38 be unconstitutional or be ineffective in whole or in part, to the extent
39 that it is not unconstitutional or ineffective, it shall be valid and
40 effective and no other clause or provision shall, on account thereof, be
41 deemed invalid or ineffective.

42 § 4. Notwithstanding the provisions of any law to the contrary, the
43 New York State Bridge Authority, the Niagara Frontier Transportation
44 Authority, the Rochester-Genesee Transportation Authority, the Capital
45 District Transportation Authority and the Central New York Regional
46 Transportation Authority are hereby authorized to enter into agreements
47 with the Commissioner of Transportation, the New York State Thruway
48 Authority, and/or the Metropolitan Transportation Authority for the
49 purposes of this act.

50 § 5. This act shall take effect immediately and shall have been deemed
51 to have been in full force and effect on and after April 1, 2006.

AN ACT concerning revenue.

**Be it enacted by the People of the State of Illinois,
represented in the General Assembly:**

Section 1. Short title. This Act may be cited as the Local Government Facility Lease Act.

Section 5. Definitions. As used in this Act:

"Facility property" means property owned by a municipality with a population of over 500,000 inhabitants, or a unit of local government whose jurisdiction includes territory located in whole or in part within a municipality with a population of over 500,000 inhabitants, that is used by the municipality or other unit of local government for the purpose of an airport, parking, or waste disposal or processing. "Airport", however, does not include any airport property, as defined under Section 10 of the O'Hare Modernization Act.

"Leased facility property" means facility property that is leased to a private entity for continued use for the same airport, parking, or waste disposal or processing purpose.

Section 10. Compliance with applicable ordinances. Each party to whom facility property is leased shall comply with all applicable ordinances of the municipality in which the property is located governing contracting with minority-owned and women-owned businesses and prohibiting discrimination and requiring appropriate affirmative action, to the extent permitted by law and federal funding restrictions, as if the party to whom the property is leased were that municipality.

Section 15. Limitation on the expansion of airport property. Chicago Midway International Airport is facility property used for airport purposes under this Act. No runway of Chicago Midway International Airport shall be expanded beyond

the territory bounded by 55th Street on the north, Cicero Avenue on the east, 63rd Street on the south, and Central Avenue on the west, as those avenues and streets are situated on the effective date of this Act.

Section 20. Use of lease proceeds by lessor.

(a) With respect to any leased facility property used for airport purposes, at least 90% of the net proceeds of the lease shall be expended or obligated by the lessor municipality for:

(i) the construction and maintenance of infrastructure within the municipality;

(ii) contributions to pension funds created for municipal employees; or

(iii) any combination of (i) or (ii).

(b) The amount of net proceeds expended or obligated for item (ii) in subsection (a) may not exceed the amount of net proceeds expended or obligated for item (i) in subsection (a). As used in this Section, "net proceeds" means the gross proceeds less any debt service payments on, and payments to retire, debt that is specifically associated with the leased facility property or otherwise required to be paid out of lease proceeds.

Section 25. Project labor agreements for projects funded by airport lease proceeds. With respect to the construction of public works funded by the proceeds described in Section 20, where the project has an estimated contract value of \$500,000 or more, where there has been a written determination that the public interest in cost, timely and orderly construction, labor stability, and advancement of minority-owned and women-owned businesses and minority and female employment would be served by a project labor agreement, and where not otherwise prohibited by applicable law, the municipality or municipal corporation responsible for implementing the project shall in good faith negotiate a project labor agreement with labor organizations engaged in the construction industry. Any

project labor agreement shall:

(1) set forth effective, immediate, and mutually binding procedures for resolving jurisdictional disputes and grievances arising before completion of work;

(2) contain guarantees against strikes, lockouts, or similar actions;

(3) ensure a reliable source of skilled and experienced labor;

(4) further public policy objectives as to improved employment opportunities for minorities and women in the construction industry to the extent permitted by State and federal law;

(5) be made binding on all contractors and subcontractors on the public works project through inclusion of appropriate bid specifications in all relevant bid documents; and

(6) include such other terms as the parties deem appropriate.

Section 30. Labor neutrality and card check procedure agreement at the leased property. With respect to employees assigned to work on the premises of leased facility property used for airport purposes and who are not otherwise members of an existing bargaining unit cognizable under the National Labor Relations Act, and where not otherwise prohibited by applicable law, the lessee shall negotiate in good faith, with any union that seeks to represent its employees, for a labor neutrality and card check procedure agreement. The agreement shall apply only to employees actually assigned to work on the premises of the leased facility property used for airport purposes and shall have no applicability to employees not so assigned. The agreement shall contain provisions accomplishing the following objectives: resolution by a third party neutral of disagreements regarding bargaining unit scope, inclusions, and exclusions; determination of the existence of majority support for a bargaining agent by means of a card check procedure;

employer neutrality; prohibition of coercion or intimidation of employees by either the employer or the union; and a prohibition on strikes, work stoppages, or picketing for the duration of the agreement.

Section 35. Wage requirements. In order to protect the wages, working conditions, and job opportunities of employees employed by the lessee of leased facility property used for airport purposes to perform work on the site of the leased premises previously performed by employees of the lessor on the site of the leased premises and who were in recognized bargaining units at the time of the lease, the lessee, and any subcontractor retained by the lessee to perform such work on the site of the leased premises, shall be required to pay to those employees an amount not less than the economic equivalent of the standard of wages and benefits enjoyed by the lessor's employees who previously performed that work. The lessor shall certify to the lessee the amount of wages and benefits (or their equivalent) as of the time of the lease, and any changes to those amounts as they may occur during the term of the lease. All projects at the leased facility property used for airport purposes shall be considered public works for purposes of the Prevailing Wage Act.

Section 40. Required offers of employment. As part of any transaction to lease facility property that is used for airport purposes:

(1) the lessee must offer employment, under substantially similar terms and conditions, to the employees of the municipality who are employed, at the time of the lease, with respect to the facility property used for airport purposes; and

(2) the municipality must offer employment in another department, division, or unit of the municipality, under substantially similar terms and conditions, to employees of the municipality who are employed, at the time of the

lease, with respect to the facility property used for airport purposes.

Section 45. Judicial enforcement. The provisions of this Act are judicially enforceable by injunctive relief and an award of actual damages.

Section 50. Home rule preemption; exemption from State Mandates Act.

(a) A home rule unit may not exercise its home rule powers and functions in a manner that is inconsistent with this Act. This subsection is a limitation under subsection (i) of Section 6 of Article VII of the Illinois Constitution on the concurrent exercise by home rule units of powers and functions exercised by the State.

(b) Notwithstanding Sections 6 and 8 of the State Mandates Act, no reimbursement by the State is required for the implementation of any mandate created by this Act.

Section 900. The Property Tax Code is amended by changing Section 15-185 as follows:

(35 ILCS 200/15-185)

Sec. 15-185. Exemption for leaseback property and qualified leased property ~~Leaseback exemption.~~

(a) Notwithstanding anything in this Code to the contrary, all property owned by a municipality with a population of over 500,000 inhabitants, or a unit of local government whose jurisdiction includes territory located in whole or in part within a municipality with a population of over 500,000 inhabitants, shall remain exempt from taxation and any leasehold interest in that property shall not be subject to taxation under Section 9-195 if, ~~for the purpose of obtaining financing,~~ the property is directly or indirectly leased, sold, or otherwise transferred to another entity whose property is not exempt and immediately thereafter is the subject of a

leaseback or other agreement that directly or indirectly gives the municipality or unit of local government (i) a right to use, control, and possess the property or (ii) a right to require the other entity, or the other entity's designee or assignee, to use the property in the performance of services for the municipality or unit of local government. Property ~~The property~~ shall no longer be exempt under this subsection ~~Section~~ as of the date when the right of the municipality or unit of local government to use, control, and possess the property or to require the performance of services is terminated and the municipality or unit of local government no longer has any option to purchase or otherwise reacquire the interest in the property which was transferred by the municipality or unit of local government.

(b) Notwithstanding anything in this Code to the contrary, all property owned by a municipality with a population of over 500,000 inhabitants, or a unit of local government whose jurisdiction includes territory located in whole or in part within a municipality with a population of over 500,000 inhabitants, shall remain exempt from taxation and any leasehold interest in that property is not subject to taxation under Section 9-195 if the property, including dedicated public property, is used by a municipality or other unit of local government for the purpose of an airport or parking or for waste disposal or processing and is leased for continued use for the same purpose to another entity whose property is not exempt.

For the purposes of this subsection (b), "airport" does not include any airport property, as defined under Section 10 of the O'Hare Modernization Act.

Any transaction described under this subsection must be undertaken in accordance with all appropriate federal laws and regulations.

(c) For purposes of this Section, "municipality" means a municipality as defined in Section 1-1-2 of the Illinois Municipal Code, and "unit of local government" means a unit of

local government as defined in Article VII, Section 1 of the Constitution of the State of Illinois. The provisions of this Section supersede and control over any conflicting provisions of this Code.

(Source: P.A. 93-19, eff. 6-20-03.)

Section 905. The Illinois Municipal Code is amended by adding Section 11-102-15 as follows:

(65 ILCS 5/11-102-15 new)

Sec. 11-102-15. Chicago Midway International Airport; application of other Acts. In addition to the provisions of this Division 102, Chicago Midway International Airport is subject to the provisions of the Local Government Facility Lease Act.

Section 910. The Prevailing Wage Act is amended by changing Section 2 as follows:

(820 ILCS 130/2) (from Ch. 48, par. 39s-2)

Sec. 2. This Act applies to the wages of laborers, mechanics and other workers employed in any public works, as hereinafter defined, by any public body and to anyone under contracts for public works.

As used in this Act, unless the context indicates otherwise:

"Public works" means all fixed works constructed by any public body, other than work done directly by any public utility company, whether or not done under public supervision or direction, or paid for wholly or in part out of public funds. "Public works" as defined herein includes all projects financed in whole or in part with bonds issued under the Industrial Project Revenue Bond Act (Article 11, Division 74 of the Illinois Municipal Code), the Industrial Building Revenue Bond Act, the Illinois Finance Authority Act, the Illinois Sports Facilities Authority Act, or the Build Illinois Bond

Act, and all projects financed in whole or in part with loans or other funds made available pursuant to the Build Illinois Act. "Public works" also includes all projects financed in whole or in part with funds from the Fund for Illinois' Future under Section 6z-47 of the State Finance Act, funds for school construction under Section 5 of the General Obligation Bond Act, funds authorized under Section 3 of the School Construction Bond Act, funds for school infrastructure under Section 6z-45 of the State Finance Act, and funds for transportation purposes under Section 4 of the General Obligation Bond Act. "Public works" also includes all projects financed in whole or in part with funds from the Department of Commerce and Economic Opportunity ~~Community Affairs~~ under the Illinois Renewable Fuels Development Program Act for which there is no project labor agreement. "Public works" also includes all projects at leased facility property used for airport purposes under Section 35 of the Local Government Facility Lease Act.

"Construction" means all work on public works involving laborers, workers or mechanics.

"Locality" means the county where the physical work upon public works is performed, except (1) that if there is not available in the county a sufficient number of competent skilled laborers, workers and mechanics to construct the public works efficiently and properly, "locality" includes any other county nearest the one in which the work or construction is to be performed and from which such persons may be obtained in sufficient numbers to perform the work and (2) that, with respect to contracts for highway work with the Department of Transportation of this State, "locality" may at the discretion of the Secretary of the Department of Transportation be construed to include two or more adjacent counties from which workers may be accessible for work on such construction.

"Public body" means the State or any officer, board or commission of the State or any political subdivision or department thereof, or any institution supported in whole or in

part by public funds, and includes every county, city, town, village, township, school district, irrigation, utility, reclamation improvement or other district and every other political subdivision, district or municipality of the state whether such political subdivision, municipality or district operates under a special charter or not.

The terms "general prevailing rate of hourly wages", "general prevailing rate of wages" or "prevailing rate of wages" when used in this Act mean the hourly cash wages plus fringe benefits for training and apprenticeship programs approved by the U.S. Department of Labor, Bureau of Apprenticeship and Training, health and welfare, insurance, vacations and pensions paid generally, in the locality in which the work is being performed, to employees engaged in work of a similar character on public works.

(Source: P.A. 92-16, eff. 6-28-01; 93-15, eff. 6-11-03; 93-16, eff. 1-1-04; 93-205, eff. 1-1-04; revised 1-12-04.)

Section 915. The State Mandates Act is amended by adding Section 8.30 as follows:

(30 ILCS 805/8.30 new)

Sec. 8.30. Exempt mandate. Notwithstanding Sections 6 and 8 of this Act, no reimbursement by the State is required for the implementation of any mandate created by this amendatory Act of the 94th General Assembly.

Section 999. Effective date. This Act takes effect upon becoming law.

AGREEMENT FOR THE OPERATION AND MAINTENANCE
OF
THE CITY OF INDIANAPOLIS, INDIANA
ADVANCED WASTEWATER TREATMENT FACILITIES

THIS AGREEMENT FOR THE OPERATION AND MAINTENANCE OF THE CITY OF INDIANAPOLIS, INDIANA, ADVANCED WASTEWATER TREATMENT FACILITIES ("Agreement"), dated as of December 20, 1993, and executed by (i) the City of Indianapolis ("City"), acting by and through the Department of Public Works of the City of Indianapolis ("Department"), (ii) White River Environmental Partnership, an Indiana general partnership having its principal place of business in Indianapolis, Indiana ("Contractor"), (iii) LAH White River Corporation, JMM White River Corporation and IWC Services, Inc. (collectively, "Partners"), and (iv) IWC Resources Corporation, GWC Operational Services, Inc., JMM Operational Services, Inc., Lyonnaise American Holdings, Inc., Lyonnaise des Eaux-Dumez, GWC Corporation ("GWC") and Montgomery Watson Americas, Inc. (collectively, "Parent Companies"),

WITNESSETH

PREAMBLE

WHEREAS, the City owns and is responsible for the operation and maintenance of the Belmont and Southport Advanced Wastewater Treatment Facilities (collectively, "AWT Facilities," as described in Appendix "A" hereto); and

WHEREAS, the City desires to have the AWT Facilities maintained and operated in the most efficient manner possible, while complying with all Federal, State and local laws, rules and regulations; and

WHEREAS, the efficient operation and maintenance of the AWT Facilities require unique and specialized professional skills together with experience in new technologies and engineering expertise; and

WHEREAS, the City desires to maintain ownership of the AWT Facilities and to contract for operation and maintenance of the AWT Facilities with a private contracting firm which has the specialized professional skills and experience to operate the AWT Facilities in the most efficient manner possible; and

WHEREAS, the Contractor responded to the Request for Proposal issued by the City for operation and maintenance of the AWT Facilities; and

WHEREAS, the Contractor has available to it experienced professionals in the business of supplying operation, maintenance and management services for facilities such as the AWT Facilities; and

WHEREAS, the City and the Contractor wish to enter into this Agreement setting forth their respective rights, duties, privileges and responsibilities,

NOW, THEREFORE, in consideration of the mutual promises and commitments hereinafter described, the City and the Contractor AGREE as follows:

ARTICLE I. DEFINITIONS

Section 1.01. Agreement Year. The period commencing with the Effective Date and ending at 12:00 midnight on the anniversary date of the Effective Date and, for each successive Agreement Year thereafter, the period commencing on 12:00 midnight on the anniversary date of the Effective Date and ending on 12:00 midnight of the next succeeding anniversary date of the Effective Date.

Section 1.02. Annual Fee. The fee as described in Article VIII of this Agreement.

Section 1.03. AWT Facilities. The City of Indianapolis Advanced Wastewater Treatment Facilities, consisting of the Belmont Plant and the Southport Plant, and any additions to and interconnection between the two plants or replacements thereof (including Capital Improvements), owned by the City and operated and maintained by the Contractor, all as further described in Appendix A to this Agreement.

Section 1.04. Beginning Inventory. The spare parts, tools, materials and supplies at the AWT Facilities on the Effective Date, which are intended to be used by the Contractor and are identified in Appendix C to this Agreement.

Section 1.05. Capital Expenditures. The cost of new Capital Improvements and major repairs and replacements, including material and contract labor, for the AWT Facilities, the individual cost of which exceeds \$25,000.

Section 1.06. Capital Improvements. The improvements to the AWT Facilities made pursuant to the City's Capital Improvement Plan, including all Equipment and components thereof, and major repairs and replacements to the AWT Facilities resulting from Capital Expenditures.

Section 1.07. Contractor's Proposal. The Proposal for Contract Operations and Maintenance of the Advanced Wastewater Treatment Facilities submitted by the Contractor to the City, August 26, 1993, as supplemented and amended by letters from the Contractor to Joseph E. DeGroff, on the City's behalf, dated November 5 and November 9, 1993.

the Additional Services require approval by the Board of Public Works, the City shall promptly seek such approval.

ARTICLE IX. PERSONNEL

Section 9.01. Contractor to Interview AWT Employees. On or before the Effective Date, the Contractor shall complete its interviewing of all employees of the AWT Facilities who are interested in and apply for a position with the Contractor. The Contractor shall use its best efforts to employ all interested and qualified employees of the AWT Facilities as its employees at the AWT Facilities, consistent with its intent to have an initial staffing level of 206 employees. In addition to the employees hired by the Contractor to work at the AWT Facilities, the Contractor shall offer employment to existing AWT employees in order to fill thirty (30) positions with entities owned by the Partners or affiliated companies. The Contractor shall have the right to require substance abuse tests of all persons to whom it offers a position of employment and the right to reject for employment any person not passing or declining to take such a test.

Section 9.02. Comparable Employment. The Contractor shall provide current City AWT Facilities employees with a total package of compensation and benefits equivalent to or better than compensation and benefits provided by the City. The Contractor acknowledges that it has agreed to bargain with the employees' collective bargaining representatives to determine the specific terms and conditions of employment to which bargaining unit employees will be subject. The Contractor shall provide the City with wages and benefits specifics at least ten (10) days prior to the Effective Date of this Agreement, subject to ratification of the collective bargaining agreement with the union. All employees shall receive year for year credit for years employed by the City for purposes of eligibility and vesting in the Contractor's benefit programs. All pre-existing conditions of employees and dependents currently covered by the City's health insurance program shall be covered on and after the Effective Date under the Contractor's health insurance program.

Section 9.03. Personnel Changes by Contractor. If at any time subsequent to the Effective Date of this Agreement the Contractor makes a determination to reduce the number of employees at the AWT Facilities, the Contractor shall use its best efforts to place displaced employees in comparable capacities at other facilities operated by the Contractor, the Partners or the Parent Companies. The City will attempt to place any employees displaced by the Contractor in other employment opportunities with the City for a period of one year following the employee's displacement.

Section 9.04. Worker Assistance Program. The Contractor shall pay Three Hundred Thousand Dollars (\$300,000) to support a

displaced worker assistance program ("Worker Assistance Program") which will be designed and administered by the Contractor to assist displaced workers with the process of employment change ("Fund"). The Fund will be used to support a number of initiatives including, without limitation, specialized training programs, assistance with job search skills, an outplacement allowance and career and outplacement counseling programs, consistent with the terms of the Schedule of Outplacement Services, which is attached hereto and incorporated by reference as Appendix F. The Contractor shall report at least monthly to the City on the operation of the Worker Assistance Plan and the use of the Fund. Any moneys remaining in the Fund at the end of the first Agreement Year shall be credited to the Annual Fee for the second Agreement Year.

Section 9.05. Nondiscrimination in Employment. The Contractor and any subcontractor shall not discriminate against any employee or applicant for employment to be employed in the performance of this Agreement, with respect to hire, tenure, terms, conditions or privileges of employment, or any other matter directly or indirectly related to employment, because of race, religion, color, age, sex, handicap, national origin, ancestry, disabled veteran status or Vietnam-era veteran status. Breach of this provision may be regarded as a material breach of the Agreement.

Section 9.06. No Restriction on Employment. At or prior to the Termination Date, the Contractor shall not place any restriction upon the ability of the employees at the AWT Facilities to become employees of the City, or employees of any contractor which may in the future operate and maintain the AWT Facilities.

Section 9.07. City not Employer. Nothing in this Article shall be construed to place the City in the relationship of the Employer of, or to grant the City the rights to direct or control either employees of the Contractor or displaced employees. The City shall, however, make appropriate payment, at its expense, of all accrued but unused City employee vacation time, personal leave, and perfect attendance time. In addition, the City shall pay all non-exempt AWT City employees for accrued but unused compensatory time as of the Effective Date. The Contractor agrees to pay AWT City employees for accrued but unused sick leave up to one hundred forty-four (144) hours per employee and to pay exempt City AWT employees for accrued but unused compensatory time, and the City agrees to reimburse the Contractor for these amounts actually paid upon receipt of documentation verifying such payments.

AGREEMENT FOR THE OPERATION AND MAINTENANCE
OF
THE INDIANAPOLIS INTERNATIONAL AIRPORT FACILITIES

THIS AGREEMENT FOR THE OPERATION AND MAINTENANCE OF THE INDIANAPOLIS INTERNATIONAL AIRPORT FACILITIES (hereinafter referred to as this "Agreement") dated _____, 1995, and executed by the **Indianapolis Airport Authority** (hereinafter referred to as the "Authority"), and **BAA Indianapolis LLC**, an Indiana limited liability company, and **BAA USA Holdings, Inc.**, a Delaware corporation (hereinafter collectively referred to as the "Contractor"),

WITNESSETH

PREAMBLE

WHEREAS, the Authority owns and is responsible for the operation and maintenance of the Indianapolis International Airport, three reliever airports, one general aviation airport, one heliport, and a foreign trade zone, all in the Indianapolis area (hereinafter referred to collectively as the "Airport Facilities," as described in Schedule 1.07 attached hereto); and

WHEREAS, the Authority desires to have the Airport Facilities maintained and operated in the most efficient manner possible, while complying with all Legal Requirements; and

WHEREAS, the efficient operation and maintenance of the Airport Facilities requires unique and specialized professional skills together with experience in improving and managing highly-regarded, world-class airports of similar or larger size; and

WHEREAS, the Authority desires to maintain ownership of the Airport Facilities and to contract for the operation and maintenance of the Airport Facilities with an organization which has the specialized professional skills and experience to operate the Airport Facilities in the most efficient manner possible; and

WHEREAS, the Contractor responded to the RFP issued by the Authority for the operation and maintenance of the Airport Facilities; and

WHEREAS, the Contractor has available to it experienced professionals in the business of supplying operation, maintenance, and management services for facilities such as the Airport Facilities; and

WHEREAS, the Authority and the Contractor wish to enter into this Agreement setting forth their respective rights, duties, privileges, and responsibilities.

NOW, THEREFORE, in consideration of the mutual promises and commitments hereinafter described, the Authority and the Contractor agree as follows:

ARTICLE I.

DEFINITIONS

Section 1.01. Adjusted Baseline. The Baseline Projection, as adjusted in Article VI or elsewhere herein.

Section 1.02. Administrative Services Component. The support services for the Airport Facilities, including, but not limited to, finance and human resources services and those services more fully described in Section 3.06 herein.

Section 1.03. Agreement Year. The period commencing with the Effective Date and ending at 12:00 midnight on December 31, 1996, and for each subsequent Agreement Year thereafter, the period commencing on 12:00 midnight on December 31 of the preceding Agreement Year and ending on 12:00 midnight on December 31 of the applicable Agreement Year or the Termination Date.

Section 1.04. Airfield Services Component. The airfield activities and the oversight of aircraft services at the Airport Facilities, including those services more fully described in Section 3.06 herein.

Section 1.05. Airlines. Those airlines which utilize the Airport Facilities, including, without limitation, those airlines set forth in Schedule 1.05 attached hereto.

Section 1.06. Airport Director. The person selected by the Contractor pursuant to Section 3.04 herein to be in charge of the operation, maintenance, and management of the Airport Facilities on the Contractor's behalf pursuant to the terms of this Agreement. In no event shall the Airport Director be deemed to be the airport director or other official described in any documents relating to the issuance of bonds by the Authority and neither the Contractor nor the Airport Director shall have any liability whatsoever thereunder.

Section 1.07. Airport Facilities. The Indianapolis International Airport, three reliever airports, one general aviation airport, the Downtown Heliport, and the Foreign Trade Zone, all in the Indianapolis area, and any additions to or replacements thereof (including capital improvements), owned by the Authority and operated and maintained by the Contractor, all as further described in Schedule 1.07 attached hereto. The three reliever airports are Eagle Creek Airport, Metropolitan Airport, and Mount Comfort Airport. Speedway Airport is the general aviation airport. Except with respect to Speedway Airport, which is to be replaced by Hendricks County Airport, the term "Airport Facilities" shall not include any airport facility in addition to or in replacement of any existing airport facility.

ARTICLE XIV.

PERSONNEL

Section 14.01. Staffing. The Contractor shall employ adequate staff to operate and maintain the Airport Facilities in accordance with the terms of this Agreement.

Section 14.02. Contractor to Interview Airport Employees. Before the Effective Date, the Contractor shall complete its interviewing of all employees of the Airport Facilities who are interested in and apply for a position with the Contractor. Subject to its normal and customary interview practices, the Contractor shall use its best efforts to employ all interested and qualified employees of the Authority as its employees at the Airport Facilities. The Contractor shall have the right to require substance abuse tests of all persons to whom it offers a position of employment and the right to reject for employment any person not passing or declining to take such a test.

Section 14.03. Comparable Employment.

(a) The Contractor shall provide Authority employees who are employed by the Contractor with a total package of initial compensation and benefits for such employees essentially similar to the compensation and benefits currently provided by the Authority assuming comparable levels of work responsibilities, the minimum specifications of which are set forth in Schedule 14.03 attached hereto. The Contractor shall provide the Authority with final wages and benefits specifics at least thirty (30) days prior to the Effective Date.

(b) From the Effective Date until January 1, 1996, the Contractor shall provide health insurance coverage to employees of the Authority whom it has hired under its own group health insurance plan(s) which shall be substantially identical to the existing insured and self-insured group health insurance plans of the Authority. With respect to the self-insured group health insurance plan of the Authority, the Authority shall provide the Contractor with the right to request reimbursement from such plan for any claims of employees of the Authority whom the Contractor has hired incurred beginning on and after the Effective Date through December 31, 1995. However, the Contractor shall not acquire any right, title or interest in or to any of the assets which the Authority holds for the funding of any claims under such self-insured group health insurance plan. The nature of this reimbursement shall be in the form of a loan from the Authority to the Contractor and, accordingly, the Contractor shall also reimburse the Authority for the cost of such funds, as reasonably determined by the Authority. On January 1, 1996 (or as soon as possible thereafter when the amount of the reimbursable claims is known), the Contractor shall reimburse the Authority the amount, if any, that the Authority has expended on the Contractor's behalf for claims incurred from the Effective Date through December 31, 1995. Any claims incurred by an employee who is a participant in any of the Authority's group health insurance plans prior to his/her

date of hire with the Contractor shall be the obligation of the Authority's group health insurance plans. Effective as of January 1, 1996, the Contractor shall provide health insurance coverage to its employees under its own group health insurance plan, which coverage shall be comparable (including coverage for dependents, if applicable) to that which such employees were receiving under the group health insurance plan sponsored by the Authority, without regard to any waiting periods or pre-existing conditions. This coverage shall be at a cost to such employees equal to or less than that which such employees paid for comparable coverage as an employee of the Authority under whichever plan is providing coverage to such employees (and his/her dependents, if applicable) (it being understood that such costs may increase in the future as a result of normal health care cost increases). The Contractor shall provide COBRA health care continuation coverage or, if such coverage is unavailable, alternate coverage to any employees of the Authority who do not become participants in the Contractor's group health insurance plan, at the expense of such employees.

(c) Each employee of the Authority who is hired by the Contractor shall be credited with the years of service accumulated under the Authority's pension and welfare benefit plans for eligibility and vesting purposes under all such plans sponsored by the Contractor. The Authority shall transfer all accrued vacation and sick time to the Contractor for each employee of the Authority hired by the Contractor and shall reimburse the Contractor for any liability associated with such accrued vacation and sick time when actually incurred by the Contractor up to the amount of vacation and/or sick time of the affected employee on the Effective Date.

(d) The Authority's defined benefit pension plan shall be terminated as of the Effective Date and the Authority shall secure a favorable determination letter from the Internal Revenue Service to the effect that such plan's termination does not adversely affect its qualified status. The ability of the employees of the Authority to rollover funds into the 401(k) plan of the Contractor is contingent upon the receipt of such letter. The Authority shall amend its plan as necessary to bring it into compliance with all existing Legal Requirements and to permit the payment of a lump sum form of benefit. Upon termination of the Authority's existing defined benefit pension plan, the Authority shall ensure that its employees shall receive their respective accrued benefits thereunder. The Contractor shall establish a 401(k) plan as of the Effective Date and shall therein provide for discretionary employee pre-tax salary deferral contributions and employer contributions. During the Term and any Renewal Term, the Contractor shall, to the extent permitted by any Legal Requirement, make an annual employer contribution for eligible participants equal to at least (i) the Authority contribution to the Authority's defined benefit plan during 1994, divided by the total compensation of eligible Authority employees for 1994 times (ii) the total compensation of all eligible employees of BAA Indianapolis LLC for the applicable year.

Section 14.04. Training of Airport Employees. The Contractor shall implement a comprehensive training program for its employees at the Airport Facilities.

Section 14.05. Personnel Changes by Contractor. The Transition Plan shall provide for voluntary attrition of employees of the Authority following the Effective Date. Consistent with the terms of the Transition Plan, there shall be no involuntary layoff of employees of the Authority who are subsequently employed by the Contractor. The Contractor and the Authority shall share in the costs associated with such voluntary attrition at forty percent (40%) and sixty percent (60%), respectively. The Authority's voluntary attrition costs shall not exceed \$480,000 and such costs shall be paid from improvements in the Net Airline Cost on a per Enplaned Passenger basis in any Agreement Year until paid in full. The Contractor shall pay such costs until such time as there are sufficient improvements in the Net Airline Cost on a per Enplaned Passenger basis from the Adjusted Baseline on a per Enplaned Passenger basis.

Section 14.06. Nondiscrimination.

(a) The Contractor and any subcontractors shall not discriminate against any employee or applicant for employment in the performance of this Agreement, with respect to hire, tenure, terms, conditions or privileges of employment, or any other matter directly or indirectly related to employment, because of race, religion, color, age, sex, handicap, national origin, ancestry, disabled veteran status or Vietnam-era veteran status.

(b) The Contractor shall not discriminate on the grounds of race, religion, color, age, sex, handicap, national origin, ancestry, disabled veteran status or Vietnam-era veteran status in the selection and retention of subcontractors, or in the procurement of materials or supplies or leases of equipment.

(c) The Contractor shall permit access to its books, records, accounts, other sources of information, and the Airport Facilities as may be determined by the Authority or the FAA to be pertinent to ascertain compliance with this Section 14.06.

(d) The Contractor shall include as covenants, agreements, and obligations of concessionaires and subcontractors, the nondiscrimination provisions contained in this Section 14.06 in every lease, contract, and agreement, including, but not limited to, contracts for the procurement of materials or supplies or leases of equipment. The Contractor shall take such action with respect to any lease, contract or procurement as the Authority or the FAA may direct as a means of enforcing such provisions, including the enforcement of sanctions for noncompliance.

(e) The Contractor agrees that it shall furnish to any Governmental Authority or the Authority, as required, any and all documents, reports, and records required by Title 14, Code of Federal Regulations, Part 152, Subpart E.

(f) These provisions are required by the FAA pursuant to Title 14, Code of Federal Regulations, Part 152, 45 Federal Register 10184 (February 14, 1980), as a

condition of and a prerequisite to the Authority's receipt of federal assistance in connection with the Airport Facilities.

Section 14.07. No Restriction on Employment. At the Termination Date, the Contractor shall not place any restriction upon the ability of the employees at the Airport Facilities to become employees of the Authority or employees of any contractor which may in the future operate and maintain the Airport Facilities.

Section 14.08. Authority not Employer. Nothing in this Agreement shall be construed to place the Authority in the relationship of the employer of, or to grant the Authority the rights to direct or control, employees of the Contractor or displaced employees.

ARTICLE XV.

DEFAULTS AND REMEDIES

Section 15.01. Contractor Events of Default. The occurrence of any of the following shall constitute an "Event of Default" by the Contractor for purposes of this Agreement:

(a) The institution against the Contractor or the Parent Company of bankruptcy, insolvency, reorganization, arrangement, debt adjustment, liquidation or receivership proceedings in which it is alleged that the Contractor or the Parent Company is insolvent or unable to meet its debts as they mature;

(b) The breach by the Contractor of any representation, covenant, warranty or obligation of the Contractor under this Agreement, except in the event of Unforeseen Circumstances;

(c) The Contractor or the Parent Company shall become a corporation in dissolution under applicable bankruptcy or insolvency laws; or

(d) A lien which exceeds Twenty-Five Thousand Dollars (\$25,000), or liens which in the aggregate exceed Fifty Thousand Dollars (\$50,000), shall be filed against the Airport Facilities, or any portion thereof, because of any act(s) or omission(s) of the Contractor, its employees or agents, and shall not be discharged within thirty (30) days after receipt of notice or other knowledge thereof by the Contractor, unless the Contractor shall within the aforesaid thirty (30) days, furnish to the Authority security in the amount of such lien or liens to protect the interests of the Authority.

Section 15.02. Authority Events of Default. The occurrence of any of the following shall constitute an "Event of Default" by the Authority for purposes of this Agreement: