

Project Development Issues
for the Columbia River
Crossing Project:
Mega Project Requirements

Working Paper 1.2.3

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Executive Summary

- Projects estimated to cost \$1 billion or more, as the Columbia River Crossing Project, must comply with FHWA's Mega Project oversight requirements if any percentage of Federal-aid highway funds is incorporated in the 'construction' finance plan (Federal-aid funds can be used for engineering and environmental work without invoking the requirements).
- To maintain its full panoply of Federal funding options, the Columbia River Crossing Project will need to comply with both FHWA's Mega Project oversight requirements and, as discussed in WP 1.2.2, FTA's New Starts requirements.
- Both the FHWA and FTA processes require the preparation and implementation of Financial Plans and Project Management Plans; although the special requirements of each agency differ.
- The Project staff will need to reach agreement with FHWA and FTA with regards to how both sets of requirements can be concurrently met; the rules and procedures for integrated projects has not yet been developed.

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1. Introduction

1.1 Purpose

The term Mega Project (which can be used interchangeably with Major Project) arises in two similar but not directly related contexts. Based on the provisions of 23 USC 106, relating to FHWA's oversight responsibilities, projects costing over \$1 billion that employ any percentage of federal-aid highway funds (no matter how small), from any federal aid highway source, including formula funds) are subject to certain special oversight requirements and procedures. These requirements and procedures are commonly referred to as mega project requirements.

In addition, the *Transportation Equity Act: A Legacy for Users (TEA-LU)*, the current transportation authorization bill in the House of Representatives, creates a new discretionary funding program for high-cost "*Projects of National and Regional Significance.*"¹ This program is popularly referred to as the "mega-project program, and would make \$6 billion available for large projects should the program be enacted."²

This report focuses on the oversight issues related to mega projects; the funding issues are addressed in Technical Memorandum 7.2. Specifically, this Working Paper 1.2.3 identifies specific activities and products that should be undertaken or prepared to ensure that the Columbia River Crossing Project complies with the mega project requirements; which are a pre-requisite to employing any Federal-aid highway funding for construction of the project.

1.2 Organization of Report

This report is organized as follows:

- Section 2 overviews FHWA's general project and mega project oversight responsibilities.
- Section 3 details the Financial Plan requirements for mega projects.
- Section 4 details the Project Management Plan requirements for mega projects.
- Section 5 summarizes mega projects currently inventoried by FHWA.
- Section 6 provides summary conclusions and observations.

¹ See Section 1304 of HR 3; *Transportation Equity Act: A Legacy for Users*

² The Senate Bill (SAFETEA) does not contain an equivalent program.

2. FHWA Project Oversight

2.1 General Statutory Requirements for Oversight

23 USC Sec. 106 establishes the general laws regarding the oversight and project approval of federal-aid highway projects. Three key requirements are established that serve as the backdrop for mega project requirements:

- **Project Agreements**

23 USC 106(a)(2) requires FHWA to enter into a formal project agreement with State transportation departments that formalizes the conditions of the project approval. The execution of the project agreement is deemed a contractual obligation of the Federal Government for the payment of the Federal share of the cost of the project.³ The project agreement must make provision for State funds required to pay the State's non-Federal share of the cost of construction and to pay for maintenance of the project after construction.⁴ If a part of project costs are to be paid by political subdivisions of the State, the Secretary may rely on representations made by the State transportation department for ensuring that the non-Federal contribution will be provided.⁵ It should be noted that FTA will require more than the DOT's representations, if the Columbia River Crossing Project incorporates a New Starts component.

- **Value Engineering**

“Value engineering analysis” is a systematic process of review and analysis of a project during its design phase by a multi-disciplined team of persons not involved in the project in order to provide suggestions for reducing the total cost of the project and providing a project of equal or better quality.⁶ Such suggestions may include combining or eliminating otherwise inefficient or expensive parts of the original proposed design for the project and total redesign of the proposed project using different technologies, materials, or methods so as to accomplish the original purpose of the project. FHWA may require value engineering analyses or other cost reduction analysis for any Federal-aid highway project it deems.⁷ Value engineering is required for projects on the National Highway System costing at least \$25 million.⁸

³ 23 USC 106 (a)(3)

⁴ 23 USC 106(b)(1)

⁵ 23 USC 106(b)(2)

⁶ 23 USC 106(g)(2)

⁷ 23 USC 106(e)

⁸ 23 USC 106(g)(1)

- **Financial Plan**

23 USC 106(h) requires financial plans for projects receiving financial assistance that cost over \$1 million. These plans are discussed in detail in Section 3.

2.2 Overview of FHWA's Mega Project Program

FHWA defines Mega (or Major) projects as:

- Projects estimated to cost more than \$1.0 billion, or
- Projects approaching \$1.0 billion with a high level of interest by the public, Congress, or the Administration.⁹

FHWA views these as “high risk” projects based the history of large cost overruns and significant project delays that has been exhibited by such projects (e.g.; Central Artery Project in Boston, MA). To provide enhanced oversight of these projects, FHWA established the “*Major Projects Team*” in its Office of Infrastructure (within its Office of Program Administration). FHWA also requires each Mega Project to have a designated Oversight Manager, with responsibility to analyze project management issues, in particular review and acceptance of Financial Plans, risk assessment and overall project management. FHWA issued a “*Resource Manual for Oversight Managers*” that describes FHWA’s expectations to its contracted Oversight Managers.

In December 2000, USDOT completed the *Report of the One-DOT Task Force on Oversight of Large Transportation Infrastructure Projects*. This Report included near-term and long-term recommendations on how FHWA should provide comprehensive oversight and monitoring of mega projects. Among a large set of recommendations, this report proposed that:

- Project Management Plans should be submitted on Mega projects
- Written interagency project agreements should be entered into for Mega projects.
- Periodic, independent reviews of mega projects should be done under the direction of an Oversight Manager.

In October 2001, FHWA completed an *FHWA Implementation Plan*, which explained FHWA’s response to the specific recommendations in the *Report on the Oversight of Major Transportation Projects*. The following summarizes FHWA’s key points:

- Task Force Recommendation C.1: FHWA should require recipients to submit Project Management Plans
FHWA Plan Response C1: Interagency Project Agreements, FHWA Stewardship Agreement on Project, and Finance plans include elements of project management plan. FHWA will issue guidance on content of project

⁹ FHWA senior management designates which projects are to be considered Mega projects due to a high level of interest

management plans to assist Divisions in formulating the above-referenced documents.

- Task Force Recommendation C.2: FHWA should enter into written agreements with recipients that address the terms and conditions of Federal participation in the project; roles and responsibilities of the parties and the working relationships; and independent duty of third party experts
FHWA Plan Response C.2: This is already accomplished in FHWA Stewardship agreement. Where processes differ from Stewardship agreement, interagency project agreements provide that information. FHWA should make policy call on whether all major projects should have full FHWA project oversight.
- Task Force Recommendation C.3: FHWA should conduct periodic, independent reviews under to ensure the recipient has the capability to efficiently and effectively complete the mega project without compromising the Federal government
FHWA Plan Response C.3: FHWA will issue new oversight policy Spring 2001 that discusses FHWA independent review responsibilities for all projects. (Oversight policy issued June 22, 2001). Major project team provides some additional oversight in their project monitoring activities (quarterly updates, review, and discussion of monthly status reports - mainly tracking hot issues or FHWA commitments). Independent Government cost verification reviews conducted on standard Design-Bid-Build major projects.
- Task Force Recommendation C.4: Operating Administrations should allow PE/Design to achieve 20-35% before approving funding for final design and construction
FHWA Plan Response C.4: For projects requiring FHWA project approval actions, FHWA does not approve construction funding prior to sufficient information for Design Build approval (typically 30% design) or completion of full design. FHWA does approve design funding prior to 20-35% design, however final design cannot begin until NEPA process complete.
- Task Force Recommendation C.5: Conduct Financial Capacity Assessments prior to commitment of funds for final design and construction
FHWA Plan Response C.5: FHWA issued Financial Plan requirements in May 2000, which prohibit funding of construction prior to FHWA accepting the financial plan. FHWA Financial Plan is a plan for the project - and the impact of the proposed project on the statewide plan is reviewed to the extent necessary. FHWA process is not a "capacity assessment" of an agency to fulfill all of its financial obligations.
- Task Force Recommendation C.6: Develop oversight processes that incorporate earned value management systems

FHWA Plan Response C.6: FHWA agrees with promoting the appropriate tools - but does not support mandating any one tool. Major project team is building a resource manual of tools which will include earned value management. It will also include procurement options and other project management tools that provide timely reporting and resolution of issues.

- Task Force Recommendation C.7: Designate "At Risk" when significant deviations from baseline schedule, cost estimate, funding, or significant tech/mgmt issues occur.

FHWA Plan Response C.7: FHWA has done this on CA/T; was under discussion with OST on WWB when States responded to Financial plan requirement. FHWA will implement as needed on individual projects.

This Plan serves as FHWA's basis for the mega project requirements described in the following sections.

3. Mega Projects Finance Plan Requirements

3.1 Background

Financial Plans are required for Mega Projects by 23 USC 106(h), which states:

A recipient of Federal financial assistance for a project under this title with an estimated total cost of \$1,000,000,000 or more shall submit to the Secretary an annual financial plan for the project. The plan shall be based on detailed annual estimates of the cost to complete the remaining elements of the project and on reasonable assumptions, as determined by the Secretary, of future increases in the cost to complete the project.

In response to the statutory requirement, FHWA issued a *Financial Plan Guidance* on May 23, 2000.¹⁰ The explanation which follows is based on the Guidance and training materials prepared by FHWA for review of the Financial Plans by Oversight Managers.

3.2 Introduction to Mega Project Financial Plan Requirements

Financial plans must be prepared for all Federal-aid projects with an estimated total cost of \$1 billion or more (and in some cases, for large and important projects costing less than \$1 billion). This threshold is measured in year-of-expenditure dollars. In this context, the term "project" is generally be defined as that work described in the environmental document with independent utility between logical termini. A project could comprise several segments, and each segment could be constructed by one or more construction contracts. Any Mega project receiving Federal funds for construction, regardless of the Federal percentage, is required to submit a Financial Plan. In the case where Federal funds are used only for the preparation of the environmental document,

¹⁰ The Guidance was published in the Federal Register as a Notice on January 5, 2001.

with all construction funding entirely from other than Federal sources, a Financial Plan is not be required.

Under the Guidance, the Financial Plan is a comprehensive document which (a) reflects the cost and revenue structure of a project, (b) explains the assumptions about both cost and revenue upon which the plan is based, (c) identifies potential funding shortfalls and proposed solutions, and (d) provides a reasonable assurance that there will be sufficient financial resources available to complete the project as planned. The initial Financial Plan must provide information on the immediate and longer term financial implications resulting from project initiation. The annual updates of the Financial Plan must provide information on actual cost and revenue performance in comparison to initial estimates as well as updated estimates of future year obligations and expenditures. The annual updates also must provide information on cost and revenue trends, current and potential funding shortfalls and the financial adjustments necessary to assure completion of the project.

In the case of Mega Projects funded jointly by FHWA and FTA, as potentially may be the case for the Columbia River Crossing Project, it is anticipated that a single Financial Plan will be prepared that meets the requirements of both FHWA and FTA.

3.3 Timing Requirements

While FHWA encourages the preparation of initial Financial Plans as early as possible in the project development process, the initial Financial Plan for Mega Projects should be complete by the time the Record of Decision (ROD) is issued. However, in the FTA New Start process, which also must be followed by the Columbia River Crossing Project, a concept Financial Plan is required to enter Preliminary Engineering, as explained in Working Paper 1.2.2. From FHWA's perspective, the initial Financial Plan usually must be accepted by FHWA prior to right-of-way acquisition, but, in all cases the initial Financial Plan must be accepted by FHWA before authorization of Federal-aid funding for project construction. On a design-build project the initial Financial Plan must be accepted prior to FHWA concurrence in the issuance of a "*Request for Proposal*."

Financial plans must be updated annually. The schedule for the updates must be shown in the initial Financial Plan.

3.4 Preparation and Approval Methodology

Financial Plans and Updates must be prepared in accordance with the FHWA guidelines and consistent with recognized financial reporting standards. The content of the initial Financial Plan and each Update must be certified as "*accurate and reasonable to the best of my knowledge and belief*" and signed by the DOT Director or Secretary. The initial Financial Plan and each Update must be submitted to the FHWA Division Administrator for review and acceptance. The review is conducted by the FHWA Division Office and Major Projects Team, and focuses on (a) the reasonableness of the cost projections, (b)

the viability of the identified funding sources, and (c) the likelihood that the funding commitments will provide sufficient resources to complete the project as planned.

3.5 Content of the Financial Plan

The initial plan should consist of at least five main sections:

- **The Cost Estimate**

This section must provide a total cost estimate for the full project; and an activity breakdown, as applicable for feasibility studies, preliminary engineering, environmental assessment, right-of-way acquisition, construction, construction engineering and inspection, project management, contingencies, capitalized financing costs (including reserves, capitalized interest and capital issuance costs), and other cost categories, as necessary. All cost estimates must be expressed on a cash (year-of-expenditure) basis and include a narrative describing assumptions used to arrive at such estimates. All costs must be calculated in accordance with standard accounting methods and generally do not include the costs of acquiring revenue (taxation, mortgage interest payments, etc).¹¹

- **Implementation Plan**

This section of the Plan provides a comprehensive description of the project, including without limitation the project scope, termini, and interconnections. It describes any proposed phasing for the project and dependencies on other projects. It includes (a) a list of all federal, state, and local permits and approvals required for the project, (b) a schedule for obtaining such permits and approvals, and (c) the schedule for completing the project. The project schedule and the cost-to-complete are presented in annual increments in year of expenditure dollars. This section must also discuss the likelihood and possible impacts on the implementation plan from an array of potential future cost and/or revenue changes.

- **Revenues**

This section (a) describes all funding sources for the project, (b) states whether each funding source is “committed” or “anticipated,” and (c) provides an evaluation of the likelihood of anticipated amounts being realized. Federal funds must be described by funding category. Projected expenditures of Federal-aid funds should be constrained by anticipated annual limitations on Federal-aid fund obligations. The amount and sources of revenue for the non-Federal share must be clearly discussed. If

¹¹ See DOT Order 4600.17A for guidance on the inclusion of interest payments.

the availability of these funds were limited to certain parts or phases of the project, then those limits must be explained.

- **Cash Flow**

The cash flow pro forma must indicate the level of cash required to fund the project on an annual basis over the period of the financial plan. The pro forma must include beginning and ending balances, all sources and uses of funds, and show annual change in financial position. The key feature of this section is to demonstrate that revenue will be available to permit annual project fund obligations and expenditures as presented in the Implementation Plan.

The requirement is to demonstrate that the "project specific" cash flow payout schedule can be met. The DOTs may also have to show the broader "agency-wide" cash flow analysis if there are potential impacts to the project funding sources due to other competing project needs within the agency.

- **Other Factors**

All special project cost containment strategies being used or planned for later use must be described. This section should also describe the responsibilities (financial and non-financial) of the various parties involved in the project and provide evidence of any agreements or commitments. This section should also describe any special agreements, laws, rules, or regulations to which the project is subject. If pertinent, this section should discuss the liability for subsequent operation and maintenance costs as segments of the project come on line. The initial submission of the plan should also set the schedule for the future annual updates.

Each annual update of the Financial Plan should provide updates of total cost (actual cost to date) and cost-to-complete estimates. Any significant change in the total project cost or revenue since the last estimate must be presented and the major reasons for these significant changes must be explained. Annual Updates to the initial plan should include revisions to the five main sections described above, and the following additional information:

- The cost history of the project
- An analysis of cost and revenue trends that may result in additional funding needs or cost reductions
- A discussion of additional funding increases or cost reductions necessary in the coming year to meet funding shortfalls which have become known

- A report on any significant reductions in cost during the past year and the potential for such reductions in future years
- A listing of significant increases in project costs both in the past year and projected for the future which would result in changes of \$10 million or more as compared to the original estimated costs

3.6 Comparison of FHWA and FTA Finance Plan Requirements

A detailed explanation of the financial plan requirements for FTA’s New Starts Program is provided in Working Paper 1.2.2. The table below compares FTA’s requirements with FHWA’s Mega Project requirements. Assuming the Columbia River Crossing Project includes a New Starts component, the Project will have to comply with both sets of requirements (for each respective mode). To date, no formal process has been implemented to merge these two program requirements; however, a single financial reporting process must be agreed upon early in the project development process.

**Financial Plan Requirements
Summary Comparison
FTA vs. FHWA**

FTA	FHWA
Summary of <u>Agency's</u> 20-year cash flow projection (funding sources, revenue forecasts, other planned project costs, annual O&M expenses, etc.) required.	Agency 20-year projection not required.
Cash Flow Analysis based on Agency.	Cash Flow Analysis based on Project.
FTA does Agency Financial Capacity Assessment. Audited financial statements, rail and bus fleet management plans, etc. required.	No Agency Financial Capacity Assessment.
Letter of Certification not required.	Letter of Certification from STA required.
Full Funding Grant, so therefore federal funds are capped.	Federal funds generally not capped.
Non-federal funding sources must be formally approved and programmed prior to FTA approval of the FFGA (must attach legislation, signed local agreements, MPO commitments, bonding prospectus and authorization to issue debt, etc.).	Finance Plan approval based on "likelihood" of realizing non-federal funding sources. Generally, non-federal sources not acceptable if legislative action is required...discuss risks of non-federal sources. Attach agreements, commitments, etc.

Cost Estimate in year-of-expenditure or mid-point of construction.	Cost Estimate in year-of-expenditure.
Project contingency line item required.	Project contingency implied in attachments, but not absolutely required.
Cost containment strategies not required.	Cost containment strategies (VE, Upset limits, etc.) required.
EIS and MIS documents required to help identify commitments in the FFGA.	EIS, MIS documents available, but reference to commitments not included in Finance Plan.
Follow-up reviews conducted on grantee's capacity.	Annual Updates to Financial Plan required.
In General: Financial Plan requirements are more <u>Agency</u> focused.	In General: Financial Plan requirements are more <u>Project</u> focused.

3.7 Sample Initial Finance Plan

FHWA views the Woodrow Wilson Bridge project's Initial Financial Plan as a good example of a financial plan. It is available online at www.wilsonbridge.com.

4. Project Management Plan Guidance

4.1 Background

Unlike Financial Plans, which are required for Mega Projects under 23 USC 106(h), Project Management Plans are not mandated by statute. However, FHWA strongly recommends their use for Mega Projects, and expects that the affected DOT's executive management and FHWA will endorse the Project Management Plan, including the project objectives and the proposed delivery methods to meet those objectives. In the case of mega, multi-modal projects, such as the Columbia River Crossing Project, it is expected that there will be a single Project Management Plan meeting the requirements of both FHWA and FTA.

The purpose of the Project Management Plan is to clearly define the roles, responsibilities, processes, and activities that ensures that the Mega project will be completed on-time, on-budget, and with a high degree of quality. It addresses the design and construction phases of the Mega project.

FHWA expects the Project Management Plan to be submitted for review and approval early in the project's design stage, soon after the Record of Decision (ROD) is issued. The Project Management Plan is intended to be a "living document" that is updated throughout the key stages of a project.

4.2 Contents of Plan

At a minimum, the Project Management Plan includes the following components:

- Scope of the project
- Description of project staff organization with reporting relationships, functional responsibilities, job descriptions and job qualifications
- Budget which includes the project management organization, appropriate consultants, property acquisition and utility relocation
- Baseline cost estimates which include all financing costs
- Baseline construction schedule
- Financial plan (which is required by a statutory provision for Mega Projects)
- Cost, schedule, and change order control procedures
- Plan for reporting requirements including recipient's commitment to make monthly submissions of the project budget and project schedule to DOT
- Risk management plan that includes both actions that can be taken to reduce the probability that risks will occur and actions that can be taken if the risk occurs
- Value engineering analysis or other cost reduction analysis
- Document record keeping system
- Quality control and quality assurance programs
- Materials testing procedures
- Safety oversight program
- Procedures for testing the operational system
- Plans for evaluating project effectiveness and impacts

5. Mega Project “Queue”

The table below lists FHWA’s current inventory of Mega Projects, their completion date, and their total project cost:

Mega Project	Location	Completion	Cost
San Francisco-Oakland Bay Br.	San Francisco - Oakland, CA	Construction 2011	\$5.1 billion
SR 210 Foothills Freeway	Los Angeles, CA	Construction 2005	\$1.1 billion
I-25/I-225 SE Corridor (TREX)	Denver, CO	Construction 2006	\$1.7 billion
I-95/New Haven Harbor Crossing	New Haven, CT	Construction 2011	\$1.0 billion
Miami Int. Ctr.	Miami, FL	Construction 2008	\$1.3 billion
Tampa Interstate Project	Tampa, FL	Construction 2013	\$1.0 billion

I-4 Orlando	Orlando, FL	Phased Construction to <u>begin</u> in 2008 and 2012	\$2.5 billion
CREATE (rail)	Chicago, IL	Construction 2014	\$1.6 billion
New Miss. River Br.	IL- St. Louis MO	Construction to begin 2008	\$1.6 billion
Ohio River Bridges	IN- Louisville, KY	Phased construction 2007-2020	\$2.5 billion
Central Artery-Ted Williams Tunnel	Boston, MA	Construction 2005	\$14.6 billion
Intercounty Connector	Mont. and PG Counties, MD	Construction to begin 2006	\$2.1-\$2.4 billion
I-94/Edsel Ford Freeway	Detroit, MI	Construction to begin 2009	\$1.2 billion
Mon/Fayette Toll Facility	Pittsburgh	Construction 2009-2015	\$2.0 billion
Central Texas Turnpike	Austin, TX	Construction 2011	\$3.3 billion
I-10/Katy Freeway	Houston, TX	Construction 2008	\$2.7 billion
Trans Texas	Ft. Worth-Dallas, TX	TBD	TBD
I-95/ Woodrow Wilson Bridge	Potomac River, VA-MD-DC	Construction 2011	\$2.4 billion
Springfield Int.	Springfield, VA	Construction 2007	\$0.7 billion
I-64/Hampton Roads Crossing	Hampton Roads, VA	TBD	\$4.4 billion
Marquette Int.	Milwaukee, WI	Construction 2008	\$1.1 billion
I-405	Seattle, WA	TBD	TBD

This list of projects represents more than \$50 billion in total costs (ignoring the TBD costs), and all of the projects listed are currently ahead of the Columbia River Crossing in terms of the project development process.

6. Summary Conclusions

- Projects estimated to cost \$1 billion or more, as the Columbia River Crossing Project, must comply with FHWA's Mega Project oversight requirements if any percentage of Federal-aid highway funds is incorporated in the 'construction' finance plan (Federal-aid funds can be used for engineering and environmental work without invoking the requirements).

- To maintain its full panoply of Federal funding options, the Columbia River Crossing Project will need to comply with both FHWA's Mega Project oversight requirements and, as discussed in WP 1.2.2, FTA's New Starts requirements.
- Both the FHWA and FTA processes require the preparation and implementation of Financial Plans and Project Management Plans; although the special requirements of each agency differ.
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