
Office of Inspector General

Audit Report

FHWA MET BASIC REQUIREMENTS BUT CAN STRENGTHEN GUIDANCE AND CONTROLS FOR FINANCIAL AND PROJECT MANAGEMENT PLANS

Federal Highway Administration

Report Number: ST-2015-018

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Memorandum

**U.S. Department of
Transportation**

Office of the Secretary
of Transportation
Office of Inspector General

Subject: **ACTION:** FHWA Met Basic Requirements but
Can Strengthen Guidance and Controls for
Financial and Project Management Plans
Federal Highway Administration
Report Number ST-2015-018

Date: January 27, 2015

From: Thomas E. Yatsco 
Assistant Inspector General
for Surface Transportation Audits

Reply to
Attn. of: JA-30

To: Federal Highway Administrator

The Federal Highway Administration (FHWA) provides financial assistance and oversight to States' high-cost and complex major projects. Federal law defines major projects as those with an estimated cost of \$500 million or more. In 2013, FHWA reported that States¹ had 103 active major projects, totaling approximately \$143.7 billion. States are required by Federal law to prepare project management plans and annual financial plans for each of their major projects and submit their plans to FHWA.² These plans are intended to provide timely information needed to effectively manage major projects' scope, cost, and schedule, and ensure that projects meet applicable Federal requirements. FHWA Division Offices are responsible for reviewing and accepting States' plans based on Agency guidance. In recent years, much public and congressional attention has been focused on reducing the time it takes to deliver major projects. In particular, the Moving Ahead for Progress in the 21st Century Act (MAP-21)³ contained a series of reforms to accelerate project delivery.

¹ Throughout this report, we use the term "States" to refer to the various entities that manage major projects, which include State Departments of Transportation, other State Agencies (such as toll agencies), local public agencies, and private ventures (such as private-public partnerships).

² The requirement was enacted in 2005 through the Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (SAFETEA-LU), Pub. Law 109-59.

³ Pub. Law 112-141.

Based on the growing number of major projects that meet the legislative threshold, we initiated this audit of FHWA's oversight of financial plans and project management plans for major projects managed by States. Specifically, we determined whether FHWA (1) verified that States' initial and updated financial plans and project management plans met basic requirements, (2) consistently evaluated major project financial plans and project management plans in accordance with its guidance, and (3) had sufficient guidance in key areas or controls to ensure implementation of plan agreements.⁴ In addition, based on congressional interest, we obtained the views of FHWA officials and States on their use and the potential benefits of innovative methods and MAP-21 provisions to accelerate delivery of major projects.

To perform this review, we focused on five major projects currently under construction or recently completed in California, Maryland, North Carolina, Texas, and Washington. We interviewed FHWA Headquarters and Division officials directly responsible for major project oversight, as well as officials from the States managing these projects. We also examined FHWA's and States' cost estimate review documentation; States' financial plans and project management plans and related FHWA guidance and procedures; and other documents related to the cost, schedule, funding, and risks for these projects. We conducted our review in accordance with generally accepted Government auditing standards. See exhibit A for more information on our scope and methodology. See exhibit B for summaries of the five major projects we reviewed.

RESULTS IN BRIEF

For all five major projects we reviewed, FHWA Division Offices ensured that States met basic requirements to submit initial financial plans, annual updates to financial plans, and project management plans—and that these plans contained basic cost, schedule, and funding elements. For example, annual financial plan updates for all five projects included required explanations of cost and revenue trends. Additionally, for three⁵ major projects we reviewed, FHWA accepted financial plans and project management plans before authorizing Federal funds for construction, as required in its guidance. However, due to the Agency's lack of controls to enforce compliance with this requirement, FHWA authorized Federal funds for the major project in Texas before accepting the initial financial plan or project management plan. FHWA's authorization of funds prior to accepting these plans did not negatively impact the completion of the Texas project, which was ahead of schedule and within budget at the time of our review. However,

⁴ FHWA notes in its guidance that 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.

⁵ FHWA authorized Federal funds before approving the project management plan or initial financial plan for two of the five major projects we reviewed (Maryland and Texas). However, the major project in Maryland is not considered in our analysis because construction for the project started before FHWA finalized this requirement.

proceeding to construction without required plan acceptance heightens the possibility that all parties may not agree on key cost, schedule, and funding risks.

FHWA ensured that financial plans and project management plans were submitted, but FHWA Division Offices did not consistently follow Agency guidance when evaluating the plans for the five major projects we reviewed. Though FHWA issued guidance to the States on plan requirements, FHWA has not developed controls to ensure that each Division Office is consistently following the guidance when overseeing States' major projects. Consequently, FHWA could not always demonstrate that critical project elements in States' project management plans and financial plans—such as cost, schedule, and financing—were fully evaluated. Specifically, Division Offices did not consistently follow guidance to ensure (1) sufficient evaluation and documentation of project costs for three of the five major projects we reviewed, (2) the inclusion of required integrated project schedules in States' monthly progress reports for four of the five major projects we reviewed, (3) the evaluation of toll-based project financing before accepting initial financial plans for two major projects we reviewed, or (4) States provided financial plan annual updates with current risk information for two of the five project we reviewed. For example, the initial financial plan for the major project in Washington included \$400 million in toll-based financing, even though the State's legislature had not yet authorized the tolling. Therefore, the initial financial plan lacked a core element: reasonable assurance that sufficient funding would be available to complete the project.

FHWA lacked specificity in key areas of its financial plan and project management plan guidance used by Division Offices to help oversee State's major projects. Key areas not clearly defined in FHWA's guidance include when a baseline project schedule should be developed, which cost estimate is to serve as a baseline cost estimate, what changes should trigger a required update to project management plans, and which major project requirements should be applied to specific types of projects. FHWA's guidance also does not detail the processes Division Offices should use to ensure that States fulfill commitments defined in their project management plans. Consequently, four of the five major projects we reviewed did not have fully developed baseline schedules, and three of the five projects we reviewed did not have updated plans that reflected significant changes to organizational structure and responsibilities. One of the Division Offices we visited was initially unsure how to meet major project requirements when alternative financing mechanisms or contracting methods are used. Additionally, States did not follow through on commitments defined in their project management plans for three of the five major projects we reviewed.

FHWA Division Offices and States associated with the five projects we reviewed identified contracting methods, project management tools, and MAP-21 provisions

that could help accelerate delivery, improve project management, and enhance oversight of major projects. Division Offices and States identified several MAP-21 project delivery provisions that are either already being used or are intended to be used in the future to help accelerate project delivery or increase efficiencies, such as advanced right-of-way acquisition and programmatic agreements. In addition, all five major projects we reviewed used an innovative contracting method called design-build contracting during which a joint contracting team controls both the design and construction phases of the project. Finally, Division Offices and States utilized several innovative management tools—such as independent reviews and interagency leadership teams—to establish financial integrity, make programmatic improvements, or otherwise increase project efficiencies.

We are making recommendations to improve FHWA's oversight of major project financial plans and project management plans. Where appropriate, we identified issues that would apply to major projects across FHWA, including guidance and oversight controls.

BACKGROUND

In response to cost overrun and financial oversight issues found with the Boston Central Artery/Tunnel Project,⁶ Congress mandated in SAFETEA-LU that all recipients of federally funded major projects submit an annual financial plan and a project management plan. Financial plans and project management plans are intended to provide program and oversight officials with timely information to help manage major projects by providing a credible basis on which to conclude that major projects' costs, schedule, and funding are reasonable.

FHWA updated its major project guidance specifying its requirements for project management plans in 2009 and for financial plans in 2007. For example, the guidance requires that States' financial plans clearly explain any cost and revenue assumptions and demonstrate how a project will be implemented over time, including identifying project costs and financial resources. States are required to submit financial plans and project management plans to FHWA, with FHWA Headquarters and Division Offices required to review financial plans and project management plans before the plans are accepted. In addition, FHWA must accept States' financial plans before authorizing Federal funding for project construction.

⁶ *Central Artery/Ted Williams Tunnel Project Highlights Need for Effective Federal Oversight* (OIG Report Number TR-2000-088), Jun. 7, 2000. OIG reports are available on our Web site at <http://www.oig.dot.gov>.

FHWA ENSURED THAT STATES' FINANCIAL PLANS AND PROJECT MANAGEMENT PLANS MET BASIC GUIDANCE REQUIREMENTS

Consistent with Federal law, FHWA Division Offices ensured that States submitted initial financial plans, annual updates to financial plans, and project management plans for all five major projects we reviewed. FHWA reviewed the financial plans and project management plans, provided comments to the States, and incorporated States' comments into the plans. For example, for the project we reviewed in Maryland, the FHWA Division Office ensured that the State resolved all comments on the initial financial plan and project management plan before the office accepted the plans.

In addition, the financial plans and project management plans for all five major projects we reviewed contained the basic elements related to cost, schedule, and funding that are outlined in FHWA guidance. For example, annual financial plan updates for all five projects included explanations of cost and revenue trends. FHWA's financial plan guidance included this element to help project managers and stakeholders clearly identify trends that have impacted project costs and revenues, the implications of those trends, and any adjustments made in consideration of those trends.

For three⁷ major projects we reviewed, FHWA Division Offices also accepted financial plans and project management plans before authorizing Federal funds for construction, as required in its guidance. This requirement provides FHWA with reasonable assurance that the project has sufficient financial resources and an appropriate implementation roadmap so that it can be completed as planned. However, our review determined that FHWA authorized Federal funds for the major project in Texas before accepting the State's initial financial plan and project management plan for the project. While FHWA's controls did ensure that the State submitted a draft initial financial plan and project management plan before any significant expenditure of Federal-aid highway funds, FHWA did not have controls in place to enforce its requirement that Division Offices review and accept these plans before authorizing Federal funds. Consequently, FHWA authorized Federal funds for construction for the major project in Texas before it accepted the initial financial plan and project management plans. FHWA's authorization of funds before plan acceptance did not negatively impact the completion of the project,⁸ which was ahead of schedule and within budget at the time of our review. Nonetheless, proceeding to construction without required plan

⁷ FHWA authorized Federal funds before approving the project management plan or initial financial plan for two of the five major projects we reviewed (Maryland and Texas). However, the major project in Maryland is not considered in our analysis because construction for this project started before FHWA finalized this requirement.

⁸ This project, the North Tarrant Express, was fully operational on October 4, 2014, months ahead of schedule.

acceptance heightens the possibility of disagreements among stakeholders on key cost, schedule, and funding risks.

FHWA DID NOT CONSISTENTLY FOLLOW ITS GUIDANCE WHEN EVALUATING FINANCIAL PLANS AND PROJECT MANAGEMENT PLANS FOR MAJOR PROJECTS

FHWA did not consistently follow Agency guidance when evaluating financial plans and project management plans. Though FHWA has issued guidance to the States on meeting plan requirements, FHWA has not developed controls to ensure that each Division Office is consistently following the guidance when overseeing major projects. As a result, FHWA could not always demonstrate that critical project elements were fully evaluated. Specifically, we identified instances in which FHWA Division Offices did not always follow Agency guidance to (1) evaluate and document project cost estimates, (2) evaluate integrated project schedules, (3) evaluate toll-based project financing, and (4) obtain annual updates on project risk. While each major project is unique, the issues we identified in the five projects reviewed point to weaknesses in controls that are applicable to all major projects.

FHWA Did Not Always Ensure That Project Cost Estimates Were Fully Evaluated and Clearly Documented

FHWA guidance specifies that the financial plans for major projects must be based on detailed cost estimates and clearly explain cost and revenue assumptions. Officials from the Division Offices overseeing the major projects we reviewed said they established the project cost estimates for the initial financial plan by working with States at cost estimate review workshops.⁹ However, we identified several initial financial plans that did not provide sufficient detail regarding the cost estimate or did not fully document projects costs. This is attributable to a lack of controls to ensure that Division Offices comply with related Agency guidance for their major projects.

Three of the five Division Offices we reviewed (California, Texas, and Washington) did not ensure that all project costs to support the initial financial plan were thoroughly evaluated. For example, participants of the cost estimate review workshop for the project in Washington State did not fully evaluate an estimated \$150 million needed for additional City of Seattle surface street work, and viaduct removal and tunnel decommissioning. Instead of developing and

⁹ Washington State used an alternative processes to estimate project costs: a cost estimate validation process. While these estimating processes can go by different names, they serve the same function: to estimate the total project costs.

documenting a detailed estimate, the State used a high-level, order-of-magnitude estimate that required less time and effort to develop.¹⁰

Although project cost estimates can sometimes change between the cost estimate review workshops and issuance of the initial financial plan, three Division Offices (California, Texas, and Washington) did not include all of these changes in the initial financial plans or properly document them. For example, the estimated total cost for the project we reviewed in California increased from \$950 million at the cost estimate review to \$1.034 billion before the initial financial plan was issued; however, this increase was not reflected in the initial financial plan, which FHWA accepted. In another example, FHWA reported in its 2012 Annual Summary to Congress that the project in Texas had a baseline project cost estimate of \$1.9 billion at the initial financial plan, which is derived from the developer's \$2.11-billion total cost estimate in the financial plan. However, the initial financial plan did not clearly explain this adjustment to the cost estimate, and the FHWA Texas Division Office could not provide documentation to fully explain the difference. Without accurate and documented project cost estimates in the initial financial plan, the Division Offices cannot clearly demonstrate how these estimates were established or effectively assess any future changes in project costs.

FHWA Did Not Consistently Ensure That States Included Integrated Project Schedules in Their Monthly Progress Reports

According to FHWA project management plan guidance, States are to submit monthly progress reports on their major projects, which should include an integrated project schedule. An integrated project schedule provides a picture of the entire project's implementation by integrating all project work into a single master schedule. However, FHWA Division Offices did not ensure that States' monthly progress reports included integrated project schedules for four of the five Division Offices we reviewed (California, Maryland, North Carolina, and Washington). Instead, the four Division Offices evaluated the progress of the major projects against individual construction contracts—which does not allow FHWA and States to determine the impact of individual contract changes on the overall project schedule or to clearly identify the project's critical path. The critical path is the longest continuous sequence of activities in a project schedule, and it determines the project's earliest completion date. Identification of a critical path is key to project management because it helps to focus the management team's attention on the activities that will lead to the project's success.

FHWA lacks controls to ensure that Division Offices with major projects require States to submit integrated project schedules and evaluate project progress in

¹⁰ A rough "order-of-magnitude" estimate is a quick, high-level cost estimate that generally requires less time and effort than a "budget-quality" estimate.

accordance with these schedules. For example, the Maryland Division Office did not enforce the requirement that the monthly progress reports include an integrated project schedule for the State's major project we reviewed. The reports only provided information on five individual design-build construction contracts and did not illustrate the project's critical path. Without an integrated project schedule, the Division Office was not able to review whether the monthly progress reports accurately reflected progress against the project's critical path.

FHWA Did Not Always Evaluate Toll-Based Project Financing Before Accepting Initial Financial Plans

FHWA's reviews of major project financial plans are intended to determine if sufficient funds are available to complete the project. According to FHWA, using toll-based revenues to fund transportation projects is a potentially important funding source to cash-strapped State and local governments. However, for two of the major projects we reviewed with toll-based financing (Maryland and Washington), FHWA did not evaluate projected toll revenue assumptions before accepting the initial financial plans. Therefore, the initial financial plan lacked a core element: reasonable assurance that sufficient funding would be available to complete these projects. Although tolling may increase in the future as a way to fund major highway projects, FHWA lacks controls to ensure that Division Offices with major projects are evaluating toll-based financing.

For example, the initial financial plan for the project we reviewed in Maryland identified toll revenues as a key project risk. However, the Division Office did not evaluate the projected \$1.23 billion in toll-based financing and cash cited in the plan. Instead, the Division Office incorrectly determined that the Transportation Infrastructure Finance and Innovation Act (TIFIA) Joint Program Office was responsible for this review. However, the project did not include any TIFIA funding when the initial financial plan was submitted for FHWA's review, so the TIFIA Joint Program Office would not have reviewed the project's financing.¹¹

Additionally, the initial financial plan for the project we reviewed in Washington identified \$400 million in tolling revenues. However, FHWA accepted the project's initial financial plan without evaluating whether the projected toll revenues were sufficient and could actually be generated. Instead, it relied on the State to perform this review and the Office of the State Treasurer's assumption that, if the toll revenues were inadequate, Washington State could use general tax revenue to repay financing for the toll revenue bonds. After FHWA's acceptance of the initial financial plan, several factors raised questions about whether the \$400 million projection was realistic. For example, the Washington State legislature had not yet authorized tolling when FHWA accepted the initial

¹¹ The project did ultimately receive a TIFIA loan but not until after FHWA's acceptance of the initial finance plan.

financial plan. In addition, a report issued by an expert review panel (soon after FHWA's acceptance of the initial financial plan) cast doubt on whether tolls would be able to produce the planned \$400 million in revenue for the Washington project. A financial plan annual update for the project later showed that the State had initially overestimated the tolling revenues in its initial financial plan. In the project's annual update, tolling revenues were reduced by 84 percent to \$62.8 million (compared to the \$400 million projection in the initial financial plan). As a result of reduced projections in tolling revenue, the State increased its estimate of the amount of Federal funds needed to finance the project.

FHWA Did Not Consistently Require Annual Updates on Project Risks

According to FHWA's major project guidance, States are required to submit annual financial plan updates that include current information on risks to project completion, as well as strategies to mitigate those risks. However, FHWA did not ensure that the projects' financial plan updates provided current risk information or risk mitigation strategies for two of the five major projects we reviewed (California and Texas). This is attributable to FHWA's lack of controls to enforce this requirement. For example, the major project in California reported in its 2009 initial financial plan that the anticipated relocation of a 96-inch water utility line was a potential risk to successful project completion. The water line relocation was removed from the project's scope of work in 2010, but the annual updates to the financial plan continued to report this relocation as a risk. Additionally, for the major project in Texas, one of the risks reported in the initial financial plan was a potential change in design standards and criteria. The State continued to report this risk in the annual updates to the financial plan, even though design activities were almost completed and changes to design standards and criteria were no longer a risk. Without updated information on project risks, FHWA is hindered in its ability to target its oversight activities and ensure States have plans and resources to mitigate identified risks.

FHWA GUIDANCE ON PROJECT MANAGEMENT PLANS AND FINANCIAL PLANS LACKS SPECIFICITY IN KEY AREAS

We identified a lack of specificity in key areas of FHWA's financial plan and project management plan guidance that Division Offices use to review major projects—specifically in the areas of (1) defining the baseline project cost and schedule estimates, (2) updating project management plans, (3) specifying when major project guidance should be applied to different types of projects, and (4) defining processes to oversee States' implementation of project management plans. The lack of specificity in FHWA's guidance led to confusion about what should be included in the plans and resulted in unfulfilled project management plan commitments.

FHWA Does Not Clearly Define When a Baseline Project Cost Estimate or Schedule Should Be Developed

FHWA's financial plan and project management plan guidance does not clearly define when a baseline project schedule should be developed or which cost estimate is to serve as a baseline.¹² Both the baseline cost estimate and the baseline schedule are intended to be reference points with which project managers can track progress and deviations. For example, a baseline project schedule (the original planned schedule agreed upon by stakeholders) is intended to be compared to the project's current project schedule (which depicts actual project performance). Likewise, a baseline project cost estimate is intended to be compared to the current project cost estimate.¹³

Four of the five major projects we reviewed (California, Maryland, North Carolina, and Washington) did not have fully developed baseline project schedules. For example, for the major project in Washington, the timeline and schedule in the initial financial plan did not differentiate between major project activities or define significant project milestones. Instead, the initial financial plan focused on the design-build contract used for the project's tunnel construction. In addition, the Maryland project's initial financial plan includes a baseline completion date of December 2012 for the project; yet, the annual financial plan updates did not provide schedule comparisons to reflect an 18-month delay because the baseline schedule was not clear.¹⁴

Moreover, FHWA's financial plan guidance touches on baseline cost estimates, but it does not clearly specify whether the baseline cost estimate is defined at the conclusion of the cost estimate review or upon FHWA's acceptance of the initial financial plan. Without clearly defining when a baseline project cost estimate and schedule should be developed, FHWA cannot accurately evaluate the progress of major projects.

FHWA Guidance Does Not Define When States Should Update Their Project Management Plans

FHWA's guidance states the project management plan should be updated if a significant change has occurred, but the guidance does not define or provide examples of significant changes that the Division Offices can consistently apply to major projects. As a result, States did not update three of the five project

¹² According to the Government Accountability Office, a project's baseline schedule and baseline cost estimate provide critical program controls to support effective project management.

¹³ Baseline schedules and baseline cost estimates are interdependent, since schedule variances are usually followed by cost variances.

¹⁴ In the initial financial plan (2006), the project's completion date was estimated to be December 2012; however, in the financial plan annual update (2012), the completion date was delayed until June 2014.

management plans we reviewed (California, North Carolina, and Texas) to reflect changing events.

For example, the project management plan for a major project in North Carolina was not updated despite a major organizational change (the project sponsor had been absorbed by another State government agency). Additionally, the project management plan for a major project in California was not updated despite changes in the roles and responsibilities of the project's two sponsors—the State and the local transit agency—which led to confusion about who was responsible for developing the project management plan and financial plan. In contrast, Division Officials for a major project in Washington State considered the project management plan to be a “living document” and updated it multiple times to reflect changes to contracts, processes, or the project's organizational structure.

FHWA Guidance Does Not Specify Which Major Project Requirements Should Be Applied to Different Types of Projects

FHWA Headquarters has not provided its Division Offices with specific instructions on how to apply major project guidance to different types of projects. As a result, Division Offices and States did not clearly understand when to apply guidance for projects using financing mechanisms or contracting methods that deviated from those typically used on highway projects.

Key areas that lack specificity in FHWA's financial plan guidance are alternative financing, such as TIFIA loans and public-private partnerships, and design-build contracting, which differs from the traditional design-bid-build method¹⁵ used on highway projects. For example, the Texas Division Office was unsure whether the project developer was required to submit an initial financial plan for a public-private partnership project since it had already submitted a similar financial plan to satisfy a TIFIA loan application requirement for that same project. Discussions between the Division Office and FHWA Headquarters resolved this misunderstanding, and the Division Office subsequently required the project developer to submit an initial financial plan. In another example, the Maryland Division Office did not include required value engineering study provisions in the project management plan. While FHWA guidance states that this study should be included, the Division Office did not believe it applied to design-build projects.

FHWA Guidance Lacks Processes To Ensure That States Fulfill Commitments Defined in Project Management Plans

FHWA's project management plan guidance does not define a process that Division Offices should use to oversee States' implementation of project

¹⁵ Design-bid-build is the more traditional contracting approach in which the design and construction services must be undertaken in sequence.

management plans. Consequently, FHWA Division Offices did not conduct formal assessments to ensure that States were fulfilling commitments defined in project management plans.

For example, FHWA did not ensure that States followed through on project management plan commitments for three of the five major projects we reviewed (California, North Carolina, and Texas). For the major project we reviewed in North Carolina, the State committed to implementing key project management controls, such as developing a risk management plan and conducting internal audits, but FHWA did not ensure that either was done. Moreover, for the major project we reviewed in Texas, FHWA did not ensure that the State fulfilled its commitment to submit updates to the project management plan. Neither the Texas Division Office nor the State was aware of its requirement in the project management plan to update the plan as necessary or notify the Division Office if updates were not necessary.

FHWA AND STATES IDENTIFIED INNOVATIVE METHODS AND MAP-21 PROVISIONS THAT COULD IMPROVE MAJOR PROJECT DELIVERY

We asked FHWA Division Offices and States associated with the five projects we reviewed to identify MAP-21 provisions and other project management tools that could help accelerate delivery, improve management, and enhance oversight of major projects. In response, Division Offices and States pointed to the potential benefits of a wide range of methods—from advanced right-of-way acquisition to interagency leadership teams.

Division Offices and States identified several MAP-21 project delivery provisions that are either already being used or are intended to be used in the future to help accelerate project delivery or increase efficiencies:

- **Advanced right-of-way acquisition.** California Division officials indicated that a MAP-21 provision—which broadens the ability of States to acquire or preserve right-of-way before completion of an environmental review process required under the National Environmental Policy Act of 1969—could accelerate delivery of the State’s major projects. This provision allows States to carry out acquisitions of real property interests for a project before completing federally required environmental reviews¹⁶ and without affecting

¹⁶ The National Environmental Policy Act generally requires FHWA to evaluate the potential environmental effects of road and bridge projects by determining if the project could affect the quality of the human environment. Analyses range from the most rigorous environmental impact statements to the less comprehensive environmental assessments and categorical exclusions.

subsequent approvals. By acquiring right-of-way earlier, the State can save time before construction begins.

- **Construction Manager/General Contractor (CM/GC) contracting method.** Washington Division officials noted that they are considering using CM/GC for the major project we reviewed in the State. MAP-21 authorizes the CM/GC project delivery method, which allows a project owner to engage a construction manager early in the planning and design process. This delivery method is intended to incorporate the contractor's perspective in planning and design decisions, introduce innovations, improve the design quality, and resolve potential third-party issues.
- **Programmatic agreements.** Multiple States we visited have been using programmatic agreements since before MAP-21 was enacted and pointed to their benefits. For example, Washington State already has programmatic agreements in place, with some developed 20 years ago. MAP-21 encourages the use of programmatic agreements between States and FHWA that standardize the environmental consultation, review, and compliance process for federally funded projects. FHWA's Web site notes that expanding the use of programmatic agreements can help to streamline reviews, reduce project implementation time, and increase trust among States and regulatory agencies.

To help States benefit from these MAP-21 provisions, FHWA issued question-and-answer guidance on topics such as advanced right-of-way acquisition, CM/GC contracting methods, and programmatic agreements. FHWA issued a final rule on programmatic agreements and plans to issue regulations to implement provisions for the advanced right-of-way acquisition and CM/GC contracting methods.

Division Offices and States also discussed the potential benefits of innovative contracting methods. For example, all five selected major projects used design-build contracting. Under this type of contract, a joint contracting team controls both the design and construction phases of the project. This method can reduce contract disputes since both the designer and contractor are on the same team. It can also reduce the time to complete a project because the contracting team can decide to begin construction before all design work is completed. In addition, the Texas Department of Transportation entered into a public-private partnership for the major project we reviewed in Texas, which combined public and private funding to plan, develop, design, and construct the project.

Finally, Division Offices and States we visited utilized several other innovative management tools to establish financial integrity, make programmatic improvements, or otherwise increase project efficiencies.

- **Independent Reviews.** Two of the five major projects we reviewed (Maryland and Washington) established independent oversight controls. For example, Washington State’s legislature hired an independent consultant to identify and report on major project issues that could impact the State’s ability to deliver the project on time and within budget. The State said that the report prompted its legislature and other stakeholders to pay more attention to project risks. In another example, the Maryland Department of Transportation hired an external auditor to monitor the major project’s financial activities, including construction and consultant billings. The Division Office indicated that investment in the external auditor increased the project’s financial integrity.
- **Interagency Leadership Team.** North Carolina Division Office officials established an Interagency Leadership Team to put in place programmatic improvements that have indirectly streamlined the environmental approval process. For example, the Interagency Leadership Team’s process improvements helped Federal and State stakeholders come to an early consensus on the projects, which allowed for more thorough identification of the projects’ environmental issues and discussions on how to address them.
- **Alternative Technical Concepts.** Maryland and Washington allowed alternative technical concepts for their design-build construction procurements, which gave contractors an opportunity to propose equal or better designs, or alternative construction methods. Both States requested and received waivers from FHWA to allow bidders to submit proposals based on their alternative technical concept designs without having to submit additional proposals for the base design.

CONCLUSION

Congress requires financial plans and project management plans to help FHWA and States identify and monitor cost, schedule, and funding risks. The ultimate goal is to provide greater assurance that major projects using Federal funds are constructed as quickly and cost effectively as possible and continue to comply with applicable Federal requirements. While FHWA’s reviews of the plans generally ensured that basic requirements were met, FHWA can do more to strengthen its major project oversight by implementing more specific guidance to Division Offices and strengthening controls to ensure that Division Offices more consistently follow Agency requirements. Such oversight improvements may also help FHWA advance a major MAP-21 priority to accelerate the delivery of highway projects.

RECOMMENDATIONS

We recommend that the Federal Highway Administrator:

1. Develop and implement controls to ensure that FHWA reviews and accepts the initial financial plan before authorizing Federal funds for major project construction.
2. Develop and implement controls to ensure that all Division Offices follow FHWA's financial plan and project management plan guidance when overseeing major projects. Specifically, these controls should ensure that:
 - a) cost estimate reviews assess all major project cost elements, and these cost elements are documented in detail;
 - b) any changes to major project costs between the cost estimate review workshop and the approval of the initial financial plan are documented;
 - c) States submit integrated project schedules that clearly identify the project's critical path, and FHWA uses them to monitor project progress; and
 - d) annual financial plan updates provide updated information on project risks and mitigation strategies.
3. Develop and implement controls to ensure that FHWA Division Offices verify that there is reasonable assurance of sufficient toll-based financing, if applicable, before accepting a project's initial financial plan.
4. Clarify financial plan guidance by:
 - a) defining when States are required to develop baseline project cost estimates and baseline project schedules, as well as specify the level of detail required for these baselines; and
 - b) defining when guidance requirements apply to specific project delivery methods or projects involving alternative financing mechanisms, such as TIFIA loans.
5. Strengthen project management plan guidance by:
 - a) defining what constitutes a significant change that would trigger a project management plan update, including examples; and
 - b) requiring periodic, documented assessments of States' implementation of their project management plans to ensure that States fulfill commitments detailed in their plans.

AGENCY COMMENTS AND OFFICE OF INSPECTOR GENERAL RESPONSE

We provided FHWA with our draft report on December 11, 2014, and received its response on January 9, 2015, which is included as an appendix to this report. FHWA concurred with all five recommendations as written and stated that it intends to implement them by December 31, 2016. Accordingly, we consider all recommendations resolved but open pending completion of the planned actions.

We appreciate the courtesies and cooperation of Federal Highway Administration representatives during this audit. If you have any questions concerning this report, please call me at 202-366-5630 or Anthony Zakel, Program Director, at 202-366-0202.

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cc: DOT Audit Liaison, M-1
FHWA Audit Liaison, HAIM-13

EXHIBIT A. SCOPE AND METHODOLOGY

We conducted this audit from July 2013 through December 2014 in accordance with generally accepted Government auditing standards. Those standards require that we plan and perform the audit to obtain sufficient, appropriate evidence to provide a reasonable basis for our findings and conclusions based on our audit objectives. We believe that the evidence obtained provides a reasonable basis for our findings and conclusions based on our audit objectives.

On July 18, 2013, we announced an audit of FHWA's major project oversight, and the objectives were to assess selected major projects to determine whether FHWA oversight ensures that the States (1) prepared initial financial plans and project management plans that comply with FHWA guidance and (2) updated plans to address actions needed to mitigate cost, schedule, and funding risks. On November 22, 2013, we revised our objectives based on congressional interest in the efficacy of project oversight tools and our ongoing mandate to assess provisions for accelerating project delivery included in Subtitle C of the MAP-21. Our revised audit objectives were to review selected major highway projects to (1) determine whether FHWA verified that States' initial and updated financial plans and project management plans met FHWA guidance and (2) identify whether additional project delivery tools are available or being used to manage major projects' cost, schedule, and funding.

We verified with FHWA that there were 30 major projects that had estimated completion dates between 2012 and 2015. We used the following criteria to select 5 major projects from this universe of 30. Since this audit was an assessment of FHWA's oversight of major projects with oversight performed primarily by its Division Offices, we excluded Division Offices that we visited during our previous audit of FHWA's oversight of full oversight projects; these States included Florida, Michigan, and Pennsylvania. We then selected the five States that had the highest total dollar value of major projects. This selection strategy resulted in a non-representative selection of five major projects across five separate States, which means that the findings in this report cannot be projected. We reviewed each of the five major projects as a case study. Exhibit B provides summaries of the projects for informational use only, capturing the information as of the date of the most recent financial plan annual update for each project. While the results from the projects reviewed cannot be generalized across all major projects, we identified issues in the multiple projects we reviewed that pointed to weaknesses in controls applicable across all major projects.

We interviewed FHWA Division officials directly responsible for providing Federal oversight of these five major projects, States and project developers managing these major projects, and FHWA Headquarters officials responsible for major project oversight. We also examined cost estimate review documentation

Exhibit A. Scope and Methodology

and analysis; States' financial plans and project management plans and related FHWA guidance and procedures; and other documents related to cost, schedule, funding, and other project risks. Finally, we asked FHWA Division Offices and States associated with the five projects we reviewed to identify MAP-21 provisions and other project management tools that could help accelerate delivery, improve management, and enhance oversight of major projects. Our review did not assess whether any particular methods or MAP-21 provisions have actually resulted in accelerated project delivery or reduced costs.

EXHIBIT B. MAJOR PROJECT SUMMARIES

I-405 Sepulveda Pass Improvements Project

PROJECT SUMMARY

Interstate 405 (I-405) is a north/south route originating at I-5 in Orange County in Irvine and terminating at I-5 in Los Angeles near the community of Mission Hills. Currently, there is a gap in the northbound high occupancy vehicle (HOV) network along the I-405 corridor.

This major project widens the existing northbound and southbound facilities to add one HOV lane (northbound only) and standardize northbound lanes, median, and shoulders. The project also adds a southbound I-405 mixed flow lane through the I-101/I-405 Interchange. This project is expected to enhance traffic operations by adding freeway capacity in an area that already experiences heavy congestion.

CONTRACT INFORMATION

Design-Builder: Kiewitt Corporation is the Design Consultant and Contractor, with Stantec Incorporated as the Construction Manager.

Current Contract Value:** \$890 million

PROJECT FUNDING*

Federal SAFETEA-LU:	\$117 million
Federal ARRA:	\$189.9 million
Federal STPL-R-STP:	\$10.1 million
State Funding:	\$730.1 million
Local Funding:	\$94.3 million

*As of the 2013 Financial Plan Annual Update

**Provided by FHWA on 12/2/2013



Source:

<http://latimesblogs.latimes.com/lanow/2010/03/sepulveda-boulevard-closure-expected-to-worsen-westside-traffic-woes.html>

PROJECT ESSENTIALS

Location:	Los Angeles, CA
Project Sponsor:	California Department of Transportation and Los Angeles Metropolitan Transportation Authority
Project Delivery:	Design-Build
Private Partner:	None
Lenders:	Bondholders
Cost*:	\$1,141.4 million total
Plans, Spec. & Estimates*	\$25.6 million
Construction*	\$983.0 million
Project Approval & Environment*	\$21.5 million
Right of Way*	\$108.7 million
Reversible Lane Project*	\$2.6 million

NEPA Phase

1/7/2002
Notice of Intent (NOI)**

Design Phase

4/25/2008
Record of decision**

4/23/2009
Project Authorization for Construction Phase**

Construction Phase

6/1/2009
Notice to Proceed for Primary Contract**

Contract Close-out Phase

6/30/2014
Substantial Completion**

1/31/2016
Estimated Contract Closeout**

EXHIBIT B. MAJOR PROJECT SUMMARIES (CONTINUED)

Maryland Intercounty Connector

PROJECT SUMMARY

The Intercounty Connector (ICC) is a toll highway in Maryland linking the I-270/I-370 corridor in eastern Montgomery County, and the I-95/US 1 corridor in northwestern Prince George's County. The highway will be approximately 18 miles in length and have six lanes total. The ICC will have a variable tolling structure based on peak and off-peak travel times. Toll collection will be fully electronic, allowing toll collection without significant travel delays. The road is also expected to stimulate new transit growth through the creation of additional express bus routes along the corridor.



Source: 2012 FHWA Financial Plan Update



Source: <http://www.iccproject.com/project-images.php>

CONTRACT INFORMATION

Design-Builders: Intercounty Constructors, MD200 Constructors, and IC3

Current Contract Value: \$2.399 billion

PROJECT FUNDING***

Federal Funding: \$19.3 million

GARVEE Bonds: \$750.0 million

State Funding: \$444.9 million

State Toll Funding: \$668.9 million

TIFIA: \$516 million

*As of the 2012 Financial Plan Annual Update

**Provided by FHWA on 12/12/2013

***Source: FHWA Project Profile

PROJECT ESSENTIALS

Location: Montgomery and Prince George's County, MD

Project Sponsor: Maryland State Highway Administration (SHA) and Maryland Transportation Authority (MdTA)

Project Delivery: Design-Build

Private Partner: None

Lenders: Bondholders, USDOT TIFIA

Cost*: \$2,399.1 million total

Engineering* \$252.0 million

Right of Way* \$260.7 million

Construction* \$1,757.1 million

Mitigation* \$129.3 million

NEPA Phase

6/3/2003
Notice of Intent (NOI)**

Design Phase

5/29/2006
Record of Decision**

7/14/2006
Project Authorization for Construction**

11/9/2007
Notice to Proceed for First Contract**

Construction Phase

8/31/2014
Substantial Completion**

Contract Close-out Phase

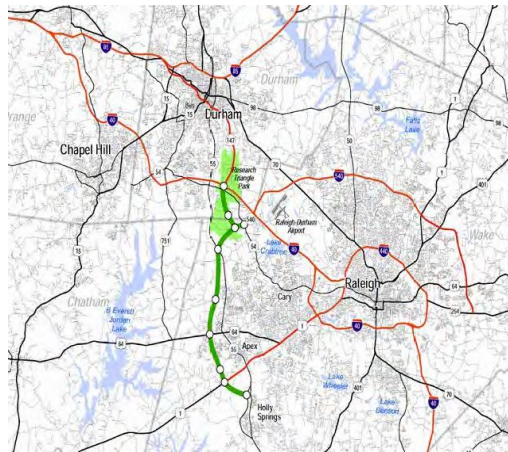
TBD
Contract Closeout**

EXHIBIT B. MAJOR PROJECT SUMMARIES (CONTINUED)

Triangle Expressway Project

PROJECT SUMMARY

The 18.8 mile Triangle Expressway provides congestion relief on existing north-south routes serving the Research Triangle Park regions, including I-40, between Raleigh and Durham, as well as improves commuter mobility, accessibility and connectivity to the Research Triangle Park employment center. The tolled highway comprises three sections: Phase 1 with 2.8 miles of North Carolina 540 and 3.4 miles of NC 147, Phase 2 with 6.6 miles of NC 540 from the southern terminus of Phase 1 to US 64, and Phase 3 with 6 more miles of NC 540 from the southern terminus of Phase 2 to the NC 55 Bypass near Holly Springs.



Source: 2009 Initial Finance Plan



Source: WWF Inspection #13

CONTRACT INFORMATION

Design-Builders: ST Wooten; and Raleigh-Durham Roadbuilders, a Joint Venture of Archer Western Contractors and Granite Construction Company

Current Contract Value:** \$1.148 billion

PROJECT FUNDING*

General Bonds: \$268.5 million

Build America Bonds: \$351.9 million

TIFIA: \$386.7 million

Annual State Appropriation: \$25.0 million

Other: \$169.6 million

*As of the 2012 Financial Plan Annual Update

**Provided by FHWA on 12/5/2013

PROJECT ESSENTIALS

Location:	Raleigh-Durham, NC
Project Sponsor:	North Carolina Turnpike Authority
Project Delivery:	Design-Build
Private Partner:	Raleigh-Durham Roadbuilders
Lenders:	Bondholders, USDOT TIFIA
Cost*:	\$1134.9 million total
Prior Expenditures*:	\$153.6 million
Construction*:	\$827 million
Capitalized Interest & Debt Service*	\$126.1 million
TIFIA Credit Charge*	\$10.5 million
Other*	\$17.7 million

NEPA Phase

6/7/2006
Notice of Intent (NOI)**

4/30/2004
Record of Decision (ROD) for Western Wake Freeway**

8/26/2008
Categorical Exclusion (CE) for Northern Wake Freeway**

Design Phase

7/29/2008
Finding of No Significant Impact (FONS) for Triangle Parkway**

N/A
Project Authorization for Construction Phase**

8/3/2009
Notice to Proceed for Primary Contract**

Construction Phase

1/2/2013
Substantial Completion**

Contract Close-out Phase

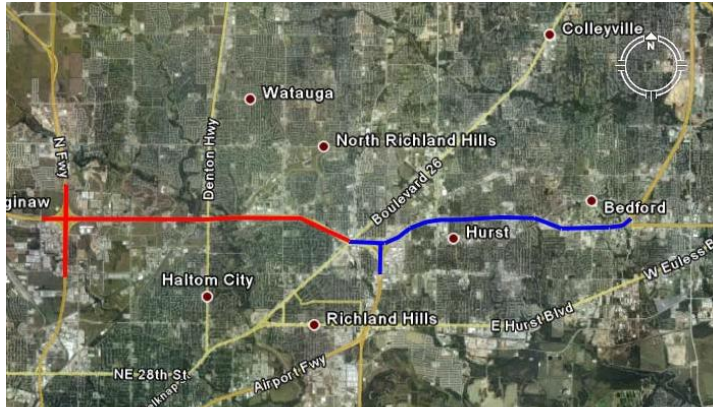
7/1/2013
Contract Closeout**

EXHIBIT B. MAJOR PROJECT SUMMARIES (CONTINUED)

North Tarrant Express

PROJECT SUMMARY

The North Tarrant Express consists of two projects. The first is for 13 miles of Interstate 820 and State Highways 121 from north of Fort Worth to just southwest of Dallas Fort Worth International Airport. The existing highway of Interstate 820 includes two general purpose lanes in each direction. Proposed improvements include three general lanes in each direction with two managed lanes in each direction, for a total of 10 lanes with frontage roads for future traffic volume. The second project includes developing the remainder of the corridors along State Highway 183. When all phases are completed, the North Tarrant Expressway will comprise of 36 miles of managed lanes.



Source: 2012 North Tarrant Express Finance Plan



Source: <http://www.northtarrantexpress.com/>

CONTRACT INFORMATION

Contractor: Bluebonnet Contractors, LLC
Current Contract Value:** \$1.463 billion
Duration of Concession: 52 years

PROJECT FUNDING*

Base Equity: \$426.0 million
TIFIA: \$649.4 million
Private Activity Bonds: \$397.8 million
State Funds: \$580.8 million
TIFIA Interest: \$53.4 million

*As of the 2011 Financial Plan Annual Update

**Provided by FHWA on 12/2/2013

PROJECT ESSENTIALS

Location: Dallas-Fort Worth Metroplex
Project Sponsor: Texas Department of Transportation, NTE Mobility Partners LLC (concession company and TIFIA borrower)
Project Delivery: Design-Build-Finance-Operate-Maintain
Private Partner: NTE Mobility Partners, LLC, Other
Lenders: Bondholders, USDOT TIFIA
Cost:** \$2,107.4 million total
 Design and Construction* \$1,466.3 million
 Right of Way* \$211.2 million
 Tolling and ITS* \$57.6 million
 Debt Fees* \$156.7 million
 Reserves* \$60.0 million
 Other* \$155.6 million

NEPA Phase

2/19/2008
 Receipt of Environmental Assessment (EA)**

7/14/2009
 Project Authorization for Construction Phase**

10/26/2009
 Finding of No Significant Impact (FONSI)**

12/31/2009
 Notice to Proceed for Primary Contract**

Design Phase

Construction Phase

Contract Close-out Phase

6/23/2015
 Estimated Substantial Completion**

9/21/2015
 Estimated Final Acceptance*

EXHIBIT B. MAJOR PROJECT SUMMARIES (CONTINUED)

SR99 Alaskan Way Viaduct Replacement Project

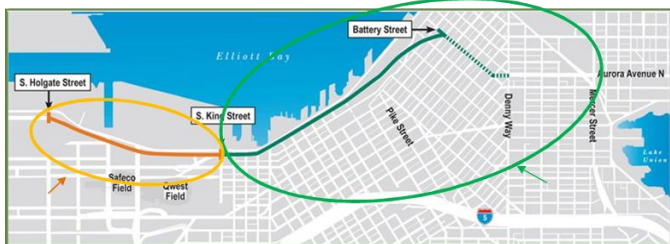
PROJECT SUMMARY

The Alaskan Way Viaduct is an elevated section of State Highways SR 99, one of two major north-south corridors in Seattle. In 2001, the viaduct was damaged by the Nisqually Earthquake, and it became apparent that the viaduct was nearing the end of its useful life and needed to be replaced.

This project consists of two parts: the first is the replacement of the viaduct with a side-by-side roadway that will have wider lanes at the south end of the viaduct. The second is the replacement of the Central Waterfront viaduct section with a bored tunnel underneath downtown Seattle connecting the new SR99 roadway south of downtown and Aurora Avenue in the north.



Source: Initial Financial Plan



Source: Initial Financial Plan

CONTRACT INFORMATION

Design-Builder: Seattle Tunnel Partners, a joint venture of Dragados USA and Tutor Perini Corporation. The team also includes Frank Coluccio Construction, Mowat Construction, and HNTB Corporation

SR 99 Bored Tunnel Contract Value:
\$1.101 billion

PROJECT FUNDING*

Federal Funding: \$483.3 million

State Funding: \$1,302.1 million

Local Funding: \$296.6 million

State Toll Funding: \$62.8 million

Port of Seattle: \$95.1 million

*As of the 2013 Financial Plan Annual Update

PROJECT ESSENTIALS

Location: Seattle, WA

Project Sponsor: Washington State Department of Transportation, King County, City of Seattle and Port of Seattle

Project Delivery: Design-Build

Private Partner: None

Lenders: None

Cost*: \$2,239.8 million total

Preliminary Engineering*	\$135.8 million
Right of Way*	\$182.2 million
Construction*	\$1,736.7 million
Viaduct Removal*	\$90.0 million
Mercer Street West*	\$95.1 million

NEPA Phase

6/22/2001
Notice of Intent (NOI)

Design Phase

8/22/2011
Record of decision

8/23/2011
Project Authorization for construction

08/23/2011
Notice to Proceed for Primary Contract

Construction Phase

1/31/2016
Estimated Substantial Completion

Contract Close-out Phase

TBD
Contract Closeout

EXHIBIT C. MAJOR CONTRIBUTORS TO THIS REPORT

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Petra Swartzlander	Senior Statistician
Christina Lee	Writer-Editor

APPENDIX. AGENCY COMMENTS



U.S. Department
of Transportation
**Federal Highway
Administration**

Memorandum

Subject: **INFORMATION:** Federal Highway
Administration (FHWA) Response to Office of
Inspector General (OIG) Draft Report on Major
Projects Oversight

Date: January 9, 2015

From: Gregory G. Nadeau
Acting Administrator

In Reply Refer To:
HCFB-30

To: Thomas E. Yatsco
Assistant Inspector General for Surface
Transportation Audits

The FHWA carries out a significant level of oversight for States' high-cost and complex projects by closely overseeing the financial and project planning. Currently, there are a total of 101 active major projects with an estimated cost of over \$147 billion. This oversight includes FHWA's approval on many critical elements of the projects, including cost estimation, funding sources, and work scope. Through its demonstrated processes and internal controls, FHWA directly supports the timely delivery of our Nation's most expensive and challenging infrastructure projects. Examples of these major projects include the replacement of the Tappan Zee Bridge over New York's Hudson River, expedited as a High Priority Project by the Administration with a total cost of about \$5 billion, and the construction of the Ohio River Bridge, a complex bi-State project connecting the metropolitan areas of Louisville, KY and Clark County, IN. The FHWA is also implementing many innovative methods that are accelerating the delivery of major projects – a top FHWA priority that is supported within the current surface transportation authorization.

- The FHWA has strong measures in place to validate States' financial and project management plans—critical documents that commit funds and schedules—before authorizing Federal funds for construction. Supporting full transparency, FHWA annually reports key information on each major project to Congress including a description of the work, costs and schedule status, the number of cost estimate reviews conducted, and the number of financial plans reviewed.
- Each FHWA major project has a designated oversight manager serving the Agency's lead in overall project administration, review and acceptance of the financial plans, and in providing status reports to FHWA's top management. Additionally, specially designated project oversight managers are assigned to the highest risk major projects.

- The FHWA’s review of cost estimates is a risk-based approach, which prioritizes the analysis of project uncertainties based on their level of risk, rather than considering all parts of the project equally. In addition, FHWA conducts thorough reviews of project funding sources and determines if sufficient funds are available to complete the construction of the major project.
- FHWA conducts a variety of innovative contracting methods through its Every Day Counts Initiative that help accelerate project delivery, including advanced right-of-way acquisition, which allows the ability to acquire property earlier in the process, and the “Construction Manager General Contractor” method, which engages the contractor earlier in the planning process.
- Existing FHWA efforts are bolstered by a spirit of continuous improvement, using opportunities to strengthen oversight. For example, upon overseeing a first-of-its-kind major project that used public-private partnership as well as Transportation Infrastructure Finance and Innovation Act program funding, FHWA took the opportunity to develop specific guidance for this type of project.

Based upon our review of the draft report, we concur with recommendations 1 through 5 as written and intend to implement them by December 31, 2016.

We appreciate this opportunity to offer additional perspective on the OIG draft report. Please contact Regina McElroy, Director of the Office of Innovative Program Delivery, at (202) 366-8006 with any questions or if the OIG would like to obtain additional details about these comments.