Office of Inspector General
Audit Report

FHWA HAS OPPORTUNITIES TO IMPROVE OVERSIGHT OF ARRA HIGH DOLLAR PROJECTS AND THE FEDERAL-AID HIGHWAY PROGRAM

Federal Highway Administration

Report Number: MH-2013-012

Date Issued: November 14, 2012

Memorandum

U.S. Department of Transportation
Office of the Secretary of Transportation
Office of Inspector General

Subject: ACTION: FHWA Has Opportunities To Improve Oversight of ARRA High Dollar Projects and the Federal-Aid Highway Program
Federal Highway Administration
Report Number MH-2013-012

Date: November 14, 2012

From: Joseph W. Comé
Assistant Inspector General for Highway and Transit Audits

Reply to Attn. of: JA-40

To: Federal Highway Administrator

The Federal Highway Administration (FHWA) is responsible for overseeing $27.5 billion in funding provided by the American Recovery and Reinvestment Act of 2009 (ARRA).[1] Those funds have been committed to nearly 13,000 infrastructure projects, ranging from relatively simple paving projects to more complex highway and bridge construction. ARRA established tight deadlines for distributing ARRA highway funds and added new accountability and transparency requirements. The Department of Transportation made a commitment to ensure that all projects meet ARRA timeframes, Federal requirements, and legislative goals.

As part of our ARRA oversight, we initiated an audit of selected FHWA high dollar ARRA projects, which we defined as bridge and highway projects receiving at least $20 million and $25 million, respectively, in ARRA highway infrastructure investment grants. In June 2010, we issued an advisory to the Department alerting it that States were not conducting required value engineering (VE) studies. Accordingly, our work focused on identifying significant issues that could impact FHWA's effective oversight of ARRA. As such, we are reporting on whether (1) projects conducted required VE studies and (2) ARRA funds were obligated based on the States' best estimate of cost.

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[1] Pub. L. No. 111-5 (2009).

To conduct our audit, we identified 130 ARRA projects that met our high dollar threshold. We assessed 32 of these projects in 21 States and Washington, DC, for compliance with VE and other key Federal requirements.[2] We also assessed FHWA's plans to meet the September 30, 2010, deadline for obligating ARRA funds and FHWA's oversight of States' cost estimating practices when obligating ARRA. We interviewed FHWA, State, and local officials and consultants and contractors; reviewed relevant laws and FHWA regulations, policies, and guidance; and examined project documents.

We conducted this performance audit between January 2010 and July 2012 in accordance with generally accepted Government auditing standards. Exhibit A provides a detailed description of our objective, scope, and methodology, including the statistical projections used in the report. It also notes related work initiated in conjunction with this project. Exhibit B lists the States and projects we reviewed, and exhibit C lists the projects for which States and Washington, DC, did not conduct a VE study.

RESULTS IN BRIEF

One-third of the States in our review did not perform VE studies during the project planning or design phase for at least one ARRA project.[3] Specifically, we found that, in 32 projects we reviewed, 10 projects in 7 States and Washington, DC, did not undergo federally required VE studies during planning or design. Based on our statistical sample and analysis, we estimate that FHWA missed opportunities to maximize ARRA investments by about $82 million because it did not ensure States conducted all required VE studies.[4] While we recognize that estimates of savings resulting from VE studies may vary, improvements in the States' compliance with VE requirements could yield significant future savings for the Federal-aid highway program. We first alerted FHWA of these concerns in a June 2010 ARRA advisory.[5] FHWA took prompt actions during our audit to address our concerns, such as revising its VE regulation and policy to include the dollar threshold for conducting VE studies on bridge projects. FHWA now faces a challenge in ensuring that States effectively and fully implement the new VE regulations that were finalized in March 2012.

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[2] We performed a comprehensive review of applicable requirements in 14 of the 32 projects.

[3] Federal law required a VE study during the planning or design phase on any Federal-aid highway project on the National Highway System with an estimated total cost (including Federal, State, and local funds) of $25 million or more. VE is also required for all FHWA-funded bridge projects with estimated total costs of $20 million or more.

[4] Individual VE studies may not yield dollar savings recommendations. Our estimate was based on 18 projects sampled from a 110-project universe that received under $100 million in ARRA funds, resulting in a 90-percent confidence interval ranging from $25 million to $139 million. See exhibit A of this report for a detailed discussion on how we arrived at this estimate.

[5] OIG ARRA Advisory AA-2010-001, "FHWA's Oversight of the Use of Value Engineering Studies on ARRA Highway and Bridge Projects," June 28, 2010. OIG reports and advisories are available on our Web site: www.oig.dot.gov.

FHWA did not consistently emphasize its cost estimating guidelines designed to help ensure States obligate funds for projects based on best estimates of project costs, increasing the likelihood of overestimated costs and the potential that ARRA funds will go unused when ARRA concludes. Shortly after ARRA's enactment, the Department reported that States routinely received low bids ranging from 10 percent to 30 percent below the States' engineering estimates. A year later, in 16 of 17 ARRA projects we reviewed in 8 States and Washington, DC, for cost estimates, the winning construction contract bids came in below the engineering estimates—by an average of 18 percent, and in one case by as much as 41 percent. One factor that may have contributed to these low bids is that project estimates may not have reflected current market conditions, which had changed dramatically due to the economic downturn. Officials in only three of nine Division Offices we visited said they performed an analysis recommended by FHWA's cost estimating guidelines to ensure sound estimates. Accurate estimates were especially important after September 30, 2010, as ARRA no longer permitted States to re-obligate ARRA funds to new projects. With very limited exceptions, bid savings realized from the differences between estimates and contract award amounts occurring after this final obligation deadline will have to be returned to the U.S. Treasury, and will not be available for ARRA highway infrastructure improvement projects.[6] FHWA now faces the challenge to aggressively monitor ARRA obligations for any unused or idle funds that result from overestimating or other occurrences, such as reducing the scope of a project, and then to make certain that the States re-obligate or return ARRA funds before they expire in 2015.

We are recommending actions for FHWA to improve its oversight of high dollar ARRA projects and to address the issues raised in our earlier ARRA VE advisory.

BACKGROUND

FHWA, States, and local public agencies overseeing and administering ARRA projects must adhere to 23 United States Code (U.S.C.) and 49 U.S.C. While Federal law requires FHWA and a State to enter into an agreement documenting the extent to which the State assumes FHWA responsibilities, FHWA is ultimately accountable for ensuring projects meet Federal requirements.

According to 23 U.S.C., States are required to submit a formal project agreement for each proposed Federal-aid project. FHWA's approval of the agreement creates an obligation of Federal funds.[7] However, before executing the agreement, FHWA must ensure that the State has met all applicable prerequisite requirements of

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[6] FHWA plans to re-obligate $25 million per year in recovered ARRA funds for allowable project cost overruns until September 30, 2015, when ARRA funds expire and must be returned to the U.S. Treasury.
[7] An obligation denotes that FHWA has formally committed Federal funds to the project.

Federal laws and implementing regulations. For instance, one prerequisite requires the State to include the proposed project in its relevant Metropolitan Transportation Improvement Program (TIP) or Statewide Transportation Improvement Program (STIP)—each of which outlines and prioritizes all State infrastructure projects. The State's request to obligate Federal funds for a particular project must be supported by its best estimate of project costs.

According to FHWA's guidelines, which are not mandatory, a State's estimate of project costs should be within 10 percent of the low bid for at least 50 percent of all projects.[8] If a State is not achieving this degree of accuracy over a period of time, such as 1 year, FHWA's reliance on the State's estimates may decline. Further, if a State overestimates project costs, Federal funds, which could be used for other projects, unnecessarily remain unused for an extended time. Conversely, underestimating may not provide enough funding to a project, which can cause delays while a State arranges for additional funding.

FHWA met ARRA's statutory timeframes for distributing ARRA funds and took steps to increase its oversight. For example, FHWA created national review teams to independently assess States' management of ARRA funds, used "Program Accountability and Results Reviews" to assess project risks, and implemented a checklist to assist Division Offices in their evaluation of the completeness of project documents before construction authorization.

FHWA OVERSIGHT DID NOT FULLY ENSURE PROJECTS COMPLIED WITH FEDERAL REQUIREMENTS FOR VALUE ENGINEERING STUDIES

FHWA did not always ensure States complied with the requirement to perform VE studies during a project's planning or design phase. By not ensuring States conducted all required VE studies, FHWA lost opportunities to maximize ARRA investments.[9] Furthermore, while FHWA took some corrective actions after we issued an ARRA advisory in June 2010, oversight vulnerabilities remain, such as ensuring States effectively and fully carry out VE requirements.

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[8] FHWA's "Guidelines on Preparing Engineer's Estimate, Bid Reviews and Evaluation," January 20, 2004.

[9] Not all VE studies result in cost savings. In general, a VE analysis is conducted to provide recommendations regarding project safety, reliability, and efficiency; improve project value and quality; and reduce the time to complete a project.

FHWA Missed the Opportunity To Maximize ARRA Funds by Not Ensuring States Completed VE Studies

Of the 32 projects we reviewed for compliance with the VE requirement (of the 130 that met our high dollar threshold), 7 States and Washington, DC, did not conduct VE studies for a total of 10 ARRA projects (see table 1).[10] The lack of a VE study means there was no upfront independent analysis of a project to improve its performance, reliability, quality, and safety, and to reduce its life-cycle costs. States are required by law to conduct at least one VE study during the planning or design phase for all FHWA-funded highway projects on the National Highway System with an estimated cost of $25 million or more and all FHWA-funded bridge projects with an estimated cost of $20 million or more.

Table 1. High Dollar ARRA Projects and Number of Projects Reviewed for a VE Study in the Planning or Design Phase

High Dollar Projects	Total	OIG VE Study Statistical Sample		Other Projects Reviewed for VE Study	
		Total	Without a VE Study	Total	Without a VE Study
Receiving $100 Million or More in ARRA Obligations	7	0	0	3	0
Receiving Less than $100 Million in ARRA Obligations	121	18	5	10	5
With Over 50 percent ARRA Obligations Expended	2	0	0	1	0
Total	**130**	**18**	**5**	**14**	**5**

Source: OIG and FHWA Financial Management Information System.

While we recognize that estimates of savings resulting from individual VE studies may vary, based on the results of our statistical sample that included 18 of 110 high dollar projects receiving ARRA obligations under $100 million, we estimate that FHWA missed the opportunity to make about $82 million in ARRA funding available for other highway projects because FHWA did not make sure that States completed all the required VE studies.[11] However, the financial impact of not meeting all VE requirements may be higher, since our estimate was only for high dollar projects receiving ARRA obligations under $100 million and did not include all ARRA projects with total project costs that met or exceeded the VE

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[10] On July 6, 2012, the Moving Ahead for Progress in the 21st Century Act (Pub. L. No. 112-141), changed the requirement for providing VE studies to each National Highway System highway and bridge project with an estimated total cost of $50 million and $40 million, respectively.

[11] We found that States did not conduct required VE studies for 5 of the 18 projects. We estimated an average of 7.4 percent VE savings based on the 18 projects in our sample and applied the percentage to the 5 projects in our sample that did not have a required VE study in order to project to all projects that were estimated not to have a required VE study out of the 110 projects in our universe. Exhibit A of this report provides details on how we arrived at this estimate.

study threshold requirements. On December 5, 2011, FHWA provided our office with its own review of the 119 projects we identified as high dollar, and identified 10 projects that did not undergo a State-led VE study. Using a 10-year historical average of VE savings incurred on projects, FHWA estimated that the potential lost savings was about $30 million for the 10 projects. While our approach used to estimate the financial impact for this group of projects differed from FHWA, both approaches show that improvements in the States' compliance with VE requirements could yield significant future savings for the Federal-aid highway program.

FHWA Took Actions To Address Our ARRA Advisory, but VE Oversight Challenges Remain

During our audit, FHWA took prompt actions to address our concerns reported in our ARRA advisory—that States were not conducting all required VE studies. Those actions included issuing revised VE regulations and policy. However, challenges remain for improving VE oversight. Specifically:

- Federal highway regulations regarding VE requirements were out-of-date when we began our review in 2010. Officials responsible for VE oversight on one project stated that they did not perform the required VE study because they relied on Federal regulations that were not updated to include 2005 VE legislative changes. These statutory changes included the new requirement that bridge projects, with an estimated cost equal to or exceeding $20 million, undergo VE studies. FHWA issued a revised internal VE policy in May 25, 2010,[12] and on March 15, 2012, issued revised VE regulations to reflect the changes enacted in 2005.[13] FHWA now faces a challenge in ensuring that States are aware of the revised Federal regulations, and begin to effectively and consistently implement them in a timely manner.

- In June 2010, we reported that most Stewardship and Oversight Agreements between the States and FHWA did not mention VE, cite the $20 million threshold for bridge VE studies, or correctly explain the bridge VE requirement. Our current review found that some States still did not mention VE or cite the VE requirements correctly. FHWA made a recent improvement in this area by revising its Stewardship and Oversight Agreement guidance in July 2011, to include the use of VE studies as an effective stewardship and oversight indicator. However, the revision does not specify

[12] FHWA's "Updated FHWA Value Engineering (VE) Policy," May 25, 2010.
[13] 77 Code of Federal Regulations 15250 (March 15, 2012).

that the indicator must be included in Stewardship and Oversight Agreements.[14]

- FHWA did not ensure that all States subsequently conducted VE studies for the projects identified in our June 2010 ARRA advisory as missing VE studies. According to FHWA, for maximum benefit, VE analysis should be conducted as early as practicable in the planning or design phase of a project. FHWA's actions regarding two projects, involving the resurfacing of Connecticut's Merritt Parkway, clearly demonstrate the potential value in carrying out a study, even during project construction.[15] After construction began, FHWA found that no VE study had been performed and requested one. The State conducted a joint VE study for both projects, which resulted in nearly $2 million in cost savings.

- Our review found that FHWA exempted a State from conducting VE studies on some projects by authorizing "waivers," a practice that is not allowed under existing regulations. Specifically, FHWA's Oklahoma Division Office waived VE requirements for three ARRA high dollar projects. Among other things, the Oklahoma Department of Transportation claimed that the restrictive scope and nature of the projects, and their immediacy, would not allow for any plan revisions. Consequently, the Division Office concurred that "it is in the public interest to waive the requirement to perform VE studies."

Beyond ARRA, FHWA faces challenges in effectively and fully implementing the final VE regulation and making VE studies a viable tool to reduce costs and increase safety and quality on applicable federally funded projects. Responses to FHWA's June 22, 2011, Notice of Proposed FHWA Rulemaking, which resulted in its March 2012 rule, still showed a broad range of States' concerns regarding the implementation of the requirement. These concerns include balancing the States' need for flexibility in conducting VE studies, determining what costs trigger a VE study, and lack of adequate staffing to meet the requirement.

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[14] FHWA's April 14, 2006, "Federal-aid Highway Program Stewardship/Oversight Agreement Guidance" was in effect when we started our review and was revised on July 1, 2011.

[15] Our ARRA advisory did not discuss the Connecticut Merritt Parkway.

FHWA DID NOT CONSISTENTLY EMPHASIZE ITS COST ESTIMATING GUIDANCE AND FACES A CHALLENGE IN MONITORING UNEXPENDED ARRA OBLIGATIONS

FHWA took steps to make certain that States met statutory deadlines for committing or obligating ARRA funds; however, FHWA did not consistently emphasize its cost estimating guidance designed to help ensure States obligate funds for projects based on best estimates of project costs. Insufficient attention to cost estimating increased the likelihood that States overestimated some project costs, which could lead to leaving ARRA funds unexpended when ARRA concludes. Expired funds would run counter to ARRA's intent that States use the funds to the fullest extent to spur economic activity.

States initially calculated ARRA project obligation amounts based on a project's engineering estimates. In early 2009, shortly after ARRA's enactment, the Department reported that States routinely received bids ranging from 10 percent to 30 percent below their engineering estimates. As required, States adjusted their obligation amounts for projects after the winning contract bids came in lower than expected, as many bids did. States could make these adjustments and re-obligate the funds to additional projects only until the ARRA obligation deadline of September 30, 2010. However, even as this deadline neared, we found a continuing trend in States' overestimating costs. Specifically, in 16 of 17 ARRA projects, in 8 States and Washington, DC, the winning construction contract bids came in below the engineering estimates—by an average of 18 percent, and in one case by as much as 41 percent.[16]

One reason for a pattern of estimates that exceeded winning bids is that FHWA did not consistently emphasize the importance of using existing FHWA cost estimating guidance. FHWA issued this guidance to its Division Offices to help them ensure that States developed sound engineering estimates, which would minimize large gaps between estimates and contract awards. FHWA guidance considers a State to have credible estimates if the estimates are within plus or minus 10 percent of the low bid for at least 50 percent of the projects awarded over a period of time, such as 1 year. We did not assess States' compliance with FHWA's guidance, which is not mandatory. However, only three of nine Division Offices we visited, acknowledged performing such an analysis to determine whether States had met FHWA's cost estimating guidelines for credible estimates. According to FHWA, considering the timeframes ARRA imposed to obligate funds, it actively worked with the States to obligate funds and encouraged the use of best estimates. This was done through conference calls with State counterparts, Division Offices' interactions with the States, and discussions on a project-by-project basis. In

[16] Exhibit A of this report provides details on how we selected these projects.

August 2010, shortly before the deadline, FHWA Headquarters issued a memorandum to remind the States of the deadline and in September 2010 urged the States to research current costs compared to engineers' estimates and revise obligations to minimize the return of unused ARRA funds to the U.S. Treasury.

In our opinion, the economic downturn and resulting changes in construction market conditions (i.e., a nationwide pattern of low bids) warranted greater FHWA emphasis on the review and reassessment of the States' engineering estimates. Any bid savings, which States realize from the differences between estimates and contract award amounts after the final obligation deadline, create the potential that ARRA funds will go unused elsewhere because ARRA narrowly restricts how these funds can be used.[17] By ARRA's final obligation deadline, FHWA had successfully obligated all ARRA highway infrastructure grants, but the States had yet to award construction contracts for an estimated $1.5 billion in approved ARRA project obligations. As a result, there is an increased likelihood that ARRA funds will have to be returned to the U.S. Treasury after September 30, 2015; thereby reducing funds available for ARRA highway infrastructure improvement projects. With unexpended ARRA obligations still remaining, FHWA will face a challenge in aggressively monitoring these obligations for any unused or idle funds occurring as a result of overestimating or other occurrences, such as reductions in the scope of a project, and making certain that the States re-obligate or return ARRA funds before they expire in 2015.

CONCLUSION

FHWA is responsible for overseeing over $27 billion in ARRA funding for highway and bridge projects across the Nation—in addition to the billions of dollars FHWA is already responsible for overseeing under the Federal-aid highway program. In responding to this large, rapid infusion of new highway dollars, FHWA met the initial goals of ARRA by starting billions of dollars worth of projects and obligating funds to meet tight statutory milestones. However, FHWA has missed opportunities to maximize ARRA investments on high dollar projects due to weaknesses in some States' implementation of VE requirements and cost estimating practices. The challenge for FHWA in the years to come is to make certain effective oversight occurs on other high dollar ARRA projects that have yet to be completed, and apply lessons learned from ARRA to strengthen the oversight mechanisms used in the Federal-aid highway program.

[17] After September 30, 2010, any State ARRA funds FHWA recovers can be used only on an existing ARRA project for costs related to legitimate cost overruns within the original scope of work and purpose associated with the project. FHWA plans to re-obligate $25 million per year nationwide in recovered ARRA funds for cost overruns.

RECOMMENDATIONS

We recommend that the Federal Highway Administrator:

1. Verify that required VE studies were conducted for all ARRA projects that were not identified in this report, or identify reasons for not conducting them.

2. Identify steps needed to increase States' awareness of and compliance with FHWA's new March 15, 2012, rule covering VE legislative changes and revised guidance contained in FHWA's May 25, 2010, memorandum, "Updated FHWA Value Engineering Policy."

3. Verify that Division Offices review each State's procedures for estimating costs, including procedures to conduct periodic reviews and to address significant changes in market conditions.

4. Develop and implement a plan to make sure controls are in place to effectively manage remaining unexpended ARRA funds.

AGENCY COMMENTS AND OFFICE OF INSPECTOR GENERAL RESPONSE

We provided FHWA with our draft report on July 12, 2012, and received its response on October 18, 2012. FHWA's response is included in its entirety as an appendix to this report. In response to our recommendations, FHWA concurred with recommendations 1 through 3 and concurred in part with recommendation 4. Based on actions FHWA has taken and recent MAP-21 changes to VE requirements, we consider recommendation 2 closed. We consider recommendation 3 to be resolved but open pending receipt of the documentation supporting the actions taken.

In its response, FHWA acknowledges that some projects did not include the required VE analysis, but believes our estimate of $82 million in savings is overstated based on its own review of the projects examined in our audit. The exact financial impact of failing to conduct VE studies is difficult to precisely estimate, and the approach we used to estimate lost opportunities for financial savings differed from those of FHWA. In addition, the timing of our respective reviews differed. For example, FHWA's approach consisted of data compiled from Division Offices, where our estimating approach included a statistical sample and analysis of actual project documentation and excluded projects not on the National Highway System. In those instances where FHWA policies were not clear about whether a particular project should have conducted a VE study, such as the three "off-the-shelf" projects referred to by FHWA in its response, we kept them in our universe. Excluding these three projects would have only dropped our estimate slightly, reducing it to about $80 million. Regardless, it is important to reiterate that improvements in the States' compliance with VE requirements could yield significant future savings for the Federal-aid highway program.

For recommendation 1, FHWA stated that it completed actions addressing this recommendation and identified 10 projects where VE analyses were not completed. We agree that it is no longer practical to conduct a VE study for these projects and the other projects we identified in our report because the projects are either mostly completed or in construction. Additionally, since we issued our ARRA advisory on VE studies in June 2010, FHWA has worked proactively with the States to correct the conditions we identified and to minimize the potential loss in VE savings. Accordingly, we consider recommendation 1 to be closed.

Regarding recommendation 4, FHWA stated it has developed additional controls to ensure that the States use ARRA funds timely and appropriately. We announced audits on June 21, 2012, that will include reviews of FHWA's oversight of unexpended ARRA obligations.[18] As a result, we plan to close this recommendation and will provide an assessment of these controls in a later report.

ACTIONS REQUIRED

In accordance with follow-up provisions in Department of Transportation Order 8000.1C, we request that FHWA provide documentation demonstrating completion of recommendation 3 within 30 days after completion.

We appreciate the courtesies and cooperation of FHWA representatives during this audit. If you have any questions concerning this report, please call me at (202) 366–5630 or David Pouliott, Program Director, at (202) 366–1844.

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cc: DOT Audit Liaison, M–1

[18] The two audits will review FHWA's oversight of unexpended ARRA obligations. The first audit will (1) assess FHWA's controls for monitoring unexpended ARRA obligations and (2) identify unexpended ARRA funds at risk of not being expended before final deadlines. The second audit will determine whether FHWA's policies, procedures, and management activities result in the prompt and appropriate use or return of unexpended ARRA funds.

EXHIBIT A. OBJECTIVE, SCOPE, AND METHODOLOGY

Our audit objective was to assess whether FHWA's oversight of high dollar ARRA projects resulted in compliance with Federal requirements for cost, quality, and construction scheduling. The focus of our audit was not to provide an overall assurance that FHWA met all requirements, but to identify trends, issues, or challenges that affected FHWA's oversight of ARRA. As a result we are reporting specifically on whether (1) projects conducted required VE studies and (2) ARRA funds were obligated based on the States' best estimate of cost. For the purpose of our review, we defined high dollar projects as highway infrastructure investment grant projects that FHWA categorized as highway or bridge projects receiving a total ARRA obligation equal to or greater than $25 million and $20 million, respectively. We did not include in our review the U.S. territories of the Virgin Islands, Guam, American Samoa, or the Northern Mariana Islands.

To conduct our audit, we reviewed a total of 32 projects for various requirements (see table 2 below) and monitored other ARRA actions. We did not review all selected Federal requirements for each project because the projects we selected for review were in various stages of development, and we adjusted our review to integrate emerging issues. For example, during our review, we added assessments of FHWA's plans to meet the September 30, 2010, deadline to obligate ARRA funds and FHWA's oversight of States' cost estimating practices when obligating ARRA funds, and assessed these issue areas in 17 projects we had not finished reviewing at the time.

Table 2. High Dollar ARRA Highway and Bridge Projects Reviewed

Area Reviewed	Projects	Location
Comprehensive Review of Applicable Requirements*	14	California, District of Columbia, Florida, New Jersey, North Carolina, Ohio, Pennsylvania, Virginia
VE Studies During Planning or Design Phase	32	Alaska, Arizona, California, Colorado, Connecticut, District of Columbia, Florida, Idaho, Louisiana, Massachusetts, Michigan, Minnesota, Mississippi, New Jersey, New York, Nevada, North Carolina, Ohio, Oklahoma, Pennsylvania, Virginia
States' Engineering Estimates Versus Winning Contract Bids	17	Arizona, California, District of Columbia, Florida, New Jersey, North Carolina, Ohio, Pennsylvania, Virginia

Source: OIG

*Applicable requirements varied depending on the type of project and stage of development.

As a result of our work, we announced additional audits. For some of the projects we reviewed, FHWA had assumed "full oversight" responsibilities—that is, it performs certain project responsibilities, such as project approval of design, plans, and specifications. We reviewed two ARRA bridge projects that experienced delays in construction that FHWA retained full oversight responsibility for—the I-4 Connector to the Lee Roy Selmon Expressway Interchange project in Tampa, Florida, and the New York Avenue Bridge project in Washington, DC,—and assessed the reasons behind the delays. As a result of our assessment, we initiated two audits that could impact how ARRA funds are used or accounted for over the next few years and the Federal-aid highway program in general. The two audits are: "Federal Highway Administration's Full Oversight Activities During ARRA Construction," which we announced on May 17, 2011, and "Improvements to Stewardship and Oversight Agreements Are Needed To Enhance Federal-aid Highway Program Management," which we issued on October 1, 2012.[19] Furthermore, as a result of the challenge we identified in this report regarding the monitoring of unexpended ARRA obligations, we announced two audits on June 21, 2012, covering "FHWA's Oversight of Unexpended ARRA Obligations." The audit announcement and the report are available on our Web site at www.oig.dot.gov.

In total, our review encompassed 130 high dollar ARRA projects we identified as meeting our threshold. We began by identifying a universe of 128 high dollar ARRA projects, extracted from FHWA's Weekly List of FHWA Recovery Act Projects, as of January 29, 2010, which was the best information available at the time of our review. We selected for our review two additional projects that came to our attention during our audit work. To accomplish our audit objectives, we first selected, from the universe of 128 high dollar ARRA projects we identified, the project with the highest amount of obligations from one of two projects with an ARRA expenditure rate of more than 50 percent. We considered these projects separately from the others because their high expenditure rates warranted additional attention. Second, we selected three of seven ARRA projects with $100 million or more in ARRA funding obligations because their high estimated total cost warranted additional Federal oversight. We also selected the three projects based on their proximity to other projects selected for our review. Finally, we stratified the remaining universe of 119 projects receiving under $100 million in ARRA funding obligations into 7 strata according to our investigative regions and selected a probability proportional to a project obligations sample of 20 projects with replacement. Replacement means that every sample selection was made from the entire universe of projects in order to keep the sampling weights the same on every trial. One of the projects in Oklahoma was selected twice, which reduced the actual sample size to 19 unique projects.

[19] OIG Report MH-2013-001.

During our audit, we found that 9 highway projects in our 119 project universe were not on the National Highway System and, therefore, were not required to have a VE study. This reduced our universe from 119 to 110 projects and our sample size from 19 to 18. To calculate our estimate of $82 million of ARRA funding that could have been made available if projects had conducted the required VE studies, we took the following steps. We:

(1) Estimated the value of accepted recommendations for the 110 projects in our universe by using the values for 10 of the 18 sampled projects, 0 for the 3 sampled projects that had VE studies that did not results in any savings, and 0 for the 5 sampled projects that did not have a required VE study. (To provide a conservative estimate, we used zero for projects that did not have a required VE study, thereby reducing the estimated savings percentage achieved.)

(2) Computed the sampling error and 90 percent lower and upper confidence limits.

(3) Divided the estimated value of accepted recommendations in the universe of 110 projects by the total ARRA obligations for the 110 projects in the universe to arrive at a 7.4 percent savings.

(4) Repeated Step 3 for the 90 percent lower and upper confidence limits to arrive at the 2.3 percent lower confidence limit and the 12.5 percent upper confidence limit savings range.

(5) Multiplied the 7.4 percent savings by the total obligation amount (including all funding sources, not just ARRA) as of June 23, 2011. For the 5 projects in our sample that did not have a required VE study, used 0 for all other 13 sampled projects. (Again, to provide a conservative estimate, we used 0 for the 13 projects.)

(6) Projected the amounts to the universe of 110 projects to arrive at the best estimate for the total amount of funding that could have been made available.

(7) Repeated Step 5 using the 2.3 percent lower and the 12.5 percent upper confidence limit savings.

(8) Repeated Step 6 to arrive at the lower and upper 90 percent confidence limit amounts of obligations that could have been made available.

(9) Computed the ARRA funding percentage (88.6 percent) by dividing the ARRA amount obligated by the total amount obligated as of June 23, 2011. Multiplied the best estimate, the lower confidence limit, and the upper confidence limit by the ARRA funding percentage to arrive at the amount of ARRA funding that could have been made available.

During this current review, we interviewed FHWA, State, and local officials and consultants and contractors; reviewed relevant laws and FHWA regulations, policies, and guidance; and examined project documents. Finally, we obtained technical support from our engineering and legal staff.

We conducted this performance audit from January 2010 through July 2012 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 objective.

EXHIBIT B. PROJECTS REVIEWED

ARRA Award Number	State	City	Project Description
0A41022	Alaska	Matanuska-Susitna Borough	Rehabilitation of Parks Highway between Willow Creek and the Kashwitna River.
010B205	Arizona	Phoenix	Reconfigure and reconstruct I-10 interchange.
010C203	Arizona	Phoenix	I-10 widening from I-8 to SR 87.
0103101	California	San Bernardino	I-10 extension and interchange.
4053015	California	Los Angeles	I-405 widening from I-10 to US-101 for HOV lane.
P024030	California	Oakland	SR 24 two-lane tunnel, north of existing Caldecott tunnels.
P076024	California	San Diego	SR 76 construction of four-lane highway.
Q101153	California	Oakland	Route 101 pavement reconstruction.
C010101	Colorado	Denver	Reconstruction, widening of Alameda Bridge over I-25.
0150194	Connecticut	Trumbull	Route 15 resurfacing, bridge, and safety improvements.
ARRA001	Florida	Fort Walton Beach	SR 85 flyover ramp.
ARRA279	Florida	Tampa-St. Petersburg-Clearwater	New toll road connecting I-4 to Selmon Expressway.
ARRA280	Florida	Tampa-St. Petersburg-Clearwater	Two interchanges on U.S. 19.
ARRA549	Florida	Jacksonville	SR 9B four-lane highway.
A001222	Idaho	Dover	U.S. 95 Dover Bridge replacement.
1709503	Louisiana	Baton Rouge	I-10 widening from four to six lanes.
001S899	Massachusetts	Fall River	Interchange construction of Route 24.
1038005	Michigan	Lansing	I-94 reconstruction.
09ES136	Minnesota	Maple Grove	State Highway 610 construction.
0261076	Mississippi	Collinsville	Additional lanes SR 19 between SR 492 and the Lauderdale County Line.
0952054	Nevada	North Las Vegas	U.S. 95 asphalt overlay.
2952123	New Jersey	Gloucester	I-295 rehabilitation, including replacement of bridge decks, pavement, and guard rails.

ARRA Award Number	State	City	Project Description
0007109	New Jersey	Ocean City	Route 52 causeway.
XM09063	New York	Albany	Painting of viaduct and ramps along southbound Bruckner Expressway.
0100017	North Carolina	Fayetteville	Grading and bridge construction along future I-295 outer loop.
E090688	Ohio	Nelsonville	U.S. 33 corridor 9-mile upgrade.
STIM015	Oklahoma	El Reno	I-40 rehabilitation from mile marker 132 to mile marker 136.
STIM001	Oklahoma	Muskogee	I-40 rehabilitation from mile marker 281.67 to mile marker 288.22.
STIM048	Oklahoma	Tulsa	I-244 reconstruction from U.S. 75 interchange to U.S. 64 interchange.
Z065102	Pennsylvania	Philadelphia	Preservation Girard Point Bridge.
FS09065	Virginia	Danville	Improvement of Piedmont Drive and replacement of Robertson bridge.
1108027	Washington	District of Columbia	Reconstruction of the existing New York Avenue Bridge.

Sources: OIG analysis and data from www.recovery.gov Web site.

EXHIBIT C. PROJECTS WITHOUT A VE STUDY IN PLANNING OR DESIGN PHASE

ARRA Award Number	State	Project Description	ARRA Funding (Millions)[a]
0A41022	Alaska	Rehabilitation of Parks Highway between Willow Creek and the Kashwitna River.	$25.2
010C203	Arizona	I-10 widening from I-8 to SR 87.	$40.7
0150194	Connecticut[b]	Route 15 resurfacing, bridge, and safety improvements.	$39.3
A001222	Idaho	U.S. 95 Dover Bridge replacement.	$28.9
2952123	New Jersey	I-295 rehabilitation, including replacement of bridge decks, pavement, and guard rails.	$78.8
XM09063	New York	Painting of viaduct and ramps along southbound Bruckner Expressway.	$20.0
STIM015	Oklahoma	I-40 rehabilitation from mile marker 132 to mile marker 136.	$30.0
STIM001	Oklahoma	I-40 from mile marker 281.67 to mile marker 288.22.	$27.2
STIM048	Oklahoma	I-244 reconstruction from U.S. 75 interchange to U.S. 64 interchange.	$20.6
1108027	Washington, DC	Reconstruction of the existing New York Avenue Bridge.	$25.8

Sources: OIG analysis, FHWA data, and www.recovery.gov Web site.

[a] ARRA funding levels are as of June 17, 2011, and may not represent total project costs or total Federal funding on all projects.

[b] The Connecticut Merritt Parkway project did not have a VE study during the design or planning phase as required. As discussed in the report, a VE study was conducted after construction began at the request of FHWA's Connecticut Division Office.

EXHIBIT D. MAJOR CONTRIBUTORS TO THIS REPORT

Name	Title
David Pouliott	Program Director
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APPENDIX. AGENCY COMMENTS

U.S. Department of Transportation
Federal Highway Administration

Memorandum

Subject: **INFORMATION:** Federal Highway Administration Response to Office of Inspector General (OIG) Draft Report on High Dollar Recovery Act Highway Projects (10U3008M000)

Date: October 18, 2012

From: Victor M. Mendez
Administrator

In Reply Refer To:
HIF/HCF

To: Calvin L. Scovel III
Inspector General (J-1)

From the outset of the American Recovery and Reinvestment Act of 2009 (Recovery Act), the Federal Highway Administration (FHWA) carried out its stewardship and oversight responsibilities with a focus on compliance with existing and new requirements. As a direct result of the Recovery Act, 43,400 miles of roads have been repaved, 2,723 bridges improved, and tens of thousands of jobs were created or saved.

Recovery Act Projects Complied with Value Engineering Requirements

In the context of Recovery Act implementation, it is important to recognize that some projects pulled off the shelf did not meet the value engineering (VE) thresholds at the design phase and did not require a VE analysis. Therefore, the OIG draft report's estimate of savings of $82 million that could have been redirected at other projects is hugely overstated. The FHWA reviewed in detail the 119 Recovery Act projects the OIG initially identified as requiring a VE analysis and confirmed the vast majority of projects fully complied with VE requirements. As a result, we strongly disagree with the OIG's assertion that $82 million could have been saved and redirected to other projects. Specifically, FHWA determined that 109 of the total 119 projects, or 92 percent of these projects, either conducted the required VE analysis or a VE analysis was not required because the projects were 1) not located on the National Highway System or 2) were below the monetary threshold of projects requiring a VE analysis. Only 10 of the 119 projects did not include the required VE analysis. By including projects that did not actually require a VE analysis in the statistical calculation, the projection of estimated savings cited in the OIG draft report is therefore flawed. We have made significant improvements in the VE program over the years working with State Departments of Transportation, the OIG, and other entities, and FHWA is fully committed to continuing to provide strong oversight of State DOT's VE programs, which have resulted in annual cost savings of $1.7 billion on average from fiscal years 2002 through 2011.

FHWA Fully and Expeditiously Applied Recovery Act Funds

The FHWA provided effective leadership for the full deployment and utilization of Recovery Act funds. Cost estimates are an important tool for establishing the basis for key project decisions, establishing metrics against which project success will be measured, and communicating the status of a project at any given point in time. Bids that came in below engineer estimates enabled States to obligate Recovery Act funds for additional projects. The FHWA encouraged the States to make the fullest possible use of Recovery Act funds to gain maximum benefit, and these funds have been redeployed to the extent allowed by law.

Recovery Act funds, by statute, were to be spent within the context of existing programs, which have established internal controls. The FHWA used its proven systems for programmatic controls to ensure Recovery Act funds were used appropriately. Controls include, for example, FHWA's approval of States' Plans, Specifications, and Estimates (PS&E) packages, in accordance with policies and guidance, before funds are obligated. Approval of PS&E packages enables FHWA to monitor States' cost estimating practices, including major projects estimated at $500 million or greater. In an effort to further enhance project cost estimating practices, FHWA initiated work with the American Association of State Highway and Transportation Officials' (AASHTO) Technical Committee on Cost Estimating to update AASHTO's "Practical Guide to Estimating." The guide will identify States' estimating best practices and offer guidance on improving project cost estimates.

In addition, throughout the implementation of the Recovery Act, FHWA actively worked to identify and manage risks. As documented in FHWA's Recovery Act Risk Management Plan, the National Review Team (NRT), consisting of a multidisciplinary team of experts, provided additional accountability and national consistency for Recovery Act implementation. The NRT validated FHWA's existing Recovery Act risks, identified emergent risks during Recovery Act implementation, and described strategies needed to respond to these risks, including PS&E monitoring. Over the course of FHWA's Recovery Act oversight efforts, the NRT conducted 232 site visits, independently touching more than 1,400 projects.

FHWA Increased Awareness and Application of Value Engineering

Value engineering is one of numerous Federal requirements that FHWA oversees to ensure States' compliance in the delivery of the Federal-aid highway program (FAHP) and to improve the performance and quality of transportation projects, including those funded by the Recovery Act. The successful application of the VE process contributes measurable benefits to the quality and cost-effectiveness of surface transportation improvement projects and to the effective delivery of the overall FAHP.

The purpose of VE is to provide the needed functions safely, reliably, efficiently, and at the lowest overall cost; improve the value and quality of the project; and reduce the time to complete the project. While reducing project costs is one purpose of conducting a VE analysis, it is not intended solely to reduce project costs at the construction stage. The VE analysis considers the lifetime cost of the project; implications on the users of the facility, the environment, and stakeholders; time to complete; safety; reliability; and future maintenance. In some cases, a VE analysis may result in an increase in the initial cost but provide greater long-term value.

The Moving Ahead for Progress in the 21st Century Act (MAP-21) doubled the threshold for projects requiring a VE analysis, as well as removed the requirement for conducting a VE analysis for non-National Highway System bridge projects and for projects using the design-build method of construction. In light of these legislative changes, which became effective October 1, 2012, FHWA has identified needed regulatory changes and will update FHWA's VE policy to reflect these changes accordingly.

OIG Recommendations and FHWA Actions

Recommendation 1: Verify that required VE studies were conducted for all Recovery Act projects that were not identified in this report, or identify reasons for not conducting them.

Response: Concur. FHWA reviewed all 119 projects the OIG identified as part of their audit to determine if VE studies were required, and if so, if they were conducted. FHWA verified 109 of these 119 projects either conducted the required VE analysis or did not require a VE analysis because they were not located on the National Highway System or the cost of the project was below the threshold to require a VE analysis. The FHWA identified 10 projects that did not have the required VE analysis and determined the reasons States did not conduct a VE analysis on those projects. Action pursuant to this recommendation is complete and results of FHWA's review have been provided to the OIG. We request the OIG close this recommendation upon receipt of this request.

Recommendation 2: Identify steps needed to increase States' awareness of and compliance with FHWA's new March 15, 2012, rule covering VE legislative changes and revised guidance contained in FHWA's May 25, 2010, memorandum, "Updated FHWA Value Engineering Policy."

Response: Concur. FHWA has conducted extensive outreach to raise the highway industry's awareness of the changes impacting VE that have occurred in legislation and guidance. These outreach activities have focused on the staff of State Departments of Transportation, Local Public Agencies, engineering consulting firms, construction companies, and FHWA. These outreach activities have included delivering presentations and briefings, conducting webinars, updating training materials, developing technical guidance and outreach materials, and updating information on FHWA's Web site. Based on FHWA already having completed the work necessary to satisfy this recommendation and based on documentation provided, we request the OIG close this recommendation upon receipt of this request.

Recommendation 3: Verify that Division Offices review each State's procedures for estimating costs, including procedures to conduct periodic reviews and to address significant changes in market conditions.

Response: Concur. FHWA is currently working with AASHTO on the publication of an update to AASHTO's "Practical Guide to Estimating." The updated guide is expected to be published in December 2012. Following publication of the guide, FHWA's Office of Infrastructure will send a memorandum to all Division Offices instructing them to conduct a review of their State's cost estimating procedures by May 31, 2013. The instructions will require each Division Office to notify the Office of Infrastructure of results upon completion of its review. FHWA will utilize this information to ensure that each Division Office has conducted the reviews in accordance with the memorandum.

Recommendation 4: Develop and implement a plan to make sure controls are in place to effectively manage remaining unexpended ARRA funds.

Response: Concur in part. In addition to using its existing programmatic controls, FHWA developed additional controls for Recovery Act implementation to provide an additional level of assurance that funds were used appropriately. At this juncture, less than 7 percent of Recovery Act highway funds remain to be expended after completing over 13,000 Recovery Act projects. The FHWA program and Division Offices, working with their respective States, will continue to take all necessary actions to facilitate the completion of Recovery Act work and bring about the timely expenditures of remaining Recovery Act funds in an effective and efficient manner in accordance with requirements of the Transparency Act and other related laws, regulations, and policies. The FHWA's Office of the Chief Financial Officer developed a weekly report to ensure that Agency officials are regularly informed of the status of unexpended funds in each State. At this point, over 93 percent of these funds have already been expended: 3 States have fully expended their Recovery Act funds; 12 States have exceeded the 99 percent expenditure level; and 38 States have exceeded the 94 percent mark. In light of this, combined with our current arsenal of tracking and monitoring tools in place, we do not consider it useful at this juncture to develop and implement any new plans for further controls relating to the use of Recovery Act funds. Based on actions completed, and the status of Recovery Act expenditures, we request OIG close this recommendation.

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FHWA is proud of its work and that of its State partners in effectively investing Recovery Act funds in highway and bridge projects and generating tens of thousands of jobs and a lasting transportation legacy for the traveling public. If you have any questions or comments regarding this response, please contact David Nicol, Director of Program Administration, Office of Infrastructure, at 202-366-5530.