



U.S. DEPARTMENT OF TRANSPORTATION
OFFICE OF INSPECTOR GENERAL

**Improvements Are Needed To Strengthen
the Benefit-Cost Analysis Process for the
TIGER Discretionary Grant Program**

OST

Report No. ST2018028

February 28, 2018





Improvements Are Needed To Strengthen the Benefit-Cost Analysis Process for the TIGER Discretionary Grant Program

Self-Initiated

Office of the Secretary | ST2018028 | February 28, 2018

What We Looked At

Since its establishment in 2009, the Office of the Secretary's (OST) Transportation Investment Generating Economic Recovery (TIGER) grant program has provided billions of dollars for infrastructure improvements and economic development. As part of the selection process for TIGER awards, OST evaluates each applicant's project benefit-cost analysis (BCA), which shows the project's economic benefits. Prior to fiscal year 2016, projects that did not demonstrate net economic benefits were disqualified, but for fiscal year 2016 and after, lack of economic benefit did not automatically disqualify projects. We conducted this audit because of the importance of BCAs to TIGER grant awardee selection. Our objective was to assess OST's policies and procedures for evaluating BCAs in determining which TIGER grant applications are forwarded for further review. We assessed the BCA process for the fiscal year 2015 and 2016 rounds.

What We Found

During round 2015, OST's BCA reviews generally met Federal guidelines but reviewers' approaches were not standardized. Specifically, reviews did not include standardized elements such as actions allowable when applications lack information and length of review time. OST also had no procedures for BCA documentation and as a result, not all reviewers retained his or her review notes. Furthermore, OST reassessed 47 projects and determined that the BCA review findings of costs that outweighed benefits for 20 of them were questionable. While these 20 projects were forwarded to the Secretary as eligible for award, we found that the reassessment work lacked required elements of systematic review. For round 2016, OST implemented a standardized review template and a responsible official to finalize reviews, but did not update TIGER's written policy to include these changes. This lack of standardized BCA reviews limits OST's ability to make the process fair and transparent so applicants can make informed decisions when preparing their applications.

Our Recommendations

We made four recommendations to help OST ensure equity and consistency in the BCA review process. OST concurs with our recommendations.

All OIG audit reports are available on our website at www.oig.dot.gov.

For inquiries about this report, please contact our Office of Legal, Legislative, and External Affairs at (202) 366-8751.

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Memorandum

Date: February 28, 2018

Subject: INFORMATION: Improvements Are Needed To Strengthen the Benefit-Cost Analysis Process for the TIGER Discretionary Grant Program | Report No. ST2018028

From: Barry J. DeWeese 
Assistant Inspector General for Surface Transportation Audits

To: Under Secretary of Transportation for Policy

The Transportation Investment Generating Economic Recovery (TIGER) discretionary grant program has provided approximately \$5.6 billion for surface transportation infrastructure improvements and economic development since it was established by the American Recovery and Reinvestment Act.¹ TIGER's goals are to improve the Nation's transportation system's state of good repair, economic competitiveness, livability, environmental sustainability, and safety. TIGER grants are annually awarded by the Department of Transportation (DOT) Secretary through a merit-based, competitive process, administered by the Office of the Under Secretary of Transportation for Policy in the Office of the Secretary (OST).

As part of the selection process for TIGER grants, each project is subjected to an evaluation of the applicant's benefit-cost analyses (BCA) for meeting the program's national goals and the project's anticipated outcomes. Specifically, OST's economic analysis (EA) teams² are responsible for reviewing and rating BCAs in TIGER grant applications. In 2015, OST's control and calibration (C&C) team³ participated in the BCA review process. An applicant's BCA shows the project's net economic benefits based on the estimated value of the project's benefits in areas such as safety and increased mobility. Prior to fiscal year 2016, rules required OST to disqualify projects that did not demonstrate net economic

¹ Pub. Law No. 111-5 (2009).

² According to OST guidance, EA Teams are comprised of DOT economic experts.

³ The C&C team—comprised of representatives from OST—is charged with ensuring quality, consistency, and integrity in the application review process.

benefit—the benefits associated with the project were not likely to equal or exceed the costs. In fiscal year 2016 and after, a project’s economic benefit was no longer an automatic disqualifying factor for TIGER grant eligibility.

We conducted this audit because of the importance of BCAs to the selection of awardees for grants from TIGER and other discretionary grant programs, such as the Infrastructure for Rebuilding America (INFRA) program.⁴ Our objective was to assess OST’s policies and procedures for evaluating BCAs in determining which TIGER grant applications are forwarded for further review. Specifically, we assessed the BCA process for the fiscal year 2015 and 2016 TIGER rounds.

We conducted our work according to generally accepted Government auditing standards. We evaluated the BCA reviews and outcomes for the fiscal years 2015 and 2016 TIGER rounds and OST’s policy, guidance, and procedures in effect for those reviews. We conducted interviews with OST officials, economists with the Operating Administrations (OA), and officials at the John A. Volpe National Transportation Systems Center (Volpe) to discuss processes implemented during funding rounds 2015 and 2016. See exhibit A for more information on our scope and methodology.

We appreciate the courtesies and cooperation of DOT representatives during this audit. If you have any questions concerning this report, please contact Barry J. DeWeese, Assistant Inspector General for Surface Transportation Audits, at (202) 366-5630.

cc: The Secretary
DOT Audit Liaison, M-1

⁴ In July 2017, the Fostering Advancements in Shipping and Transportation for the Long-Term Achievement of National Efficiencies (FASTLANE) program was renamed INFRA. FASTLANE was originally established under the Fixing America’s Surface Transportation Act of 2015 (FAST Act) (Pub. Law No. 114-94) and funds freight and highway projects.

Results in Brief

EA teams' BCA reviews during round 2015 were generally adequate per Federal guidelines,⁵ but the reviewers' approaches were not fully standardized.

Specifically, the EA teams' reviews did not include standardized elements such as actions allowable when applications lack information and length of time available for reviews. Also in 2015, OST had no standard procedures for BCA documentation requirements and as a result, each EA team member decided whether to retain his or her review notes. This lack of documentation may limit OST's ability to support the basis of its BCA decisions and communicate its rationale for BCA review results to external stakeholders. Furthermore, in 2015, OST's C&C team reassessed 47 projects—that the EA team found had costs that exceeded benefits—and determined that the EA teams' findings of costs that outweighed benefits for 20 projects were questionable. While we found that the reassessment work lacked necessary elements of a systematic review, the C&C team forwarded these projects as eligible for inclusion in the Secretary's selection pool. Moreover, OST had not clearly defined the C&C team's role in the BCA review process in its policy and guidance. In the 2016 round, OST addressed some of these issues, including implementation of a standardized BCA review template and a single responsible official to finalize BCA reviews. However, OST did not change the Program's written policy to include these changes, and we are therefore unsure whether the improvements will continue in place in future funding rounds. Because BCAs continue to be an important part of the TIGER review and grant selection process, the lack of standardized BCA reviews limits the Department's ability to make the process fair and transparent⁶ so that applicants can make informed decisions when preparing their TIGER grant applications.

We are making recommendations to help OST better ensure equity and consistency in the BCA review process.

⁵ Office of Management and Budget (OMB) Circular A-4, *Regulatory Analysis* (2003).

⁶ Per 2 CFR Part 200 and Part 200, Appendix I

Background

For each annual TIGER funding round, OST publishes a Notice of Funding Availability (NOFA) in the Federal Register that details the grant process and selection criteria. The NOFA is required by OMB's Uniform Administrative Requirements for Federal investments.⁷ The guidance requires that each Federal grant program's processes be transparent so that applicants can make informed decisions when preparing their applications. The NOFAs for funding rounds 2015 and 2016 stated that grants were evaluated in a three phase review process. These review processes occurred over periods of approximately 5 months and 2.5 months, respectively. In the first phase, technical evaluation (TE) teams rated applications in accordance with the NOFA's non-economic selection criteria. Applications that received highly recommended ratings from the TE teams advanced to second phase analysis. This second phase consisted of project readiness and economic analysis review—the EA teams' reviews of the applicants' BCAs. In the third and final phase, the senior review (SR) team⁸ identified a pool of projects from which the Secretary selected grant recipients.⁹

As part of phase two, EA team members evaluated each applicant's economic information and determined whether the proposed project's BCA was:

1. Positive—the project's costs were less than or equal to the benefits;
2. Uncertain¹⁰—it was unclear to the reviewer whether benefits exceeded costs; or
3. Negative—the reviewer determined that the project's costs exceeded the benefits.

EA teams were staffed by economists drawn from staff in DOT's OAs—such as the Federal Highway Administration and Federal Transit Administration—and Volpe. OST's guidelines¹¹ and the NOFA provided EA teams and TIGER grant applicants with guidance on how to quantify certain project actions and benefits, such as the dollar impact on safety assumptions. Additionally, OMB guidelines¹² identify techniques useful to BCA evaluators in assessing comprehensive estimates of

⁷ As codified at 2 CFR § 200.203 and Appendix I to Part 200.

⁸ The SR team includes the Deputy Secretary, OST senior leadership, and cognizant operating administrators.

⁹ The SR team can request that applications with ratings lower than highly recommended advance for further review.

¹⁰ Per OST's Fiscal Year 2016 TIGER Discretionary Grant Program Guidelines for Evaluation of Applications, uncertain results are described as either (1) uncertain, but benefits appear likelier to exceed costs or (2) uncertain, but costs appear likelier to exceed benefits.

¹¹ Fiscal Year 2015 and 2016 TIGER Discretionary Grants Program Guidelines for Evaluation of Applications.

¹² OMB Circular A-94, Guidelines and Discount Rates for Benefit-Cost Analysis of Federal Programs (1992); OMB Circular A-4.

expected benefits and costs, both tangible and intangible, as well as opportunity costs. Furthermore, the guidelines provide techniques to identify costs and benefits expected in the future, and the appropriate discount rates to make gains and losses occurring at different times comparable. Finally, when values are not computable, OMB's guidelines explain how to enumerate, quantify, and summarize these values in a systematic way. TIGER applicants are informed that this is the source of guidance evaluators will use.

BCA Reviews in 2015 Were Generally Adequate but Not Fully Standardized, and Subsequent Review Process Changes To Improve Consistency Were Not Added to Policy

EA teams' BCA reviews during 2015 were generally adequate and consistent with existing TIGER program's policies and procedures. However, EA team reviewers' approaches to reviews were not fully standardized. OST also lacked standard procedures on documentation requirements for BCA reviews. Furthermore, in 2015, the C&C team's BCA review reassessments lacked elements of an acceptable BCA review per Federal guidelines, and the team's role in the BCA process was not well defined. In 2016, OST made changes to the BCA review process to enhance consistency; however, these changes were not included in its written policy or guidance.

EA Teams' BCA Reviews Were Generally Adequate and Consistent With Requirements

In our review of a statistical sample of 55 out of 224 grant applications that received BCA reviews during round 2015, we found that EA teams' BCA reviews were generally adequate given the depth of information included in applications and the limited time allotted for review. Specifically, documentation we reviewed showed that EA teams' work applied the guidance in OMB's Circular A-4, and included due diligence in determining the following elements of an acceptable BCA review:

- **Adjustments of benefit claims to align with published data.** For example, EA team reviewers updated freight volume projections to

be consistent with recently published estimates for the State where the project was located.

- **Assessments of marginal impacts of projects with multiple parts.** For example, the EA team reviewer of a two-part project quantified the part in which one road segment would be built independently from the second part.
- **Sensitivity analyses of benefit and cost claims.** For example, EA team reviewers adjusted down estimates of average time savings for transit projects only to find that even with reduced benefits, the projects would still have positive net benefits.

EA Team Reviewers' Approaches Were Not Standardized

While the BCA reviews were generally adequate, OST policy and guidance do not provide a standardized process for BCA reviews that complies with OMB's requirement. The requirement states that discretionary grant programs' processes must be transparent so applicants can make informed decisions when preparing their applications. In the absence of a standardized process from OST, EA team reviewers conducted their reviews differently. For example, the 12 EA team reviewers¹³ we interviewed responded differently to BCAs that were missing information needed for the evaluation. One reviewer searched for additional information on the internet, one reached out to the applicant, one went to OST, and others did not take any actions to obtain the information. Three reviewers stated that it was against policy to gather the missing information, although we found no specific prohibition in TIGER policy.

Approaches to BCA reviews also differed in the various amount of time reviewers spent on the reviews. For example, two reviewers spent 3 days on reviews, while another spent approximately 5 hours on reviews. While a BCA review's level of complexity may contribute to the amount of time spent on it, three EA team reviewers informed us they were under time constraints that limited their reviews. Another reviewer stated that having more time and resources would have been helpful. As a result, these time constraints could impact the quality of the BCA reviews.

¹³ Eight economists from OAs and four economists from Volpe.

OST Had No Documentation Requirements for BCA Reviews

OST lacked standard procedures for how EA team reviewers should document their BCA evaluations. Two of the 12 EA team reviewers we interviewed informed us that they did not retain their working papers, which documented the rationale for how they reached their conclusions. Others' retention of these documents varied. Each individual reviewer decided whether to retain his or her review notes. Additionally, we attempted to review the documentation on the work of two reviewers who had left the Department but it was not available. Furthermore, a senior economic official confirmed that in 2016, he changed some BCA determinations without communicating the changes to the reviewers or maintaining documentation to show the original BCA determination and his rationale for the changes.

OST retains EA Team reviewers' summaries of their work. In a summary, a reviewer describes the claimed benefits and costs described in the applicant's grant proposal. The summary also includes the reviewer's assessment of the weaknesses and strengths of the claimed benefits and costs based on NOFA guidance and technical expertise. An OST official stated that the Agency does not retain more information on BCA reviews because the volume would be large and storage would require too many resources. However, this is not consistent with the Government Accountability Office's (GAO) *Standards for Internal Control in the Federal Government*,¹⁴ which states that documentation maintenance helps retain organizational knowledge and mitigates the risk of limiting knowledge to a few personnel. OST's lack of a documentation procedure may limit the Agency's ability to support the basis of its BCA decisions and communicate its rationale for BCA review results to external stakeholders and applicants.

The C&C Team's 2015 Reassessments Lacked Elements of Acceptable BCA Reviews, and the Team's Role Was Not Well Defined

During the 2015 funding round, the EA team completed its BCA reviews and determined that costs exceeded benefits for 20 transit projects. OST believed this

¹⁴ GAO, *Standards for Internal Control in the Federal Government* (GAO-14-704G), September, 2014.

to be an anomaly and requested a reassessment of the results.¹⁵ However, the C&C team's reassessments lacked elements of acceptable BCA reviews, and the C&C team's role in the BCA review process was not well defined.

In September 2015, OST issued supplemental guidance on the C&C team's reassessments of EA teams' review results. The guidance noted the Office of General Counsel (OGC) requested the C&C team, with the assistance of the Department's Chief Economist, reassess 47 applications the TE team rated as highly recommended,¹⁶ and that EA teams determined had costs that exceeded benefits. The supplemental guidance also stated that OGC requested reassessments to ensure that EA teams' reviews properly reflected total benefits—including qualitative benefits—consistent with the NOFA and Executive Order (EO) 12893.¹⁷ The supplemental guidance noted the C&C team determined that while the BCA review process incorporated qualitative benefits, the results of the EA teams' BCA reviews included inconsistencies in qualitative benefits assessments.

OST implemented a reassessment process for these projects. OST officials stated this process was intended to be an independent review to determine whether EA teams used consistent evaluation approaches and interpretations of possible BCA ratings, and correct the anomaly in the evaluation process.

The C&C team engaged Volpe¹⁸ to comment on whether the EA teams appropriately considered qualitative factors. Volpe's economic experts reported that 5 of the 47 projects included possible inconsistencies in qualitative benefits assessments. The C&C team then reassessed the 47 project applications, and concluded that for 20, the determination that costs exceeded benefits was questionable. Because of this uncertainty, the C&C team forwarded the 20 project applications to the SR team for possible inclusion in the Secretary's selection pool. Six of the 20 projects were awarded \$84 million in TIGER funds. For 4 of these 20 projects, the C&C team's determinations disagreed with that of both the Volpe economic experts and the EA team reviewers. For example:

- For one project, Volpe documented no inconsistencies in the EA team's BCA review and concluded that, even with inclusion of all qualitative

¹⁵ We did not review the adequacy of BCAs in years prior to round 2015 and therefore did not verify OST's claim that there was an anomaly in the 2015 round as contrasted to prior rounds.

¹⁶ We found that five projects that were reassessed had lower ratings than highly recommended.

¹⁷ EO 12893, *Principles for Federal Infrastructure Investments* (1994).

¹⁸ The C&C team asked Volpe's economic experts to answer, and document their responses to, the following questions: (1) Are there qualitative costs or benefits associated with the project and if so, were they documented in the BCA review and incorporated into the BCA rating? If not, please list the categories of qualitative costs and benefits. (2) If qualitative costs and benefits were not fully incorporated into the BCA rating, would doing so have affected the BCA rating? (3) Were there any inconsistencies in the BCA review and rating process or the review narratives?

benefits, a large gap existed between costs and benefits. Nonetheless, the C&C team reached a different determination on the EA team's finding.

- Regarding another project, the C&C team disagreed with the EA team's and Volpe's findings that the costs outweighed the benefits. Volpe had documented no inconsistencies and confirmed that the EA team considered qualitative benefits in its review, noting that additional benefits would be difficult to estimate.

We found that the C&C team's justifications for its recommended changes in the BCA review results for these 20 projects lacked several elements of an acceptable BCA review, and the work performed did not follow standard BCA practice. Specifically, the justifications lacked the following:

- Threshold analyses that would help decision-makers understand the potential significance of qualitative factors as guided by OMB Circular A-4
- Results of attempts to quantify impacts, such as counting the number of potentially impacted people
- Explanations of reasons why qualitative benefits could not be quantified or discussions of the strengths or limitations of the qualitative information
- Details on the nature, timing, likelihood, location, and distribution of unquantified benefits and costs
- A list of all unquantified benefits and costs
- A list of the qualitative factors believed to be most important, considering the factors' degrees of certainty, expected magnitudes, and whether the effects would be reversible

In some cases, the C&C team used benefit cost ratios (BCR) to support its determinations, but according to OMB Circular A-4,¹⁹ BCRs are not appropriate for assessing BCAs because the ratios can be misleading. Furthermore, the C&C team's process for its reassessments was not systematic, and therefore contrary to EO 12893. A systematic approach allows for equal comparisons, but the C&C team did not reassess BCA reviews that found that a project's costs did not exceed its benefits. The team's approach only called the EA teams' BCA review results into question when they indicated that the project's costs exceeded benefits, skewing the usefulness of all BCA determinations in the selection of projects for the 2015 round of grants.

¹⁹ OMB Circular A-4 states that a BCR is not a meaningful indicator of net benefits and should not be used for that purpose, and that it is well known that considering this ratio alone can yield misleading results.

A systematic approach to the reassessments could have included the review of a statistical sample of the universe of the projects that the EA teams reviewed. In contrast to the C&C team's reassessments, OIG economists' reviews of the statistical sample of 55 projects from 2015 did not identify any inconsistent applications of BCA best practices in the EA teams' BCA reviews. Under EO 12893, DOT must base infrastructure investments on systematic analyses of expected project benefits and costs.

Furthermore, OST's policy and guidance do not address the C&C team's role in the BCA review process. Specifically, OST's Guidelines for Evaluation of Applications does not provide information on the following:

- How the C&C team ensures quality, consistency, and integrity in the BCA assessments
- How the C&C team selects BCAs for review
- How the C&C team resolves material irregularities or inconsistencies if identified
- How the C&C team documents its BCA assessments

Finally, the C&C team included non-economists who may be unfamiliar with industry standards for conducting BCAs and BCA reviews or may lack the education and expertise to arrive at reasonable conclusions regarding applicants' BCAs. OST stated that the Chief Economist is a member of the C&C team and provides economic expertise. OST's guidance at the time of our review identified the Chief Economist as a consultant on the work of the C&C teams. However, while we did not assess the specific role played by the Chief Economist in the BCA reviews conducted by the C&C team, we identified unacceptable elements which point to the need for clearer guidance to the non-economist reviewers making up the bulk of the C&C team.

The inconsistency of the C&C team's BCA reassessment results compared to those of other reviewers along with the lack of policy and guidance on the team's role in the BCA review process reduced OST's ability to ensure a fair and equitable project application review process.

OST Made Process Changes for Round 2016 To Enhance BCA Review Consistency

OST officials informed us that for 2016, they made the following changes to the BCA review process to enhance consistency:

- EA team reviewers had a standardized template of questions to answer regarding each application's BCA.
- OST implemented a multi-stage process for the BCA reviews in which EA team reviewers develop draft review results that are forwarded to the senior economist responsible for the BCA review process, who then finalizes the review. The reviews are not complete until this final level of oversight has been completed.

However, these process changes were not established in OST's round 2016 written policy or guidance. Furthermore, its guidance for round 2017 does not include these changes, and, as a result, we cannot be sure that the practices will be part of the process in the future. This lack of a standardized process for BCA reviews limits the Department's ability to ensure equity and consistency in the BCA determination process.

Additionally, while BCAs remained required, OST removed from the NOFA the prohibition on projects whose costs exceed their benefits from receiving TIGER grants. Prior to 2016, projects with negative BCA review results did not advance for further consideration. According to OST officials, this change was necessary to allow more flexibility in the selection process. The EA teams reviewed 241 BCA applications and found 19 projects with costs that outweighed benefits. As a result of the change to the NOFA, however, all the projects were included in the pool for final award selection. Ultimately, the program awarded \$47 million to 4 of the 19 projects that EA teams determined had costs that outweighed benefits.

Conclusion

Congress has appropriated billions of dollars to the TIGER Program for transportation infrastructure and economic development projects across the country. However, OST's policies and procedures for reviews of applicants' BCAs lack sufficient detail to ensure that reviewers and decision-makers apply the same standards to each TIGER project application. While OST's change to the NOFA for 2016 allows projects to be eligible for final award selection even if the BCA determines that costs outweigh benefits, a BCA remains a requirement for the application process. The lack of standardized procedures for these reviews makes it difficult for the Department to be sure that decision makers are properly informed in their awards of program grants.

Recommendations

To improve controls for BCA reviews in TIGER discretionary grant awards, we recommend that the Under Secretary for Transportation Policy:

1. Provide detailed guidance for consistent BCA reviews, including whether reviewers should perform research to correct or complete missing information in project applications.
2. Establish and implement requirements regarding how BCA reviewers should document and maintain support for their reviews.
3. Define the C&C team's role in the BCA review process to include the necessary steps to carry out a systematic review.
4. Revise policy and guidance to include the standardized BCA review template and the requirement that a single responsible official finalize BCA reviews.

Agency Comments and OIG Response

We provided OST with our draft report on December 21, 2017, and received its formal response on February 6, 2018, which is included as an appendix to this report. OST concurred with all four of our recommendations and proposed appropriate actions in response. OST provided information indicating that they have taken action on recommendations 1, 2, and 4. We are currently reviewing that information. OST also noted that it will complete actions to address recommendation 3 in the evaluation guidelines for subsequent rounds of TIGER, should funding be appropriated.

Actions Required

We consider all four recommendations resolved but open pending our confirmation of OST's actions.

Exhibit A. Scope and Methodology

We conducted our work from July 2016 through December 2017 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.

Our objective was to assess OST's policies and procedures for evaluating BCA in determining which TIGER grant applications are forwarded for further review. Specifically, we assessed the BCA process for the fiscal year 2015 and 2016 TIGER rounds.

To conduct our audit, we evaluated the BCA reviews and outcomes for the fiscal year 2015 and 2016 TIGER rounds, and OST's policy, guidance, and procedures in effect for those reviews. We also conducted interviews with OST officials, including members of the Office of Infrastructure, Finance and Innovation, OGC, and the Office of the Chief Economist. We also interviewed two non-economist members of the C&C team, eight economists from OAs, and four economists at Volpe to discuss processes implemented during the funding rounds. To assess the level of economic expertise of the EA team reviewers, we questioned interviewees on their education and work experience, and relied to a large extent on OST's assertion that those performing BCA reviews were adequately qualified to perform analyses consistent with OMB's Circular A-4. However, we also verified the Chief Economists for the 2015 and 2016 rounds were classified as Economists in the Federal Personnel Payroll System. Based on our analysis of the evidence provided, we determined the EA team reviewers to be sufficiently qualified.

We selected a statistical sample of BCA review results from information prepared by OST, and evaluated the results of the EA teams' work relative to NOFA guidance. We also assessed whether qualitative factor considerations that the EA teams applied met Federal requirements. We generated our sample from a list of 224 round 2015 grant applications provided by OST, with a total Federal funds request of \$5.1 billion, of which \$3.6 billion would be TIGER funding. We stratified this universe into seven strata based on the type of disposition each the application received after the EA team's review and the amount of Federal funds requested. We computed stratum sample sizes approximately proportional to the number of grant applications in each stratum. We selected a sample of 55 applications as follows: a probability proportional to size with replacement sampling from four strata, and a census from three high-dollar value strata. Three

grant applications were selected twice due to our “with replacement” sampling methodology²⁰ and reduced the initial sample size from 58 to 55, or 24.6 percent, of 224 applications in the universe. Our sample had a total Federal funds request of \$2.4 billion, or 47 percent, of \$5.1 billion in the universe.

For round 2016, we limited our review to OST’s policies and processes for BCAs reviews and did not assess whether reviewers’ work was consistent with the NOFA.

For both rounds 2015 and 2016, we assessed the adequacy of BCA review documentation retained by OST in a SharePoint system. While we were not able to independently access and test the data maintained in the SharePoint system, we met with OST’s contractor and with their assistance tested sample data points between an Excel spreadsheet of TIGER data prepared by OST’s contractor and the information in OST’s SharePoint system maintained by the contractor. Based on our review, we found the TIGER data assessed to be sufficiently reliable for purposes of our audit.

²⁰ In this “with replacement” sampling methodology, once an application is selected, it is placed back into the universe and becomes eligible for selection again. As a result, an application that has already been selected could be selected again, and multiple selections of a single application did occur in our sample. We decided to use the probability proportional to size with replacement sampling methodology because it is widely used and accepted due to its straight forward sampling error formulas which make the computations transparent without sophisticated software.

Exhibit B. Organizations Visited or Contacted

DOT Operating Administrations

Office of the Secretary, Washington, D.C.

Other Organizations

John A. Volpe National Transportation Systems Center, Cambridge, MA

Exhibit C. List of Acronyms

| | |
|----------|--|
| BCA | benefit cost analysis |
| BCR | benefit cost ratio |
| C&C team | control and calibration team |
| DOT | Department of Transportation |
| EA team | economic analysis team |
| EO | Executive Order |
| GAO | Government Accountability Office |
| NOFA | Notice of Funding Availability |
| OA | Operating Administration |
| OGC | Office of General Counsel |
| OIG | Office of Inspector General |
| OMB | Office of Management and Budget |
| OST | Office of the Secretary |
| SR team | senior review team |
| TE team | technical evaluation team |
| TIGER | Transportation Investment Generating Economic Recovery Program |
| Volpe | John A. Volpe National Transportation Systems Center |

Exhibit D. Major Contributors to This Report

| | |
|--------------------|---------------------|
| RACHEL ALDERMAN | PROGRAM DIRECTOR |
| BETTY KRIER | CHIEF ECONOMIST |
| JAY SWARTZBAUGH | PROJECT MANAGER |
| JAMILA MAMMADOVA | SENIOR ANALYST |
| OLEG MICHALOWSKI | SENIOR ANALYST |
| ALPHONSO MURRAY | ANALYST |
| BRIAN CWERENZ | ANALYST |
| JOAO MACIEIRA | ECONOMIST |
| EVAN ROGERS | ECONOMIST |
| PETRA SWARTZLANDER | SENIOR STATISTICIAN |
| MAKESI ORMOND | STATISTICIAN |
| FRITZ SWARTZBAUGH | ASSOCIATE COUNSEL |
| SUSAN NEILL | WRITER-EDITOR |

Appendix. Agency Comments



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

Subject: **INFORMATION:** Management Response to Office of the
Inspector General (OIG) Draft Report on Benefit-Cost Analysis
Process for the TIGER Discretionary Grant Program

Date: FEB 06 2018

From: Finch Fulton 
Deputy Assistant Secretary for Transportation Policy

To: Barry J. DeWeese
Assistant Inspector General for Surface Transportation Audits

Ensuring that taxpayers' dollars are spent wisely is a top priority for the U.S. Department of Transportation. We are committed to ensuring that discretionary awards made through the Transportation Investment Generating Economic Recovery (TIGER) discretionary grant program are merit-based, competitive, and thoroughly vetted. As the OIG noted in its draft report, DOT improved its benefit-cost analysis (BCA) review processes between 2015 and 2016. We made process changes prior to the 2016 round of TIGER and continued through the 2017 round.

Examples of the enhancements made to the BCA review process include the following:

- revised and reissued Departmental guidance on conducting a BCA for the TIGER discretionary grant program;
- held training sessions with both OST and modal staff to review the new guidance and the written template for conducting reviews, including clarifying how reviewers should address missing information and the required documentation that must be retained and provided to the Chief Economist for each review; and
- revised its TIGER evaluation guidelines to include the standardized BCA review template.

Based on our review of the draft report, we concur with all four recommendations as written. We completed actions to implement recommendations 1, 2, and 4 and on February 6, 2018, we provided supporting documentation to the OIG requesting closure. Regarding recommendation 3, to define the control and calibration team's role in the BCA review process, we will complete actions to address this recommendation in the evaluation guidelines for subsequent rounds of TIGER, should funding for TIGER be appropriated.

We appreciate the opportunity to review the OIG draft report. Please contact Madeline Chulumovich, Director of Audit Relations and Program Improvement, at 202-366-6512 with any questions.

U.S. DOT IG Fraud & Safety Hotline

hotline@oig.dot.gov | (800) 424-9071

<https://www.oig.dot.gov/hotline>

Our Mission

OIG conducts audits and investigations on behalf of the American public to improve the performance and integrity of DOT's programs to ensure a safe, efficient, and effective national transportation system.

OFFICE OF INSPECTOR GENERAL
U.S. Department of Transportation
1200 New Jersey Ave SE
Washington, DC 20590



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