



U.S. DEPARTMENT OF TRANSPORTATION  
**OFFICE OF INSPECTOR GENERAL**

**Stronger Guidance and Internal Controls  
Would Enhance DOT's Management of  
Highway and Vehicle Safety R&D  
Agreements**

**OST**

Report No. ZA2019051

May 1, 2019





## Stronger Guidance and Internal Controls Would Enhance DOT's Management of Highway and Vehicle Safety R&D Agreements

*Directed by the Fixing America's Surface Transportation Act of 2015*

Office of the Secretary of Transportation | ZA2019051 | May 1, 2019

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### What We Looked At

Research and development (R&D) is vital to advancing technology that can improve vehicle safety. From fiscal years 2012 to 2016, the Federal Highway Administration (FHWA), the National Highway Transportation Safety Administration (NHTSA), and the Office of the Assistant Secretary for Research and Technology (OST-R) awarded grants and cooperative agreements involving highway and vehicle safety R&D with a total maximum value of \$501 million in Federal funds. In 2015, the Fixing America's Surface Transportation Act directed our office to review the Department of Transportation's (DOT) management and oversight of cooperative agreements and cooperative research and development agreements (CRADA), including R&D agreements between DOT and foreign governments. Our audit objective was to assess the Department's policies and procedures for selecting and overseeing its highway and vehicle safety R&D agreements, including grants, cooperative agreements, and CRADAs.

### What We Found

DOT can strengthen its policies and procedures for awarding and overseeing highway and vehicle safety R&D agreements. First, FHWA and NHTSA do not always follow DOT guidance or Governmentwide requirements for awarding R&D agreements with for-profit recipients, and the Agencies lack guidance which specifically addresses awarding R&D agreements with foreign recipients. Second, NHTSA did not follow DOT policy when it approved the award of cooperative agreements—worth a combined maximum total of \$93.7 million—without full and open competition. Third, while FHWA, NHTSA, and OST-R have taken steps to strengthen their oversight of R&D agreements, some gaps remain. For example, OST-R does not routinely review support for grantee cost reimbursements; NHTSA lacks policies and procedures for managing high-dollar R&D agreements; and FHWA paid invoices that did not meet minimum requirements. Based on our findings and statistical projections, we identified \$1.6 million in funds that could be put to better use. As a result of weaknesses in its policies and internal controls, DOT may not be able to ensure that it is receiving the best value when awarding new agreements and minimizing the risk of fraud, waste, or abuse of R&D funds.

### Our Recommendations

We made 15 recommendations to the Department to improve its management of highway and vehicle safety R&D agreements, including one recommendation that could put \$1.6 million to better use. The Department concurred with 13 recommendations and did not concur with 2.

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# Contents

Memorandum	1
Results in Brief	3
Background	4
DOT Can Strengthen Its Policies and Procedures for Awarding and Overseeing Highway and Vehicle Safety R&D Agreements	5
Conclusion	19
Recommendations	20
Agency Comments and OIG Response	21
Actions Required	23
<b>Exhibit A.</b> Scope and Methodology	24
<b>Exhibit B.</b> List of Acronyms	26
<b>Exhibit C.</b> Major Contributors to This Report	27
<b>Appendix.</b> Agency Comments	28



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## Memorandum

Date: May 1, 2019

Subject: ACTION: Stronger Guidance and Internal Controls Would Enhance DOT's Management of Highway and Vehicle Safety R&D Agreements  
Report No. ZA2019051

From: Mary Kay Langan-Feirson  
Assistant Inspector General for Acquisition & Procurement Audits

To: Assistant Secretary for Research and Technology  
Federal Highway Administrator  
National Highway Traffic Safety Administrator  
Senior Procurement Executive

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Research and development (R&D) is vital to advancing technologies and capabilities that can help prevent highway fatalities and improve vehicle safety. The Administration has also declared the safe integration of connected vehicle systems onto American roadways as a priority area for Federal R&D efforts.<sup>1</sup> From fiscal years 2012 to 2016, the Federal Highway Administration (FHWA), the National Highway Transportation Safety Administration (NHTSA), and the Office of the Assistant Secretary for Research and Technology (OST-R) awarded grants and cooperative agreements involving highway and vehicle safety R&D with a total maximum value of \$501 million in Federal funds.<sup>2</sup>

Given the importance of R&D to the Department of Transportation's (DOT) safety mission and the significant taxpayer-dollar investment involved, effective oversight is key to managing these agreements and meeting the Department's R&D goals. In December 2015, the Fixing America's Surface Transportation (FAST) Act directed our office to review the Department's management and oversight of its cooperative agreements and cooperative research and development

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<sup>1</sup> OMB, FY 2020 Administration Research and Development Budget Priorities, M-18-22 (July 31, 2018).

<sup>2</sup> This figure includes modifications that added Federal funds to the agreements but does not include cost share from recipients. FHWA and NHTSA also expended a significant amount of funds for R&D using contracts during the same time period. However, R&D contracts are not within the scope of our audit.

agreements (CRADA),<sup>3</sup> including highway and vehicle safety R&D agreements between DOT and foreign governments.<sup>4</sup> Accordingly, our audit objective was to assess the Department's policies and procedures for selecting and overseeing its highway and vehicle safety R&D agreements, including grants, cooperative agreements, and CRADAs.

We conducted our work in accordance with generally accepted Government auditing standards. To evaluate FHWA, NHTSA, and OST-R's oversight of highway and vehicle safety R&D agreements and to assess their compliance with relevant policies and procedures, we selected two statistical samples—the first comprising 44 grants and cooperative agreements from a universe of 112 highway and vehicle safety agreements awarded from fiscal years 2012 to 2016 and a second comprising 69 financial transactions from a universe of 2,544 transactions.<sup>5</sup> We are making improper payment projections based on the results of this sample. Exhibit A lists more details 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 call me at 202-366-5255, or Darren Murphy, Program Director, at 206-255-1929.

cc: The Secretary  
DOT Audit Liaison, M-1  
FHWA Audit Liaison, HAIM-13  
NHTSA Audit Liaison, NPO-310  
OST-R Audit Liaison, RTC-1

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<sup>3</sup> A CRADA is an agreement between a Federal laboratory and non-Federal entity in which the Government provides personnel, equipment, intellectual property, or other non-monetary services to the entity towards the conduct of agreed-upon R&D efforts.

<sup>4</sup> Pub. Law No. 114-94, Section 24202.

<sup>5</sup> These include payments made to financial assistance recipients and other entries reflecting refunds or changes to lines of accounting.

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## Results in Brief

### **DOT can strengthen its policies and procedures for awarding and overseeing highway and vehicle safety R&D agreements.**

First, FHWA and NHTSA do not always follow DOT guidance or Governmentwide requirements for awarding R&D agreements with for-profit recipients, and the Agencies lack guidance which specifically addresses awarding R&D agreements with foreign recipients. For example, until January 2019, FHWA had not developed policies and procedures governing conflicts of interest for its CRADAs, which it uses to conduct collaborative research and technology transfer efforts, primarily with the private sector. Second, NHTSA's agreement policies are outdated, and as a result, the Agency did not follow DOT policy when it approved the award of nine cooperative agreements—worth a combined maximum total of \$93.7 million in Federal cost-sharing—without using full and open competition. Third, while FHWA, NHTSA, and OST-R have taken steps to strengthen their oversight of R&D agreements, some gaps remain. For example, DOT does not ensure that Operating Administrations (OAs) consistently identify their sponsored research efforts, which could hamper the Department's ability to ensure that R&D agreements receive proper oversight. This occurs in part because OAs do not apply a clear or consistent definition for R&D when determining whether a financial assistance award should be identified as R&D. In addition, OST-R does not routinely ask for or review support for cost reimbursements to determine whether grantee costs are reasonable or allowable, even though some recipients of University Transportation Center (UTC) grants had audit findings that could warrant taking a risk-based approach to reviewing reimbursement requests in greater detail. As a result of weaknesses in its policies and internal controls, DOT and its OAs may not be able to ensure that they are receiving the best value when awarding new agreements and minimizing the risk of fraud, waste, or abuse of R&D funds.

We are making recommendations to improve DOT and OAs' management of highway and vehicle safety R&D agreements.

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## Background

In fiscal year 2017, FHWA and NHTSA received \$152 million and \$90 million, respectively, for highway and vehicle safety R&D activities.<sup>6</sup> Most of these funds were expended in coordination with third parties (e.g., universities and industry) rather than used for in-house research activities.<sup>7</sup> In addition, OST-R manages the Department's UTC program that funds more than \$70 million annually in research grants to specialized institutes focusing on transportation research, including research on highway and vehicle safety.

Table 1 describes examples of significant highway and vehicle safety R&D grants and cooperative agreements awarded by these three OAs.

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Table 1. Examples of Major R&D Agreements

Mode	Recipient	Purpose	Maximum Federal Cost-Share
FHWA	City of Columbus	Demonstrate how advanced data and intelligent transportation systems (ITS) technologies and applications can be used to reduce congestion, keep travelers safe, use energy more efficiently, respond to climate change, connect and create opportunities for underserved communities, and support economic vitality.	\$40 million
NHTSA	Automotive Coalition for Traffic Safety	Explore the feasibility, potential benefits of, and public policy challenges associated with deploying non-invasive, in-vehicle technology to prevent alcohol-impaired driving.	\$27.2 million
OST-R	University of Minnesota	Conduct a multidisciplinary program of transportation research, education, and technology transfer.	\$7.7 million

Source: OIG analysis of Agency documents.

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<sup>6</sup> John F. Sargent Jr. et al, *Federal R&D Funding: FY2018* (CRS Rept. No. R44888), p. 50. FHWA funding levels include \$73 million for intelligent transportation systems (ITS) research, which involves safety research in areas such as connected vehicle technology.

<sup>7</sup> See National Science Foundation, *Survey of Federal Funds for Research & Development: Fiscal Years 2016-17*, Table 8 (preliminary data). This survey did not distinguish between funds expended on contracts or financial assistance—only the latter of which was the focus of our audit.

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# DOT Can Strengthen Its Policies and Procedures for Awarding and Overseeing Highway and Vehicle Safety R&D Agreements

DOT and OAs' policies and procedures have gaps that could limit the Department's ability to effectively award and oversee highway and vehicle safety R&D agreements. For example, FHWA has not issued policies and procedures governing its CRADAs, which it uses to conduct collaborative research and technology transfer efforts, primarily with the private sector. In addition, while DOT has taken steps to improve its oversight of R&D agreements, some issues persist regarding OAs' procedures for monitoring recipients. For example, OST-R does not routinely ask for or review support for grantee cost reimbursements. As a result, DOT may be missing opportunities to reduce the risk of waste and mismanagement of these agreements.

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## FHWA and NHTSA's Policies and Procedures for Awarding R&D Agreements Do Not Always Follow DOT Guidance or Governmentwide Requirements

FHWA and NHTSA's policies and procedures do not fully address specific concerns arising from cooperation with for-profit entities. FHWA and NHTSA also lack policies and procedures for conducting R&D with foreign governments. Finally, NHTSA has not followed DOT policy when awarding cooperative agreements noncompetitively.

### **FHWA and NHTSA Have Gaps in Policies and Procedures for Entering Into Agreements To Conduct R&D With For-Profit and Foreign Entities**

While 25 of the 28 FHWA and NHTSA R&D agreements and associated files we reviewed involved State and local governments or nonprofit entities, such as professional associations and universities, both Agencies have also entered into agreements with for-profit entities. For example, FHWA and NHTSA each have cooperative agreements that call for a Federal commitment of up to \$45 million and \$52 million, respectively, to evaluate pre-competitive standards for connected vehicle technology with a consortium of automakers that is organized as a for-profit limited liability company. FHWA also has entered into CRADAs with

for-profits as well as a small number of binding agreements<sup>8</sup> with foreign entities to conduct R&D. NHTSA has not yet entered into an agreement with a foreign entity since receiving authority to do so under the FAST Act, but told us that it intends to use this authority in the future.

However, FHWA and NHTSA lack specific or up-to-date policies that address entering into agreements with for-profit entities, such as policies specifying which administrative requirements should be applied to these agreements. At the time the agreements that we reviewed were awarded, DOT's then-current Financial Assistance Guidance Manual (FAGM), issued in 2009, required OAs to apply the Office of Management and Budget's (OMB) uniform administrative requirements for nonprofit recipients of Federal funds to for-profit recipients as well.<sup>9</sup> Among other things, the uniform administrative requirements call for recipients to establish policies and procedures designed to reduce waste, fraud, and abuse when expending Federal funds.<sup>10</sup> Yet, neither FHWA nor NHTSA have financial assistance policies that sufficiently identify what, if any, administrative requirements OAs should apply to for-profit recipients of financial assistance. For example, although NHTSA's standard financial assistance provisions state that the same administrative requirements apply to for-profit organizations as nonprofits, these provisions have not been updated since 1995 and refer to DOT regulations that no longer exist.

In 2017, FHWA issued an Order updating its policies for discretionary financial assistance that incorporates by reference the 2009 FAGM.<sup>11</sup> According to FHWA, this demonstrates that it has policies and procedures that specify what administrative requirements apply to for-profit recipients of FHWA financial assistance. However, because the 2009 FAGM was replaced in 2016 with an interim version that no longer specifies what administrative requirements apply

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<sup>8</sup> FHWA and NHTSA have both entered into non-binding memorandums of cooperation (MOC) and memorandums of understanding (MOU) with foreign government agencies that establish basic frameworks for collaborating on shared research agendas in the area of highway and vehicle safety. Although MOCs and MOUs can be precursors to binding agreements, we did not evaluate FHWA's or NHTSA's policies and procedures for entering into non-binding agreements because they do not directly result in any obligations being imposed on FHWA and NHTSA. Consequently, all references to foreign agreements in this report refer to binding agreements, such as cooperative agreements, unless indicated otherwise.

<sup>9</sup> DOT Financial Assistance Guidance Manual, Chapter 1, section G.a (March 2009). In 2016, the Office of the Senior Procurement Executive (OSPE), which is responsible for establishing departmental financial assistance policies, replaced the 2009 FAGM with an "Interim" version that no longer includes the provision calling for OAs to apply the uniform administrative requirements to for-profit organizations.

<sup>10</sup> For example, the guidelines require recipients to properly inventory equipment purchased with Federal funds and safeguard it from theft and damage, conduct federally funded procurements using sound business judgment, and maintain financial management systems capable of preserving records that identify the source and application of Federal funds. The uniform administrative guidelines, which are currently codified at 2 CFR Part 200, allow, but do not require, Federal agencies to apply the guidelines to for-profit or foreign entities. See 2 CFR § 200.101(c).

<sup>11</sup> FHWA Order 4410.4, "Discretionary Grant Program Development, Implementation, and Award Coordination and Notification" (April 13, 2017).

to for-profit organizations, we maintain that FHWA still does not have specific or up-to-date policies that address this issue.

Until January 2019, FHWA also lacked policies and procedures governing its CRADAs, which it uses to conduct collaborative research and technology transfer efforts, primarily with the private sector. Although it had started to draft a CRADA policy prior to this audit, according to FHWA, there was not a pressing need to finalize the policy because the Agency has entered into only a small number of CRADAs—less than one per year on average—and FHWA “follows existing statutory, regulatory, and FHWA delegation of authority requirements when developing CRADAs.” FHWA officials told us they also use other resources, such as the United States Navy’s CRADA Handbook.

However, we identified instances in which FHWA could have benefited from having more detailed policies to guide its use of CRADAs. For example, agencies—including FHWA—have specific guidance requiring employees involved in the evaluation and award of a contract or grant to certify they are free from conflicts of interest. Moreover, Federal law requires an Agency to establish guidelines for resolving conflicts of interest when entering into CRADAs.<sup>12</sup> Yet, the CRADAs we reviewed did not certify that conflicts of interest had been resolved for the FHWA staff performing on the CRADA. FHWA has since finalized a CRADA policy that includes a conflict of interest certification and non-disclosure agreement for Agency employees who are working on CRADAs.

While this action is an important step toward mitigating personal conflicts of interests regarding FHWA employees working on CRADAs, the Agency still lacks formal procedures for identifying and mitigating organizational conflicts of interest<sup>13</sup> that could impact Government contractors or the other party to the CRADA. For example, the Navy’s CRADA handbook provides a standard clause that forbids a Government contractor performing a supporting role on a CRADA from independently pursuing the same or related technology or acting as a consultant or subcontractor to any other organization pursuing the same or related technology for 5 years.<sup>14</sup> Because it lacks a similar policy, FHWA could be at risk of failing to detect and mitigate organizational conflicts of interest on its CRADAs.

FHWA and NHTSA also lack policies and procedures for entering into agreements with foreign entities. Cooperative agreements with foreign entities entail unique

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<sup>12</sup> 15 U.S.C. § 3710a(c)(3)(A).

<sup>13</sup> Organizational conflicts of interest may occur when a contractor has multiple roles that might bias the contractor’s judgment or where an existing contract provides the contractor with an unfair competitive advantage in obtaining a future Federal award. See FAR 9.505.

<sup>14</sup> Office of Naval Research, Navy Cooperative Research and Development Agreement (CRADA) Handbook (2009), p. V–16.

considerations. For example, FHWA personnel told us that Agency oversight can be complicated by the work being performed—in some cases—outside the United States. FHWA also had to consider the impact of changes in currency exchange rates when scheduling payments. On one cooperative agreement with a consortium of European state highway research laboratories, FHWA decided to advance payment of \$548,000 to support the consortium’s efforts while minimizing the impact of fluctuating dollar-to-euro exchange rates, although the consortium did not provide support for why this amount was needed.<sup>15</sup> FHWA told us that it has since declined to contribute the remainder of the \$1.8 million in Federal funds obligated to the agreement because it has been unable to get adequate information to support costs claimed under the agreement, even though FHWA was generally satisfied with the consortium’s work. By advancing funds without establishing an oversight plan for the agreement, FHWA put itself at increased risk for fraud, waste, and abuse.

Despite requesting and receiving the authority to enter into agreements with foreign governments, NHTSA has not yet developed any policies and procedures on how such agreements should be administered and overseen. NHTSA officials recognized the importance of having policies and procedures in place prior to entering into agreements with foreign governments to conduct R&D but informed us that the Agency has not drafted them yet because it has no concrete plans to enter into any such agreements for the time being. Yet, by not having policies that address the unique circumstances of conducting research with foreign entities, NHTSA may not be prepared to manage these agreements properly when the opportunity for R&D cooperation with foreign governments arises and could encounter the same difficulties as FHWA.

### **NHTSA Did Not Follow DOT Policy in Justifying Noncompetitive Awards**

NHTSA did not follow DOT policy when it approved the award of cooperative agreements without using full and open competition. Specifically, it did not obtain the approval of the Agency Competition Advocate<sup>16</sup> before noncompetitively awarding 9 out of 13 cooperative agreements in our sample that had a maximum potential value of \$93.7 million at the time of our review.<sup>17</sup>

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<sup>15</sup> FHWA observes that OMB grant rules establish a preference for the Government to make advance payments—see 2 CFR § 200.305(b)(1). However, the same rule states that “[a]dvance payments to a non-Federal entity must [...] be timed to be in accordance with the *actual, immediate* cash requirements of the non-Federal entity” (emphasis added). FHWA did not provide us with support to show that the amount it ultimately advanced to the recipient corresponded to the recipient’s immediate financial needs.

<sup>16</sup> The Federal Acquisition Regulation (FAR) requires each agency to designate a Competition Advocate, who is responsible for identifying and challenging barriers to using full and open competition. See FAR 6.502.

<sup>17</sup> The files for all nine FHWA agreements in our sample that were awarded using limited or no competitive procedures included justifications approved by the appropriate official, and the OST-R agreements were all awarded using open competitive procedures and therefore did not require any such justification.

Under the DOT policy in effect when the agreements were awarded, NHTSA was required to develop a justification for making a noncompetitive financial assistance award and obtain approval from the Agency's Competition Advocate when the proposed award exceeded \$650,000.<sup>18</sup> However, NHTSA's justifications for other than full and open competition were all signed by a procurement specialist in its Office of Acquisition Management rather than the Competition Advocate. This happened because NHTSA's financial assistance policies and procedures are outdated and allow the Agency to delegate approval for noncompetitive awards to individuals who would not have been authorized under DOT policy.

NHTSA informed us that it intends to update its policy to conform to DOT requirements regarding who is authorized to approve financial assistance actions using other than full and open competition.<sup>19</sup> By not having the proper approval for its noncompetitive awards, NHTSA may be missing opportunities to open up its cooperative agreement awards to greater competition, which could identify innovative solutions that meet NHTSA's mission more efficiently and effectively.

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## **While DOT Has Taken Steps To Strengthen Its Oversight of R&D Agreements, Some Gaps Remain**

DOT has taken some actions to improve its oversight of R&D agreements, such as having each OA develop an Annual Modal Research Plan to reduce duplicative research programs. However, it is still missing opportunities to improve its oversight of R&D agreements. Specifically, DOT may not be aware of and accurately reporting the extent of its R&D spending because it lacks a common working definition of R&D across the OAs. In addition, FHWA, NHTSA, and OST-R's policies and procedures each have one or more gaps that limit their ability to promote effective oversight of R&D agreements. Some examples include controls related to promoting competition, reviewing requests for reimbursement, and maintaining file documentation.

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<sup>18</sup> See DOT Financial Assistance Guidance Manual, Chapter. 3, section A.5 (March 2009) (citing FAR 6.304). In fiscal year 2016, the threshold increased to \$700,000.

<sup>19</sup> Although DOT's 2016 Interim Update to its Financial Assistance Guidance Manual no longer includes the requirement described above, NHTSA informed us that the Agency head now reviews all new noncompetitive assistance agreements prior to review by the Office of the Secretary.

## DOT Does Not Ensure That Operating Administrations Consistently Identify Their R&D Agreements

Most of the agreements in our sample did not include information identifying them as R&D. Federal grant rules provide a definition of R&D for use in federal financial assistance awards<sup>20</sup> and require that each award include an identification of whether the award is R&D.<sup>21</sup> One reason for this requirement is that recipients' use of Federal funds for R&D awards is subject to special audit procedures as part of the recipients' annual Single Audit.<sup>22</sup> However, only 7 of 15 FHWA agreements<sup>23</sup> and none of the 13 NHTSA or 16 OST-R agreements in our sample identified themselves as R&D.

This occurred because the OAs lack a clear or consistent definition for R&D and a consistent method for identifying financial assistance awards as R&D. For instance, FHWA officials told us they look to legislation authorizing R&D activities for a definition of R&D. In contrast, a NHTSA acquisition official defined R&D as applied research that has the objective of introducing a new capability into public use. Meanwhile, OST-R referred to the definition of R&D found in OMB Circular A-11. In response to our finding, OST-R officials acknowledged that the OST-R grants we reviewed were in fact R&D, and, in light of the Federal requirement to identify such awards as R&D, the Agency needed to more clearly identify its R&D awards.

FHWA and NHTSA offered differing explanations as to why they had not designated the agreements in our sample as R&D:

- FHWA disagreed with our assessment that any of its awards were not properly identified as R&D because each award contained the Catalog of Federal Domestic Assistance (CFDA) number corresponding to Highway

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<sup>20</sup> Specifically, 2 CFR § 200.87 defines research" as "a systematic study directed toward fuller scientific knowledge or understanding of the subject studied," and "development" as "the systematic use of knowledge and understanding gained from research directed toward the production of useful materials, devices, systems, or methods, including design and development of prototypes and processes."

<sup>21</sup> See 2 CFR § 200.210(a)(14). Prior to the compilation of Federal grant and agreement rules in title 2 of the Code of Federal Regulations, the requirement that agencies identify their awards as R&D was located in OMB Circular A-133 § 400(c)(1).

<sup>22</sup> Under the Single Audit Act, 31 U.S.C. §§ 7501–7506, nonprofits and State and local governments that expend \$500,000 or more of Federal grant funds in a year are required to obtain an annual audit of the recipient's financial statements, internal controls, and compliance with Federal statutes, regulations, and the terms and conditions of Federal awards. In addition, OMB provides annual instructions to auditors that include specifics on reviews of recipients' R&D awards as part of Single Audits. For example, OMB advises auditors to assess recipient compliance with requirements to obtain approval from awarding agencies for changes to key personnel working on federally funded R&D.

<sup>23</sup> As discussed below, FHWA disputes our finding that awards were not properly identified as R&D.

Research and Development.<sup>24</sup> We disagree that in this case simply listing a CFDA number is adequate to convey that an award is R&D. Specifically, two of the FHWA awards we reviewed were designated “non-research” even though their CFDA numbers identified them as Highway Research and Development projects. After bringing this to FHWA’s attention, an Agency official informed us that the agreements had been erroneously categorized as “non-research” and that the Agency would clarify its method for designating agreements as R&D.

- According to NHTSA, 4 of the 13 agreements in our sample were not R&D and we should not have identified them as such, since our interpretation of Federal and departmental definitions of R&D would cast almost any NHTSA general research project as R&D. However, we believe that these agreements fit under the definition of R&D found in Governmentwide grant rules.<sup>25</sup> In addition, they also appear to conform to the definition of R&D within OST-R’s Research, Development, and Technology (RD&T) Strategic Plan. Based on the definition in OMB Circular A-11, the plan defines R&D as “creative work undertaken on a systematic basis ... to increase the stock of knowledge ... and .... to devise new applications.”<sup>26</sup> The RD&T Strategic Plan also defines “R&D outputs” as “[a]ny new or improved process, practice, technology, software, training aid, or other tangible product resulting from R&D activities.”<sup>27</sup> Table 2 details some of the work described in the NHTSA agreements that we believe can be called R&D based on the definitions in 2 CFR § 200.87 and the Department’s *RD&T Strategic Plan*.

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<sup>24</sup> The Highway Research and Development assistance program is listed under CFDA number 20.200. NHTSA awarded cooperative agreements in our sample under CFDA number 20.614 (Discretionary Safety Grants and Cooperative Agreements).

<sup>25</sup> See note 20 above.

<sup>26</sup> DOT OST-R, Research, Development, and Technology Strategic Plan FY 2017–2021 (2016) p. 8; OMB Circular A-11, § 84.2(c).

<sup>27</sup> Research, Development, and Technology Strategic Plan, p. 8.

Table 2. NHTSA Cooperative Agreements Identified by OIG as R&D

Agreement Title	Planned or Potential Work
Transportation Safety for Children	Development of training standards and materials on child passenger safety; support development of guidelines on non-crash incidents involving children based on research and technical considerations.
Law Enforcement Standards Training	Development of data-driven approaches to crime and traffic safety (DDACTS) workshops; identification and development of case studies highlighting successful outcomes from implementing DDACTS principles.
Injury Prevention for Pedestrians	Development of a webinar series and educational materials to help the integration of injury prevention and pedestrian safety efforts; develop recommendations to States regarding pedestrian injury surveillance.
Employer Focused Road Safety Resource Development	Development of an application to support employers' economic arguments for employee traffic safety and other additional resources as identified; develop and test a model for connecting with employers at the State level.

Source: OIG analysis of NHTSA agreements.

Because OAs do not use a common definition for R&D, it could be difficult for the Department to obtain a clear and comprehensive understanding of its R&D activities. As a result, the Secretary may not have a full picture of the Department's R&D efforts when certifying to Congress that DOT is not funding duplicative research as required under the FAST Act.<sup>28</sup> In addition, DOT's reporting on the amount and types of R&D it funds may not be accurate when informing Congress and other stakeholders such as the National Science Foundation on its R&D spending, and recipients may not be aware of which agreements are subject to the particular audit requirements for R&D agreements.

### **FHWA, NHTSA, and OST-R Can Strengthen Their Controls for Overseeing Highway and Vehicle Safety R&D Agreements**

FHWA, NHTSA, and OST-R's policies and procedures for overseeing their highway and vehicle safety R&D agreements lack important controls. For example, NHTSA does not have policies and procedures for managing some of its largest agreements, creating a risk that it could add additional work to these agreements that could otherwise be awarded on a competitive basis. In addition, while most

<sup>28</sup> See 49 U.S.C. § 6501(d)(1).

of the 16 FHWA payment transactions we reviewed met the requirements for reimbursement, we identified 5 instances in which FHWA made payments to recipients that were improper at the time they were made.<sup>29</sup>

### *NHTSA Has Not Developed Policies and Procedures for Managing Major R&D Agreements*

NHTSA does not have sufficient policies and procedures for managing some of its largest R&D agreements. For instance, NHTSA awarded a \$40-million<sup>30</sup> cooperative agreement to research safety aspects of connected vehicles using a “work order” process<sup>31</sup> not covered in its existing policies and procedures for managing financial assistance. While NHTSA has taken steps to manage these agreements, for example, by assigning managers from the relevant program offices responsible for overseeing each work order, we found that NHTSA has used these agreements in a manner that does not emphasize competition in the award of financial assistance as provided for under Federal law and DOT policy. For example, NHTSA more than doubled the value of an agreement from \$2 million to \$5 million when the Agency modified an agreement to add additional work that was not anticipated when first awarded. Federal law encourages competition in awarding financial assistance,<sup>32</sup> and DOT financial assistance policy states that financial assistance should be awarded using competitive procedures unless there is a reasonable justification for not using full and open competition.<sup>33</sup> NHTSA officials told us that the award was modified because the Agency needed to quickly fund a priority of the then-Administrator and the objective was related to the existing agreement, but acknowledged that the added work was not contemplated at the time NHTSA first awarded the agreement. We believe that adding unplanned work to an existing cooperative agreement is a practice that does not emphasize competition when awarding financial assistance.

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<sup>29</sup> We consider these payments improper because they included payments for work performed by subcontractors that, at the time the payments were made, had not been approved for work as required under the provisions of the financial assistance awards between FHWA and the recipients. See OMB, “Appendix C to Circular No. A-123, Requirements for Payment Integrity Improvement,” (M-18-20, June 26, 2018), pp. 8-9. Nevertheless, we do not consider it necessary for FHWA to seek recovery of these payments because (1) the Agency took action to provide the required approvals for subcontractors or agreed to review the unapproved subcontractor charges in detail upon closeout of the agreement and (2) there is no indication the work is out-of-scope or otherwise ineligible for payment.

<sup>30</sup> The Federal cost share for the agreement was \$40 million at award. NHTSA has since increased the maximum amount of Federal funds on the agreement to \$52.8 million. The total value of the agreement, including non-Federal cost share, is \$66 million.

<sup>31</sup> This process, which involves awarding an “umbrella” agreement that contains a general statement of work and terms and conditions, while providing for specific activities, deliverables, and the obligation and expenditure of Federal funds under what NHTSA refers to as “cooperative agreement projects,” is analogous to the award of task orders under an indefinite delivery/indefinite quantity (IDIQ) contract.

<sup>32</sup> 31 U.S.C. § 6301(3).

<sup>33</sup> See Financial Assistance Guidance Manual, Chapter. 3, section A.4.

NHTSA was able to add a substantial amount of funds for a new project onto an existing cooperative agreement because NHTSA's financial assistance policies do not include a requirement to obtain a justification for not using full and open competition once the original award of financial assistance has been made. Moreover, NHTSA's policies and procedures do not discuss using a work order process for awarding and managing cooperative agreements, even though NHTSA routinely awards cooperative agreements that use a work order process—specifically, 5 of the 13 NHTSA agreements we reviewed used this process. This creates a risk that NHTSA could use work orders to add out-of-scope work to an existing agreement without a reasonable justification. Consequently, NHTSA could miss additional opportunities to maximize competition when awarding financial assistance to conduct R&D.

#### *FHWA Paid Invoices That Did Not Meet Minimum Requirements*

FHWA paid two recipients for invoices on two separate cooperative agreements that should have been rejected based on provisions in their respective agreements that governed payment. One agreement required the recipient to obtain the Agreement Officer's approval before awarding or modifying subcontracts over \$150,000, while the other required the Agreement Officer's approval before awarding a subcontract regardless of value. According to FHWA, giving the Agreement Officer an opportunity to review a recipient's proposed subcontracts provides an additional level of oversight to ensure that the Agency's objectives in awarding the financial assistance will be met. However, in these instances, both recipients failed to seek the required approval from the Agreement Officer before awarding or modifying subcontracts, and FHWA subsequently reimbursed the recipients for costs that included charges paid on unapproved subcontracts. As a result, we found that FHWA made slightly over \$86,000 in improper payments by reimbursing the recipients for unapproved subcontractor costs.

One recipient sought approval before awarding or modifying other subcontracts on its cooperative agreement but, according to FHWA, did not do so in the cases noted above due to an oversight. The Agreement Officer subsequently provided retroactive approval to the recipient for these subcontracts and modifications.<sup>34</sup> Accordingly, we consider the \$73,662 paid on this cooperative agreement for costs of subcontractors that were unapproved to be improper payments at the time they were made, although FHWA's subsequent approvals render recovery of the payments unnecessary. The other recipient never submitted requests for FHWA to approve subcontracts because—although it was in the cooperative agreement—the recipient was unaware of the requirement. FHWA informed us

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<sup>34</sup> In one instance, the recipient notified the Agreement Officer of a subcontract that had not been submitted for approval, and in the remaining three instances, the Agreement Officer provided retroactive approval after we notified the Agreement Officer of the apparent improper payments.

that the corresponding agreement, on which we identified a \$12,400 improper payment to unapproved subcontractors—is in the closeout stage and that the Agency will scrutinize subcontract costs to ensure they are fair and reasonable prior to making final payment on the agreement. Based on our total findings of \$86,000 in improper payments, we project that the amount of FHWA improper payments involving unapproved subcontractors is \$1.6 million, or 2.4 percent of the value of FHWA transactions for the universe of R&D agreements awarded from fiscal year 2012 to 2016.<sup>35</sup>

*OST-R Does Not Routinely Evaluate Whether Grantee Costs Are Reasonable or Allowable*

OST-R does not routinely examine supporting documentation when approving reimbursements on its UTC grants, which receive more than \$70 million annually. Federal grant rules require that grantees only be reimbursed for reasonable and allowable expenses.<sup>36</sup> However, OST-R policies specifically state that grantees do not need to submit documentation to support reimbursement requests on UTC grants, and most do not. Specifically, only 2 of 25 requests for reimbursement from UTC grantees we reviewed contained individualized details of expenses. Moreover, OST-R generally does not review requests for reimbursement beyond assessing the reasonableness of the requested reimbursement amounts on the Federal Standard Form (SF) 270. This form allows the recipient to identify the award under which reimbursement is being sought, the amount being requested, the period of time covered by the request, and the amount of Federal funds and recipient cost-share<sup>37</sup> spent to date on the award. It does not, however, require the recipient to provide any support for costs charged to the award. According to OST-R, this is the Agency's approach for routine requests for reimbursement from grantees whose performance under the grants did not give OST-R reason for concern. OST-R officials also stated that none of the agreements in our review involved recipients whose performance on UTC grants would warrant increased monitoring. However, we found audit reports, including annual Single Audit reports, which identified material weaknesses and questioned costs associated with other research programs at universities with UTC grants.<sup>38</sup> In fact, one Single

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<sup>35</sup> Our \$1.6 million projection has a 90-percent lower confidence limit of approximately \$344,000 and a 90-percent upper confidence limit of \$2.9 million, which corresponds to a precision of  $\pm 1.9$  percent of the value of FHWA transactions in our universe.

<sup>36</sup> See 2 CFR § 200.410.

<sup>37</sup> UTC grants require recipients to provide matching funds, the amount of which can vary depending on the authorizing statute.

<sup>38</sup> A representative of OST-R told us that the Agency reviews Single Audit reports prior to awarding a UTC grant to determine if the recipient would require additional monitoring but it does not review other sources of audits, such as reports of the National Science Foundation Office of Inspector General, which conducts audits of many of the same recipients.

Audit report of a UTC grant recipient contained a finding of inadequate subrecipient monitoring tied to a UTC grant in our sample.

While we agree with OST-R that a review of the standard reimbursement form along with other required deliverables such as quarterly grant progress reports may be sufficient to determine whether the amount of funds requested at a given time is reasonable, this level of review is not sufficient to ensure that Federal funds are not expended on unallowable costs. For example, in reviewing one detailed request for reimbursement, we identified the following unallowable or potentially unreasonable costs:

- \$1,900 for unnecessary conference costs such as branded water bottles and business card holders.<sup>39</sup>
- \$8,000 for computer equipment charged in the last year of the agreement's 5-year period of performance.

According to OST-R, the Agency is limited in reviewing requests for reimbursement in detail due to Federal grant rules. Specifically, OST-R believes that it cannot require grantees to submit additional information beyond the standard form used to request reimbursement from the Government, and that this kind of auditing activity is restricted to the grantee's annual Single Audit. It is true that according to Federal grant rules, Federal agencies must require recipients to use only the OMB-approved standard forms when requesting reimbursement or submitting financial reports.<sup>40</sup> However, the same rules allow agencies to require more detailed financial reports or additional monitoring for a recipient based on concerns identified either before or after an award, and to obtain access to any documentation related to an award.<sup>41</sup> Moreover, FHWA and NHTSA agreements we reviewed require recipients to submit supporting documentation when seeking reimbursement in addition to standard Federal financial reports. Therefore, we disagree that Federal rules for financial assistance prevent OST-R from obtaining information on costs charged to UTC grants beyond what recipients report on the SF 270.

OST-R also points out that it has limited staff and budgetary resources that make it difficult for the Agency to conduct detailed oversight of UTC grantee expenses. However, there are options for OST-R to conduct some form of review beyond examining top-line reimbursement numbers without having to review detailed cost information for every single request for reimbursement. For example, the Federal Aviation Administration varies the level of detail that recipients of Airport

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<sup>39</sup> The conference costs described above are unallowable because they are neither necessary nor reasonable for the performance of the award, see 2 CFR § 200.403(a).

<sup>40</sup> 2 CFR §§ 200.305(b), 200.327.

<sup>41</sup> 2 CFR §§ 200.207, 200.336(a).

Improvement Program grants must provide when requesting payment based on the results of a pre-award grantee risk assessment. Those recipients designated as high-risk must submit detailed support for costs claimed, while low-risk recipients can provide a summary schedule of vendor invoices. The National Science Foundation also uses a risk-based approach to identify a limited sample of transactions each year, for which it asks grantees to supply detailed cost information. This kind of risk-based monitoring could benefit OST-R by identifying issues with one grantee that may warrant clarifying cost rules for all grantees and thereby reduce the likelihood that grantees submit unallowable costs for reimbursement.<sup>42</sup>

#### *Agreement Files Lacked Required Documentation*

Federal regulations require Agencies to maintain records that support the basis for the Agency's decisions; protect the Government's legal, financial, and other rights; and allow for proper scrutiny of agency decisions by Congress and other stakeholders.<sup>43</sup> However, we found that FHWA, NHTSA, and OST-R R&D agreement files in our sample were missing important information and analyses. Figure 1 provides examples of the information we found was missing from agreement files.

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<sup>42</sup> OST-R takes issue with our use of these examples because the programs involved are significantly larger in scope than the UTC program and cost billions of dollars per year rather than \$70 million for the UTC program, and that "risk-based monitoring" refers to developing grantee-specific oversight plans before making an award. We disagree that evaluation of risk and updating of controls end after the award of a grant. For example, OMB Circular A-123, Management's Responsibility for Enterprise Risk Management and Internal Control (2016), anticipates that managers will continuously monitor program risks, including fraud risks in Federal programs, and update approaches for addressing risk as needed.

<sup>43</sup> 36 CFR § 1222.22.

Figure 1. Examples of Documentation Missing From OA Agreement Files

Operating Administration	Number of agreement files missing documentation	Potential value of agreements missing documentation
<b>Missing some or all conflict of interest certifications<sup>a</sup></b>		
NHTSA	 9 of 13	\$98.0 million
FHWA	 9 of 15	\$82.1 million
OST-R	 0 of 16	\$0
<b>Total</b>	<b>18 of 44</b>	<b>\$180.1 million</b>
<b>Missing evidence that recipients were checked against suspended and debarred parties list before award<sup>b</sup></b>		
NHTSA	 11 of 13	\$75.9 million
FHWA	 0 of 15	\$0
OST-R <sup>c</sup>	 16 of 16	\$108.7 million
<b>Total</b>	<b>27 of 44</b>	<b>\$184.6 million</b>
<b>Missing post-award annual budget reviews<sup>d</sup></b>		
NHTSA	 13 of 13	\$103 million
FHWA	 10 of 15	\$83.6 million
OST-R	 16 of 16	\$108.7 million
<b>Total</b>	<b>39 of 44</b>	<b>\$295.3 million</b>

<sup>a</sup> OST, *Financial Assistance Guidance Manual (FAGM)*, March 2009, Chapter 5, section C.

<sup>b</sup> *FAGM*, Chapter 6, section B.2.

<sup>c</sup> The OST-R agreements selected in our sample for file review that were missing evidence that recipients were checked against the suspended and debarred parties list were all awarded in 2012 or 2013. OST-R acknowledged that it did not begin including evidence of checks for suspended and debarred parties until 2014—although this had been a requirement in the Department’s *Financial Assistance Guidance Manual* since 2009—but it is now the Agency’s standard practice to include these checks.

<sup>d</sup> *FAGM*, Chapter 9, section D.

Source: OIG analysis of FHWA, NHTSA, and OST-R agreement files.

According to the Department, the absence of this documentation does not demonstrate that the analyses or oversight did not take place, and OAs have numerous controls that would detect and mitigate risks. For example, with respect to conflict of interest certifications, FHWA officials told us that while the certifications may have been missing from the files, staff involved with awarding and managing agreements undergo annual ethics training and file annual

financial disclosure reports. Also, the Agency told us recipients are required to submit quarterly progress reports that would identify performance or budget concerns similar to annual budget reviews, which would mitigate the impact of not doing an annual budget review. While we appreciate that OAs have controls for managing conflicts of interest and other risks, we are not aware of an approved waiver or deviation that allows them to substitute their own procedures for departmental requirements that provide for the documentation of specific actions that protect government and taxpayer interests in the administration of financial assistance awards.

FHWA, NHTSA, and OST-R acknowledged that in some cases personnel had failed to document some analyses and reviews and stated that they have provided additional guidance to individuals so that these items would be properly documented in the future. Some missing documentation can also be attributed to policies being unclear or not well-tailored to the needs of specific grant programs. For example, DOT policies describe the need for Agencies to estimate the cost to the Government for each agreement, but do not provide any detail on what cost elements should be evaluated and how. In addition, although OST-R staff told us that they conduct pre-award budget reviews for each UTC grant, they were not aware of the annual requirement to do post-award budget reviews. By not documenting or conducting the analyses identified above, DOT is at risk of making awards based on a conflict of interest or the appearance of one, making awards to ineligible recipients, and failing to identify when recipients are over budget or whether there are opportunities to put obligated but unused dollars to better use.

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## Conclusion

Research and development plays an important role in the Department's mission to improve highway and vehicle safety. While FHWA, NHTSA, and OST-R have some policies and procedures in place to manage highway and vehicle safety R&D agreements, these Agencies have opportunities to strengthen their guidance and internal controls in several areas. These include clarifying procedures for agreements with for-profit and foreign entities and implementing additional oversight to avoid improper payments in reimbursements. Given the significant taxpayer investment in highway and vehicle safety R&D and the important safety outcomes that can emerge from this work, strong policies and procedures are critical to ensuring DOT manages and oversees these efforts as effectively and efficiently as possible.

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## Recommendations

To improve management of R&D agreements, we recommend that the Federal Highway Administrator:

1. Update financial assistance policies and procedures to address what administrative requirements apply to agreements with for-profit and foreign entities.
2. Finalize and issue policies for signing and administering CRADAs.
3. Update policies and procedures to determine when it is appropriate to require approval of recipient subcontracts or subawards and communicate this requirement to recipients; review the \$12,400 in unapproved subcontractor costs identified in this report; and recover any costs deemed unreasonable. Implementing this recommendation could result in \$1.6 million in funds being put to better use.
4. Update the checklist for agreement files that describes what pre- and post-award documentation is required under current DOT and FHWA policies.

To improve management of R&D agreements, we recommend that the National Highway Traffic Safety Administrator:

5. Update financial assistance policies and procedures to address what administrative requirements apply to agreements with for-profit and foreign entities.
6. Update financial assistance policies and procedures to specify what level of review is required to approve a justification for making a financial assistance award without using full and open competitive procedures.
7. Update financial assistance policies and procedures to specifically address agreements using a work-order structure, including procedures to reduce the risk of using these agreements to circumvent the general requirement to award financial assistance using full and open competitive procedures.
8. Update the checklist for agreement files that describes what pre- and post-award documentation is required under current DOT and NHTSA policies.

To improve management of R&D agreements, we recommend that the Assistant Secretary for Research and Technology:

9. Provide guidance to OAs to reinforce a common definition of R&D for use when determining whether a financial assistance award needs to be identified as R&D.
10. Develop and implement a risk-based methodology for reviewing a number of grantee reimbursement requests in detail on a regular basis.
11. Recover \$1,900 in unallowable costs and take appropriate action to determine whether \$8,000 in computer equipment costs was reasonable, and if not, seek recovery of these funds as well.
12. Update the checklist for agreement files that describes what pre- and post-award documentation is required under current DOT and OST-R policies.

To improve departmental policy for awarding and overseeing R&D agreements, we recommend that the Senior Procurement Executive:

13. Revise DOT financial assistance policies to require that OAs define what administrative requirements apply to agreements with for-profit and foreign recipients.
14. Revise DOT financial assistance policies to specify what officials are authorized to approve justifications for awarding financial assistance without full and open competition.
15. Develop and issue guidance to OAs for clearly identifying awards as R&D.

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## Agency Comments and OIG Response

We provided a copy of our draft report to the Department on February 25, 2019, and received its response on March 27, 2019, which is included as an appendix to this report. The Department concurred with recommendations 2 through 12 and recommendations 14 and 15, and provided appropriate actions and completion dates. After we issued our draft report, the Department provided documentation demonstrating that it had completed planned actions for recommendations 2 and 11. Accordingly, we consider both of these recommendations resolved and closed. We consider recommendations 3, 4, 5, 6, 7, 8, 9, 10, 12, 14, and 15 resolved but open pending completion of planned actions. The Department did not concur with recommendations 1 and 13, as detailed below.

Regarding recommendation 1, FHWA did not agree to update its financial assistance policies and procedures, stating that it has “codified” 2 CFR Part 200, the Uniform Administrative Requirements, Cost Principles, and Audit Requirements for Federal Awards, which it uses for its financial assistance manual. While we understand and appreciate that it has been the Agency’s general practice to apply the same administrative requirements to agreements with for-profit and foreign entities as it does for other recipients, we do not believe that a reference to 2 CFR Part 200 is sufficient to demonstrate that FHWA has a policy clearly indicating what requirements, if any, apply to for-profit and foreign entities. As we note in our report, Part 200 of 2 CFR specifically states that “Federal agencies *may apply* [the requirements within Part 200] to for-profit entities, foreign public entities, or foreign organizations,” with some exceptions.<sup>44</sup> Thus, the manner in which FHWA has adopted 2 CFR Part 200 to govern its financial assistance awards still allows the Agency to apply all, some, or none of the uniform administrative requirements to its agreements with for-profit and foreign entities. Because we believe this arrangement does not address the intent of our recommendation, we consider this recommendation open and unresolved and request that FHWA reconsider its position.

For recommendation 13, OSPE did not agree to revise DOT financial assistance policies to require that OAs define what administrative requirements apply to agreements with for-profit and foreign recipients. Like FHWA, OSPE stated that it has codified 2 CFR Part 200 for use as its financial assistance manual. In addition, OSPE claims that the regulations address administrative requirements for agreements with for-profit and foreign entities and are applicable to all recipients unless noted by exception, so an update to OSPE’s departmental financial assistance policies and procedures is unnecessary. We do not believe that OSPE’s statement that it has adopted 2 CFR Part 200 as departmental financial assistance policy is sufficient to define what administrative requirements apply to financial assistance awards to for-profit and foreign recipients for the same reasons as discussed above in our response to FHWA on recommendation 1. We also disagree that 2 CFR Part 200 is applicable to agreements with for-profit and foreign entities by default because the text of the regulations explicitly provides agencies with discretion as to whether they apply the administrative requirements to for profit and foreign entities.<sup>45</sup> While we appreciate OSPE’s commitment to strengthening departmental controls over financial assistance agreements, we do not believe that adoption of 2 CFR Part 200 as the Department’s financial assistance policy meets the intent of our recommendation

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<sup>44</sup> 2 CFR § 200.101(c) (emphasis added).

<sup>45</sup> See *id.* (“Federal agencies *may apply* [the uniform administrative requirements] to for-profit entities, foreign public entities, or foreign organizations, except where the Federal awarding agencies determines that the application of these subparts would be inconsistent with the international obligations of the United States or the statutes or regulations of a foreign government”) (emphasis added).

that OSPE have a policy clearly indicating what, if any, administrative requirements apply to DOT agreements with for-profit and foreign entities. As a result, we consider recommendation 13 open and unresolved and request that OSPE reconsider its position.

Finally, although FHWA concurred with recommendation 3 and plans to address the recommendation, it disagreed with our assessment that an estimated \$1.6 million in funds could be put to better use. In particular, FHWA stated that it is misleading to extrapolate issues with subcontractor approvals found in only two agreements, one of which—CAMP—is a large-scale, multifaceted award with dozens of subcontractors, to make a projection against the entire population of awards we reviewed. Two responses are in order. First, the extrapolations we made were based on the value of individual transactions, not the value of an agreement. The universe of FHWA transactions from which we sampled contained 666 transactions associated with 34 agreements, and 189 of them, or 28 percent, were associated with the CAMP agreement and accounted for 26 percent of the total dollar value of all 666 transactions. With that share of transaction dollars associated with CAMP, it is expected that there would be a greater chance that CAMP transactions were selected for review. Second, our sampling methodology was designed to give every dollar in the universe an equal chance of selection.<sup>46</sup> This is an unbiased, representative, and accepted sampling methodology endorsed by OMB. Thus, we stand by our projection that FHWA could put \$1.6 million to better use by enhancing its controls related to subcontractor approvals.

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## Actions Required

We consider recommendations 2 and 11 resolved and closed. We consider recommendations 3, 4, 5, 6, 7, 8, 9, 10, 12, 14, and 15 resolved but open pending completion of planned actions. In accordance with Department of Transportation Order 8000.6B, we request that FHWA reconsider its opinion regarding recommendation 1, OSPE reconsider its position regarding recommendation 13, and both organizations provide written responses within 30 days of the date of this report.

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<sup>46</sup> Specifically, we generated random numbers between 0 and the universe amount of \$67,762,852.46. Next, we computed a running total of all the transaction amounts, then looked at the running total, and identified and selected the transaction whose running total contained the random number.

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## Exhibit A. Scope and Methodology

We conducted this performance audit between September 2017 and February 2019 in accordance with generally accepted Government auditing standards as prescribed by the Comptroller General of the United States. 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 objective. We believe that the evidence obtained provides a reasonable basis for our findings and conclusions based on our audit objective.

Our audit objective was to assess the Department's policies and procedures for selecting and overseeing highway and vehicle safety R&D agreements, including grants, cooperative agreements, and CRADAs.

To address our audit objective, we reviewed Governmentwide, departmental, and OA policies and procedures regarding the award and management of financial assistance. We also reviewed laws and policies and procedures for CRADAs, including guidance from other agencies that use CRADAs. We interviewed representatives from FHWA, NHTSA, and OST-R to gain an understanding how agreements are awarded and overseen. We also interviewed OST officials whose duties involved implementing departmental R&D policies, including representatives from the Office of the Secretary for Budget (OST-B) and the Office of the Secretary for Aviation and International Affairs (OST-X) and made a site visit to FHWA's Turner-Fairbank Highway Research Center to gain insight into the Agency's procedures and practices for issuing CRADAs.

To assess agency compliance with financial assistance policies and procedures, we obtained lists of agreements awarded from fiscal years 2012 through 2016 from FHWA, NHTSA, and OST-R and established our universe by assessing whether the agreements involved highway and vehicle safety and included R&D activities based on the definition of R&D in 2 CFR § 200.87. We validated the completeness of this list by comparing the agreements' unique identification numbers with public records, including agency reporting to USAspending.gov, and with lists of agreements independently extracted by our own IT Specialist from the Department's accounting system. This universe contained 112 agreements with a total maximum potential value of \$500.8 million. From this universe, we selected a stratified probability proportional to size with replacement sample of 44 out of 112 agreements where size was the maximum potential value. Our sample had a total maximum potential value of approximately \$362.2 million or 72 percent of the universe. We also developed a standardized checklist of 18 items related to requirements governing award and oversight of the financial assistance agreements within the scope of our audit. These checklist items included requirements such as documenting justifications for non-competitive awards, verifying if recipients were currently on the Federal

suspended and debarred list and demonstrating proper closeout of completed agreements. We then used this checklist to review the agreement files for our 44 sample agreements to evaluate the OAs' compliance with the requirements. We did not project the results of this sample.

We also downloaded all transactions that were posted to DOT's accounting system between October 1, 2011 and February 13, 2018, and created a second universe by extracting all transactions that matched the identification numbers of agreements in our universe of vehicle/highway safety R&D agreements. Our universe consisted of 2,544 transactions with a total transaction amount of approximately \$343.7 million. We stratified this universe by Operating Administration and type of transaction (debits and credits) into 6 strata and selected a sample with probability proportional to size with replacement from each stratum where size was the absolute transaction amount for a total sample size of 70 out of 2,544 transactions. One transaction was selected twice due to our "with replacement" sampling methodology which reduced the actual sample size from 70 to 69.<sup>47</sup> Our sample included nearly \$28.3 million which was 8.2 percent of the approximately \$343.7 million in our universe. Our stratum sample sizes were distributed proportionately to the number of transactions in a stratum with a minimum of 2 to enable variance computations, and to allow for improper payment projections with 90-percent confidence and a desired precision no greater than +/-10 percent of the universe amount. We selected this sampling methodology because it is well known, widely used, and allows for transparent calculations without needing specialized software.

To assess DOT's administration of payments to recipients of vehicle/highway safety R&D agreements, we developed a standardized checklist of seven requirements for recipient reimbursement, which included if costs were allowable under the agreement's scope, accuracy of indirect costs charged, and documentation of payment approvals by the designated individual. We then used this checklist to review 69 reimbursement payments to evaluate DOT's compliance with the requirements.

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<sup>47</sup> As required, we accounted for the double-selection of this transaction when we made our projections.

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## Exhibit B. List of Acronyms

CFDA	Catalog of Federal Domestic Assistance
CRADA	cooperative research and development agreements
DDACTS	Development of data-driven approaches to crime and traffic safety
DOT	Department of Transportation
FAGM	Financial Assistance Guidance Manual
FHWA	Federal Highway Administration
IDIQ	indefinite delivery/indefinite quantity contracts
NHTSA	National Highway Traffic Safety Administration
OA	Operating Administrations
OIG	Office of Inspector General
OMB	Office of Management and Budget
OSPE	Office of the Senior Procurement Executive
OST-B	Office of the Assistant Secretary for Budget and Performance
OST-R	Office of the Assistant Secretary for Research and Technology
OST-X	Office of the Assistant Secretary for Aviation and International Affairs
R&D	research and development
RD&T	research, development, and technology
UTC	University Transportation Center

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## Exhibit C. Major Contributors to This Report

DARREN MURPHY	PROGRAM DIRECTOR
AARON MALINOFF	PROJECT MANAGER
MARGUERITE NEALON	SENIOR AUDITOR
ANDREW JAMES	SENIOR ANALYST
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# Appendix. Agency Comments



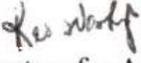
**U.S. Department  
of Transportation**

Office of the Secretary  
of Transportation

1200 New Jersey Avenue, SE  
Washington, DC 20590

**MAR 27 2019**

**Subject:** Department of Transportation's Management Response to  
OIG Draft Report on Highway and Vehicle Safety Research & Development Agreements

**From:** Keith Washington   
Deputy Assistant Secretary for Administration

**To:** Mary Kay Langan-Feirson  
Assistant Inspector General for  
Acquisition and Procurement Audits

The Department of Transportation (DOT) is committed to ensuring that the research conducted within the Department is relevant, meets departmental strategic goals; and that the outcomes of the research are applied to create a safer transportation system. The DOT also ensures that the subject matter experts selected to execute DOT research are selected through open and competitive processes.

DOT has recently taken the following actions to strengthen its research and development internal controls and guidance:

- recovered a total of \$2,925.11 from a vendor, consisting of \$1,900 in unallowable costs plus the associated indirect costs.
- determined that the \$8,000 OIG cited in computer equipment costs is reasonable and an allowable cost. The items purchased had a unit cost of less than \$5,000 and thus fall under *Expendable Properties, Supplies and Services*; and
- finalized and implemented an FHWA cooperative research and development agreements (CRADAs) Standard Operating Procedures in January 2019.

Upon review of the OIG's draft report, we concur with the following recommendations, as follows:

Operating Administration (OA)/Office	Recommendation Number	Target Action Completion Date
Federal Highway Administration (FHWA)	2	30-days after OIG's Final Report issuance
FHWA	3 and 4	December 31, 2019
National Highway Traffic Safety Administration (NHTSA)	5, 6, 7, and 8	March 30, 2020
Office of the Assistant Secretary for Research and Technology (OST-R)	9, 10, and 12	March 30, 2020
OST-R	11	30-days after OIG's Final Report issuance
Office of the Senior Procurement Executive (OSPE)	14 and 15	December 31, 2020

Regarding Recommendation 1, FHWA does not agree to update its financial assistance policies and procedures to address the administrative requirements that apply to agreements with for-profit and foreign entities. Since the time period examined in the audit, FHWA codified and uses 2 CFR Part 200 – “Uniform Administrative Requirements, Cost Principles, and Audit Requirements for Federal Awards” for its financial assistance manual. These regulations address administrative requirements for for-profit and foreign entities, and updating FHWA financial assistance policies and procedures is unnecessary. *See* 2 CFR 200.101 “Applicability.”

Regarding Recommendation 2 and 11, as previously cited, FHWA concurs with recommendation 2 and has finalized and implemented its Standard Operating Procedures for CRADAs. FHWA provided the OIG with supporting documentation and requested that the OIG close Recommendation 2 within 30 days after issuing the final report. In addition, OST – R concurs with Recommendation 11 and has recovered \$1,900 in unallowable costs and determined that \$8,000 in computer equipment was reasonable. OST-R provided the OIG with supporting documentation and requested that the OIG close Recommendation 11 within 30 days after issuing the final report.

Regarding Recommendation 3, although FHWA concurs with the recommendation to update policies and procedures to determine when it is appropriate to require approval of recipient subcontracts or sub-awards and review the \$12,400 in unapproved subcontractor costs, it disagrees with OIG’s finding that \$1.6 million in funds could be put to better use. It is misleading to extrapolate subcontractor approval and subsequent subcontractor amendment approvals found in just two awards, CAMP and Danlaw, to make a projection against the entire population of awards reviewed by the OIG. The samples selected are not representative of the population, especially in the case of CAMP. The CAMP award is an extremely complex, large scale, multi-faceted award with dozens of subcontractors in which all but one was approved. This project differs significantly from the other awards in the population. Developing a projection of CAMP and Danlaw based on the rest of the FHWA agreement population is misleading.

Lastly, regarding Recommendation 13, OSPE does not agree to revise DOT financial assistance policies to require that OAs define what administrative requirements apply to agreements with for-profit and foreign recipients. Since the time period examined in the audit, OSPE codified and uses 2 CFR 200, “Uniform Administrative Requirements, Cost Principles, and Audit Requirements for Federal Awards” for its financial assistance manual. These regulations address administrative requirements for for-profit and foreign entities and is applicable to all recipients unless noted by exception, and updating financial assistance policies and procedures is unnecessary. *See* 2 CFR 200.101 “Applicability.”

We appreciate the opportunity to review the OIG draft report. Please contact Kevin Womack, Director of Research, Development and Technology, 202-366-5447 with any questions.

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