NTC Program Progress Performance Report (PPPR) Information Form

For P.I.’s Use

On a semi-annual basis the NTC sponsored P.I. must report Program Progress Performance Report (PPPR) using the format specified in this PPPR Information Form. The form must be submitted electronically to the corresponding NTC Associate Director by 9/15/2015.

Cover Period: 4/1/2015 – 9/30/2015

<table>
<thead>
<tr>
<th>NTC Funded Project Information (Round/Year 2, 2014-2015)</th>
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<tbody>
<tr>
<td><strong>University Name</strong></td>
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<tr>
<td><strong>Project Title</strong></td>
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<tr>
<td><strong>Principal Investigator</strong></td>
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<td><strong>PI Contact Information</strong></td>
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The form includes the following six parts:

- Part I – Accomplishments: What was done? What was learned?
- Part II – Products: What has the program produced?
- Part III – Participants & Collaborating Organizations: Who has been involved?
- Part IV – Impact: What is the impact of the program? How has it contributed to transportation education, research and technology transfer?
- Part V – Changes/Problems

*Supplementary documents/materials can be attached to this form with the submission.*
**Part I – Accomplishments: What was done? What was learned?**

The information provided in this section allows the OST-R grants official to assess whether satisfactory progress has been made during the reporting period.

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1. **What are the major goals of the program?**

   The National UTC aims to promote strategic transportation policies, investment, and decisions that bring lasting and equitable economic benefits to the U.S. and its citizens. The Center is concerned with the integrated operations and planning of all modes serving the nation’s passenger and freight transportation system, including the institutional issues associated with their management and investments. A balanced multi-modal approach will be used that considers freight and passenger travel mobility, reliability, and sustainability, as well as system operations during periods of both recurring and non-recurring incidents, including response to major emergencies. The modes in this theme include highway, transit, rail, and inter-modal interfaces including ports, terminals and airports. In particular, the center focuses on research, education, and technology transfer activities that can lead to (1) Freight efficiency for domestic shipping and for our international land, air, and sea ports; (2) Highway congestion mitigation with multi-modal strategies; and (3) Smart investments in intercity passenger travel facilities such as high speed rail. Major center activities are as following:

   - **Advanced & Applied Research Promoting Economic Competitiveness:**
     Our research activities are multimodal/intermodal and multidisciplinary in scope, with the aims of addressing nationally and regionally significant transportation issues pertinent to economic competitiveness and providing practice-ready solutions.

   - **Education, Workforce Development, Technology Transfer, & Diversity**
     The consortium is committed to providing high-quality transportation education and workforce development programs for a broad and diverse audience. Center’s efforts will support the development of a critical transportation knowledge base and a transportation workforce that is prepared to design, deploy, operate, and maintain the complex transportation systems of the future.
| 2. What was accomplished under these goals? | The use of public-private-partnerships (PPP or P3) to deliver major U.S. transportation projects has increased in the last couple of decades. This research is a benchmarking study with the objectives to conduct a comprehensive analysis of funding streams to quantify the funding sources used to deliver PPP transportation projects in the U.S.

The research team finalized the data collection and verified data through (a) professional databases, (b) publicly available sources, and (c) structured interviews with key projects constituents.

The preliminary results were published in peer-reviewed conference proceedings and presented at the EPOC 2015 international conference in Scotland. Preliminary results show using private funding almost doubles the amount of resources spent to deliver PPP infrastructure on certain types of PPP methods, which showcase a successful manner for public agencies to leverage private funding in order to serve the public. In this reporting period the research team has collected all the remaining data needed, presented preliminary results at an international conference, completed the first round of statistical analysis, and prepared the first draft of the paper discussing the final results, which will be submitted for publication in a peer-reviewed ASCE journal in the next month.

This project fills a gap of knowledge on PPP project performance in the U.S. transportation sector. Ongoing research activities include finalizing the technical article and submitting it to ASCE for publication. |
| --- | --- |
| 3. How have the results been disseminated? | Preliminary results on DBFOM PPP have been published in international conference proceedings. The final results on all PPP types will be submitted to ASCE next month.


2. Ramsey, D.W., and El Asmar, M. () “Analysis of Funding Streams for Public-Private-Partnerships in the U.S. Transportation Sector,” in preparation for the Journal of |
Additionally, related synergistic work by the same research team also has been completed and is currently in review for publication as a case study by ASCE. Finally, the PI will include the new knowledge in his graduate course on Alternative Project Delivery Methods (CON551).

| 4. What do you plan to do during the next reporting period to accomplish the goals? (10/1/2014 – 3/10/2015) | The PI will finalize the statistical analysis and the technical journal paper discussing the final results. These to remaining activities are expected to be completed by the end of 2015. |
### Part II – Products: What has the program produced?

Publications are the characteristic product of research projects funded by the UTC Program. OST-R may evaluate what the publications demonstrate about the excellence and significance of the research and the efficacy with which the results are being communicated to colleagues, potential users, and the public, not the number of publications. Many research projects (though not all) develop significant products other than publications. OST-R may assess and report both publications and other products to Congress, communities of interest, and the public.

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| 1. Journal publications: | [List peer-reviewed articles or papers appearing in scientific, technical, or professional journals. Include any peer-reviewed publication in the periodically published proceedings of a scientific society, a conference, or the like. A publication in the proceedings of a one-time conference, not part of a series, should be reported under “Books or other non-periodical, one-time publications.”]

[Identify for each publication: Author(s); title; journal; volume: year; page numbers; status of publication (published; accepted, awaiting publication; submitted, under review; other); acknowledgement of federal support (yes/no).]


| 2. Books or other non-periodical, one-time publications | [Report any book, monograph, dissertation, abstract, or the like published as or in a separate publication, rather than a periodical or series. Include any significant publication in the proceedings of a |

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<tr>
<th>3. Other publications, conference papers and presentations</th>
<th>[Identify any other publications, conference papers and/or presentations not reported above. Specify the status of the publication as noted above.]</th>
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<tr>
<td>4. Website(s) or other Internet site(s)</td>
<td>[Identify any website(s) or other Internet site(s)]</td>
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<tr>
<td><a href="http://faculty.engineering.asu.edu/asmar/">http://faculty.engineering.asu.edu/asmar/</a></td>
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<tr>
<td>5. Technologies or techniques</td>
<td>[Identify technologies or techniques that have resulted from the research activities. Describe the technologies or techniques and how they are being shared. Such as Technologies or technology assessments]</td>
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<tr>
<td>Public-Private-Partnerships (PPP) is a project delivery method or technique that we are investigating and benchmarking in this study.</td>
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<tr>
<td>6. Outreach activities</td>
<td>2 peer-reviewed conference presentations</td>
</tr>
<tr>
<td>7. Courses and workshops</td>
<td>• CON 551 Alternative Project Delivery Methods • Project management training workshop</td>
</tr>
<tr>
<td>8. Inventions, patent</td>
<td>[Identify inventions, patent applications with date, and/or licenses]</td>
</tr>
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</table>
| applications, and/or licenses | that have resulted from the research. Submission of this information as part of an interim research performance progress report is not a substitute for any other invention reporting required under the terms and conditions of an award; as of the date of this document, UTC Program inventions may not be submitted to the Federal government’s Interagency Edison (iEdison) invention-reporting system, but OST-R is working to make that available and will notify UTCs. For additional requirements pertaining to Patents and Copyrights, refer to General Provisions of Grants for University Transportation Centers, Section III, 14.] 

N/A |
| 9. Other products | [Identify any other significant products that were developed under this program. Describe the product and how it is being shared. Examples of other products are:

- Databases
- Physical collections
- Audio or video products
- Software or NetWare
- Models
- Educational aids or curricula
- Instruments or equipment
- Data & Research Material
- Other]

The project will result in the first comprehensive database for PPP transportation projects in the U.S., which combines the key funding information available in government and private databases currently available. |
**Part III – Participants & Collaborating Organizations: Who has been involved?**

OST-R needs to know who has worked on the project to gauge and report performance in promoting partnerships and collaborations.

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1. **What organizations have been involved as partners?**

3 researchers are involved:
- PI: Dr. Mounir EL ASMAR
- Lead Ph.D. student: David Ramsey
- Supporting Ph.D. Student: Abbas Chokor

2. **Have other collaborators or contacts been involved?**

Significant collaborators and contacts outside the UTC have provided valuable data that made this research possible. These knowledgeable and supportive collaborators include:
- Gordon Burton (Alaska DOT)
- Alicia Torrez and Sara Ulbrich (Texas DOT)
- Lisa Loftus-Otway (Texas, UT Austin)
- Neal Belitsky (American Roads LLC)
- Jessica Keane and Maribel Lena (Florida DOT)
- Ron Marsico (Port Authority of NY/NJ)
- Kathy M. (Lake of the Ozark Community Bridge)
- Peter Femia (Connector 2000 Association)
- Jessica Cowardin and Larry Cloyed (Virginia DOT)
- Nancy Herera (Texas DOT)
- Barbara Kelleher (Florida DOT)
- John McCuskey (E-470 Public Highway Authority)
- John Flansberg (City of Reno)
- Crystal Gorman and John McShaffrey (Florida DOT)
- Kirk Avila (Orange County Transit Authority)
- Maria Melendres (Alameda Corridor Transportation Authority)
- Sam Johnson (Caltrans, SANDAG)
- Neal Fitzsimmons (NJ Transit Authority)
- Kimberlee Akimoto (Tri Met)
- Benjamin Asher (Texas DOT)
- Ian Satter (Florida DOT)
- Mary Koester (Minnesota DOT)
- Todd Walker (Las Vegas Monorail LLC)
- Mark Shotkoski (NWP Public Highway Authority)
Part IV – Impact: What is the impact of the program? How has it contributed to transportation education, research and technology transfer?

DOT uses this information to assess how the research and education programs:

- increase the body of knowledge and techniques;
- enlarge the pool of people trained to develop that knowledge and techniques or put it to use; and,
- improve the physical, institutional, and information resources that enable those people to get their training and perform their functions.

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<tr>
<td>1. What is the impact on the development of the principal discipline(s) of the program?</td>
<td>[Describe how findings, results, techniques that were developed or extended, or other products from the program made an impact or are likely to make an impact on the base of knowledge, theory, and research and/or pedagogical methods in the principal disciplinary field(s) of the program. Summarize using language that an intelligent lay audience can understand (Scientific American style).]</td>
</tr>
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</table>

[How the field or discipline is defined is not as important as covering the impact the work has had on knowledge and technique. Make the best distinction possible, for example, by using a “field” or “discipline”, if appropriate, that corresponds with a single academic department (i.e., physics rather than nuclear physics). ]

ASCE and other sources have shown the state of the U.S. infrastructure system as less-than-ideal. A key constraint in revamping and providing new transportation infrastructure is the scarcity of resources. These resources have to be spent effectively to deliver the required number of high-quality transportation projects to the public.

One way of leveraging public funds to deliver more projects is the use of PPP methods, which introduce additional private resources to supplement the public funds. However, cost and schedule performance, funding characteristics and arrangements of past PPP projects have not been readily documented and analyzed.

The impact of the proposed study is to provide a comprehensive analysis of the funding sources of all PPP projects in the U.S.
transportation sector. The sources and amounts of public and private funding (i.e., grants, loans, bonds, private equity) for PPP transportation projects in the U.S. will be available to inform both the federal and state stakeholders, to help advance the state of knowledge in project delivery systems of infrastructure.

### 2. What is the impact on other disciplines?

[Describe how the findings, results, or techniques developed or improved, or other products from the program made an impact or are likely to make an impact on other disciplines.]

The impact of the proposed study can translate to more than highway projects, and include other infrastructure projects delivered in the U.S. Moreover, transportation financing stakeholders, both public and private, can be impacted by the findings of the study.

### 3. What is the impact on the development of transportation workforce development?

[Describe how the program made an impact or is likely to make an impact on transportation workforce development. For example, how has the program:

- Provided opportunities for research and teaching in transportation and related disciplines;
- Improved the performance, skills, or attitudes of members of underrepresented groups that will improve their access to or retention in transportation research, teaching, or other related professions;
- Developed and disseminated new educational materials or provided scholarships; or provided exposure to transportation, science and technology for practitioners, teachers, young people, or other members of the public?]

There can be a relatively important indirect impact, because more use of PPP can result in more transportation funds, which equates to more projects. The workforce then benefits because more work is available. On a much smaller scale and more direct level, the PI will include the new knowledge in his industry training workshops and his graduate course on Alternative Project Delivery Methods (CON 551) to educate the next generation of engineers and builders on the state of knowledge in PPP methods and performance.
4. What is the impact on physical, institutional, and information resources at the university or other partner institutions?

[Describe ways, if any, in which the program made an impact, or is likely to make an impact, on physical, institutional, and information resources that form infrastructure, including:

- Physical resources such as facilities, laboratories, or instruments;
- Institutional resources (such as establishment or sustenance of societies or organizations);
- Information resources, electronic means for accessing such resources or for scientific communication, or the like.]

N/A

5. What is the impact on technology transfer?

There is a high potential for impact on the public use of the findings. This includes the transfer of the results to entities both in government and in industry, possibly leading to the increased adoption of the new PPP delivery practice.

6. What is the impact on society beyond science and technology?

[Describe how results from the program made an impact, or are likely to make an impact, beyond the bounds of science, engineering, and the academic world on areas such as:

- Improving public knowledge, attitudes, skills, and abilities;
- Changing behavior, practices, decision making, policies (including regulatory policies), or social actions; or
- Improving social, economic, civic, or environmental conditions]

As stated previously, more use of PPP can result in more transportation funds, which equates to more projects that will be delivered to the public.

7. Additional impacts

[NTC encourages to consider identifying program results by outcomes or impacts, as suggested by the examples below. Impacts should be linked to National goals expressed in the Secretary’s Strategic Goals.]

[Outcomes are broader changes that are expected to result from the]
products, such as:

- Increased understanding and awareness of transportation issues;
- Improved body of knowledge;
- Improved processes, techniques and skills in addressing transportation issues;
- Enlarged pool of trained transportation professionals;
- Greater adoption of new technology;
- Other impacts.

Impacts are the longer-term, fundamental changes intended as a result of your activities, such as:

- Safer driver behavior;
- Increased travel time reliability;
- Increased intermodal transportation operations;
- Reduction in carbon and other harmful emissions from transportation sources;
- Other impacts.

The results will determine the absolute and relative monetary contribution of private investment in PPP transportation projects. An understanding of the private monetary investments in transportation allows us to quantify the potential of leveraging funds to deliver a larger number of projects than traditionally possible.

This can assist in arguments in favor of several surface transportation programs, some of which are set to expire, such as TIFIA and the Highway Trust Fund (HTF) as part of MAP-21. The proposed analysis of funding source arrangements can help build more understanding of the PPP method and determine its efficacy to leverage additional (mostly private) funding sources to support critical transportation projects in the U.S.
### Part V – Changes/Problems

If not previously reported in writing to OST-R through other mechanisms, provide the following additional information or state, “Nothing to Report, if applicable:

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<tr>
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<tbody>
<tr>
<td>1. Changes in approach and reasons for change</td>
<td>Nothing to report.</td>
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<tr>
<td>2. Actual or anticipated problems or delays and actions or plans to resolve them</td>
<td>Nothing to report.</td>
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<tr>
<td>3. Changes that have a significant impact on expenditures</td>
<td>Nothing to report.</td>
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<tr>
<td>4. Significant changes in use or care of human subjects, vertebrate animals, and/or biohazards</td>
<td>Nothing to report.</td>
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<tr>
<td>5. Change of primary performance site location from that originally proposed</td>
<td>Nothing to report.</td>
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