**TRANSPORTATION POOLED FUND PROGRAM**

**QUARTERLY PROGRESS REPORT**

Date: \_\_1/31/12\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Lead Agency (FHWA or State DOT): \_\_\_\_WSDOT\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**INSTRUCTIONS:**

*Project Managers and/or research project investigators should complete a quarterly progress report for each calendar quarter during which the projects are active. Please provide a project schedule status of the research activities tied to each task that is defined in the proposal; a percentage completion of each task; a concise discussion (2 or 3 sentences) of the current status, including accomplishments and problems encountered, if any. List all tasks, even if no work was done during this period.*

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| **Transportation Pooled Fund Program Project #**TPF-5(191) | **Transportation Pooled Fund Program - Report Period:**□Quarter 1 (January 1 – March 31)□Quarter 2 (April 1 – June 30)□ Quarter 3 (July 1 – September 30)X Quarter 4 (October 1 – December 31)**FINAL** |
| **Project Title:**Climate Change Impact Assessment for Surface Transportation in the Pacific Northwest and Alaska |
| **Name of Project Manager(s):**Kathy Lindquist  | **Phone Number:**(360) 705-7976 | **E-Mail**LindquK@wsdot.wa.gov |
| **Lead Agency Project ID: b**TPF-5(191) | **Other Project ID (i.e., contract #):**GCA 6384 | **Project Start Date:**January 2010 |
| **Original Project End Date:**July 30, 2011 | **Current Project End Date:** October 31, 2011 | **Number of Extensions:**2 |

Project schedule status:

□ On schedule x On revised schedule □ Ahead of schedule □ Behind schedule

Overall Project Statistics:

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|  **Total Project Budget** |  **Total Cost to Date for Project** |  **Percentage of Work**  **Completed to Date** |
| $200,000 | $200,000 | 100% |

***Quarterly*** Project Statistics:

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|  **Total Project Expenses**  **and Percentage This Quarter** |  **Total Amount of Funds**  **Expended This Quarter** |  **Total Percentage of**  **Time Used to Date** |
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| **Project Description**:The TPF-5(191) “Climate Change Impact Assessment for Surface Transportation in the Pacific Northwest and Alaska” Research project is underway. The Oregon Transportation Research and Education Consortium (OTREC) and Alaska University Transportation Center (AUTC) are conducting the research project. The project team is a multi-disciplinary group of researchers from Oregon and Alaska consisting of John MacArthur, Oregon Transportation Research and Education Center; Dr. Philip Mote, Director Oregon Climate Change Research, Institute, Oregon State University; Dr. Jason Ideker, Assistant Professor, Oregon State University; Dr. Miguel Figliozzi, Assistant Professor, Portland State University; Dr. Ming Lee, Assistant Professor, Department of Civil and Environmental Engineering, University of Alaska Fairbanks. The team brings unprecedented expertise in climate change, transportation operations, and infrastructure from Oregon State University, Portland State University, and the University of Alaska - Fairbanks.The states in the Pacific Northwest and Alaska region share interconnected transportation networks for people, goods, and services that support the regional economy, mobility, and human safety. Regional weather has and will continue to affect the physical condition and serviceability of these networks, yet the nature of climate changes and their potential impacts on the regional transportation system and its use are very poorly understood. The world’s leading climate scientists, such as the Intergovernmental Panel for Climate Change, have reached consensus that global climate changes is being observed and will continue into the future, particularly the increasing temperatures. Given this fact, the widely diverse topography, climate regimes, and localized variability of impacts within the region complicate efforts to understand and plan for adapting to the potential impacts of climate change on the regional transportation system. The rising costs of building and maintaining reliable transportation infrastructure place tremendous pressure on transportation planners, engineers, researchers, and policy makers to deliver resilient transportation systems and maximize return on investment. As such, there is an urgent need to synthesize information to characterize the regional impacts of climate change to support the development of economical and resilient adaptation strategies. Climate impacts are posing continued challenges for state departments of transportation (DOT). Changing weather patterns and their associated physical, financial, and social impacts are affecting or will affect the way transportation professionals’ finance, plan, design construct, operate, and maintain multimodal transportation infrastructure. Many state transportation agency procedures and practices were developed without full consideration of the likely impacts of climate change. For example, more frequent, high intensity precipitation events and associated floods may lead to expensive and unpredictable catastrophic failures of roads and bridges designed with outdated hydrologic data. DOTs could experience hundreds of millions of dollars in infrastructure damage that potentially could be avoided with more robust data collection, planning, and design tools/methods for managing risks. Likewise, climate-related socioeconomic changes may also be occurring, but transportation planners are currently ill-equipped to analyze them and may be delivering transportation projects that do not address future needs. Decisions made today on the planning and design of the regional transportation system will affect resiliency the system as region tries to adapt to climate change. Making well informed and thoughtful decisions now will help avoid costly modifications and disruptions to operations in the future.This report builds on several recently published significant reports and projects. In 2008, the Transportation Research Board released the *Special Report 290: Potential Impacts of Climate Change on U.S. Transportation*, which primarily focused on the consequences of climate change for U.S. transportation infrastructure and operations. The report also offers recommendations for both research and actions that can be taken to prepare for climate change. A similar study released by U.S. Department of Transportation, *Impacts of Climate Change and Variability on Transportation Systems and Infrastructure: Gulf Coast Study, Phase I*, explores the vulnerabilities of transportation systems in the Gulf Coast region to potential changes in weather patterns and related impacts, as well as the effect of natural land subsidence and other environmental factors in the region. The area examined by the study includes 48 contiguous counties in four states, running from Galveston, Texas, to Mobile, Alabama. In addition to these national reports, there are a variety studies that look at the scenarios of future climate for the Pacific Northwest. Most notably are the Climate Impacts Group’s *Washington Climate Change Impacts Assessment* and the Oregon Climate Change Research Institute’s *Oregon Climate Assessment Report,* which developed climate change scenarios for Oregon and Washington State. This report specifically evaluates future regional climate scenarios for the surface transportation system in the Pacific Northwest and Alaska. The objective of this research project was to conduct a preliminary vulnerability assessment of the risks and vulnerabilities climate change poses to the surface transportation infrastructure system in the Pacific Northwest and Alaska region. The report: * synthesizes data to characterize the region’s climate,
* identifies potential impacts on the regional transportation system,
* identifies critical infrastructure vulnerable to climate change impacts, and
* provides recommendations for more detailed analysis and research needs as appropriate to support managing risks and opportunities to adapt multimodal surface transportation infrastructure to climate change impacts.

Transportation professionals and policy makers can use the results of this report to build a breadth of knowledge and information on regional climate change impacts, understanding vulnerabilities of the transportation system and begin creating more quantitative risk assessment models. |
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| **Progress this Quarter (includes meetings, work plan status, contract status, significant progress, etc.):**Update on the Region X Transportation Consortium: Climate Change Impact Assessment for Surface Transportation in the Pacific Northwest and Alaska projectDraft report was sent to the TAC for review on June 9, 2011. A conference call is scheduled for July 11th to discuss comments. Additional comments where provided by TAC by July 31, 2011. The project manager addressed comments from the TAC and made additional revisions and edits to the report. A final draft was submitted to WSDOT on 10/31/11.A final report was submitted to WSDOT on 1/31/12. |
| **Anticipated work next quarter**:No additional work. Project completed. |

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| **Significant Results:**This research project evaluated future regional climate scenarios and provided a pre­liminary vulnerability assessment of the risks climate change poses to the surface transportation infrastructure system in the Pacific Northwest and Alaska region. This $200,000 (WSDOT contribution: $25,000 from each of the 4 State and UTC partners) research provides transportation professionals and policy makers information about regional climate change impacts and an understanding of the transportation system’s vulnerabilities. Key focus areas: • Developing quantitative risk assessment models • Data and modeling for refining future vulnerability and risk analysis • Scenario models • Database integration with GIS for specific vulnerability zones • Evaluating existing tools to integrate regional data. |
| **Circumstance affecting project or budget. (Please describe any challenges encountered or anticipated that** **might affect the completion of the project within the time, scope and fiscal constraints set forth in the** **agreement, along with recommended solutions to those problems).** |

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| **Potential Implementation:** This report compiles information and provides state transportation professionals and policy makers information about about possible regional climate change impacts and an understanding of the transportation system’s vulnerabilities that may be useful in future planning analysis. |