

## TRANSPORTATION POOLED FUND PROGRAM QUARTERLY PROGRESS REPORT

Lead Agency (FHWA or State DOT): [California Department of Transportation \(Caltrans\)](#)

**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.*

<b>Transportation Pooled Fund Program Project #</b>  <a href="#">TPF-5(357)</a>		<b>Transportation Pooled Fund Program - Report Period:</b> <input type="checkbox"/> Quarter 1 (January 1 – March 31) <input type="checkbox"/> Quarter 2 (April 1 – June 30) <input checked="" type="checkbox"/> Quarter 3 (July 1 – September 30) <input type="checkbox"/> Quarter 4 (October 1 – December 31)	
<b>Project Title:</b> <a href="#">Connecting the DOTs: Implementing ShakeCast Across Multiple State Departments of Transportation for Rapid Post-Earthquake Response</a>			
<b>Name of Project Manager(s):</b> <a href="#">Sharon Yen</a>	<b>Phone Number:</b> <a href="#">916-208-7771</a>	<b>E-Mail</b> <a href="mailto:Sharon.yen@dot.ca.gov">Sharon.yen@dot.ca.gov</a>	
<b>Lead Agency Project ID:</b> <a href="#">Task ID 2949, Project ID P1132</a>	<b>Other Project ID (i.e., contract #):</b> <a href="#">Contract # 65A0658</a>	<b>Project Start Date:</b> <a href="#">11/01/17</a>	
<b>Original Project End Date:</b> <a href="#">6/30/20</a>	<b>Current Project End Date:</b> <a href="#">9/30/22</a>	<b>Number of Extensions:</b> <a href="#">1</a>	

Project schedule status:

- On schedule     
  On revised schedule     
  Ahead of schedule     
  Behind schedule

Overall Project Statistics:

Total Project Budget	Total Cost to Date for Project	Percentage of Work Completed to Date
<a href="#">\$450,000</a>	<a href="#">\$430,830</a>	<a href="#">95%</a>

Quarterly Project Statistics:

Total Project Expenses and Percentage This Quarter	Total Amount of Funds Expended This Quarter	Total Percentage of Time Used to Date
<a href="#">\$60,520</a>	<a href="#">\$75,531</a>	<a href="#">68%</a>

**Project Description:**

The California Department of Transportation (Caltrans) is organizing and leading the TPF project, "Connecting the DOTs: Implementing ShakeCast Across Multiple State Departments of Transportation for Rapid Post-Earthquake Response," study number TPF-5(357) (<http://www.pooledfund.org/Details/Study/609>). Ten State Departments of Transportation (DOT) have committed funds and are key partners on this multi-state DOT project.

ShakeCast is a web-based tool that delivers an assessment of potential impacts to highway structures within minutes of an earthquake, raising situational awareness and improving emergency response for executive decision makers, traffic management center operators, and maintenance staff.

This TPF project seeks to achieve two primary objectives. First, it will bring participating DOTs into full ShakeCast operation for post-earthquake assessment of state and local bridge inventories. Second, the project will provide a mechanism to actively engage representatives from state DOTs with common interests in implementing and expanding the application of ShakeCast technologies to improve emergency response capabilities.

**Progress this Quarter (includes meetings, work plan status, contract status, significant progress, etc.):****Contract Status**

Original project end date has been extended to 9/30/2022 with additional funding commitments by the DOTs partners as follows:

California - \$30,000

Missouri - \$30,000

Oklahoma - \$30,000

Texas - \$30,000

Idaho - \$30,000

Washington - \$15,000

Oregon - \$30,000

A project status meeting with all DOTs was hosted on 8/10/2020 for the discussion of the 2 years project extension (Phase II), funding needs, and future work scope. A meeting summary was sent to all DOTs.

**Phase II Scope of Work: FFY21 & FFY22**

Some of the core tasks for Phase II of the TPF are similar to Phase I tasks as they pertain to operations and maintenance, but other tasks are modified as listed below:

**Task 1-** Operations and Maintenance of ShakeCast systems for participating DOTs.

- o Provide ShakeCast Cloud Hosting at USGS. Hosting includes: (i) Standing up secure cloud hardware and firewalls, with redundant operations in Denver and Sioux Falls; (ii) troubleshooting as needed (switching primary and secondary for maintenance, patching software; (iii) system and software monitoring and heartbeats; (iv) fixing bounced email messages; (v) ShakeCast software bug fixes and updates.

- o Update ShakeCast instances to Version 4 of ShakeCast (PyCast) for both in-house and USGS cloud hosted instances. V4 ShakeCast is virtually the same in terms of products and output but has been completely refactored, modernizing platform (Perl to Python), communications, databases and web platform and functionality.

**Task 2 – TPF User Support**

- o Facilitate updates to DOT facilities, fragility, notifications, and configurations.
- o Provide Operational Support for earthquake scenarios and after actual events.
- o Provide support for product template and notification configurations and website content modifications.
- o Respond to DOT technical and support questions, and provide training on ShakeCast components (e.g., ShakeCast Workbook, ShakeCast website), as requested.

**Task 3 - Develop, modify, and customize individual and TPF ShakeCast features:**

- o Implement leftover feature requests from Phase I (2017-2020), including:
  - Ground Failure
  - Advanced Fragilities (e.g., g2f)
- o Identify and implement new features and improvements (e.g., long-term hazard/risk analyses).
- o Develop, test and implement new features (e.g., extended inventory types).

**Task 4 – Reporting**

- o Document Task milestones in Quarterly Reports; document events of significance and efforts to support individual DOTs.
- o Collectively update and develop a Roadmap for long-term ShakeCast operations and research following the conclusion of the TPF project.
- o Prepare a Final Report that documents the work carried out under this project.

**Work summary for this quarter:**

DOTs	Phase II	Task Description (7/1/2020 to 9/30/2020)
California	Task 1	USGS ShakeCast hosting service (primary and backup)
	Task 2	EQ response (ShakeCast product QC); User Support; Inventory update;
	Task 3	
Idaho	Task 1	USGS ShakeCast hosting service (primary and backup)
	Task 2	EQ response (ShakeCast product QC)
	Task 3	
Mississippi	Task 1	USGS ShakeCast hosting service (primary and backup)
	Task 2	EQ response (ShakeCast product QC); Inventory update;
	Task 3	
Missouri	Task 1	USGS ShakeCast hosting service (primary and backup)
	Task 2	EQ response (ShakeCast product QC); Inventory update; Trello access
	Task 3	
Oklahoma	Task 1	USGS ShakeCast hosting service (primary and backup)
	Task 2	EQ response (ShakeCast product QC); Inventory update;
	Task 3	Loss calculations (ongoing)
Oregon	Task 1	USGS ShakeCast hosting service (primary and backup)
	Task 2	EQ response (ShakeCast product QC); User support (conference call); Scenario runs;
	Task 3	

South Carolina	Task 1	USGS ShakeCast hosting service (primary and backup)
	Task 2	EQ response (ShakeCast product QC); Inventory update;
	Task 3	
Texas	Task 1	USGS ShakeCast hosting service (primary and backup)
	Task 2	EQ response (ShakeCast product QC); User Support (conference call); Inventory update; Bridge fragility model
	Task 3	
Washington	Task 1	USGS ShakeCast hosting service (primary and backup)
	Task 2	EQ response (ShakeCast product QC); Inventory update;
	Task 3	
Utah	Task 1	USGS ShakeCast hosting service (primary and backup)
	Task 2	EQ response (ShakeCast product QC)
	Task 3	
FHWA	Task 1	USGS ShakeCast hosting service (primary and backup)
	Task 2	EQ response (ShakeCast product QC); User Support (conference call); Inventory update;
	Task 3	Loss calculations (ongoing)

**Anticipated work next quarter:**

The following work is anticipated for next quarter:

- USGS to continue the effort in providing technical support and assistance to participating DOT partners.
- USGS to continue the effort to work on providing ShakeCast cloud hosting to participating DOTs.
- ShakeCast team to continue communications with other DOTs about ShakeCast and to join the TPF.

System features development and State specific system functionality improvement is an ongoing effort for this project.

**Significant Results:**

Nothing to report at this time.

**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).**

In order to complete the scope of work tasked for the 2 years extension, additional funding commitment from each partner State is required. Long -term funding commitment from every partner state might be difficult to achieve due to the available resources of the States. A solution is to inquire funding from FHWA in establishing strategic long-term nation wide ShakeCast system support.

**Potential Implementation:**

Nothing to report at this time.