SHRP2 C10: Metropolitan Transportation Commission

Quarterly Report for April 2017 – June 2017 (prepared 20-Jun-2017)

SUMMARY

The three-agency group implementing Fast-Trips has continued advancing work on network development, demand preparation, route choice estimation, and software development. Past quarter technical highlights include: extension of the network standard and related documentation to incorporate more attributes, add new options for dwell time calculations, and reflect changes to representation of fares; completion of implementation of fares in Fast-Trips; continued refinement of inputs and calibration of the SFCTA implementation; refinement of inputs for the full-scale implementation at PSRC; and decision trade-off analysis for skimming options. Dissemination and communications activities conducted over the past quarter include: multiple presentations at the 2017 Planning Applications Conference, delivery of a TMIP webinar, and participation in the recent Technology Readiness Level Assessment. In addition, we have begun preparation of a set of teaching materials about dynamic transit assignment, and we have initiated contracting procedures with the three travel demand researchers who will be assisting us with the parallel track of work on research problem statement development.

IMPLEMENTATION

Work accomplished for the period:

Task	Activities
Task 1 - Project Mgmt / Tech Oversight	● Continued to meet on a bi-weekly basis on management-level updates and issues ● Initiated contracting activities with on-call partners who will assist with parallel research track
Task 2 - Network Supply	● Released version 0.4 of GTFS-PLUS network standard and continued work to incorporate latest changes into formal deliverables ● Updated documentation (GitHub and memos) to reflect final implementation of fares ● Continued to update network inputs for both SF Bay Area and Puget Sound regions to address issues identified during implementation testing ● Completed full draft of memo describing dwell time model and default approach for non-estimated agencies
Task 3 - Transit Demand	

Task	**Activities**
Task 4 - Transit Rider Behavior	● Continued test runs of Fast-Trips for calibration against OBS and CHTS data ● Added calibration log to project website to track issues and analysis with each model run ● Documented survey processing methods on GitHub
Task 5 - Transit System Performance	
Task 6 - Software Implementation	● Completed implementation of fares and overlap correction ● Conducted more full-scale Fast-Trips runs; examined results to identify and fix code and input issues ● Prepared decision document outlining trade-offs for skimming options
Task 7 - Test Case Development	
Task 8 - Agency Implementation and Testing	● Continued updates to SFCTA implementation to fix issues identified during calibration testing ● Completed de-bugging of PSRC implementation using full-scale Soundcast network ● Updated PSRC model inputs to latest regional base year (2014)
Task 9 - Communications and Outreach	● Updated project website with one new blog post and technical documentation needed for TRL assessment ● Delivered two presentations and held one interactive tutorial session at the 2017 Planning Apps Conference ● Led TMIP webinar on Fast-Trips project ● Participated in Technology Readiness Level Assessment ● Started development of teaching materials

Schedule status:

The team continues to make good progress on implementation and calibration of the SF Bay Area version of Fast-Trips, and the PSRC version has now been successfully run using full-scale network and demand inputs. Our overall pace on the technical work is steady, and we are maintaining a robust level of effort on communications & dissemination as well.

Expenditures and budget status:

Reimbursements requested to date are detailed in the table on the next page. The funds identified as "To be determined" are expected to be used to compensate the on-call consultants who participate in the development of research problem statements. The table will be updated next quarter, once contracts are executed with individual participants.

Resource	FHWA/ In-kind	Encumbered / Committed	Invoiced to Date / Expended
SFCTA	FHWA	$336,800	$149,400
SFCTA	In-kind	$80,000	$49,600
PSRC	FHWA	$65,000	$45,700
PSRC	In-kind	$65,000	$45,700
MTC	FHWA	$82,600	$4,800
MTC	In-kind, outside	$198,000	$198,000
Univ. of Texas, Austin	FHWA	$38,500	$14,600
Mark Hickman (Univ. of Queensland)	In-kind	$10,500	$0
Hood Consulting	FHWA	$18,000	$11,400
UrbanLabs, LLC	FHWA	$100,000	$45,200
To be determined	FHWA	$59,000	$0
Total	*FHWA*	*$700,000*	*$271,100*
Total	*In-kind*	*$353,500*	*$293,300*
Total	*All*	*$1,053,500*	*$564,000*

Summary of the quarter ahead:

In the next quarter, we will continue to move ahead on the technical tasks. We will continue refining, calibrating, and validating our initial implementation for the SF Bay Area, including moving calibration from Phase I into Phase II. We will also monitor changes in the standards and code, in order to ensure that the Puget Sound implementation remains up to date. For software development, we plan to advance our work on convergence and implement and test an initial approach to skimming; we also expect to do more testing with full-scale networks in order to focus on improving software performance. The networks team and demand team will continue to update their contributions and documentation as necessary to resolve any issues

encountered by other project staff. Finally, we hope to complete development of the teaching materials that are part of our communications and dissemination plan, and we look forward to kicking off the research problem definition work.

Risks/Challenges/Obstacles:

The most significant challenge at this point remains schedule adherence. This past quarter has required balancing our progress on the specific technical tasks with communication about our activities via conference presentations, a tutorial, a webinar, and the TRL assessment.

One other risk that we are monitoring is our ability to fully expend all funds by our project deadline. Specifically, contracting activities for the research track are not yet complete, so we do not yet have confirmation of the impact to the overall budget for this portion of the scope. Once the new funding agreements are in place, we will be able to turn our attention to final budget reallocations that match remaining scope with available staffing resources.

MEASURES

Our performance measures tracking tool shows current values for all metrics, including the developments in the past quarter specifically noted below.

Implementation and Deployment:

We have documented our progress through the calibration process on a new page on our project-website that includes identification of key issues with each run and links to more detailed analysis and visualization tools. We have also developed two public GitHub repositories that document our methods for processing survey data to be used in validation and estimating our dwell time models. Finally, we participated in the Technology Readiness Level Assessment on June 20th.

Capacity and Partnership:

This past quarter, project staff described new skills they have acquired thanks to this project including learning about the process for estimation of linear and mixed-effects models and also new methods to package up python scripts so they can be shared with others. New tools that are being used thanks to this project include iPython notebooks (to document research and model development); Jupyter notebooks (for educational scripts and demonstrating API usage); and Anaconda environments (for creating a low-risk testing area). A total of 24 people are currently

using our collaboration tools: the Asana project management system, our code repositories on GitHub, and cloud storage on Google Drive and Box.

Dissemination:

Eight members of our team attended the Planning Applications Conference in May where we delivered two presentations and conducted an interactive tutorial demonstrating the use of the Fast-Trips software. Team members received inquiries from one new academic researcher at the meeting. In late May, we conducted a TMIP webinar about Fast-Trips with over 50 participants. We also posted one new blog entry on the project website this quarter, and we updated the site with links to a variety of technical documents in preparation for the Technology Readiness Level assessment this past week.

CATEGORY	DEFINITIONS			TOTAL	Jan-Mar 2015	Apr-Jun 2015	Jul-Sep 2015	Oct-Dec 2015	Jan-Mar 2016	Apr-Jun 2016	Jul-Sep 2016	Oct-Dec 2016	Jan-Mar 2017	Apr-Jun 2017	Jul-Sep 2017	Oct-Dec 2017
Tool Implementation and Deployment	**OUTPUT MEASURE**	**METRIC 1**	**TARGET 1**													
	Agency and project partners participate in all required calls/meetings.	Number of calls/meetings attended	Minimum: Participation in group kick-off, project kick-off, and 2 additional scheduled calls per year	**10**	2	1	1	1	1	2	1	0	0	1		
	Project deliverables are submitted to Volpe/FHWA on time and on schedule.	Quarterly progress reports submitted by specified due date	Quarterly progress reports submitted by specified due date.	**10**	1	1	1	1	1	1	1	1	1	1		
		Final deliverables submitted by due date	Final deliverables submitted by due date.	**3**	1	0	2	0	0	0	0	0	0	0		
	Agency identifies desireable refinements (i.e., suggestions for future research) for tools created from the C10 project.	Documentation of desireable refinements within existing project deliverables	Information about desireable refinements included within final report.	**0**	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a		
	Agency supplies lessons learned from participating as a C10 grantee.	Documentation of lessons learned	Information about grantee experience included within final report.	**0**	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a		
	OUTCOME MEASURE	**METRIC 2**	**TARGET 2**													
	Travel demand model contains new sensititivities suitable for policy analysis.	Number of progress reports that document new variables / modeling options available	At least one	**0**	0	0	0	0	0	0	0	0	0	0		
	Methodologies, work processes, key decisions, problems encountered, & lessons learned are sufficiently well documented that peers can follow the work and repeat the results.	Number of issues and lessons documented in on-line tools	At least one	**3**	0	0	0	0	0	0	0	0	0	3		
Capacity Building and Partnerships	**OUTPUT MEASURE**	**METRIC 1**	**TARGET 1**													
	Agency practitioners (staff, contractors, consultants) and assigned partner staff are engaged with project and familiar with results.	Number of users of online collaboration tools	Staff from each partner agency makes contributions to archive of project knowledge.	**24**	15	17	18	18	22	23	23	23	24	24		
	OUTCOME MEASURE	**METRIC 2**	**TARGET 2**													
	Agency and partner staff acquire additional skills and expertise.	Number of progress reports that document new skills / expertise acquired	At least one	**2**	0	0	0	0	0	1	0	0	0	1		
	Improved work processes, data, analysis tools, and decision information are in use by our agencies.	Number of progress reports that document uptake of new processes, data, tools, methods	At least one	**3**	0	0	0	0	0	1	0	1	0	1		
Technology Transfer / Research Dissemination	**OUTPUT MEASURE**	**METRIC 1**	**TARGET 1**													
	Project data and information is shared with the academic and practitioner communities.	Number of presentations delivered (conferences, technical meetings, TRB)	1 TRB paper or poster, or participation in a panel/workshop that recounts the information	**9**	0	1	0	0	1	1	0	0	3	3		
		Number of papers/memos/articles written about the project experience	1 Presentation prior to project closeout to FHWA or other interested communities	**9**	0	0	0	0	0	6	0	0	2	1		
	OUTCOME MEASURE	**METRIC 2**	**TARGET 2**													
	Peer agencies in the state/region expresss interest in or begin to deploy C10 tools.	Number of agencies that contact C10 team about the project and/or express plans to pursue implementation	At least one	**3**	0	1	0	0	0	1	0	1	0	0		