

BEFORE THE METRO COUNCIL

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| FOR THE PURPOSE OF AMENDING THE |) | RESOLUTION NO. 14-4584 |
| FISCAL YEAR 2013-15 UNIFIED PLANNING |) | |
| WORK PROGRAM (UPWP) TO ADD FUNDING |) | Introduced by Chief Operating Officer Martha |
| FOR THE BEHAVIOR-BASED FREIGHT |) | Bennett with the concurrence of Council |
| MODEL PROJECT |) | President Tom Hughes |

WHEREAS, the Unified Planning Work Program (UPWP) describes all Federally-funded transportation planning activities for the Portland-Vancouver metropolitan area to be conducted in FY 2013-15; and

WHEREAS, the FY 2013-15 UPWP indicates Federal funding sources for transportation planning activities carried out by Metro, Southwest Washington Regional Transportation Council, Clackamas County and its cities, Multnomah County and its cities, Washington County and its cities, TriMet, and the Oregon Department of Transportation; and

WHEREAS, approval of the FY 2013-15 UPWP is required to receive Federal transportation planning funds; and

WHEREAS, the Joint Policy Advisory Committee on Transportation (JPACT) and Metro Council approved the 2013-15 UPWP update in May of 2014 as a two year work plan; and

WHEREAS, this resolution amends the FY 2013-15 UPWP to include one new project:

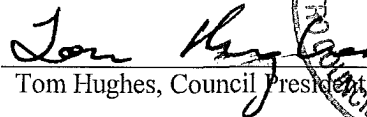
- 1. Behavior Based Freight Model

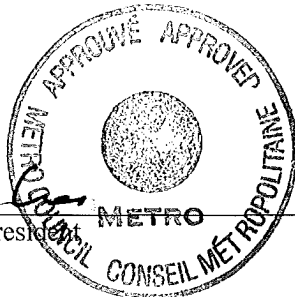
WHEREAS, a SHRP-2 grant was recently awarded for this project and therefore the Behavior-Based Freight Model was not included in the adopted FY 2013-15 UPWP.

WHEREAS, all Federally-funded transportation planning projects for the Portland-Vancouver metropolitan area must be included in the FY 2013-15 UPWP; now therefore

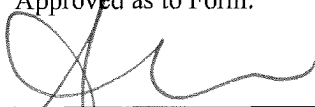
BE IT RESOLVED that the Metro Council hereby amends the FY 2013-15 UPWP to add the Behavior Based Freight Model project as shown in the attached Exhibit A.

ADOPTED by the Metro Council this 4th day of December 2014.


 Tom Hughes, Council President



Approved as to Form:



 Alison R. Kean, Metro Attorney

Behavior-Based Freight Model

Project Description for Unified Planning Work Program

Description:

This project will replace Metro's current trip-based truck model that utilizes fixed commodity flows with a truck tour model designed to reflect decisions made by shippers, receivers, truck operators, terminal managers, and others. The model will simulate movement of individual shipments throughout the supply chain, including transshipment facilities. Shipments are allocated to truck of various classes, and the movements of all freight vehicles are simulated over the course of a typical weekday. Metro's freight model will also be coordinated with the economic and commercial transport modules of the Statewide Integrated Model (SWIM2).

Metro was selected to receive one of four Freight Model Implementation Assistance grants under the federal SHRP2 C20 Freight Demand Modeling and Data Improvement Project. These funds will be used for model development. Model development and implementation will require collection of behavioral data from shippers and receivers representing a wide range of industries, common and contract freight carriers, business that operate non-freight commercial vehicles, warehouse managers, and logistics agents. The establishment surveys will gather data about industry type and size, commodities shipped and received, shipment size and frequency, and truck fleet data. Truck operators will be asked to complete diaries that provide details on all truck movements, including type and quantity of goods delivered and picked up at each stop, over a 24-hr period. Additional freight data, such as GPS truck tracking data and truck counts may also be collected. Freight data collection will be funded with Surface Transportation Program (STP) as part of the MTIP Regional Freight Analysis and Project Development program, in an amount to be determined at a later time.

Objectives:

Develop tools to enable a more comprehensive analysis of infrastructure needs and policy choices pertaining to the movements of goods. The following are examples:

- Infrastructure needs to support the region's export sectors
- Effects of vehicle length or weight restrictions on roads and bridges
- Local market potential for electric-powered freight vehicles
- Policies that affect location of warehouse and distribution facilities

Develop more detailed network assignments by truck type, which support regional environmental analysis, as well as local traffic operations and engineering analysis.

Develop freight forecasts that are responsive to changes in economic forecasts, changing growth rates among industrial sectors, and changing rates of economic exchange and commodity flows between sectors.

Replace trip-based truck model with more realistic tour-based model.

Previous Work:

The current truck model was initially implemented in 2002, based on commodity flow forecasts prepared for the Port of Portland and derived from the federal Freight Analysis Framework (FAF). A major model enhancement occurred in 2007, using data obtained in the Portland Freight Data Collection Project, including extensive vehicle classification counts, origin-destination surveys, and estimates of activity at transshipment facilities. The truck model was most recently updated in December, 2013 using new commodity flow forecasts prepared for the Port of Portland, Metro, and other partner agencies. They include commodity flow estimates for the 2010 base year, and forecasts for 2020, 2030, and 2040 based on FAF3 and TransSearch databases.

Methodology:

Metro will implement a metropolitan truck tour model using the framework developed for Federal Highway Administration (FHWA), and previously implemented as a metropolitan demonstration project for the Chicago Metropolitan Agency for Planning (CMAP) and implemented in a statewide application for the Florida Department of Transportation. The model specification will be customized for our region and model parameters will be re-estimated using data to be collected in a locally-funded establishment survey. The model will exchange data with Oregon's Statewide Integrated Model (SWIM2), utilizing simulated commodity flows between industrial sectors as regional control totals and allocating external flows into and out of the region to local producer and consumer entities, consistent with state and regional economic forecasts.

The SHRP2 C20 funds will be used to hire qualified consultants to 1) develop Model Implementation and Data Plans, 2) transfer the current FHWA truck tour model framework to our region, 3) update the model specification and re-estimate parameters using local surveys, and 4) add model components to simulate movement of heavier classes of non-goods commercial vehicles (e.g., utility, construction), for which data will also be obtained in the local surveys.

The STP funds will be used to implement the Data Plan. Qualified consultants will be hired to 1) design, test, and conduct business establishment surveys and truck diary surveys and utilize other instruments to obtain behavioral data for model specification and parameter estimation, 2) collect truck counts, vehicle tracking data and other data for model calibration, and 3) prepare a report summarizing data methodology and results. STP and local matching funds will be used to develop land use, economic, demographic, and freight network infrastructure data for use in model development.

The consultants will be required to:

1. Prepare an Implementation Plan, detailing initial demonstration model transfer, software requirements, integration into the current Metro travel models, SWIM2 data exchange, and desired enhancement/customization of the demonstration model;
2. Prepare a Data Plan outlining all data needs including currently available land use, economic, demographic, and transport infrastructure data, desired behavioral data to be obtained in the establishment surveys and truck diaries, contingency data resources to be used if the local survey data are not available within the project time frame, or to fill in gaps for shipment types not adequately captured in the local survey, and both existing and desired data to be obtained for model calibration and validation, such as truck counts, GPS vehicle tracking data (e.g., ATRI), and a portion of the local survey data set. A range of data options will be prepared, from

funding levels \$250,000 to \$450,000. The funding amount will be determined by Metro following completion of this task.

3. Implement the enhanced demonstration model, to include SWIM data integration and non-freight commercial vehicles;
4. Implement the Data Plan
5. Prepare a memorandum describing key findings from the local surveys, with a plan for updating the model specification and re-estimating model parameters to reflect local behavior;
6. Implement, calibrate and validate the updated model. Both truck flows by vehicle type and shipments by commodity type will be validated;
7. Provide monthly progress reports;
8. Provide a final report.

Tangible Products Expected in FY 2014-15:

1. Model Implementation Plan
2. Model Data Plan
3. Survey Instruments
4. Land Use, Economic, Demographic, and Infrastructure Data

Tangible Products Expected in FY 2015-16:

1. Initial Implementation of FHWA Demonstration Model
2. Survey Report / Model Update Memorandum
3. Calibrated and Validated Behavior-Based Freight Model
4. Final Report

Entity Responsible for Activity:

| | |
|--|--|
| Metro Research Center | Project management, data |
| Port of Portland | Technical advisor, data, private sector outreach |
| Oregon DOT | Contract administration, technical advisor, data |
| Southwest Washington Regional Transportation Council | Technical advisor, data |
| Port of Vancouver | Technical advisor, data |
| Washington State DOT | Technical advisor, data |

Schedule for Completing Activities:

Please refer to schedule information provided in the *Tangible Products* section of this planning activity description.

FY 2014-15 Costs and Funding Sources:

| Requirements: | | Resources: | |
|----------------------|------------|-----------------------------|------------|
| Personal Services | \$ | SHRP2 C20 IAP | \$ 350,000 |
| Interfund Transfers | \$ | STP | \$ TBD |
| Materials & Services | \$ 350,000 | | \$ |
| | | | \$ |
| | | <i>Local Matching Funds</i> | \$ TBD |

Exhibit A

| | | | | | | |
|--------------------------------------|----|--|--|--------------|----|--|
| <i>TOTAL</i> | \$ | | | <i>TOTAL</i> | \$ | |
| Full-Time Equivalent Staffing | | | | | | |
| Regular Full-Time FTE | | | | | | |
| <i>TOTAL</i> | | | | | | |

STAFF REPORT

IN CONSIDERATION OF RESOLUTION NO. 14-4584, FOR THE PURPOSE OF AMENDING THE FY 2013-15 UNIFIED PLANNING WORK PROGRAM (UPWP) TO ADD THE BEHAVIOR-BASED FREIGHT MODEL PROJECT.

Date: September 5, 2014

Prepared by: Chris Myers
(503) 813-7554

BACKGROUND

On May 1, 2014, the Metro Council adopted the FY 2013-15 Unified Planning Work Program (UPWP) Update via Resolution No. 14-4514 (“FOR THE PURPOSE OF ADOPTING THE FISCAL YEAR 2013-15 UNIFIED PLANNING WORK PROGRAM AND CERTIFYING THAT THE PORTLAND METROPOLITAN AREA IS IN COMPLIANCE WITH THE FEDERAL TRANSPORTATION PLANNING REQUIREMENTS”).

This resolution is an amendment to the FY 2013-15 UPWP Update to add the Behavior Based Freight Model Project. This project was awarded funds by the Federal Highway Administration (FHWA) after adoption of the FY 2013-15 UPWP. Per federal requirements, all transportation planning projects that are federally funded are required to be included in the UPWP. The proposed UPWP narrative for the Behavior Based Freight Model Project is included in Exhibit A.

ANALYSIS/INFORMATION

1. **Known Opposition** – No known opposition
2. **Legal Antecedents** – Metro Council Resolution No. 14-4514: FOR THE PURPOSE OF ADOPTING THE FISCAL YEAR 2013-15 UNIFIED PLANNING WORK PROGRAM AND CERTIFYING THAT THE PORTLAND METROPOLITAN AREA IS IN COMPLIANCE WITH THE FEDERAL TRANSPORTATION PLANNING REQUIREMENTS, adopted by the Metro Council on May 1, 2014.
3. **Anticipated Effects** – Approval will mean that grants can be submitted and contracts executed so work can commence on this project between now and June 30, 2015, in accordance with established Metro priorities.
4. **Budget Impacts** – New grant funding not included in 2014-15 Metro budget. No new expenditures.

RECOMMENDED ACTION

Approve Resolution No. 14-4584 and amend the FY 2013-15 UPWP.