

Project Title: Traffic Model Update/Mode Choice/Pavement Management Integration Project-Phase II
Agency: City of Tacoma

TCC TECHNICAL APPLICATION
2014
PIERCE COUNTY REGIONAL COUNCIL
REGIONAL TRANSPORTATION IMPROVEMENT PROGRAM (TIP)
APPLICATION FORM TO REQUEST INCLUSION OF A PROJECT IN THE FFY 2015-2017 TIP

Supplementary information can be found in the Call for Projects. Incomplete or missing answers will be scored zero. Please respond to all unrelated questions with N/A.

APPLICANT INFORMATION

1. Please select an application type:

- Other**
(Please answer Questions 1-23 and 55-63)
Potential score of 100

- Non-Motorized**
(Please answer Questions 1-23 and 49-54)
Potential score of 100

- Preservation – Funding requests are limited to \$750,000 per agency**
(Please answer Questions 1-23 and 38-48)
Potential score of 100

- Rural**
(Please answer Questions 1-23 and 73-81)
Potential score of 100

- Transit**
(Please answer Questions 1-23 and 64-72)
Potential score of 100

- Roadway application type not listed above**
(Please answer Questions 1-23 and 24-37)
Potential score of 100

1a. Agency Contact Person

Name: Josh Diekmann Address: 747 Market Street _____
Title: Assistant Division Manager Telephone: 253-591-5657 _____
Email: jdiekmann@cityoftacoma.org _____

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2. **Improvement Type:** Please select ONE primary Improvement Type. Please indicate one Primary Improvement (PI) and any number of Secondary Improvements (SI).

ROADWAY			
	New Facility – Roadway		Bridge Replacement
	Relocation – Roadway		Multiple Intersections – Roadway
	Environmental Improvement – Roadway		Single Intersection – Roadway
	Major Widening – General Purpose		Safety – Roadway
	Major Widening – HOV		Grade Separation
	Minor Widening – No new capacity		Major Interchange – GP
	Minor Widening – New capacity		Major Interchange – HOV
	Preservation/Maintenance/Reconstruction		Minor Interchange – GP
	Resurfacing		Minor Interchange – HOV
	New Bridge or Bridge Widening		Other – Roadway
	Bridge Rehabilitation		
NONMOTORIZED			
	Sidewalk		Bike Lanes
	Regional Trail (Separate Facility)		Other – Nonmotorized
	Non-Regional Trail (Separate Facility)		
OTHER			
SI	Transportation System Management	PI	Transportation Demand Management
	Intelligent Transportation System		Other – Special
	Study or Planning activity		
TRANSIT			
	New/Relocated Transit Alignment		New ferry route
	Transit Center or Station – new or expansion		Service Expansion – Ferry
	Flyer Stop		New/Relocated/Expanded terminal
	Transit Center or Station – Maintenance		Terminal Preservation
	Park and Ride (new facility or expansion)		New/Replacement Vessels – Passenger Only
	Vehicle Expansion		New/Replacement Vessels – Car/Pass
	Vehicle Replacement		Vessel Preservation/Rehabilitation
	Operations – Transit		Operations – Ferry
	Service Expansion – Transit		Other – Ferry
	Other – Transit		

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PROJECT LOCATION INFORMATION

(Roadway projects without a federal route number or a federal functional class may be ineligible for federal funds.)

- 3. **Project Location:** Traffic Model Includes Regional Interstate and State Highways, Pierce County arterials, City of Tacoma and other local agency arterials.

From: various To: various

Or, other appropriate locating information: _____

Project Length: N/A (feet)

- 4. **Federal Route Number** various arterials

- 5. **Federal Functional Class:** Interstate, State Highways, and arterials see link www.wsdot.wa.gov/Mapsdata/tools/functionalclass

- 5a. **Posted Speed Limit:** varies

- 5b. **Average Daily Traffic Volume:** varies

PROJECT DESCRIPTION

- 6. **Funding Request:** What is the proposed funding source? STP CMAQ _____

- 7. **Is this project included in a locally adopted plan or program?**
(This is a threshold requirement to compete in this funding process. Projects not shown in the applicants adopted local TIP or Transportation Element of its Comprehensive Plan are not eligible. Please provide a copy of the necessary documentation).

Yes No _____

If yes, cite document, page(s) and adoption date:
Pavement Management System Improvement and Model Integration Project, City of Tacoma, Six-Year Comprehensive Transportation Program, 2014-2020, page 39. (The budget and scope for this project will be revised during the 2014 annual amendment process).

- 8. **Brief Project Description - Include a 8 1/2 x 11 detailed vicinity map and a cross-section detail of the project, if applicable (100 words maximum):**

Tacoma is in the process of completing a Phase I update and integration of its travel forecasting model to facilitate a pavement management tool and to conduct transportation planning in the City and the region. The current model is based on the currently available PSRC 948 zone system model and includes a basic transit mode choice component and truck trip generation model to integrate with the City's updated pavement management system.

This Phase II model development project will update and further integrate (mode choice and freight elements) the City's base year and forecast year travel demand models to be consistent with PSRC's upcoming 4K zone system model. This will allow for better data sharing and integration with future model and land use updates from Pierce County and PSRC and will further enhance the updates currently being made in the Phase I model. In addition, several other enhancements, including a refined Urban Center mode choice/trip generation component, and air quality post processor will be included in this Phase II update. Ultimately these Phase II improvements will enhance the model's capabilities/tools for a variety of purposes and mandates including, land use/building permit actions, pavement management indexing/reports, transportation planning, and traffic operations analysis/concurrency. The project will also require data collection (counts and roadway attributes,

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transit ridership information), comprehensive field survey for pavement condition, documentation of the models, and associated staff training.

The project also includes the assembly of several (up to 7) subarea Synchro models into a complete network. Any gaps in the assembled Synchro network will be completed to ensure the network is contiguous and relevant to Centers and Corridors.

9. **Purpose and Need – Please provide a clear and concise narrative describing the project’s existing and proposed conditions. If available, provide pictures, technical data and/or other supporting studies or analysis (400 words maximum):**

Purpose and Need:

Traffic models are dynamic tools that require regular updates and calibration to optimize their operation for the analysis of a variety of planning and transportation operation purposes. The City is currently updating its EMME (software) based travel demand model to be consistent with recently released land use data from Pierce County and PSRC. Tacoma’s model is structurally consistent with the same type of models maintained by Pierce County and the PSRC. This consistency is critically important for data/resource sharing and for validating the performance of the corresponding models. These models share roadway attributes, traffic analysis zones (TAZ/FAZ), trip tables, trip distribution and trip assignment procedures and data. The model is designed to forecast traffic volumes for the PM peak hour.

The Phase I grant funds were used to update and integrate the City’s Pavement Management System with the travel model framework. The City has purchased the new software (EMME/3, StreetSaver, and Synchro) and its consultant is completing the modeling update, PMS integration structure, and concurrency analysis now (scheduled for completion June 2014). However, due to changes in Federal funding eligibility, Local Programs required the City to withdraw the funds for the procurement of the non-invasive pavement testing system. Therefore this Phase II grant request includes pavement condition data gathering to populate the new structure of the PMS.

The Phase II project includes maintaining consistency with planned changes in the PSRC travel model. PSRC plans to migrate to a new “4k” zone system that has more detail throughout the region. This update will require compiling numerous variables and data including traffic, roadway, and land use elements from various local and regional agencies/sources to update and optimize the City’s travel demand model and maintain consistency with the regional model. Additionally, the Phase II update will add new data and substantially enhance the model’s mode choice and freight mobility components. These are critical for both multimodal planning and pavement management.

Over the years, the integrated City and Pierce County traffic models have historically been used for:

- land use/development tool for permitting and mitigation,
- pavement management system integration for preservation,
- traffic operations/signal timing, mode split/choice for transportation system management,
- emergency preparedness route planning,
- Port area ITS planning and freight mobility analysis,
- SEPA analysis for projects and subarea plans,
- air quality analysis by looking congestion/delays that increase vehicle idling and PM10, and
- State and Regional Growth Strategy compliance and currency management.

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The Phase I project started in Fall 2013 using the best available models to meet the schedule authorized by WSDOT. Unfortunately and because of the dynamic nature of modeling, the PSRC just released new regional growth forecasts for 2035 and 2040 conditions in April 2014. In addition, they are expected to release a new model platform in June 2014 that contains additional model detail and updated transit and traffic assignment components. The City's consultant has completed much of model update, with assistance from Pierce County, using the current PSRC model framework and the most up-to-date land use data available at the time. However, there is much concern that the new City model lacks continuity and details consistent with the Pierce County and Regional models. Therefore if the City model is not updated consistent with these new models it is unlikely to be sufficiently defensible.

Also, the new model will require additional traffic counts. Doing so will reduce or eliminate the need to estimate counts using a less than desirable technique called "demand adjustment." Therefore this Phase II project includes additional arterial counts (including trucks) and added locations to help test the sensitivity of the model performance and to facilitate a GMA mandated LOS currency analysis of the City's arterial system. The City's Comprehensive Plan calls for an assessment of "all arterials aggregated by functional class." The City believes these circumstances warrant updating its travel demand models to include the new variables/data and to include the newly released variables from the Pierce County model (available summer 2014) and the PSRC model (expected June 2014).

The Phase II project will also enhance the model's Mode Choice and Freight travel components. The addition of these tools is particularly important given the City's two Regional Centers and the large number of transit based services, employment bases affected by Commute Trip Reduction requirements, and the high preponderance of freight/industrial trips in two Manufacturing/Industrial Regional Centers. Additional data analysis and collection of transit ridership data based on Pierce Transit's revised route structure will also assist in refining and calibrating the Mode Choice component of the model.

The Phase I data integration is helping to facilitate transfer of information between the travel model and pavement management system as expected. However, the models as indicated earlier warrant additional updates and refinements to meet near and long term needs. The list includes:

- Pavement condition surveys (currently based in 2008 or older)
- PSRC 2010 land use, trip tables, and roadway network
- Updated PSRC 2035 and 2040 land use forecasts
- Tacoma model needs PSRC attributes for testing/validating the elasticity of transit use, effects of pricing, and capital improvements.
- Incorporating transit and non-motorized networks and skims for mode choice
- Additional transit ridership data from Pierce Transit
- Peer assessment of borrowed mode shares vs. estimating, calibrating, and implementing a mode choice model
- Integration of Pierce County's refined 2010 model (available summer 2014)
- Development and integration of consistent land use forecasts
- Missing traffic counts for concurrency and sub-area calibration
- Preparations/structure to accept macros and GIS scripts from other models
- Review of TAZ details focused on centroid connector locations
- Peer and consultant review of the model structure and behavior
- Revision of the models documentation (user guide)

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PROJECT TRACKING AND FUNDING

NOTE: Sponsors may request funding for any single phase of the project, but requests for multiple phases is limited to preliminary engineering plus the subsequent phase necessary. For instance, requests for multiple phases are limited to the combination of (1) preliminary engineering and right-of-way or (2) preliminary engineering and construction (no right-of-way and construction requests will be considered).

Required Match: A minimum of 13.5% of local matching funds is required for PSRC’s FHWA funding. The following formula may be used to calculate the projects match:

To calculate the amount of matching funds, divide the federal funds requested by .865 and subtract the federal funds from this amount.

Example: Federal funds requested = \$100,000

$$\begin{aligned} \$100,000 / .865 &= \$115,607 \\ \$115,607 - \$100,000 &= \$15,607 \text{ local match required} \end{aligned}$$

Please note: The combination of the requested PSRC funds plus all other funding must be adequate to fully fund that phase. Requests that do not result in a phase being fully funded cannot be approved into the regional TIP and therefore will be considered ineligible for PSRC funding.

10. Grant Funds Requested

Phase (e.g., Planning Study/Project,, Preliminary Engineering, Right of Way, Construction, Other)	Estimated Obligation Date (year only)	Federal Funds Requested
Planning Study as described	2015	\$420,000
		\$
		\$
		\$
		\$
		\$420,000

IMPORTANT: Please select 2015, 2016 or 2017 for estimated obligation year. Per PSRC’s adopted project tracking policies, the deadline for obligating funds is June 1 of the selected obligation year. For more information, see:
<http://www.psrc.org/transportation/tip/tracking>

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11. Total Project Cost (\$495,000)

Guidance: To be programmed into the state Transportation Improvement Program, funds for the phase being requested must be secure or reasonably expected to be secure. Unsecured funds will not be considered. Please use the website following link to assist in completing the following table:
www.psrc.org/assets/7911/Definitions_SecuredandUnsecuredFunding.pdf

A	B	C	D	Project Phase			
				E	F	G	H
Fund Source	Secured, reasonably Expected, or Unsecured?	Obligation Date (Yr Only)	\$ Amount by Funding Source	Planning	Prelim. Eng/ Design	Right-of-Way	Construction / Implementation
Local	Secured	2015	\$75,000	\$75,000			
(name)							
Co-op Jurisdiction							
(name)							
Private Funds							
(source)							
Grant							
Other							
Other							
Other							
Grant Request	Unsecured	2015	\$420,000	\$420,000			
TOTAL			\$495,000	\$495,000			

If unable to completely fill out Tables #10-12, please explain why: N/A

11a. Provide additional information on any funds identified in the table above as reasonably expected to be secure. For example, identify the estimated approval date of funds for the project into the 6-year program; if pursuing a limited improvement district, bonding, or other local funding mechanism, when will that occur and what additional steps are required, etc. For more information on the definition of secured, reasonably expected, and unsecured funds, refer to:
<http://www.psrc.org/assets/11214/FinancialConstraintGuidance.pdf>

Match funds are approved and budgeted. The 6-year Transportation Program will be amended for the Phase II scope and associated budget as part of the annual process. Adoption will occur by mid-Dec 2014.

THE FOLLOWING RESPONSES WILL BE SCORED FOR PROJECT PRIORITIZATION.

PROJECT READINESS

12. Cooperating Jurisdictions and Private Sector Support, if any: Provide names of all jurisdictions and private parties, contributing funds would be applied, and the percentage of total project funds provided. The percentage shall be expressed based on the costs of the requested phases under the current application. Contributing funds for prior phases shall not be considered. Applicants that have been previously awarded grant funding for their project CANNOT use the grantor as a cooperating jurisdiction.

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Letters of Commitment from all cooperating jurisdictions and private sector support must be attached to receive points: Yes X No _____

Cooperating Jurisdiction	Phase	Dollar Amount of Participation	Percentage of Current Application
Port of Tacoma	Plng	0	0
Total:			

- _____ 5 % or more 3 points
- _____ 3 to 4 % 2 points
- _____ 1 or 2 % 1 point

COMMITTEE SCORE _____
 (Max. score of 3)

Private Sector Support	Phase	Dollar Amount of Participation	Percentage of Current Application
Total:			

- _____ 5 % or more of total project costs 3 points
- _____ 3 to 4 % of total project costs 2 points
- _____ 1 or 2 % of total project costs 1 point

COMMITTEE SCORE _____
 (Max. score of 3)

13. Has the jurisdiction secured/obligated state or federal funding for any of the projects below phases or has it completed a phase of the project using local funds only? (Please check all that apply)

- Planning X 1 point P/E Design 2 point
 - ROW 2 point Construction 2 point
- (ROW is required to receive points)**

If any are checked, name project title and Funding Agency ID# Pavement Management System Integration, City of Tacoma, STPUS-1280(030)

Funding Source: Federal STP
Funding Amount(s): \$324,135

Name and completion date of Planning Study: Phase I, June 2014

COMMITTEE SCORE _____
 (Max. score of 7)

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14. Federal Functional Classification: Principal Minor Collector

Principal 3 points
 Minor 2 points
 Collector 1 point

COMMITTEE SCORE _____
 (Max. score of 3)

15. Will this project include additional ADA improvements that are not required by the 2013 City/County Design Standards (LAG Manual)? Example: Construction of a sidewalk that is wider than the minimum requirements.

Yes 2 points
 No 0 points
 If yes, what are they? _____

COMMITTEE SCORE _____
 (Max. score of 2)

16. Local Agency Over Match Incentive:

More than 30% of total project costs 3 point
 21% to 30% of total project costs 2 point
 15% to 20% of total project costs 1 point

COMMITTEE SCORE _____
 (Max. score of 3)

17. Is the project or phase ready for implementation? (One point per box. Please check all that apply)

Obligate funds in 2015 (receives 2 points)	<input checked="" type="checkbox"/>	Environmental process complete* (must provide a signed ECS by FHWA or WSDOT H&LP)	
Obligates funds in 2016 (receives 1 point)		Funding requested here completes project or fully implements the project	<input checked="" type="checkbox"/>
ROW plans approved by WSDOT		Purchase of ROW certified or not required	<input checked="" type="checkbox"/>

*Note: NEPA will NOT be finalized until the "next" project phase is funded in the STIP.

COMMITTEE SCORE _____
 (Max. score of 6)

Please provide information on your project readiness to proceed: Planning study per project description is ready to proceed as soon as funds are available.

Design Status (% complete): Choose an item. N/A

Project Phase	Status	Actual or Expected Completion Date
Preliminary Engineering	Choose an item.	Click here to enter a date.
Environmental Approval	Choose an item.	Click here to enter a date.
Right-of-Way Certification	Choose an item.	Click here to enter a date.

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If construction funds are being requested, please describe any ROW needs for the project, including the number of parcels needed, whether property owners are expected to cooperate (and your agency's experience with condemnation and/or whether it is willing to go to condemnation if needed).

N/A

17a. Will other secured or reasonably secured funding benefits be missed if the project remains unfunded in 2015, 2016 or 2017?

Yes _____ No X (Include information about other funding benefits.)

Please explain:

COMMITTEE SCORE _____
 (Max. score of 1)

18. Pierce County Regional Growth Centers Hierarchy and Connecting Corridors criteria: Is the project located in (1-3) or serving (4-6) any of the following? (Please check all that apply).

1. Metropolitan Center (scores 1 point)	X	4. Corridor Supporting one (1) or more Regional Manufacturing/Industrial or Candidate Center (scores 2 point)	X
2. Regional or Candidate Growth Center Manufacturing/Industrial or Candidate Center (scores 2 points)	X	5. Corridor Supporting one (1) or more Centers (scores 1 point)	X
3. Countywide Center or Locally Identified Center (see approved PCRC Map) (scores 1 point)	X	6. Corridor Supporting two (2) or more Centers (scores 1 point)	X

Local city and town centers provide local job, service, cultural, and housing areas for their communities. They serve as focal points where people come together for a variety of activities, including shopping and recreation. These central places must be identified in local comprehensive plans, or should be advancing towards that goal. These areas are to become priority areas for future investments and growth at the local level.

List and describe centers and attach map.

This project is applicable to the entire City of Tacoma, neighboring jurisdictions including Pierce County, the PSRC (for reporting and sharing of data purposes), and WSDOT for LOS concurrency analysis for State and Federal Highway.

COMMITTEE SCORE _____
 (Max. score of 8)

19. Is the project on a transit route? (Transit routes that "intersect" are okay only when the project improves the intersection)

Guidance: Sound Transit route information is available at <http://www.soundtransit.org/Schedules>
 Pierce Transit route information is available at <http://www.piercetransit.org/pierce-transit-routes/>

Yes, full project length X 2 points

Yes, partial or intersection _____ 1 point

No _____ 0 points

If yes, provide route number(s) All bus transit bus routes that operate within the traffic model structure can

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be modeled with the addition of the PSRC Mode Choice trip tables. _____

COMMITTEE SCORE _____
 (Max. score of 2)

20. What is the peak number of transit vehicles per hour within the project limits? (Transit routes that “intersect” are okay only when the project improves the intersection)

Guidance: Sound Transit route information is available at <http://www.soundtransit.org/Schedules>
 Pierce Transit route information is available at <http://www.piercetransit.org/pierce-transit-routes/>

Peak number of transit vehicles per hour Any Sound Transit or Pierce Transit bus operating within the traffic model structure. (see pages 26 and 27 of the call for projects)

4 or more transit vehicles X 2 points
 1 to 3 transit vehicles 1 point

COMMITTEE SCORE _____
 (Max. score of 2)

21. Does this project specifically improve non-motorized access for trips to any of the following (check all that apply). Provide a map showing all checked items.

Transit locations (0-2 trips/day)	X	Schools	X	Household/Retail	X	Commercial Areas	X
Transit locations (0-5 trips/day)	X	Grocery Store	X	Parks and Recreation	X	Cultural Facilities (museums, libraries, etc.)	X
Transit locations (0-5+ trips/day)	X	Medical	X	Employment Centers	X	*Other (Park and Ride Facilities)	X

1 point each item

*Please describe:

All of the items above are trip attraction locations. The Mode choice modeling element of this grant will allow for the “post processing” analysis of non-vehicular trip access and accommodation. More specifically analysis of planned improvements that are consistent with regional polieis aimed at reducing single occupant trips/vehicle miles traveled. The City’s comprehensive transportation plan policies are consistent with regional Vision 2040 policies so this new model will allow for a very strategic approach (Complete Streets Design) to future non-motorized transportation investments by the City.

COMMITTEE SCORE _____
 (Max. score of 12)

22. Does this project provide contiguous gap-closure to a previously funded transportation route?

(Gap closure projects may improve the facility to a standard equal to those sections on either end of the project. Gap closure project may provide a missing link of a facility that leads to a single connected facility. Gap closure projects are not limited to roadway sections and may include pedestrian paths, bicycle paths, trails, bridges, or any other transportation project which completes the system.)

Yes, Final Section X 3 points

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Yes, Next Section _____ 2 point
No _____ 0 points

If yes, please name adjacent segments; provide their funding source, and completion date: _____
In addition to completing the traffic model and integration of the system, there is the completion of
the Synchro model network gaps.

COMMITTEE SCORE _____
(Max. score of 3)

23. Describe how the project has the potential to reduce emissions?

Guidance: The application process will walk project sponsors through specific questions designed to determine the potential emissions reductions of their project. For example, projects involving fuel or vehicle conversions will be asked to provide information on the total number of vehicles affected, the current fuel and vehicle usage conditions, as well as the conditions after the project is implemented. Projects expected to result in an increase in transit usage will be asked to provide information on the current transit ridership and transit routes affected, as well as the specifics of the project – i.e., how will the individual project encourage or promote new transit riders. Projects providing new or more frequent/expanded transit service would be expected to result in a higher level of new transit riders than projects providing improvements in existing transit travel times or enhanced amenities to existing service. Projects resulting in improvements in traffic flow will be asked to provide information on the current travel conditions, amount of idling, number of trucks using the route, etc. As mentioned above, the magnitude of the project and the timing of the anticipated benefits will play a role in the final score, and all projects will be evaluated against each other.

Please explain:

The Pierce County area has an existing air quality problem as it has earned the only Non-Attainment Air Quality designation in the Regional by the Puget Sound Clean Air Agency (PSCAA). The nonattainment designation means that air quality in this part of Pierce County isn't as healthy as it should be. Emissions from our tailpipes spew fine particles, polluting gases, air toxics, and carbon dioxide - and represent the largest source of air pollution in our region. These pollutants endanger our health and taint our environment, which is why reducing congestion and miles traveled is one of the most important actions we can take to protect air quality.

Poor air quality affects everyone, but children, the elderly, and people with existing respiratory or cardiac health problems are especially at risk. The tiny size of fine particle pollution allows it to be inhaled deeply in the lungs and cross into the bloodstream, increasing the potential for health risks.

When an area is designated nonattainment, the Washington State Department of Ecology (Ecology) is required to develop a State Implementation Plan (SIP) and submit it to the EPA. A SIP is a plan for restoring air quality and bringing the area back into attainment status as quickly as possible. The SIP must define what actions will be taken to control air pollution, how these actions will lead to attainment, and a projection of when air quality will meet the standard.

Several of the model's Phase II enhancements along with a new post processor have direct and specific applications to help reduce emissions in Pierce County:

- The enhanced trip generation/mode choice component will provide more accurate estimates of air pollution benefits of development in the Urban Centers, since these areas have lower vehicle traffic generation

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- The enhanced freight component will provide more accurate truck volumes, which are highly correlated with air emissions
- Additional data collection will improve model calibration results. As shown in the figure below, the air pollution emissions are highly sensitive to speed. Better speed calibration will result in more accurate estimates.
- We will develop a travel model post-processor that will use data from the new US EPA MOVES emissions factor model to quickly quantify emissions on a link-based or land use project based level.
- The travel demand model and post-processor can identify areas with excessive delay and emissions, allowing for short-term action (e.g., signal re-timing, re-channelization) and long-term capital improvements which will result in decreased travel and idling times—especially pertaining to freight and their diesel emissions.
- Land use/permitting applications of the model can control potential sources of new congestion at a finer scale.
- Output from the model provides data that can be used as input for performing air quality analysis and determinations.
- The model permits for comprehensive roadway network planning to push forward capital improvement projects that will address larger shares of vehicles, thus reducing system travel times and VMT.

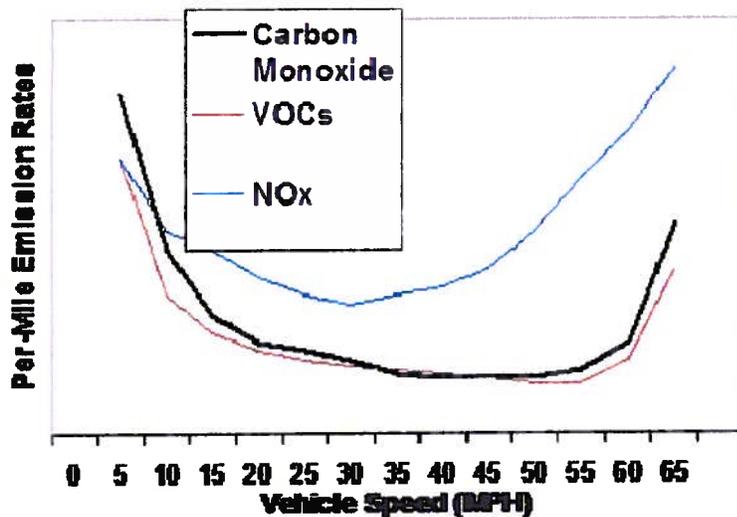


Figure #1 – Example of how air pollution rates vary with vehicle speeds.

High: A project will rate high if:

- It will substantially reduce emissions of greenhouse gases and other air pollutants, or will substantially reduce fine particulates from diesel exhaust; and
- The air quality benefits will occur by 2020.

Medium: A project will rate medium if:

- It will moderately reduce emissions of greenhouse gases and other air pollutants, or will moderately reduce fine particulates from diesel exhaust (for example, a project that reduces VMT by shortening a vehicle trip, rather than eliminating a vehicle trip); and
- The air quality benefits will occur by 2025.

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Low: A project will rate low if:

- It results in a low amount of emissions reductions; and
- The air quality benefits will occur after 2025.

High = _____ 5 points
Medium = X 3 points
Low = _____ 2 points
0 = _____ 0 points

COMMITTEE SCORE _____
(Max. score of 5)

OTHER APPLICATIONS

- 55. Please explain how the project addresses transportation issues or needs of two or more jurisdiction/agencies and/or has countywide impact and benefit.**

Guidance: Projects resulting in physical construction must be built in multiple jurisdictions to acquire multiple points. Please explain:

The City's model provides TAZ and roadway network coverage for all of Pierce County and beyond (as shown of Figure #2). Historically, all public agencies (many more than 4 agencies) including the State, are entitled to request and benefit from the travel demand models of the City and County. Recently the City of Fife recently used the 2010 Port area TATS model (based on the Pierce County model) for its recent IJR study of the I-5 at Port of Tacoma Road interchange.

Currently, the City travel demand model is structurally consistent with Pierce County's and the PSRC models. They are all based in EMME software. The models share transportation roadway network and land use data in terms of households and employment by different categories. The roadway network consists of freeways, principal arterials, minor arterials and collector arterials. The roadway network is defined with links with nodes depicting street intersections or major driveways. Some of the network attributes input in the model are roadway posted-speed limits, capacity and number of lanes, volume-delay function, and turning delays and prohibitions where applicable at intersections. The model is designed to forecast traffic volumes for the PM peak hour.

The Traffic Modeling Community recognizes the importance of integrated travel demand models to help evaluate local, regional, and statewide transport and operations of overland freight and goods on highways and local arterials. The proposed City traffic model also provides an opportunity to share freight and traffic data for the development of local and Regional models. This mutual benefit has helped with several important I-5 and local arterial studies. The multiagency partnership included Pierce County as they were the only agency at the time to have an up-to-date traffic model for the recent TATS study. The completion of this project will help to reduce the amount of requests the County's receives for its model and modeling services. Additionally, the large coverage area and find detail of the updated City of Tacoma model will particularly benefit the smaller communities surrounding Tacoma, such as Fife, Fircrest, and University Place. They can use the City model to assist in transportation and land use analysis since these jurisdictions are covered by the model and much of the travel from these communities is highly related to land use and travel patterns in Tacoma.

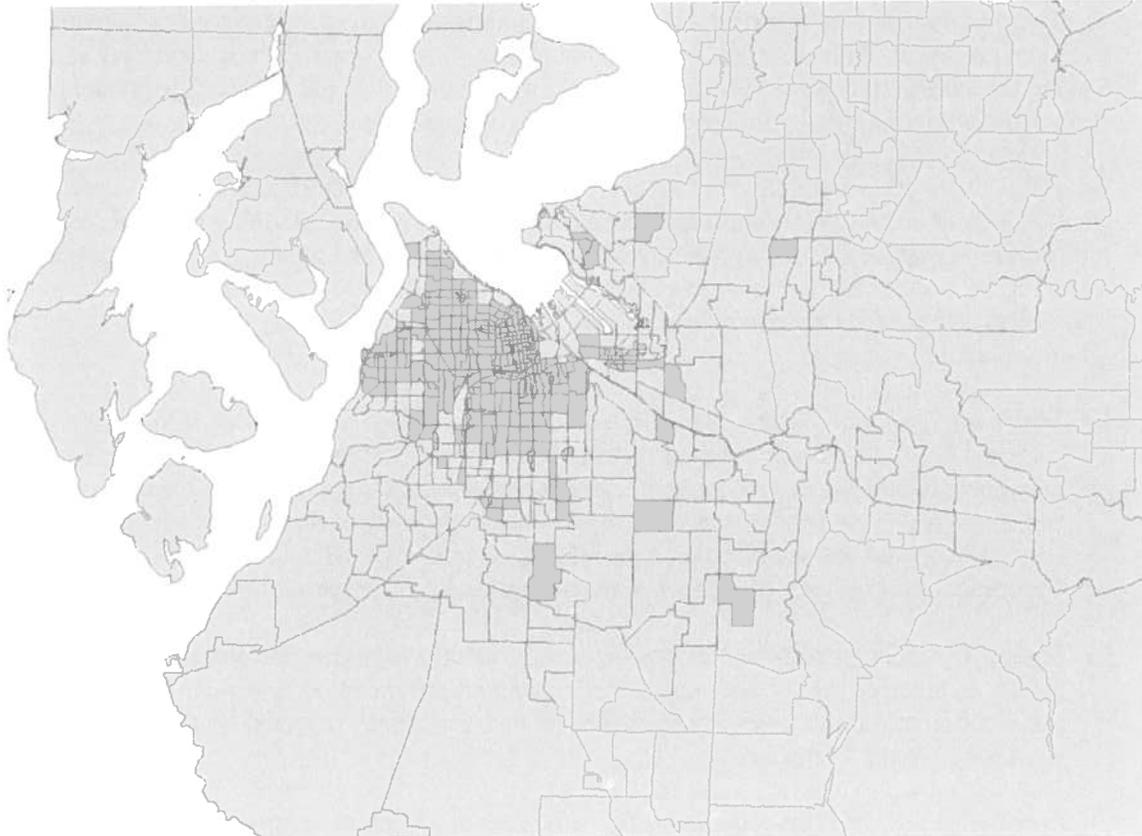


Figure #2 – Partial Extent of Phase II Tacoma Travel Model. Covers all of Pierce County and extends into Kitsap and King Counties.

4 or more agencies affected X 8 Points
 2 or 3 agencies affected 5 Points

COMMITTEE SCORE
 (Max. score of 8)

56. Please explain how the project addresses transportation Safety.

The enhanced data collection and model calibration included in the Phase II scope of work will improve the model’s ability to generate input data for the Highway Safety Manual’s predictive crash forecasting techniques. Using the HSM, the City and others will be able to better identify safety improvements and prioritize projects. The enhanced travel model can be far more cost effective than any one individual safety project since it can be used to analyze, prioritize, and generate data to fund many projects. Some other specific examples are highlighted below:

Mitigation or anticipation of congested travel conditions would be possible with this project and such analysis could reduce the likelihood of collisions caused by changes in, or disparate, traffic flow conditions.

The pavement management elements, relying on the updated freight information and mode splits, can be used to preserve quality of travel along the system roadways thereby reducing the likelihood of single vehicle crashes due to poor roadway surfacing and/or structure.

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The Evacuation Route Monitoring includes traffic and weather monitoring of one key roadways or corridors consistent with emergency evacuation plans. The selection of these roadways or corridors is done via a traffic model which comprehensive route congestion and delays. The model can also show alternative routes to be included in the overall evacuation plans.

On a 5 to 7 year cycle multiple local agencies, Pierce County, WSDOT, and FHWA convene to conduct a modeling exercise focused on enhancing the security and reliability of the surface transportation system through available real-time information. The model deployment examines how security and reliability can be improved under specific situations or scenarios described below. The enhanced Phase II City model will be able to address emergency preparedness and municipal security planning scenarios.

- a) **Major metropolitan areas** – The collection and dissemination of real time information on all principal arterials, freeways, major rail and bus systems, and intermodal connectors and facilities to support security management and emergency evacuation and response. On a day-to-day basis, this real-time information will also support improved congestion management and incident response, enhanced travel time reliability, improved safety and better overall operational performance of the metropolitan area surface transportation system.
- b) **Statewide reporting system** – The widespread collection and dissemination of information on incidents, weather events, and other scheduled and non-scheduled lane and road closures that can significantly impact security management and emergency response by reducing travel capacity on major highways.
- c) **Security of critical infrastructure** – The surveillance and monitoring of critical bridges and tunnels; major rail and bus facilities; freight and intermodal connectors and terminals; and major hazardous materials and military routes to detect potential security problems, provide alerts and assist in post-event analysis.
- d) **Non-metropolitan evacuation** – Traffic and weather monitoring of key roadways or corridors outside of metropolitan areas to support emergency evacuations caused by either man-made or natural disasters.
- e) **Weather response** – The collection and use of road weather information to improve safety and operational response to weather events such as flood, fog, snow or ice.

Additionally, the Port of Tacoma area is preparing to update its emergency response plan to understand if the additional land uses in the Port area warrant additional fire safety and police coverage. Key to this evaluation will be a travel model application to understand response times and how traffic and freight movement could impact the ability to address emergency situations. While the Phase I model can facilitate this planning effort, the enhanced calibration and validation of the Phase II model will provide additional value. As Urban Centers grow in population, Tacoma anticipates the need for additional fire and police response time planning using the travel model.

COMMITTEE SCORE _____
(Max. score of 4)

57. Please explain how the project addresses security and mobility.

Mobility:

In addition to answers to mobility provided earlier in this application, one of the fundamental uses of travel models is to evaluate potential projects and plans that could impact mobility in the region. The Phase II enhancements will further aid in the travel model's ability to evaluate the mobility benefits and impacts of land use and transportation projects through better calibration, more refined concurrency evaluations, enhanced vehicle trip generation/mode choice estimates, and improved freight and goods movement forecasts. This translates into better investments of limited municipal funding, which can be focused on projects yielding the greatest benefit to improving travel conditions and mobility.

Security: Same answer to question #56 Safety.

The Evacuation Route Monitoring includes traffic and weather monitoring of one key roadways or corridors consistent with emergency evacuation plans. The selection of these roadways or corridors is done via a traffic model which comprehensive route congestion and delays. The model can also show alternative routes to be included in the overall evacuation plans.

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- h) **Security of critical infrastructure** – The surveillance and monitoring of critical bridges and tunnels; major rail and bus facilities; freight and intermodal connectors and terminals; and major hazardous materials and military routes to detect potential security problems, provide alerts and assist in post-event analysis.
- i) **Non-metropolitan evacuation** – Traffic and weather monitoring of key roadways or corridors outside of metropolitan areas to support emergency evacuations caused by either man-made or natural disasters.
- j) **Weather response** – The collection and use of road weather information to improve safety and operational response to weather events such as flood, fog, snow or ice.

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COMMITTEE SCORE_____
(Max. score of 4)

58. Please explain how the project addresses environment.

As previously described in our response to Question 23, the enhanced travel model features several improvements to provide better air pollution and greenhouse gas emissions estimates. In addition, the Phase II enhancements to the model will better quantify the environmental benefits of new growth in the City's Urban Centers. As is well documented, more compact growth has a great number of environmental benefits, but a major benefit is reduced vehicle trip generation since uses are closer together and walking, transit, and bicycling is more convenient. The enhanced model will more accurately assess the transportation benefits and impacts of compact development in Urban Centers.

In addition to better estimating the transportation impacts of different types of land uses, the more accurate Phase II travel model will have improved traffic forecasts. These more accurate forecasts will help to determine if environmental enhancements such as low impact drainage designs or other elements of the City's Complete Streets guidelines can be implemented in the limited available right-of-way without significant impacts to traffic flow.

COMMITTEE SCORE_____
(Max. score of 4)

59. Please explain how the project addresses Transportation System Integration.

In addition to our project purpose and need statement, the enhanced Phase II model will have improved modeling of the transit system since we will be able to collect more calibration data to improve the performance of the mode choice model. This is an important improvement of the model given the proposed expansion of Sound Transit service in the City and the potential for new high capacity transit service in the City. The enhanced freight model will also provide better input data for overland freight operators and for the integrated pavement management system.

COMMITTEE SCORE_____
(Max. score of 4)

60. Please explain how the project addresses preservation.

This project addresses preservation by completing pavement condition inventories into the pavement management model (Street Saver). The City's consultant has completed the technical integration structure between the traffic and PMS models. The newly calibrated traffic model outputs (base and future) will be added to the StreetSaver model. The new pavement condition data from this project will allow for a complete pavement condition report of the City's road network. This along with visual distress data will help the City to better prioritize and assign maintenance and reconstruction

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activities to its 830 lane miles of arterials. The new integrated model will also be used to catalog the bearing capacity and the usable life of pavement under different predicted future traffic loads and maintenance regimes. The new PMS outputs will be particularly important for prioritizing roadway improvements along transit routes, the Port area facilities, and regional retail centers where there is a predominance of transit type activity, heavy truck use, and industrial type commerce. This is the only integrated travel model and pavement management system in the Western United States and with the additional inventory data and enhanced freight movement model as part of the Phase II improvements, this can serve as a demonstration or comparable for others.

COMMITTEE SCORE_____
(Max. score of 4)

61. Please explain how the project addresses global competitiveness.

The new model will include a freight mobility component which will be helpful in the analysis of existing and the future locations of Port area facilities. The model outputs will be particularly important for prioritizing roadway improvements (including ITS) in the Port area facilities and heavy haul corridors to help ensure their maintenance and viability the manufacturing/industrial type commerce. The project model will also be used to evaluate commercial sites within downtown and Tacoma Mall Regional Centers as these locations are most likely to attract and retain investments of global significance. Forecasting the pavement life of port and commercial area roads is critical to ensuring adequate maintenance investments and good road access to these areas. If investments are not identified in a timely manner and prioritized appropriately, the global competitiveness of these areas and Pierce County will suffer.

COMMITTEE SCORE_____
(Max. score of 4)

62. Please explain how the project addresses productivity and efficiency.

The enhanced Phase II travel model maximizes the efficiency of transportation investments in Tacoma and the surrounding jurisdictions that choose to use the model. The integrated travel model and pavement management system outputs can be used to prioritize investments to ensure roads are adequately maintained and are safe for all users, to address congestion and other factors that can compromise economic activity, and to address inefficiencies that degrade air quality and the environment. The output also ensures that city resources are used in the most productive ways in both maintaining the existing system and attracting business and enhancing the connectivity of the city.

Beyond serving as a resource to maximize the efficiency of City outlays, the enhanced model is capable of trip assignment and distribution outputs for specific sites and roadways. In the Manufacturing/Industrial Centers, Regional Centers, and larger developments this information is particularly useful as it shows trip productions and attractions to specific locations and routes. For example, the most efficient and least congested routes and the most logical locations based on "clustering of use" can be determined by the model outputs and post processing. Also the model stores Household (HH) and Employment (EMP) data by trip purpose. These outputs are also useful for employers looking for certain efficiency in employee trips to work, demographics, employee by industry type, and household density.

COMMITTEE SCORE_____
(Max. score of 4)

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63. Please explain how the project addresses connectivity.

Travel models excel at evaluating connectivity. A key measure of connectivity is the number of destinations that can be accessed within a given time from a location (see maps A and A-2). For example, it may be of interest to understand how many jobs are within a 20 minute transit ride from a neighborhood in the City, or how many residences are within a 10 minute drive of a key retail area. The enhanced Phase II travel model will be able to better answer these questions by ensuring compatibility with new land use data from the PSRC and Pierce County and more accurate travel speed estimates from the updated model calibration and data collection elements of Phase II. Using the travel model results and demographic data, projects can be evaluated and prioritized to meet the City's economic development, environmental, access, and social justice goals.

COMMITTEE SCORE _____
(Max. score of 4)

TOTAL SCORE FOR ALL SECTIONS _____

JURISDICTION APPROVAL.

I, the undersigned, affirm to the best of my knowledge:

- SL (initial) The project information contained within this application is accurate.
- SL (initial) The project is programmed and matching funds are available.
- SL (initial) Agency acknowledges it must apply for listing in Regional TIP before June 1 of the selected obligation year.

BY: Chris Lane
Approving Authority

TITLE: Engineering Division Manager, Public Works _____

DATE: 4/30/2014