DKS Associates
TRANSPORTATION SOLUTIONS

Memorandum

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DATE:	09 Jul 2010	
SUBJECT:	**Congestion Pricing Proposals Analysis** **Task 3.3 Technical Approach for Traffic and Transportation Analysis**	P/A No. P09042-008-016

Introduction

This memorandum describes the approach to conducting the transportation and traffic analysis per Task 3.3 in the CPPA Work Order Contract. The following narrative lays out each subtask required, identifies responsibilities, and states key assumptions for the two pricing proposals that will be evaluated using the Metro travel demand model:

- Cornelius Pass Road Pricing Proposal
- OR 217 Ramp Pricing Proposal

DKS Associates will oversee the analysis, and serve as the coordinator for all team members.

Table 1: General Evaluation Assumptions

Description	Assumptions
The value of time during study periods is:	Same as was developed and applied for the Columbia River Crossing study, segmented by vehicle type
Vehicles that have tolls applied	Under 10,000 lbs. gross vehicle weight
Model base year for land use and network is:	2005
Model horizon year for land use and network is:	2035
Model year of opening for land use and network is:	2012
Toll rate for OR 217 Ramps	$1 off-peak, $2 peak
Toll rate for Cornelius Pass Road	$2 off-peak, $4 peak

Task Work Steps

The work flow for the traffic and transportation analysis for both proposed pricing projects will include the following steps, with indicated responsibilities:

1. **Metro** will prepare the **No Build** networks for the selected forecast years, see summary for OR 217 in Table 2 below, and Table 3 for Cornelius Pass Road area. It is assumed that the No Build network for OR 217 (referred to as Null 1) will be used for the Cornelius Pass Road pricing proposal.
    a. The Year of Opening scenario network will be derived from the 2005 network, with additional regional projects that have been built or will be operational by 2012. The primary regional improvement in Washington County is the widening of US 26 from Sylvan to Cornell Road, and related interchange improvements, which includes the third northbound lane on OR 217 to US 26. This segment of US 26 should be identical to the 2035 network.
    b. Within the area of Cornelius Pass Road, additional local roadways will be added to the network that represent conditions observed in the field (refer to Table 3).
    c. The land use for the Year of Opening will be interpolated from the 2005 and 2035 model data.
    d. The Horizon Year network will reflect the 2035 Federal Regional Transportation Plan Financially Constrained Project list, which includes the Columbia River Crossing (CRC) project, and the braided ramps on OR 217 from Beaverton-Hillsdale Highway to Allen Boulevard.
    e. The planned shoulder widening on OR 217 should marginally improve link capacity in affected areas.
    f. The planned traveler information system cannot be evaluated in the travel demand model.
    g. The second No Build case identifies ramp closures at Wilshire Street, Walker Road, and Denny Road (both directions, all ramps).
    h. **Metro** will prepare full travel demand runs for the two **No Build** networks, referred to in Table 1 as Null 1 and Null 2.

Table 2: Summary of OR 217 Improvements Assumptions for No Build Networks

Year	No-Build (Null 1)	Ramp Closure (Null 2)
2012	Shoulder widening per 217 Mgmt Study	Shoulder widening per 217 Mgmt Study
	Traveler Information per 217 Mgmt Study	Traveler Information per 217 Mgmt Study
2035	RTP project: Braided ramps from B-H Hwy to Allen	RTP project: Braided ramps from B-H Hwy to Allen
		Ramp Closures and any improvements needed on the local network, as suggested by the 217 Study

Table 3: Characteristics of Roadways in the vicinity of Cornelius Pass Road

Roadway	Average Travel Time from US 30 to Intersection of Cornelius Pass Road at Skyline Blvd.
Cornelius Pass Road	7:04
Logie Trail Road	12:51
McNamee	15:05

2. **Metro** will modify the No Build model network (created in Step 1) to reflect the proposed pricing projects for each applicable forecast year. The Value of Time (VOT) developed and applied for the CRC project also will be applied for the two proposed pricing projects. Refer to Table 4 for a summary of Build networks.
    a. Add / update link and node attributes, as needed, in project influence area
    b. Apply toll time penalty[1] at proposed toll locations (note that heavy trucks will be excluded from tolls).
    c. **Metro** will prepare trip assignments only for **Build** networks as summarized below.
    d. **Metro** will report data as summarized in Table 5.

Table 4: Assumptions for Build Networks

Year	OR 217 Tolled Ramps	Cornelius Pass Road Pricing
2012	Ramps tolled at Wilshire Street, Walker Road, Denney Road (on-ramps, both directions)	Point toll located south of US 30 intersection (both directions)
2035	Ramps tolled at Wilshire Street, Walker Road, Denney Road, Highway 99W, 72nd Avenue (on-ramps, both directions)[2]	Point toll located south of US 30 intersection (both directions)

Table 5: General Transportation Assessment MOEs

Categories	Comments
Time of day	AM peak period, PM peak period
Traffic volume (autos and trucks reported separately)	Tolled facility and non-tolled facilities
Traffic speed	Tolled facility and non-tolled facilities
Traffic delay	Tolled facility and non-tolled facilities
Traffic congestion (demand / capacity ratio)	Tolled facility and non-tolled facilities

[1] Toll time penalty is the travel time equivalent of the toll charge, based on the amount of the charge and the value of time.

[2] Note: The five-ramp toll assumption is based on an earlier version of the project proposal that included a second phase of toll ramp implementation. The final report only analyzes the effects of tolling for the three ramps proposed for initial implementation, which was the proposal put forward by the project sponsors for consideration. [May 2011]

3. **DKS Associates and Stantec** will post-process volumes from model traffic assignments
4. **DKS Associates and Stantec** will prepare MOEs for each project (see Table 1 for general MOEs, and specific MOEs for each project in subsequent sections).

Cornelius Pass Road Pricing Proposal

Assumptions:

- The tolling facility is located just west of US 30 intersection. It operates in both travel directions, and does not apply to heavy trucks (over 10,000 pounds gross vehicle weight).
- This is an exclusive toll facility. Vehicles (aside from trucks) will not be permitted without a transponder tag.
- Violation will be enforced by cameras.
- Toll rate is fixed schedule that varies by time of day (e.g., higher during peak periods, and lower during off-peak hours; not dynamically priced).
- The No Build scenario on Cornelius Pass Road does not reflect the safety improvements that are identified to be funded by the toll revenue. In other words, that are the same as the Financially Constrained network provides.
- Forecasts are required for Year of Opening, and Horizon Year.
- Local streets parallel to Cornelius Pass Road will be added to the model network, and link attributes (link length and free flow speed) will produce free flow travel time is similar travel times as measured in the field by ODOT.
- Project Influence Area: Generally the area bounded by the regional facilities (US 30, US 26) loop route formed by connections with Cornelius Pass Road, including local parallel streets routes to the east and west (see attached map).

Project MOEs

- Estimated cost to construct and maintain (annualized)
- Estimated annual toll revenue
- Estimated net revenue available for safety improvements

OR 217 Ramp Pricing Proposal

Assumptions:

- Phase 1 (Year of Opening and End of Pilot Project); tolls to be located on all on-ramps at Wilshire, Walker and Denny interchanges with OR 217
- All toll collection will be made electronically. Vehicles without transponder tags will not be permitted.
- Violation will be enforced by cameras.
- Existing ramp meters at tolled locations will be removed.
- Toll rate is fixed schedule that varies by time of day (e.g., higher during peak periods, and lower during off-peak hours; not dynamically priced).
- Phase 2 (Interim Year and Horizon Year); additional tolls added on all on-ramps at 72nd Avenue and Highway 99W interchanges with OR 217.
- Project Influence Area: Generally the Walker Road on the north, Cedar Hills Boulevard and Hall Boulevard on the west, I-5 on the south, and Western Avenue to the east. Mock-up of study area shown on attached PDF.

Project MOEs

- Net change in entering traffic on tolled and non-tolled ramps throughout the corridor
- Change in mainline weaving conditions
- Congestion impacts on diversion routes serving non-tolled ramps
- Change in corridor travel time
- Note: This does not include intersection performance conditions (LOS analysis) at locations within the influence area.