Portland/Vancouver I-5 Transportation and Trade Partnership Project
Evaluation Measures for Option Packages

(Prior to running evaluation measure macros, two pre-processing steps must be preformed. These are documented separately following table below).

Evaluation Criteria			Evaluation Measures		Evaluation Data	Notes
1	**Maintain or Improve Transportation Performance**					
1.1	**Improve travel times**	A	Morning, mid-day and evening travel time for transit, autos and trucks to key locations via I-5.		Area-to-area travel times for SOV, HOV, transit, and trucks for AM three-hour, PM four-hour, and mid-day time periods. Representative zones will be selected for the following areas: • Downtown Portland (Pioneer Square) • Central Industrial Eastside District • Oregon Health Sciences University Hospital • Hillsboro • Wilsonville • Gresham • Gateway • Highway 212 (near Fred Meyer distribution center) • Lloyd Center • Portland International Airport • T-6 • Columbia Boulevard east of MLK (at NE 10th or NE 33rd) • Swan Island • Northwest Industrial Area (NW Yeon/NW 29th) • Low Income North Portland neighborhood (off Killingsworth near Albina, Williams, or MLK) • Vancouver neighborhood east of I-5 (near Fourth Plain/Fort Vancouver Way) • Vancouver CBD (7th/Washington) • Vancouver Mall (Fourth Plain north of SR 500) • Salmon Creek • Port of Vancouver • Clark Community College • Camas • Richfield • Battleground	1. Travel times will be reported in matrix (area-to-area) format. 2. Transit time will be generic transit time (i.e., no distinction between LRT vs. bus submodes). 3. SOV, HOV, and transit travel times will be taken from zone-to-zone travel time matrices. If SOV and HOV times are identical, then one (SOV/HOV) travel time value will be reported. 4. Truck times will be calculated as the sum of link travel times along specific truck routes, where applicable. 5. I-5 may or may not be used for travel between specific area pairs. 6. Areas shown in list reflect interest in improving travel times to industrial areas, major activity centers, and residential areas. Processing Notes: Input Preparation: None. Macro Processing: 1. Separate macros for AM, mid-day, and PM time periods. Macros stored in c:\I-5trade\Evaluation Measures\1.1.A\amtime.mac, mdtime.mac, pmtime.mac. 2. Punch files produced containing interzonal times by mode (no AM transit times– AM transit not modeled by Metro). 3. Macro can be run from any scenario within databank for option. Post-Processing: 1. In Ultraedit, strip header records from punch files, save files. 2. Open punch files in Excel as "Delimited", with "Space" and "Other (:) " as delimiters. 3. Delete column A. 4. Copy tables to spreadsheet stored as c:\I-5 Trade\Evaluation Measures\1.1.A\Area-to-Area __ Travel Time Template.xls. Tables must be copied to sheets labeled "EMME/2 SOV Times", "EMME/2 HOV Times", and "EMME/2 Transit Times". 5. In "Evaluation Table" sheet, change all "9999" transit time values to "N/A" and change header record to reflect correct option.
		B	Improve travel times: Morning, mid-day and evening travel time for transit, autos and trucks from key locations to I-5.		Node-to-node peak direction travel times from key locations to nearest I-5 ramp for SOV, HOV, transit, and trucks for AM three-hour, PM four-hour and mid-day time periods. Representative nodes will be selected for the following areas: • Portland International Airport • T-6 • Columbia Boulevard east of MLK (at NE 10th or NE 33rd) • Low Income North Portland neighborhood (off Killingsworth near Albina, Williams, or MLK) • Vancouver CBD (7th/Washington) • Vancouver Mall • Port of Vancouver • Clark Community College	1. Areas shown in list include only those areas for Evaluation Measure A with direct access to I-5. 2. Total node-to-node travel time will include time on I-5 ramp. Time on I-5 ramp only will also be shown separately. This evaluation data was dropped due to difficulty of producing the information (Modeling Subgroup agreed with this at 10/4/01 meeting). Prior to this decision, preliminary ideas (agreed to by Modeling Subgroup) on how to develop this information were: 1. "Nearest ramp" will be determined by shortest distance, not time. 2. Macro will be set up using node numbers for nearest ramps as reflected in Constrained Baseline alternative. If nearest ramp is different in another alternative, then macro will have to be changed or shortest path plots will have to be produced manually. 3. Ending node at freeway will be for ramp junction, not ramp terminal. 4. Time on ramp will be produced separately using module 2.41 within

Evaluation Criteria			Evaluation Measures	Evaluation Data	Notes
					same macro.
					5. Peak direction may not be same as direction <u>from</u> key location <u>to</u> I-5 for mid-day and PM peak time periods. For example, direction from PDX to I-5 (westbound) is not the peak direction in PM peak period. Direction <u>from</u> key location <u>to</u> I-5 is always the direction to be used, regardless of whether it is peak direction during particular time period or not.
					6. Inro can provide method for writing shortest path travel times produced in module 2.15 as file or report.
					7. Evaluation data spreadsheet: c:\I-5Trade\Evaluation Measures\1.1.B\Node-to-Node Travel Time Template.xls.
1.2	**Maintain or reduce congestion**	A	Morning and evening percentage of congested highway lane miles in study area (at or exceeding v/c = 0.85). (Per 9/17/01 Modeling Subgroup meeting).	1. Percentage and total lane-miles at or exceeding v/c = 0.85 by hour for AM three-hour and PM four-hour time periods for: • I-5 and I-205 • highways and major arterials • truck routes • all roadways in study area 2. Plots showing above facilities by number of hours of congestion.	<u>Processing Steps</u> *Input Preparation:* None. *Macro Processing:* 1. Separate macros for AM and PM time periods for calculation of congested lane miles and development of congestion duration plots. Macros stored in c:\I-5trade\Evaluation Measures\1.2.A,B\amvc85+.mac, pmvc85+.mac, amcnghrs.mac, pmcnghrs.mac. 2. Report files produced by amvc85+.mac and pmvc85+.mac. 3. Punch files produced by amcnghrs.mac and pmcnghrs.mac for each facility category containing link color code for no. of hours of congestion (stored in ul1). 4. Node files for AM and PM scenarios must also be punched for development of congestion duration plots. 5. Macros must be run from scenario containing facility category flags titled "copy of sc____ for preparation of AM (or PM) evaluation measures" – see pre-processing notes.
		B	Morning and evening percentage of congested arterial lane miles in study area (at or exceeding v/c = 0.85). (Per 9/17/01 Modeling Subgroup meeting).		
			Morning and evening total rush hours of delay within study area (non-transit modes only).		*Post-Processing:* 1. For congested lane miles measure, manually copy both congested lane miles and total lane miles by facility category from report files to spreadsheet stored as c:\I-5 Trade\Evaluation Measures\1.2.A, B\Congested Lane Miles.xls. Congested lane miles and lane mile totals are shown in portions of report files where "len*lan" network calculations are reported. (Total lane mile values for AM and PM peak periods need to be copied only once into highest hour section of table. These values are then automatically copied into sections for other hours). Change header records on each worksheet to reflect correct option. 2. For duration of congestion measure, import link batchout files and node files into ArcView for production of plots.
		C		3. VHD, VMT, and VHT by hour and facility category for AM three-hour and PM four-hour time periods.	<u>Processing Steps</u> *Input Preparation:* None. *Macro Processing:* 1. Separate macros for AM and PM time periods for calculation of vehicle hours of delay and VMT, VHT. Macros stored in c:\I-

	Evaluation Criteria			Evaluation Measures	Evaluation Data	Notes
						5trade\Evaluation Measures\1.2.C\amvhdclc.mac, pmvhdclc.mac, amvmtvht.mac, pmvmtvht.mac.
						2. Report files produced all macros.
						3. Macros for VHD calculation must be run from **copies of** scenarios containing facility category flags titled "copy of sc____ for preparation of AM (or PM) evaluation measures" – see pre-processing notes. Batchin files with special VDFs for VHD calculation labeled "amvhdfnc.in" and "pmvhdfnc.in" must exist within databank directory (see macros for additional notes).
						4. Macros for VMT, VHT calculation must be run from scenarios containing facility category flags titled "copy of sc____ for preparation of AM (or PM) evaluation measures" – see pre-processing notes.
						Post-Processing:
						1. For VHD measure, manually copy total VHD by facility category from report files to spreadsheet stored as c:\I-5 Trade\Evaluation Measures\1.2.A, B\VHD, VMT, VHT.xls. VHD totals are shown in portions of report files where "result = @delay" network calculations are reported.
						2. For VMT, VHT measures, manually copy total VMT, VHT by facility category from report files to same spreadsheet used for VHD. VMT, VHT totals are shown in portions of report files where "result = @hrvmt" and "result = @hrvht network calculations are reported.
						3. Change header records on each worksheet to reflect correct option.
1.3	**Promote transportation choices**		A	Number and percentage of person trips by SOV, HOV, transit, bicycle, and pedestrian for study area for daily and evening time periods.	Same as evaluation measure.	<u>Processing Steps</u>
						Input Preparation:
						None.
						Macro Processing:
						1. Macro stored in c:\I-5trade\Evaluation Measures\1.3.A\SAtrp.mac.
						2. Within macro, PM peak period transit trips calculated as PM 2-hour transit trips * 1.8 (per 8/8/01 Metro e-mail). This is because PM 4-hour transit trip table not available. PM peak period bike/ped trips calculated as daily bike/ped trips * 0.325 (per 8/7/01 Metro e-mail), since PM 4-hour bike/ped trip table not available.
						3. Two report files produced. First file titled "___SAtrp1.rpt" is only one that is used (after development of macro, was found that second file "SAtrp.rpt" was not needed).
						4. Macro can be run from any scenario within databank for option.
						Post-Processing:
						1. Copy total trips by mode from, to, and within study area from report file to spreadsheet stored as c:\I-5 Trade\Evaluation Measures\1.3.A\Study Area Person Trip Summary. Trip totals must be copied to sheet labeled "Study Area Modal Trips" in same order as they appear in report file. Copy should be done using Ultraedit Find feature, with "List Lines Containing String" box checked. Find search string should be "Result:".
						2. Use Ultraedit clipboard option to copy selected lines to new file within Ultraedit.
						3. Within new file, strip "Result:_____" character string from selected lines, then copy to "Study Area Modal Trips" worksheet.
						4. Change header record in worksheet labeled "Evaluation Table" to reflect correct option.

Evaluation Criteria			Evaluation Measures	Evaluation Data	Notes
		B	Number and percentage of person trips to and from downtown Vancouver and downtown Portland by SOV, HOV, transit, bicycle, and pedestrian for daily and evening time periods.	Same as evaluation measure.	Processing Steps *Input Preparation:* None. *Macro Processing:* 1. Macros stored in c:\I-5trade\Evaluation Measures\1.3.A\DTPDXtrp.mac, DTVantrp.mac. 2. See notes 2. – 4. for Evaluation Measure 1.3.A. *Post-Processing:* 1. Copy total trips by mode from, to, and within study area from report files to spreadsheet stored as c:\I-5 Trade\Evaluation Measures\1.3.B\Downtown Person Trip Summary. Trip totals must be copied to sheets labeled "DT Portland Person Trips" and "DT Vancouver Person Trips" in same order as they appear in report files. 2. See notes 1. – 4. for Evaluation Measure 1.3.A.
		C	Number of people able to cross Columbia River for evening time period.	Number and percentage of person trips by mode (SOV, HOV, transit, bicycle, and pedestrian) crossing Columbia River during PM four-hour time period between following Portland and Vancouver districts: *Portland Districts* • District 1 - Downtown Portland • District 2 – Central Industrial Eastside • District 3 – NW Portland/Council Crest • District 4 - North Portland North of Lombard • District 5 – Columbia Corridor • District 6 – North Portland South of Lombard • District 7 - NE Portland North of I-84 • District 8 – NW Portland Industrial Area • District 9 – SE Portland South of I-84 • District 10 – East Multnomah Co. East of I-84 • District 11 – Washington County • District 12 – Clackamas County • District 19 – West Portland *Vancouver Districts* • District 13 - Vancouver West of I-5 • District 14 - Central Vancouver I-5 to Andresen Rd. • District 15 – E. Vancouver Andresen Rd. to Clark Co. Line • District 16 - Camas/Washougal and east of Clark County • District 17 – Mid-Clark Co. • District 18 - North Clark County • District 20 – Mid-Clark Co. East of I-205	1. Number and percentage of trips will be reported in matrix (district-to-district) format. Processing Steps *Input Preparation:* None. *Macro Processing:* 1. Macro stored in c:\I-5trade\Evaluation Measures\1.3.C\xrvrtrps.mac. 2. See note 2. for Evaluation Measure 1.3.A. 3. Punch files produced containing district-to-district person trips by mode. 4. Macro can be run from any scenario within databank for option. *Post-Processing:* 1. See notes 1. – 3. for Evaluation Measure 1.1.A. 2. Copy tables to spreadsheet stored as c:\I-5 Trade\Evaluation Measures\1.3.C\District-to-District Person Trip Summary Template.xls. Tables must be copied to sheets labeled "EMME/2 SOV Trips", "EMME/2 HOV Trips", "EMME/2 Transit Trips", and "EMME/2 Bike-Ped Trips".
		D	Change in vehicle miles traveled (VMT) for evening time period.	Change in VMT compared to Option ____ for all trips in study area (except commercial and transit trips) by hour and total (per 9/17/01 Modeling Subgroup meeting) for PM four-hour time period.	This data was dropped since base option never defined by Modeling Subgroup.
1.4	Enhance public safety	A	Change in number of traffic conflict points (difficult merges, for example).	Same as evaluation measure.	To be determined based on demand and/or operational model results.
		B	Impacts on emergency vehicle access.	Same as evaluation measure.	See above.
		C	Impacts on incident management access.	Same as evaluation measure.	See above.

	Evaluation Criteria			Evaluation Measures	Evaluation Data	Notes
			D	*Bridge height encroachment into Pearson Airpark flight path.*	*Evaluation data to be determined by others.*	
1.5	**Improve travel reliability**		A	Total exclusive right-of-way by mode.	Same as evaluation measure.	Conceptual engineering task to determine lane-miles for truck lanes, HOV, bus, LRT, etc.
			B	Duration of "rush hour" congestion.	Same as evaluation measure.	See data item 2. for Evaluation Measures 1.2.A, B.
			C	*Dollar cost of bridge lift delays for transit, autos, and trucks.*	*Evaluation data to be determined by others.*	
1.6	**Minimize impacts on other highways and streets**		A	Change in "rush hour" traffic (autos and trucks) on highways and streets adjacent to study area.	Total traffic volume (autos and trucks) and percentage change in traffic volume compared to Option ___ for PM four-hour time period along following screenlines: A Columbia River (I-5 and I-205) B Columbia Slough (North Portland Road to 33rd) C West of I-5 in Portland from Greeley to Marine Drive D East of I-5 in Portland from I-84 to Marine Drive E1 South of Killingsworth from Greeley to MLK E2 South of Killingsworth from 33rd to 102nd F1 South of Fourth Plain (Vancouver) from Simpson Road to Stapleton Road F2 South of Fourth Plain (Vancouver) from Andresen to 112th G1 West of I-5 in Vancouver from Washington Street/6th to Main Street G2 West of I-5 in Vancouver from Minnehaha to 99th H1 East of I-5 in Vancouver from SR 14 to SR 500 H2 East of I-5 in Vancouver from 54th to 99th	1. Evaluation data will be displayed on plots. 2. Screenlines will allow changes in traffic to be tracked along parallel and adjacent facilities. 3. Traffic volumes will also be shown for individual facilities along screenlines by volume range category. (Percentage change in volumes was dropped since base option never defined by Modeling Subgroup). 4. Color code screenlines and links by total traffic volume (auto and truck) range category. 5. Auto and truck volumes should be displayed separately on plots. 6. Screenline volumes will also be summarized in tables. Processing Steps *Input Preparation:* None. *Macro Processing:* 1. Screenline plots are prepared using two macros that produce batchout file containing auto, truck, and total volumes for screenlines and for each link crossing screenlines. 2. First macro stored in c:\I-5Trade\Evaluation Measures\1.6.A\slvolpt1.mac. Within this macro, copy is made of scenario titled "copy of sc____ for preparation of PM evaluation measures" (number of scenario to be copied must be entered in macro command line). Screenline nodes and links and links from Constrained Baseline w/o DLRQ Option that cross screenlines are then batched into copied scenario. These links are tagged with values of 2 – 13 in ul1 that i.d. them as belonging to one of twelve screenlines and allow them to be plotted in color. Value of 2 is also coded in ul2 for screenline links that total screenline volumes will be posted to. 3. Once first macro has been run, network of subject scenario needs to be reviewed/modified in module 2.12 to make sure that all links crossing screenlines are tagged in ul1. Use ul1 as color index in module 2.12. 4. Second macro stored in c:\I-5Trade\Evaluation Measures\1.6.A\slvolpt2.mac. This macro calculates auto, truck and total volumes for each link crossing screenlines. Link records for these links containing I-node, j-node, ul1, and volumes are batched out by screenline, together with screenline link that the total screenline volume will be posted to. *Post-Processing:* 1. Import batchout file to temporary spreadsheet (to import, parse batchout file as fixed width file type). 2. Sum auto, truck, and total volumes for individual links crossing

	Evaluation Criteria		Evaluation Measures	Evaluation Data	Notes
					screenlines on rows for screenline links (screenline links have 80000-series node numbers).
					3. Copy columns containing screenline data to adjacent (empty) columns using Paste Special "values" option.
					4. Delete all columns containing original data.
					5. Delete remaining columns with "ul1" and "result" in column headers.
					6. Strip out all rows containing column headers.
					7. Import spreadsheet and batched-out node file for scenario into ArcView for plotting.
					8. For creation of screenline summary table, delete all rows for individual links. (Should be left with 12 rows and 5 columns containing I-node, j-node, auto volume, truck volume, and total volume for each screenline).
					9. Copy screenline data to spreadsheet stored as c:\I-5 Trade\Evaluation Measures\1.6.A\Screenline Summary Template.xls. Data must be copied to sheet labeled "EMME/2 Screenline Volumes".
					10. Change header record in sheet labeled "Evaluation Table" to reflect correct option
2	**Support Trade and Freight Movement and the Regional Economy**				
2.1	Improve strength of regional industrial areas	A	"Rush hour" and non-"rush hour" travel time for autos and trucks from key locations to I-5.	Data for Evaluation Measure 1.1.B dropped due to processing difficulty.	
		B	Percentage of truck route lane miles over capacity during rush hours.	See 1.2.A and 1.2.B for truck routes.	
2.2	Increase business savings within study area	A	Daily value of reduced time spent in traffic by trucks and rail.	1. Value of VHD for trucks.	Processing Steps
					Input Preparation:
					Facility category flags must be batched out of scenario titled "copy of sc____ for preparation of PM evaluation measures" with file name of "___pmffl.in", where___ is the option number. This file is batched into the mid-day scenario used for mid-day truck VHD calculation within the macro.
					Macro Processing:
					1. Macro stored in c:\I-5trade\Evaluation Measures\2.2.A\trkvhd.mac. Within this macro, copy is made of original Metro mid-day assignment scenario for calculation of mid-day truck VHD. Scenarios used for calculation of AM and PM peak period VHD for Evaluation Measure 1.2.C are used for AM and PM period truck VHD calculation.
					2. Report file produced containing total truck VHD by time period.
					3. Batchin file with special VDFs for mid-day VHD calculation labeled "mdvhdfnc.in" must exist within databank directory (see macro for additional notes).
					4. Macro can be run from any scenario within databank for option.
					Post-Processing:
					1. Manually copy total truck VHD values by time period from report file to spreadsheet stored as c:\I-5 Trade\Evaluation Measures\2.2.A, B\Value of Truck Time Template.xls. These totals are shown in portions of report file where "result = @tkvhd" network calculations are reported. Must be copied to worksheet labeled "Truck VHD".
					2. Value of truck time of $35/hr. used within spreadsheet (as provided

	Evaluation Criteria		Evaluation Measures	Evaluation Data	Notes
					by Metro and agreed to by WSDOT). 3. Within spreadsheet, factor of 5.625 is applied to 1-hr. mid-day VHD in order to obtain 6-hr. mid-day VHD (per Metro). 4. Change header record within "Evaluation Table" worksheet to reflect correct option.
				2. Value of reduced VHD for rail compared to _____ within study area.	1. To be determined in Rail Study.
2.3	Minimize impacts to water navigation		*Evaluation measures to be determined by others.*		
2.4	Reduce freight delay	A	Mid-day and evening travel time for trucks from key locations to I-5.	Data for Evaluation Measure 1.1.B dropped due to processing difficulty.	
3	Maintain and Enhance Quality of Life				
3.1	Reduce spillover traffic into neighborhoods	A	Traffic volumes (autos and trucks) on selected roads.	See 1.6.A.	
3.2	Support adopted city plans		*Evaluation measures to be determined by others (also see 1.6.A).*		
3.3	Air quality impacts	A	Production of standard pollutants within study area.	Same as evaluation measure.	Method of estimation to be determined.
3.4	Noise impacts		To be determined.		
3.5	Impacts to water resources		*Evaluation measures to be determined by others.*		
3.6	Other land use impacts		*Evaluation measures to be determined by others.*		
3.7	Average commute time	A	Average work trip time.	Average PM peak period travel time for SOV, HOV, and transit to all destinations from: • Salmon Creek • Vancouver CBD • North Portland • Portland CBD • selected industrial areas	<u>Processing Steps</u> *Input Preparation:* None. *Macro Processing:* 1. Macro stored in c:\I-5trade\Evaluation Measures\3.7.A\pmavgtm.mac. Within macro, constraint of 0, 200 minutes applied for transit because of excessive times for small number of interchanges. Mean travel times calculated as weighted means using modal trips. 2. Report file produced containing average PM peak period travel times by mode from selected origins to all destinations. 3. Macro can be run from any scenario within databank for option. *Post-Processing:* 1. Copy mean travel times from report file to spreadsheet stored as c:\I-5 Trade\Evaluation Measures\3.7.A\Average Commute Times.xls. Times must be copied to sheet labeled "EMME/2 Avg. SOV, HOV, Trn Times" in same order as they appear in report file. Copy should be done using Ultraedit Find feature, with "List Lines Containing String" box checked. Find search string should be "mean". 2. Use Ultraedit clipboard option to copy selected lines to new file within Ultraedit. 3. Within new file, strip "statistics_____mean:" character string from

Evaluation Criteria			Evaluation Measures	Evaluation Data	Notes
					selected lines, then copy to "EMME/2 Avg. SOV, HOV, Trn Times" worksheet. 4. Change header record in worksheet labeled "Evaluation Table" to reflect correct option.
3.8	**Vehicle occupancy vs. capacity**	A	Average auto vehicle occupancy at Columbia River screenline.	Same as evaluation measure.	Processing Steps *Input Preparation:* None. *Macro Processing:* 1. Macro stored in c:\I-5trade\Evaluation Measures\3.8.A\xrvr.mac. 2. Report file produced containing total PM peak period auto person trips from OR to WA and from WA to OR. 3. Macro can be run from any scenario within databank for option. *Post-Processing:* 1. Manually copy total trips from report file to spreadsheet stored as c:\I-5 Trade\Evaluation Measures\3.8.A\AVO Template.xls. Trips must be copied to worksheet titled "Auto Person + Vehicle Trips". 2. Copy total auto vehicle trips from spreadsheet for Evaluation Measure 1.6.A to "Auto Person + Vehicle Trips" worksheet. 3. Change header record in "Evaluation Table" worksheet to reflect correct option.
3.9	**Annual transit ridership**	A	Daily transit ridership across Columbia River and within study area.	Same as evaluation measure.	1. Trips will <u>not</u> be broken down by transit submode. 2. Transit ridership = transit person trips. 3. See 1.3.A for study area transit ridership. 4. See 1.3.C for transit ridership across river.
3.10	**Time cost of travel (by mode)**	A	Cost of total travel time by mode (SOV, HOV, transit, and trucks) within study area for PM four-hour time period.	Same as evaluation measure.	1. For each mode, cost will be calculated as Σ link travel time x no. of link trips x value of time, for all links in study area (use study area link tags from 1.2.A, B). Processing Steps *Input Preparation:* None. *Macro Processing:* 1. Macro stored in c:\I-5trade\Evaluation Measures\3.10.A\trvlcost.mac. 2. Report file produced containing total PM peak period hours of travel by mode for study area. 3. Macro must be run from scenario "copy of sc____ for preparation of PM evaluation measures". *Post-Processing:* 1. Manually copy total travel hours values from report file to spreadsheet stored as c:\I-5 Trade\Evaluation Measures\3.10.A\Cost of Travel Template.xls. Values must be copied to worksheet titled "Travel Hours". 2. Values of time applied within "Evaluation Table" worksheet obtained

Evaluation Criteria			Evaluation Measures	Evaluation Data	Notes
					from Metro (8/9/01 e-mail). Values of time for SOV and transit are per person hour of travel (SOV value of time used for transit). Values of time for HOV and truck are per vehicle hour of travel. 3. Change header record in "Evaluation Table" worksheet to reflect correct option.
4	**Minimize Impacts to the Environment**	A	Change in access	Qualitative information based on factors such as availability of transit, congestion levels, connectivity, and other factors.	
		B	Energy consumption	Daily VMT	
			Remaining evaluation measures to be identified by others.		
5	**Support Regional Land Use Plans**		Evaluation measures to be determined using Metroscope model.		
6	**Distribute Benefits, Costs, and Impacts Equitably**	A	Modal usage of I-5 by origin-destination pair for evening time period.	Number and percentage of person trips by mode (SOV, HOV, transit, bicycle, and pedestrian) between districts for PM four-hour time period using following I-5 links: • between I-405 and Going St. • Columbia River bridge • between SR 500 and Fourth Plain Blvd.	1. Number and percentage of trips will be reported in matrix (district-to-district) format. 2. Districts are same as those listed in 1.3.C. 3. Cannot obtain bike/pedestrian trips by link, but probably none of these trips on I-5 anyway. 4. To obtain PM peak period HOV person trips using select links, need PM peak period AVO for HOV vehicle trips to convert vehicle trips to person trips (2.04 per Metro). 5. Use select cutlines rather than select links for locations n/o downtown Portland and in Vancouver. Cutline for n/o downtown Portland will include parallel links from Interstate to MLK. Cutline for Vancouver will include links from St. John's to Main (per Modeling Subgroup – 8/9/10). 6. Add cell to table for each district-to-district pair showing % of total person trips using select link or cutline for that district-to-district pair (per Modeling Subgroup – 8/9/10). (This data item was dropped due to processing difficulty – agreed to by Modeling Subgroup at 10/4/01 meeting).
		B	Average PM peak period travel time by mode from selected neighborhoods to all destinations.	Same as evaluation measure.	Processing Steps *Input Preparation:* None. *Macro Processing:* 1. Separate macros for each mode (SOV, HOV, transit) stored in c:\I-5trade\Evaluation Measures\6.B\neighsov.mac, neighhov.mac, neightrn.mac. Mean travel times calculated as weighted means using modal trips. Within transit time macro, constraint of 0, 200 minutes applied for transit because of excessive times for small number of interchanges. 2. Report files produced containing average PM peak period travel times by mode from selected neighorhood zone groups to all destinations. 3. Macro can be run from any scenario within databank for option. *Post-Processing:* 1. Copy mean travel times from report files to spreadsheet stored as c:\I-5 Trade\Evaluation Measures\6.B\Neighborhood Commute Times Template.xls. Times must be copied to sheet labeled "EMME/2 Avg.

Evaluation Criteria		Evaluation Measures	Evaluation Data	Notes
				SOV, HOV, Trn Times" in same order as they appear in report file. SOV times must be copied to column A, HOV times to column B, and transit times to column C. Copy should be done using Ultraedit Find feature, with "List Lines Containing String" box checked. Find search string should be "mean". 2. Use Ultraedit clipboard option to copy selected lines to new file within Ultraedit. 3. Within new file, strip "statistics_____mean:" character string from selected lines, then copy to "EMME/2 Avg. SOV, HOV, Trn Times" worksheet. 4. Change header record in worksheets labeled "Evaluation Table – Portland" and "Evaluation Table – Vancouver" to reflect correct option.
7	**Evaluate Project Capital and Operating Costs, Revenue Hours**	*Evaluation measures to be determined by others.*		

Pre-Processing Steps

Step 1: Insertion of facility category flags:

1. Make copies of original Metro assignment scenarios for AM and PM peak time periods. Label as "copy of sc____ for preparation of AM (or PM) evaluation measures".
2. Batchout facility category flags from similar option using module 2.41. Flags are stored in extra attributes"@flag1" and "@flag2". @flag1 contains values of:

   1 = all non-study area links
   2 = study area links not included in other facility categories (this includes all links, e.g., centroid connectors, LRT-only links, walk-only links, etc.)
   3 = I-5 (mainline links only, including HOV links)
   4 = principal and major arterials not included in truck route category
   5 = truck routes (Does not include I-5 or I-205 mainline links, but does include I-5 and I-205 ramps per RTP. Truck route links do not vary between options.)
   6 = I-205 (mainline links only)

   (Total study area links = sum of links with @flag1 values $\geq$ 2).

   @flag2 contains values of:

   1 = all non-study area links and study area links not in principal and major arterial category
   2 = study area links in principal and major arterial category, including truck routes

   If flags from similar option do not exist, these can be created through following steps:

   1. Create copy of original Metro assignment scenario (AM or PM peak period).
   2. Set ul1 = 1 for all links.
   3. Batchout all links.
   4. Read link batchout file into ArcView.
   5. Overlay imported links with study area districts.
   6. Set ul2 = 2 for all links included in overlay area.
   7. Batchin links from ArcView into EMME/2.
   8. Manually set facility category flags for study area links using module 2.12 (Metro has two digit link type code (first digit = subarea code, second digit = facility type).
   9. Copy facility category flags to AM (PM) assignment scenario from PM (AM) scenario.
   10. Manually review, modify AM (PM) scenario facility category flags using module 2.12.

Step 2: Development of revised SOV, HOV, and transit in-vehicle times:

1. Macros for development of AM and PM peak period times are contained in c:\I-5 Trade\Evaluation Measures\Revised Travel Time Estimation\amtmclc.mac, pmtmclc.mac. Processing notes are included within macros.
2. Revised times for mid-day time period are not developed – standard 1-hour mid-day times from Metro are used.