

BEFORE THE METRO COUNCIL

FOR THE PURPOSE OF ENDORSING THE)
TRAFFIC RELIEF OPTIONS TASK FORCE)
RECOMMENDATION TO FURTHER)
EVALUATE PEAK PERIOD PRICING)
OPTIONS)

RESOLUTION NO. 97-2546B

Introduced by Mike Burton,
Executive Officer

WHEREAS, Section 1012(b) of the Intermodal Surface Transportation Efficiency Act (ISTEA) of 1991 authorized the Secretary of Transportation to create a Congestion Pricing Pilot Program to fund a series of demonstration projects and related studies to promote the implementation of congestion pricing; and

WHEREAS, Metro and the Oregon Department of Transportation (ODOT) submitted a joint application to determine whether or not congestion pricing is a desirable traffic management tool in the Portland metropolitan region and to increase public understanding of the concept; and

WHEREAS, the study methodology involved the assessment of public attitudes to the concept, development and evaluation of a number of congestion pricing alternatives, and a recommendation at the end of the study as to whether an appropriate demonstration project should be established in the Portland metropolitan area; and

WHEREAS, Resolution No. 93-1743A endorsed the region's application for a congestion pricing pilot study and directed Metro and ODOT staff to pursue ISTEA funds for this purpose; and

WHEREAS, Metro and ODOT have received approval and \$1.2 million in funding to undertake a Congestion Pricing Pre-Project Study (the study); and

WHEREAS, Ordinance No. 96-628 amended the FY 1995-96 budget and appropriations schedule for the purpose of conducting the study; and

WHEREAS, Due to the relative newness of the concept and the potential for significant public concern, Metro and ODOT have agreed to establish a Task Force of business and community leaders to provide advice and direction on the study; and

WHEREAS, Metro Council on April 25, 1996 passed Resolution No. 96-2333 endorsing the composition and mission of the Congestion Pricing Task Force for the purpose of providing direction to the Congestion Pricing Pre-Pilot Study and making a recommendation to the Joint Policy Advisory Committee on Transportation (JPACT) and the Metro Council as to whether a demonstration project of congestion pricing should be undertaken in the Portland metropolitan area and, if so, what its parameters should be; and

WHEREAS, The Task Force began meeting and work commenced on the Congestion Pricing Pre-Pilot study, renamed the Traffic Relief Options study, in June 1996; and

WHEREAS, The study process involved technical and senior management staff from jurisdictions in the region in a Technical Advisory Committee and a Project Management Group; and

WHEREAS, Metro established an extensive public involvement program that included research on public attitudes, workshops, newsletters and fact sheets, a speakers bureau and involved civic, environmental, social service, business and transportation organizations; and

WHEREAS, A comprehensive group of approximately 40 possible options were identified that covered the range of pricing types under consideration and congested locations within the region in the fall of 1996; and

WHEREAS, Preliminary evaluation criteria were established in the fall of 1996; and

WHEREAS, The initial group of locations and evaluation criteria were reviewed by the public at workshops as well as by the JPACT and the Metro Council and feedback was reviewed by the Task Force and incorporated, where appropriate; and

WHEREAS, The final evaluation criteria are attached as Exhibit B; and

WHEREAS, A screening process considered the potential for options to improve transportation performance, financial feasibility, the availability of transportation options, impacts on neighborhood traffic and public acceptance; and

WHEREAS, The results of the analysis are contained in Working Paper #6 and summarized in a June 18, 1996 memorandum to the Traffic Relief Options Task Force; and

WHEREAS, based on Working Paper #6, the results of workshops with the public and feedback from elected officials, the Task Force has recommended that the options described in Exhibit A be carried forward for further study; and

WHEREAS, Further evaluation will consider the criteria listed in Exhibit B; and

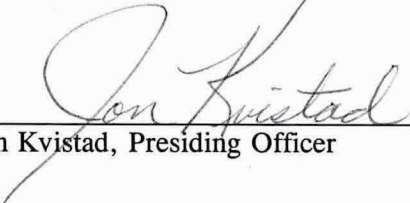
WHEREAS, Further evaluation of the options in this study will include public review, including public workshops and a speakers bureau; now, therefore,

WHEREAS, The selection of the options for further study identified on Exhibit A is not intended to preclude consideration of peak period pricing or tolling elsewhere within the region.

BE IT RESOLVED:

1. That the primary goal of the Traffic Relief Options Study is to determine whether or not the concept of peak period pricing is a desirable traffic management tool within this region.
2. That the Traffic Relief Options Study evaluate the options recommended by the study Task Force and shown on Exhibit A, including a regional alternative to be developed and studied for analytic purposes.
3. That the evaluation consider the criteria listed on Exhibit B.
4. That the evaluation continue to seek public review at key milestones including narrowing of options under study to approximately three and the final recommendation as to whether or not peak period pricing is a desirable tool and any associated demonstration project proposal.

ADOPTED by the Metro Council on this 23rd day of October, 1997.



Jon Kvistad, Presiding Officer

Approved as to Form:



Daniel B. Cooper, Legal Counsel

STAFF REPORT

CONSIDERATION OF RESOLUTION NO. 97-2546B FOR THE PURPOSE OF ENDORING THE TRAFFIC RELIEF OPTIONS TASK FORCE RECOMMENDATION TO FURTHER EVALUATE PEAK PERIOD PRICING OPTIONS

Date: August 14, 1997

Presented by Andrew Cotugno

PROPOSED ACTION

Resolution No. 97-2546B endorses the recommendation of the Traffic Relief Options Task Force to further evaluate the options described in Exhibit A to the resolution. Resolution No. 97-2546 was received by the Council Transportation Planning Committee on July 22 and approved with changes. Resolution No. 97-2546A was reviewed by JPACT at its August 14, 1997 meeting. At that meeting, concerns were voiced about the Beaverton Area Pricing option, but the resolution was approved without changes. When the Staff Report and Resolution were presented to the Metro Council for informational purposes on September 4, Councilor McLain raised serious objections to continued study of the Beaverton Area Pricing option in light of its small chance of implementation and resources required to examine it in detail. As a result of these comments from JPACT and the Council, the task force revised its recommendation to exclude the Beaverton Area Pricing option from further consideration. This revised resolution incorporates this change.

FACTUAL BACKGROUND AND ANALYSIS

History

In 1991, as part of the Intermodal Surface Transportation Efficiency Act, Congress approved the funding of a series of demonstration projects and related studies to promote the implementation of congestion pricing. Metro and ODOT submitted a joint application and, in 1994, received approval to undertake a two-year pre-project study of congestion pricing, also known as peak period or variable pricing, in the region. The federal portion of the \$1.2 million project cost is 80 percent.

The goals of the study are to evaluate the desirability of peak period pricing as a traffic management tool within the Portland metropolitan region and to increase public understanding of the concept. The study approach is to develop and evaluate possible demonstration project proposals in order to evaluate the concept in terms of specific locations and implementation strategies. This approach allows the evaluation to analyze very concrete costs, benefits and other effects rather than remaining an abstract debate based on assumptions and principles. If at the end of the study the task force determines that peak period pricing has merit for the region, it may recommend implementation of a demonstration project to further test the concept.

Peak period pricing is a transportation management tool which applies market pricing principles to roadway use. It is a fairly new and controversial concept in the transportation field but has been used successfully for years by the utility industry to better manage peak period usage. It involves the application of user surcharges or tolls on congested facilities during peak traffic periods. It is the only fee system that is aimed specifically at managing peak period travel demand.

Peak period pricing represents a departure from traditional approaches to highway financing. It is more akin to tolling, where users pay a fee for service at the time of use. Interest in peak period pricing has increased in recent years due to continuing increases in demand for roadways at a time of decreasing financial resources for maintenance and expansion of the transportation network.

Task Force

Due to the relative newness of the concept and the potential for significant public concern, in June 1996, the Metro Council and ODOT approved a study advisory task force of business and community leaders. The task force is responsible for providing direction to the technical work and public outreach efforts throughout the study. At the end of the study, the task force is charged with making a recommendation to JPACT, the Metro Council and the Oregon Transportation Commission as to whether an appropriate congestion pricing demonstration pilot should be developed and tested within the Portland metropolitan area. The task force has held open meetings once a month since June 1996.

Study Status

The study commenced work during the summer of 1996. Since then, the following major activities have taken place:

- research conducted on other study efforts
- focus groups held to assess public attitudes towards the concept
- outreach materials, including newsletters and fact sheets, developed and distributed
- pricing types identified for inclusion in the study
- congested locations reviewed for suitability for each pricing type
- a comprehensive list of approximately 40 possible pricing options developed
- evaluation criteria established

These initial actions were reviewed by representatives of a broad spectrum of interest areas through a series of workshops as well as by TPAC, JPACT and the Metro Council. Comments were reviewed by the task force and incorporated, where appropriate.

Since that time, a series of successive screenings have taken place which have resulted in the recommended list of options. The evaluation process is described in detail in Working Paper No. 6, a summary of which is contained in Attachment A, a June 18, 1997 memorandum to the Traffic Relief Options Task Force. The 40 options were first reviewed for projected transportation performance. About 20 that failed to meet minimum thresholds for cost effectiveness and congestion relief were set aside.

The remaining 20 options were assessed for their projected costs and benefits on the transportation system, availability of travel alternatives, effects on traffic in residential neighborhoods, financial feasibility and public acceptance. The public acceptance measure was developed based on results from public outreach efforts. It considers both the quality of available alternatives (including new capacity and transit) and the comprehensiveness of the congestion pricing option (since public reaction has consistently favored those options that allow more alternatives to the priced facility).

At its May 1996 meeting, the study task force preliminarily identified 11 options for detailed study. That selection process and group of options were reviewed by representatives of a broad range of interest areas through a series of workshops. At its June 26 meeting, the task force reviewed the results of the public outreach effort and recommendations of the study Project Management Group (PMG) and recommended nine options for further study. At its September 11 meeting, based on comments received from JPACT and Metro Councilor Susan McLain, the task force eliminated one option (Beaverton Area Pricing) from further consideration at this time. The eight options proposed for detailed study are described in Exhibit A to the attached resolution.

Recommended Traffic Relief Options for Further Study

Exhibit A to the resolution contains those options recommended for further evaluation. These options represent a range of pricing types and locations. The next phase of evaluation will include, for each option, a review of engineering feasibility, full travel forecasts on an upgraded travel forecasting model to assess effects on travel time throughout the network and consideration of the criteria listed on Exhibit B to the resolution.

Public outreach efforts will be expanded to include a speakers bureau and public workshops during the fall of 1997. Public input into the criteria and options will be assessed as part of the evaluation. It is anticipated that the task force, based on the results of the technical and public involvement efforts, will make a recommendation of three options for more detailed study during the winter of 1998.

TPAC

TPAC reviewed the report and resolution and approved it with changes that have been incorporated. Comments included adding language to the Resolve section of the resolution in order to:

- highlight that the primary goal of the study, and one that precedes any determination on a pilot project, is to determine whether or not peak period pricing makes sense for the region; and
- clarify that a regional alternative will be developed based on findings about the different types and locations of options. It will be studied to help evaluate the merits of congestion pricing and will not be proposed for implementation as a pilot project; and
- describe future study milestones.

In addition, TPAC requested that the staff report and resolution elaborate on the study context and approach. Further, an introductory sentence was added to Exhibit A to clarify that only one of the nine options for further study might be chosen for a possible demonstration project. Finally, the description of the proposed location of tolling on the option on Highway 43 was corrected.

Specific concerns raised by individual members are as follows:

Christopher Kopca of the Downtown Development Group submitted a letter expressing support of the study with the conditions that the route not adversely impact Central City job growth, that funds raised through tolls be prioritized for maintenance or improvement to that portion of the network, and that existing travel lanes not be priced.

Keith Bartholomew of 1000 Friends of Oregon indicated concern about adding capacity as part of a possible peak period pricing demonstration project, particularly if the new capacity is not priced. He also commented that options which turn an existing lane into a reversible lane should be considered to add capacity.

Susie Lahsene of the Port of Portland stressed that future modeling should account for freight and any related traffic diversion. These comments will be forwarded to the Study Task Force for their review and will be addressed in the next phase of the study.

JPACT

At the August 14 JPACT meeting, the resolution was approved without changes. However, there was extensive discussion about the Beaverton area option (#20) under study. Mayor Drake stated that it was his belief that further study of the Beaverton area option would be informative from an analytic standpoint. He emphasized, however, that the option faces such severe technical and public acceptance obstacles that it has little or no chance for implementation. Don Wagner indicated that the analytic benefits to studying each discrete pricing type were significant enough to warrant continued study of the option. The concern was expressed that the study should focus only on options that have a chance of implementation. It was also stated that, unless there was some prospect for implementation, this option should be withdrawn due to the potential public opposition that could be engendered to the entire study from it.

Bridget Wieghart indicated that these concerns had been debated by the Traffic Relief Options Task Force and that group had determined that this option had enough potential to continue to the next step. Mike Hogle clarified that, as more is learned about the engineering or political feasibility, any of the options could fall out at any time. Councilor Washington said that he believed that the task force process was a good one and should be respected. In the end, it was agreed that these concerns would be raised with the task force for further consideration during the next phase of analysis but that the resolution should go forward as is.

At its October 9, 1997 JPACT meeting, JPACT recommended approval of Resolution No. 97-2546B, deleting Option 20 (Beaverton Area Pricing) from further consideration.

June 18, 1997

TO: Traffic Relief Options Task Force
FROM: Terry Moore
SUBJECT: WORKING PAPER 6: EVALUATION OF 40 PRICING OPTIONS
SUMMARY

BACKGROUND

This report is a summary of Working Paper 6, which evaluates approximately 40 different pricing options to identify the 10 options that will be the focus of a more detailed evaluation that will occur in the Summer and Fall of 1997.

The 40 original options, and the methods used to identify them, are described in Working Paper 3. The criteria to be used to evaluate the options are described in Working Paper 4. The details of the methods used to conduct the evaluation (including how the criteria in Working Paper 4 would be applied) are summarized in Working Paper 6.

This summary is organized as follows:

- *Overview of the Pricing Options and Methods.* Summarizes what the options are, and how they will be evaluated.
- *Evaluation by Criterion.* Presents, for each category and sub-category of criteria that Working Paper 6 recommends be used at this level of evaluation, (a) the likely impacts of road pricing in general, and (b) what those general impacts suggest about the relative performance of the 40 pricing options on those criteria.
- *Summary Evaluation by Pricing Option.* Consolidates the results of the previous section to show impacts by pricing option.
- *The Next Steps.* Guidelines for the Task Force for using measures to identify 10 options for detailed review. What happens over the next year as 10 options get narrowed to a preferred option for the demonstration project.

OVERVIEW OF THE PRICING OPTIONS AND METHODS

Table 1 summarizes the pricing options that made it to this level of evaluation. An attached chart prepared by Metro staff describes the characteristics of the options that were selected for more detailed analysis.

Table 1: Summary of Pricing Options

Location	Spot		Partial Facility, Express Lane		Whole Facility		Corridor		Area		Subtotal Selected	TOTAL
	No	Yes	No	Yes	New Capacity?		No	Yes	No	Yes		
					No	Yes						
I-5 S			X+O2	X	o	o	o	o			5	7
I-5 DwnTwn N				X	o		o	X			1	3
I 205	o			X	X		X	X			1	5
I 84							o				2	3
26	o	X		o			X	X			2	5
217				X	o	X	X				1	4
Sunrise						o					1	1
HoodPky						X					0	1
McLoughlin				o	o						2	2
Sellwood	o										1	1
Hwy 43	o				X						1	2
Tual/Sherwood						X+O2					1	2
TV Hwy					o						1	1
Beaverton Sml									o		1	1
Beaverton Lrg									X		0	1
WilRvr Brdgs									X		0	1
TOTAL	4	1	2	7	6	6	6	5	3	0	20	40

O = Made it through preliminary screening based on modeling
 X = Eliminated based on modeling of travel performance
 O2 = New variations added

As originally conceived, going from approximately 40 to approximately 10 pricing options was to be accomplished by reference to the professional literature, the results of related studies, and limited model runs on the existing model. The goal was to demonstrate the logic for eliminating options, and to support that logic by reference to accepted theory and empirical work. For travel performance, some modeling was required to be able to estimate changes in travel performance, by mode, that a pricing option would induce.

The key assumptions underlying the final evaluation methods, and the methods themselves, are:

- Among the 10 options must be a base case and a hypothetical regionwide pricing option which will be developed later in the analysis. Thus, we are really talking about picking a maximum of 8 or 9 other pricing options from the list in Table 1.
- In addition to the technical evaluation criteria, the evaluation should maintain a diversity of options (type and location) among the 10 recommended so that detailed modeling does not focus exclusively on one type or location.
- Because of the large number of pricing options (about 40) and criteria (about 25 separate sub-categories under six general headings), a score for each option on each criterion is not practical, nor is it necessary at this stage of the evaluation.
- The evaluation strategy was to first remove any pricing option whose performance on any criterion was unlikely to be acceptable in both an absolute sense and relative to other pricing options. Travel Performance was a key criterion here because of the importance of

this criterion as determined by the Task Force and the data that were available. Then, for the remaining options, their performance on all remaining criteria was estimated.

As Table 1 illustrates, several of the pricing options were eliminated prior to the evaluation presented in this working paper. Twelve were eliminated in March. In general, they were eliminated for one or more of the following reasons: (1) they are located in relatively uncongested corridors, and so likely to perform less well than other options, (2) better versions (i.e., likely better performance or lower cost) of the same type of option (e.g., without new capacity), or better versions of a similar type in the same corridor, were already being modeled, or (3) a lack of modeled diversion for a spot or partial facility on that route suggested no added benefit of analyzing a corridor option. An additional 5 were eliminated in April for similar reasons. The Willamette River bridges is a regional option. Since regional options will be developed later, it has been set aside for this evaluation. Some new variations were also added. The result is that there are 20 pricing options shown in Table 1 that are evaluated in more detail in the rest of this working paper.

EVALUATION BY CRITERION

Table 2 lists the criteria this section addresses. The highlighted criteria are those used at this level of screening.¹ The rest of this summary focuses only on those criteria for which measurement was attempted at this level of evaluation. The reasons that other criteria were not evaluated are described in Working Paper 6.

¹ The Task Force discussed and approved this subset of criteria, based on a presentation by Terry Moore of ECO, at its meeting in April.

Table 2: Evaluation Criteria and How They Are Used at This Stage of the Evaluation

Category	Sub-category	Likely to Affect Choices This Screening?
Implementation	Legality	N
	Technology	N
	Privacy	N
	Institutional Impacts	N
	Finance	Y
	Use of Revenues	N
	Demonstration Value	Y
Transportation System Performance	Costs: Facility Capital and Operation	Y
	Travel-time Savings	Y
	Safety	N
Equity	Availability of Transportation Options	Y
	Impacts by Population Group	N
	Impacts by Area	N
	Fairness of Cost Assignment to Businesses and Commuters	N
Conformity With Land Use And Transportation Plans And Policies	Land Use	N
	Transportation	N
Societal And Market Effects	Air Quality	N
	Other Environmental Impacts	N
	Energy	N
	Employment and Freight	N
	Community/Neighborhood Effects (Diverted Traffic)	Y
Public Acceptance	By Public, Interest Groups, Decisionmakers	Y

IMPLEMENTATION**Finance (amount of revenues from tolls)**

More important for selecting among alternative pricing options than the *use* of the revenue is the *amount* of revenue that a toll project will generate, both in absolute terms and as a percentage of project costs or benefits. Here the 40 options will differ from one another.

Working Paper 4 explained why this criterion can be tricky to evaluate, despite its apparent specificity. We are trying to evaluate the full cost of one alternative against the full cost of another. From that perspective, the revenues from pricing are not really a gain in real resources. Rather, the pricing, by causing consumers to face the full costs of their choices, has led to gains in efficiency that are captured generally by savings in travel time. However, the fact that the pricing

results in revenues may be important from a political and administrative perspective because the revenues provide cash to pay for the pricing option or other transportation projects.²

For the purposes of this evaluation, we define the criterion *Finance* to mean "For what proportion of the costs of the demonstration project can we identify funding sources at this point in time?" Then net revenue (toll revenue—amortized annual cost) shows what portion of project cost the option can finance via tolls. Table 3, at the end of this summary, reports the results for each option. Toll revenues are derived from modeling done for this level of evaluation; costs include construction, equipment (including computers and transponders, and operations and maintenance (see *Transportation Performance*, following).

Demonstration value

This subcriterion becomes more important toward the end of this project: other things equal, we want to select a demonstration project that has some broader application and we will know a lot more about what those regional implications might be as the study progresses. For this level, demonstration value is defined as having a diversity of option types and locations among the final 10. That diversity is subject to a few constraints:

- The possible number of combinations of project types and locations is greater than the 10 options (actually 8 or 9, since others may include a base case and a regional pricing option) that the Task Force must select for further review.
- There is probably a tradeoff between a diversity of locations and a diversity of types.

For this level of evaluation we recommend using demonstration value as a final screening criterion that checks to see whether there is an adequate mix of pricing types and locations among the options that are rated highest on other criteria. Since it is a criterion that can only be applied once a short list of projects has been selected based on other criteria, there is no further evaluation to present at this point: the Task Force will do that analysis at its May meeting.

TRANSPORTATION SYSTEM PERFORMANCE

The most quantifiable criterion is Travel Performance. Its main sub-category of benefits is travel time savings. Its main costs are the direct costs of implementing transportation improvements: new capacity and access, new technology, and new operations.

Facility Costs: Construction and Operation

To get the benefits that a pricing option provides, it must be constructed and operated. No additional literature review is needed to prove this point in theory: construction and operation are clearly costs that must be netted out from any estimate of benefits.

² Exactly how much any individual paid toward equivalent capacity improvements would be different under the pricing and no-pricing cases, however, because there is not a match between a charge based primarily on mileage (e.g., a gasoline tax) and one based on route, time, and congestion.

Working Paper 6 and an accompanying memorandum from Kittelson and Associates provide details on how costs were estimated. In sum, it looks to other studies for specifications and estimates of the cost of installing pricing technology, and adjusts estimates provided by Metro and ODOT where capacity expansion is included as part of the option. The purpose is to get order-of-magnitude estimates that allow comparisons across options to get a *rough* idea of costs.

Capital costs include civil-work, toll collection facility construction and equipment, communication plant, and a central computer system and software development. Toll equipment costs include automatic vehicle identification (AVI), electronic toll collection (ETC) antennas and roadside readers, and enforcement equipment. We estimated total cost for transponders based on existing travel on the different corridors where the options are located, adjusting average daily traffic to get an estimate of peak period users. The analysis estimated low, medium, and high cost ranges. Capital costs used in this analysis were the low ones, whereas the O&M costs were high. The O&M costs are being revised and new tables will be presented at the meeting. That is not likely to change the rank order of the options on cost, but could change a few rankings on performance (e.g., net revenues and preliminary net benefits).

O&M costs should be correlated to use of facilities, which should be correlated to number of transponders. Methods used for estimating O&M costs make the estimates more likely to be high than low.

The cost estimates shown in Table 3 are order-of-magnitude planning estimates. As such, they are internally consistent and useful for the relative comparisons across options being done in this analysis, but should not be interpreted as firm estimates of project costs.

Travel Time, Vehicle Operating Cost Savings, and Net Benefits

The primary motivation for congestion pricing is to reduce the inefficiencies in roadway use that result from the absence of proper pricing of the roadway. By responding to prices that are usually too low in peak periods on metropolitan arterials, drivers choose to drive more than they would otherwise. The result is inefficient levels of roadway congestion (and delay), and secondarily, distortions in mode choice (toward driving in SOV). Hence, the primary benefit of congestion pricing is in the *reduction of delay* (i.e., travel time savings to auto and transit users) it induces through changes in the performance of the roadway. These factors, in turn, affect a variety of other aspects of transportation system cost elements, such as noise and air pollutant emissions, accident costs, and vehicle operating costs. Ideally, assessment of transportation system performance accommodates all of these factors, so that all costs and benefits associated with the system effects of congestion pricing can be accounted for.

For the purpose of the rough screening of a large number of alternatives, however, it is neither possible nor necessary to analyze all of these effects in detail. It is not possible because the currently available models do not accommodate congestion pricing and mode choice modeling in a conceptually acceptable way. In any case, such detailed modeling would have been prohibitively costly to apply to the large number of alternatives that needed to be screened. Fortunately, for reasons described in Working Paper 6, detailed modeling is not necessary to appraise the likely, relative attractiveness of congestion pricing options.

The modeling process used for this level of evaluation produces the information necessary to estimate the benefits from route diversion directly (i.e., it measures the reduction in delay), and also provides information on the level of congestion pricing as well as the revenue potential of that price. The level of congestion pricing, along with qualitative information on the transit-susceptibility of the affected corridor, can then be used to qualitatively assess the extent to which additional benefits from diversion to transit are likely, in addition to the route diversion benefits (we make some estimates in the next section). Although this approach is rough (because of the lack of formal trip generation, trip distribution, and mode split analysis), it permits a relatively good differentiation of project alternatives.

Working Paper 6 describes several measures of travel performance that the modeling generated. In this summary we report only two. *Revenue* is the annual revenue from tolls, calculated by converting the optimal toll back to the price/VMT and multiplying by the estimated VMT. *Time(Delay) Savings* are estimated time savings multiplied by an average value of time. The estimates from the model are increased by different factors depending on judgments about the quality of transit service and feasibility of carpooling in the area affected by the option. When we annualize these measures and subtract from them the annualized cost (above), we get the performance measures reported below in Table 3.

EQUITY

Any change in the pricing of highway services will have a mixture of good and bad impacts on certain types of travelers, and on businesses and residents in subareas of the region. Congestion pricing may provide net benefits for the region as a whole, while, at the same time, leaving some groups worse off. Sub-categories of interest typically include auto tripmakers compared to other tripmakers by other modes (particularly transit and trucking); low-income households; central cities compared to suburban areas; and impacts in general on businesses.

Working Paper 6 describes the literature as it relates to these issues.³ Most of it can only be addressed at a more detailed level of analysis, not appropriate for this phase of the evaluation. It is clear that equity impacts are complex and cannot be dealt with very well with general statements like "congestion pricing hurts low-income households" or "congestion pricing helps business."

To analyze specific equity impacts, a detailed description of travel patterns (origin, destination, mode, route, and time of day) by income and household type is needed. The model refinements occurring now will attempt to forecast these characteristics.

For this level of evaluation, therefore, we limit equity to simple proxy measure: to what extent do people have other transportation options that they could shift to in response to congestion prices? The Technical Advisory Committee (TAC) members looked at several measures of existing and planned transit service and travel characteristics to make a qualitative judgment about the ability of transit and car pooling to serve the different corridors in which pricing options are being considered. Table 3 shows that assessment.

³ Including, as the Task Force requested, an evaluation of the impacts of pricing on trucking.

Community and Neighborhood Effects

For this evaluation we define this criterion as the negative impacts of spillover traffic into neighborhoods. Theory predicts some spillover; intuitively it seems likely to occur; and the modeling that we are doing at this round of evaluation forecasts that it will occur. Thus, we are relatively confident in saying that spillover traffic will occur, to varying degrees by option.

How that spillover will affect neighborhoods, however, is more difficult to predict. Spillover could be cut-through traffic on residential collectors, or it could be on to existing arterials. In the latter case, the impacts on the neighborhood character and cohesion could be relatively small.

We found no empirical work in the professional literature that attempted to evaluate the impacts of spillover traffic on neighborhoods. We can, however, predict what it would say: (1) the impacts of some traffic increases are positive to the extent that they are simply correlates of improved access; (2) the impacts of too much traffic in residential neighborhoods increase are negative; and (3) the impacts are difficult to quantify. The best estimates will come from studies that try to estimate the capitalized affects on land values, but those who take a sociological perspective on the value of neighborhood will find the economic analyses inadequate.

The TAC members considered several measures of traffic diversion through existing neighborhoods, some of which were generated by the modeling done for the evaluation: the change in congested lane miles, the amount of VMT diverted off of the priced facility during peak hours, the relative amount of time savings that occurs off the priced facility, traffic volume changes on all network streets, and Volume-to-Capacity ratios. They combined these measures with their own knowledge about local traffic patterns to make the qualitative estimate of the relative impacts of diversion in the different options, which are reported in Table 3. The focus was on identifying traffic impacts on collector and local streets not intended to carry large volumes, on increasing congestion on both collectors and arterials, and on increasing congestion at freeway ramps. Smaller diversions or diversions to major arterials without major increases in congestion were considered acceptable at this level.

PUBLIC ACCEPTANCE AND POLITICAL FEASIBILITY

Overview of the issue and evidence

Public Acceptance and political feasibility is always a qualitative assessment. There is little we can add from a technical perspective that has not already been said under other criteria. The consultant's principal task, as technical analysts, is to describe the impacts of the pricing options in terms of performance, secondary effects, and equity. The policymakers (primarily the Task Force) and their advisors (TAC, the Project Management Group, and Metro staff) have more ability than we to interpret how the performance on those variables and others is likely to influence public acceptance.

Table 3 shows a preliminary assessment of public acceptance made by the study team based on public involvement work to date (focus groups, stakeholder interviews and targeted workshops). Research to date has indicated that public acceptance is likely to vary by pricing type and the quality of alternatives available. Generally public acceptance is likely to be higher with the less

comprehensive types of pricing (partial facility and some spots) where drivers have an on the road choice and lower as the alternative becomes more comprehensive (the least acceptable being the corridor and area). The quality of alternatives being provided will also influence public acceptance: new, more, and better alternatives, both for auto and transit travel, can increase public acceptance.⁴ As we noted in the sections on Technology and Privacy, it is possible that area licensing implementations might be more acceptable to some people than AVI technology.

SUMMARY EVALUATION BY PRICING OPTION

RELATIVE PERFORMANCE

Table 3 summarizes the results of the above analysis. It shows the subset of options that made it through the initial screening (the row headings in the left column); the subset of criteria that are germane to that choice (the column headings in the top row); and a summary of the performance of each option on each criterion (the remaining cells in the matrix).

The left part of each cell of Table 3 summarizes the *relative impacts* of each option on each criterion. For criteria that can be quantified with interval or ordinal data, the impacts can be shown by simple arithmetic; for nominal data, they are based on judgments about better or worse.

The shading at the right of each estimate of impact indicates the relative performance of each option on each criterion. We use three colors of shading. The three colors divide the options roughly into thirds on each criterion: the top third (those with the highest relative advantages on that criterion) in dark gray, the middle third in light gray, and the lower third left white. Though the colors allow a quick visual inspection of performance, note that it in many cases top performers may be numerically only slightly different than inferior ones. Thus, one must always consider the magnitude of the estimated relative advantages.

Table 3 shows *relative performance* only. It does not make a decision about the importance of the differences in performance either within or across criteria. Whether formally (through weights and scores) or informally (through discussion and consensus) the importance of the differences must be addressed. *Comparisons among options can be made only within a given criterion (i.e., within a column) because the different units of measurement for each criterion do not allow comparisons across criteria without some additional assumptions.*

GUIDELINES FOR TASK FORCE DELIBERATION AND DECISIONS

The Task Force discussed the pros and cons of having the consultant prepare illustrative scores based on the assumptions listed above, and concluded that this working paper should go no farther than summarizing relative performance as we have in Table 3. The chief reasons were (1) a feeling that the weighting was ultimately a policy judgment that they should make, not the consultant; and (2) concerns about whether any set of scores could ultimately be agreed upon. It

⁴ Note that this definition of the criterion probably conflicts with the travel performance criterion: supplying new capacity will decrease the effectiveness of the tolling. Here, as elsewhere, the Task Force will have to decide how to balance competing objectives.

decided that the results reported in Table 3 would inform its discussion in May at which point it would select the 10 alternatives by consensus and voting, without formal scoring.

Without weighting and scoring, there are many ways Table 3 could be interpreted. Here are some guidelines that the Task Force should consider in its deliberation.

- *Focus on Travel Performance first.* It is the relative performance that provides an estimate of whether a pricing option does the main thing it is supposed to do: improve transportation performance in a particular area. In previous discussion and exercises, the Task Force has consistently ranked this criterion at the top (along with Public Acceptance), as have other projects like this one with which we are familiar. The measurement in Table 3 is a subset, but an important one, of benefits and costs. It includes an estimate of the main benefits (time savings) and the main costs (construction and operation of the pricing option). In the opinion of the consultants, there would have to be political or methodological reasons (or doubts about the validity of the time savings or cost estimates) to carry forward options in the bottom third or eliminate options in the top third. Such reasons may exist: our guidance is simply that the Task Force should be explicit about those reasons.
- *Look for fatal flaws second.* The Task Force also rated *Public Acceptance* as a top criterion. We interpret this to mean, no matter how good its travel performance, an option may not survive if it has other characteristics that make it unacceptable to the public and their representatives. In that sense, all the other criteria in Table 3 address this question. An ability to self-finance (with toll revenue), more transit options, and less diversion of traffic into neighborhoods all should increase public acceptance. Public acceptance is also measured separately in the final column. It is these criteria that give information to allow the Task Force to make a judgment about whether there are sufficiently strong reasons to choose options other than those that appear likely to have the best impacts on travel performance.
- *Remember that there are overlaps among criteria.* For example, traffic diversion, evaluated as a neighborhood effect under the heading of *Societal and Market Effects*. From a travel performance perspective, diversion can be desirable if people move off the congested facility on to only slightly less desirable parallel routes with excess capacity. From a neighborhood perspective (or the perspective of a traveler who already uses the parallel routes as a primary route), diversion is clearly negative.
- *Make sure your ratings are internally consistent.* Meeting this guideline can be tricky without scoring, since it requires trying to balance by eye the relative advantages in Table 10. At the extremes the decisions are not difficult. An option that performs in the upper third on all criteria should probably be selected; one that performs in the lower third on all criteria probably should not. The problem is that no options are that clear cut. In the absence of weighting and scoring, the best guidance we can give about this problem is to make sure that if two options perform roughly the same on three or even two of the top criteria, that they are both chosen unless their differences are significant (a value judgment) on less important criteria.
- *Do not add up the right hand column of each criterion to get a score for each option.* Such addition is tempting but wrong. First, the numbers 1, 2, and 3 are only there to

divide the options into three categories on each criterion. In the jargon of policy evaluation and statistics, they are *ordinal* numbers and should probably not be added. More importantly, the only way that they might legitimately be added would be if all the criteria were of equal weight. Then one could add the rankings across criteria, divide by the number of criteria, and have an interpretable and defensible "average ranking" for each option. But by all accounts (other studies, our professional opinion, and previous discussion by the Task Force) *the criteria do not have equal weights* so such averaging is inappropriate.

- *Use Demonstration Value (i.e., a diversity of types and locations) as a final screen only after you have more or less rank-ordered the options based on the preceding criteria.*
- *Remember that the estimates in Table 3 are just that: estimates.* Working Paper 6 describes in detail the methods, assumptions, data, and limitations of the analysis. It describes why several measures are uncertain, and could change. The fact that Table 3 shows negative revenues or travel performance is not too important at this point. What is important is to pick the projects that have the best chances of showing positive values for those measures when more detailed analysis is completed (subject to constraints imposed by other criteria of concern).
- *The Sunrise Corridor has not been modeled.* The modeling done for this evaluation by Metro staff and consultants was extensive and complicated. It had the types of problems one would expect in an undertaking of this size, but ultimately all but one of the options were modeled, and the models provided intuitively plausible results. For the Sunrise Corridor, however, despite numerous attempts to find the errors that were keeping the model from processing correctly, we could not get a solid analysis before the deadline for this Working Paper. Moreover, given the level of checking we have already put into the model, it is not likely that a model for this corridor will run correctly if we decide to try again.

With that in mind, the Task Force should consider whether it has enough information to make a decision about whether to eliminate or include Sunrise. The arguments to eliminate it are that it is one of the most expensive options, is more at the urban fringe (with less congestion and less consistency with 2040 planning), and was rated low on transit alternatives. In fact, it shares most of these characteristics with the Tualatin-Sherwood option, so one might expect travel performance to be similar (which for Tualatin-Sherwood was always in the bottom third of the alternatives). Everything seems to argue for eliminating it.

THE NEXT STEPS

A draft of this working paper was reviewed by the Task Force at its meeting on 15 May, 1997. The Task Force discussed the working paper, focusing on the summary matrix contained in Table 3, and preliminarily identified 11 options for consideration. Eight of the options were selected more definitively and these are option #s: 1, 3, 6, 8, 10, 11, 14, and 20. Three others, options 12b, 16 and 17 were still under discussion.

At the meeting the Task Force requested that we consider altering options 1 and 12. As a result of the Task Force discussion, option #1 was shortened to terminate at 99W rather than continuing

to Wilsonville in order to mitigate serious diversion issues on the southern end. In the process of analyzing the modified alternative, an error in the original model was corrected and this resulted in a lower ranking on the transportation performance criteria. In addition, also at the Task Force's request, option 12 became 12a and a new option, 12b, was created which includes added capacity on 217. 12b ranked higher than anticipated on transportation performance due to the low cost of the tolling equipment for partial facilities, the time delay savings benefits of the new capacity and the fact that the construction costs at this point (for comparison purposes) are based on typical per lane mile numbers and are low. The toll price continues to be below the minimum standard of 3 cents per mile.

Other changes to Table 3 based on further analysis since the May 15 meeting include slight worsening of the diversion rankings for options #8 and #10 and a slight improvement in option #20 on the same criterion. Finally, the model results for #18 were obtained and the option performed as anticipated. Combining the pricing of 99W with the Tualatin Sherwood Connector improved the toll levels but it does not appear to justify the high cost of the proposed new four lane roadway.

The options the Task Force identified in May were carried forward to targeted workshops in June. At its June 26 meeting, the Task Force will review the results of those workshops and make a final decision on 9 options which, along with a regional options to be developed later, will be carried forward for detailed evaluation.

That evaluation will commence in the Summer of 1997. Results will be reviewed by the Task Force and the public in the Fall of 1997.

Table 3: Summary of Performance

Pricing Options	Criterion	Type of facility	New Capacity?	IMPLEMENTATION	TRAVEL PERFORMANCE	EQUITY	NEIGHBORHOOD EFFECTS	PUBLIC ACCEPTANCE
				Relative Finance	Relative Performance	Travel Alternatives	Diverted Traffic	
				Toll Rev - Cost/yr (\$million) (1)	Time Savings - Cost/yr (\$million)	Based on multiple measures of transit avail (2)	Based on multiple measures of diversion (3)	Based on multiple measures (4)
1 I-5 S: I-405 to 99W	P	N		.19 - 1.73 = -1.54 2	-.29 - 1.73 = -2.02 2	Good 1	Moderate 2	1
2 I-5 S: Tigard to Wilsonville	W	N		3.92 - 4.90 = -.98 2	1.65 - 4.90 = -3.25 2	Good 1	Limited 1	2
3 I-5 S: Terwilliger to Wilsonville	W	Y		4.87 - 5.31 = -.44 1	2.61 - 5.31 = -2.70 2	Good 1	Limited 1	1
4 I-5 S: I-405 to Wilsonville	C	N		11.71 - 10.47 = 1.24 1	4.69 - 10.47 = -5.78 3	Good 1	Signfct 3	3
5 I-5 S: I-405 to Wilsonville	C	Y		11.48 - 10.75 = .73 1	5.11 - 10.75 = -5.64 3	Good 1	Signfct 3	2
6 I-5 N: I-405 to Delta Park	C	N		1.60 - 6.07 = -4.47 3	-.10 - 6.07 = -6.17 3	Good 1	Moderate 2	3
7 I-205 S: Willamette Bridge	S	N		.31 - 1.20 = -.90 2	.11 - 1.20 = -1.09 2	Limited 3	Signfct 3	3
8 I-84: Grand to 207th	P	Y		.66 - 1.41 = -.75 2	3.05 - 1.41 = 1.64 1	Good 1	Moderate 2	1
9 I-84: NE Grand to NE 207th	C	N		3.71 - 6.10 = -2.39 3	-.29 - 6.10 = -6.39 3	Good 1	Moderate 2	3
10 Hwy 26: Tunnel	S	N		1.96 - .73 = 1.23 1	.61 - .73 = -.12 1	Good 1	Moderate 2	2
11 Hwy 26: Tunnel to 185th	P	Y		.68 - 1.09 = -.40 1	3.65 - 1.09 = 2.57 1	Good 1	Limited 1	1
12a Hwy 217: Hwy 26 to I-5	W	N		2.55 - 4.86 = -2.32 3	1.32 - 4.86 = -3.54 3	Limited 3	Limited 1	3
12b Hwy 217: US 26 to I-5	P	Y		.22 - 3.15 = -2.93 3	2.80 - 3.15 = -.35 1	Limited 3	Limited 1	1
13 Sunrise Corridor	W	Y		MNR MNR	MNR MNR	Limited 3	Moderate 2	1
14 McLoughlin: Rs Is. Br.-Hwy 224	P	Y		.23 - 1.06 = -.83 2	.61 - 1.06 = -.44 1	Good 1	Limited 1	1
15 McLoughlin: Ross Is. Br to I-205	W	N		2.18 - 1.24 = .94 1	.85 - 1.24 = -.40 1	Good 1	Limited 1	2
16 Sellwood bridge	S	N		1.15 - 4.28 = -3.13 3	-.26 - 4.28 = -4.54 3	Limited 3	Moderate 2	2
17 Hwy 43: north of Sellwood bridge	S	N		.76 - .68 = .08 1	-.17 - .68 = -.85 1	Moderate 2	Signfct 3	2
18 Tualatin-Sherwood Connector	W	Y		0.87 - 12.28 = -11.41 3	1.28 - 12.28 = -11.02 3	Limited 3	Limited 1	1
19 TV Highway: Bvrton to Hillsboro	W	N		1.87 - 2.57 = -.70 2	.32 - 2.57 = -2.25 2	Moderate 2	Signfct 3	3
20 Bvrton: Cedar Hills/217; Cntr/5th	A	N		.77 - 2.62 = -1.84 3	.35 - 2.62 = -2.27 2	Moderate 2	Limited 1	3

Type: S = Spot, P = Partial Facility, W = Whole Facility, C = Corridor, A = Area

1,2,3 divide the pricing options in roughly thirds based on performance for each criteria.

MNR = Model Not Run

(1) Toll Rev based on tolls during four peak hours/day; 250 days/yr

(2) Including current and planned transit service and ability to serve

(3) Including congested lane miles, VMT diverted, value of time savings off priced link, measures of congestion

(4) Including quality of available alternatives (especially new capacity) and comprehensiveness of type

Traffic Relief Options

	Road and Option Name	New Lanes	Description
1	I-5 S Partial - Reversible Lanes* - I-405 to 99W	N	Tolls one express lane on I-5 south of I-405 (without widening) by taking a lane from the non-peak direction.
2	I-5 S Whole - Tigard to Wilsonville	N	Tolls the whole facility of I-5 from Highway 217 to Wilsonville.
3	I-5 S Whole with part new climbing lane- Terwilliger to Wilsonville	Y	Constructs a new southbound climbing lane from I-405 to Terwilliger exit; tolls all lanes of I-5 from Terwilliger to Wilsonville.
4	I-5 S Corridor - I-405 to Wilsonville	N	Tolls all lanes of I-5 from Highway 217 to Wilsonville and parallel facilities of 99W, Highway 43, Corbett, Terwilliger, 65th, 72nd, Carmen, Stafford, and Boones Ferry.
5	I-5 S Corridor with part new lane - I-405 to Wilsonville	Y	Same as #4 with the construction of an added southbound climbing lane from I-405 to Terwilliger exit.
6	I-5 N Corridor - I-405 to Delta Park	N	Tolls all lanes of I-5 from Fremont Bridge to Delta Park exit, plus spots on Portland Road, Denver, Vancouver, and Martin Luther King at the Columbia Slough.
7	I-205 S Spot - Willamette Bridge	N	Tolls the I-205 Bridge at the Willamette River.
8	I-84 Partial with improvements at I-205 - Reversible Lanes* - Grand to 207th	Y	Tolls one express lane on I-84 from Grand to 207th by taking a lane from the non-peak direction; includes construction of a third lane around I-205 entrances.
9	I-84 Corridor - NE Grand to NE 207th	N	Tolls I-84 from Grand to 207th, plus spots on Sandy, Glisan, Halsey, Burnside, and Stark where they cross I-205.
10	US 26 (Sunset Hwy) Spot - West of Tunnel	N	Tolls all lanes at a single point on the Sunset Highway west of the Vista tunnel.
11	US 26 (Sunset Hwy) Partial with part new lane - Tunnel to 185th	Y	Tolls one lane on US 26 from Vista tunnel to 185th; adds new lane between Sylvan & Hwy 217, and Murray & 185th.
12a	Hwy 217 Whole - US 26 to I-5	N	Tolls all lanes of Highway 217 from US 26 to I-5.
12b	Hwy 217 Partial with new lanes - US 26 to I-5	Y	Tolls one express lane on Highway 217 from US 26 to I-5; includes construction of new lanes.
13	Sunrise Highway Whole	Y	Builds and tolls a new facility from I-205 to US 26.
14	McLoughlin Partial with part new lane - Ross Island Bridge to Hwy 224	Y	Tolls one express lane on 99E; includes construction of a new lane from the Ross Island Bridge to Tacoma.
15	McLoughlin Whole - Ross Island Bridge to I-205	N	Tolls all lanes of Hwy 99E from Ross Island Bridge to I-205.
16	Sellwood Bridge Spot (with reconstruction)	N	Tolls a reconstructed Sellwood Bridge.
17	Hwy 43 Spot - north of Sellwood Bridge	N	Tolls all lanes at a single point on Highway 43 just north of the Sellwood Bridge
18	Tualatin-Sherwood Connector Whole with 99W Pricing	Y	Builds and tolls a new highway from Highway 99W to I-5 and prices trips on 99W from 217 to Tualatin-Sherwood.
19	TV Highway Whole - Beaverton to Hillsboro	N	Tolls all lanes of Tualatin Valley Highway from Highway 217 to 10th in Hillsboro.
20	Beaverton Regional Center Area - Cedar Hills Blvd./Hwy 217; Center/5th	N	Tolls roads that access or cross through the Beaverton Regional Center (west of Hwy 217, east of Cedar Hills Blvd., north of 5th, and south of Center).

* Reversible lanes - During peak, lane is taken from non-peak direction and tolled. The lane reverts to its original direction and is not tolled at other times.

Exhibit A

Traffic Relief Options Recommended for Further Study

The following options are recommended for further study in order to evaluate the concept of peak period pricing. At the end of the study, a determination will be made as to whether or not peak period pricing has merit for further consideration. At that time, if appropriate, one or more of these options may be recommended for implementation as a demonstration project in order to further test the concept.

Road and Option Name		Description
1	I-5 S Partial - Reversible Lanes* - I-405 to 99W	Tolls one express lane on I-5 south of I-405 (without widening) by taking a lane from the non-peak direction.
3	I-5 S Whole with part new climbing lane- Terwilliger to Wilsonville	Constructs a new southbound climbing lane from I-405 to Terwilliger exit; tolls all lanes of I-5 from Terwilliger to Wilsonville.
6	I-5 N Corridor - I-405 to Delta Park	Tolls all lanes of I-5 from Fremont Bridge to Delta Park exit, plus spots on Portland Road, Denver, Vancouver, and Martin Luther King at the Columbia Slough.
8	I-84 Partial with improvements at I-205 - Reversible Lanes* - Grand to 207 th	Tolls one express lane on I-84 from Grand to 207th by taking a lane from the non-peak direction; includes construction of a third lane around I-205 entrances.
11	US 26 (Sunset Hwy) Partial with part new lane - Tunnel to 185 th	Tolls one lane on US 26 from Vista tunnel to 185th; adds new lane between Sylvan & Hwy 217, and Murray & 185th.
12b	Hwy 217 Partial with new lanes - US 26 to I-5	Tolls one express lane on Highway 217 from US 26 to I-5; includes construction of new lanes.
14	McLoughlin Partial with part new lane - Ross Island Bridge to Hwy 224	Tolls one express lane on 99E; includes construction of a new lane from the Ross Island Bridge to Tacoma.
17	Hwy 43 Spot - near Sellwood Bridge	Tolls all lanes at a single point (or points) on Highway 43 in the vicinity of the Sellwood Bridge.

Note: In addition to the above, a regional option will be defined based on preliminary findings as to the performance of various types and locations of pricing. This regional option will be studied in order to help analyze the merits of peak period pricing and will not be proposed for implementation as part of this study.





* Reversible lanes = During peak, lane is taken from non-peak direction and tolled. The lane reverts to its original direction and is not tolled at other times.

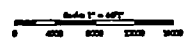
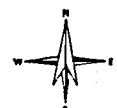
Traffic Relief Options (TRO) Study

Top 8 Regional Facilities
9/29/97

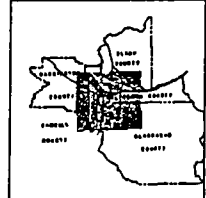
Legend

Facilities

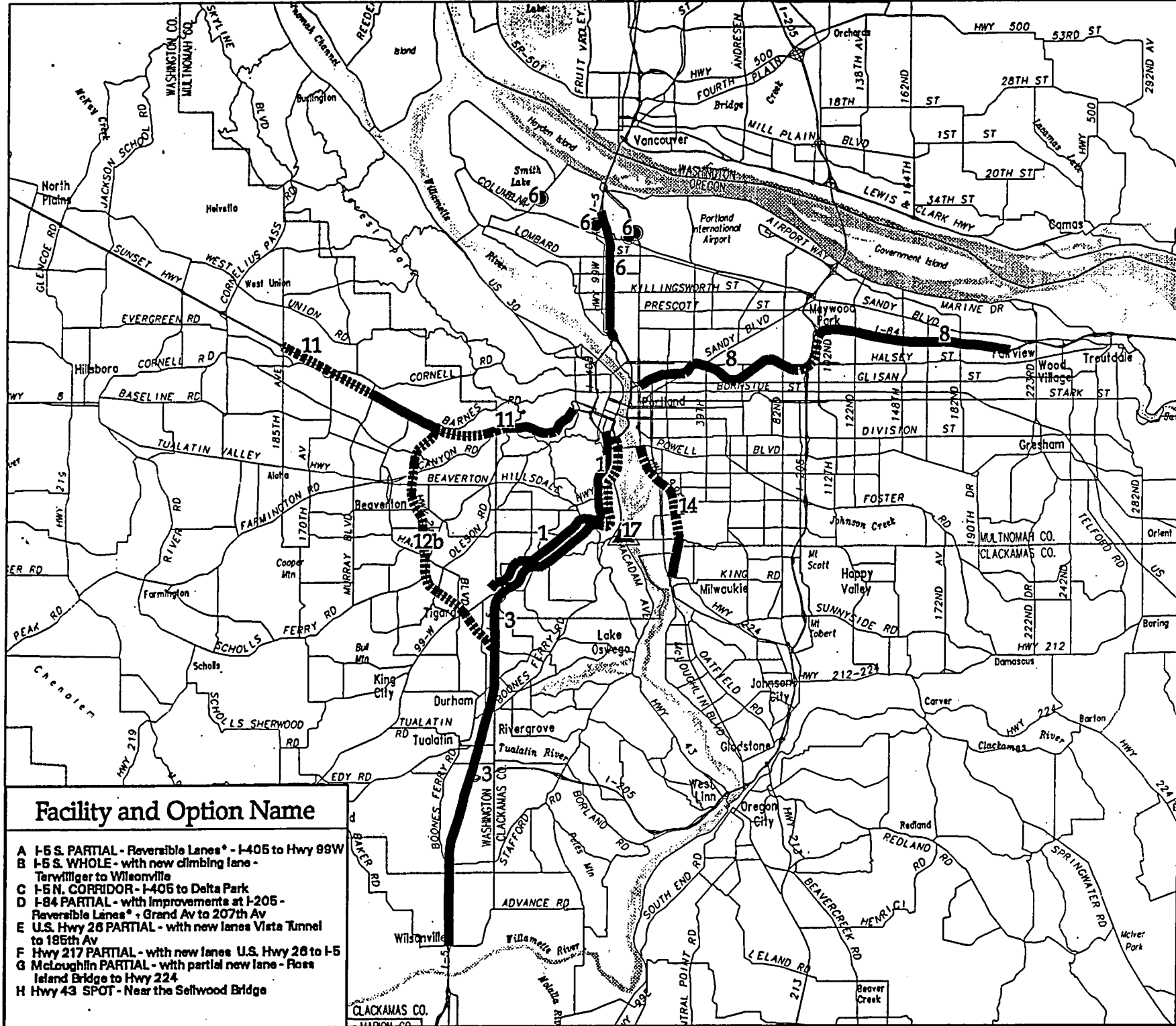
-  Existing facility
-  New capacity
-  Spot facilities
-  Corridor crossing facilities



THIS IS A PRELIMINARY STUDY AND SHOULD NOT BE USED FOR ANY OTHER PURPOSES WITHOUT THE WRITTEN APPROVAL OF METRO.



Location map



Facility and Option Name

- A I-5 S. PARTIAL - Reversible Lanes* - I-405 to Hwy 99W
- B I-5 S. WHOLE - with new climbing lane - Terwilliger to Wilsonville
- C I-5 N. CORRIDOR - I-405 to Delta Park
- D I-84 PARTIAL - with improvements at I-205 - Reversible Lanes* - Grand Av to 207th Av
- E U.S. Hwy 26 PARTIAL - with new lanes Vista Tunnel to 185th Av
- F Hwy 217 PARTIAL - with new lanes U.S. Hwy 26 to I-5
- G McLoughlin PARTIAL - with partial new lanes - Ross Island Bridge to Hwy 224
- H Hwy 43 SPOT - Near the Selfwood Bridge

Traffic Relief Options Study EVALUATION CRITERIA

IMPLEMENTATION

Issues related to the feasibility of implementation. In some cases, they apply across the board to all alternatives.

- Legal issues
- Technological issues
- Privacy issues
- Impacts on local governments/institutions/jurisdictional coordination (including management issues of the proposed alternative and responsibility for costs of local road maintenance and improvements)
- Finance issues
- Use of revenues
- Demonstration value

TRANSPORTATION SYSTEM

Covers the overall effects on the performance of the transportation system through a comparison of the aggregate costs and benefits of a "base case" system with the system under the proposed pricing alternative. It includes the effects of improvements to the system and the costs of new road construction and any improvements to alternative modes. The evaluation here is on the aggregate effect, but information on distribution of costs and benefits will be provided for trip type (business, commuters, etc.), mode (HOV, SOV, etc.) and population segment (income and geographic location).

- Direct costs to develop and maintain, including equipment and road construction.
- Costs to users - The evaluation here is on the total, system-wide user cost. Cost information will also be reported by segment of the population and the distribution of cost savings will be evaluated under "Equity" below.
- Benefits to users - Travel time savings (congestion reduction). The evaluation here is on the aggregate time savings. Distribution of effects by population segment will also be reported and evaluated under "Equity" (below).
- Safety

EQUITY

Examines the distribution of costs and benefits among various demographic, geographic and mode user groups to determine if disproportionate affects are borne by a particular population segment.

- Ability to pay for individuals and fairness to population groups
- Availability of transportation options and choices for individuals
- Fairness to various areas
- Fairness of cost assignment to businesses and commuters

CONFORMITY WITH LAND USE AND TRANSPORTATION PLANS AND POLICIES

Measures all land use and transportation effects including impacts on development patterns, compatibility with projected land uses and conformity with regional transportation goals.

- Regional growth and land use plans including Region 2040 Growth Concept and local Comprehensive Plans.
- Regional Transportation Plan measures such as use of alternative modes, vehicle miles traveled per capita, congested lane miles and average speeds.

SOCIETAL AND MARKET EFFECTS

Encompasses effects of an alternative outside of changes to the transportation system performance and includes effects on the environment, the economy and the neighborhood.

- Air quality
- Noise
- Energy
- Comprehensive economic impacts on employment, freight and commerce
- Effects on community/neighborhood/household consisting of traffic on local streets and visual impacts

PUBLIC ACCEPTANCE/POLITICAL FEASIBILITY

Final screen for each alternative at each stage of the evaluation. Covers the range of public acceptance issues.

- Public/Political acceptability, including general public, interest groups and decision makers.

BEFORE THE METRO COUNCIL

FOR THE PURPOSE OF ENDORSING THE)	RESOLUTION NO. 97-2546A
TRAFFIC RELIEF OPTIONS TASK FORCE)	
RECOMMENDATION TO FURTHER)	Introduced by Mike Burton,
EVALUATE PEAK PERIOD PRICING)	Executive Officer
OPTIONS)	

WHEREAS, Section 1012(b) of the Intermodal Surface Transportation Efficiency Act (ISTEA) of 1991 authorized the Secretary of Transportation to create a Congestion Pricing Pilot Program to fund a series of demonstration projects and related studies to promote the implementation of congestion pricing; and

WHEREAS, Metro and the Oregon Department of Transportation (ODOT) submitted a joint application to determine whether or not congestion pricing is a desirable traffic management tool in the Portland metropolitan region and to increase public understanding of the concept; and

WHEREAS, the study methodology involved the assessment of public attitudes to the concept, development and evaluation of a number of congestion pricing alternatives, and a recommendation at the end of the study as to whether an appropriate demonstration project should be established in the Portland metropolitan area; and

WHEREAS, Resolution No. 93-1743A endorsed the region's application for a congestion pricing pilot study and directed Metro and ODOT staff to pursue ISTEA funds for this purpose; and

WHEREAS, Metro and ODOT have received approval and \$1.2 million in funding to undertake a Congestion Pricing Pre-Project Study (the study); and

WHEREAS, Ordinance No. 96-628 amended the FY 1995-96 budget and appropriations schedule for the purpose of conducting the study; and

WHEREAS, Due to the relative newness of the concept and the potential for significant public concern, Metro and ODOT have agreed to establish a Task Force of business and community leaders to provide advice and direction on the study; and

WHEREAS, Metro Council on April 25, 1996 passed Resolution No. 96-2333 endorsing the composition and mission of the Congestion Pricing Task Force for the purpose of providing direction to the Congestion Pricing Pre-Pilot Study and making a recommendation to the Joint Policy Advisory Committee on Transportation (JPACT) and the Metro Council as to whether a demonstration project of congestion pricing should be undertaken in the Portland metropolitan area and, if so, what its parameters should be; and

WHEREAS, The Task Force began meeting and work commenced on the Congestion Pricing Pre-Pilot study, renamed the Traffic Relief Options study, in June 1996; and

WHEREAS, The study process involved technical and senior management staff from jurisdictions in the region in a Technical Advisory Committee and a Project Management Group; and

WHEREAS, Metro established an extensive public involvement program that included research on public attitudes, workshops, newsletters and fact sheets, a speakers bureau and involved civic, environmental, social service, business and transportation organizations; and

WHEREAS, A comprehensive group of approximately 40 possible options were identified that covered the range of pricing types under consideration and congested locations within the region in the fall of 1996; and

WHEREAS, Preliminary evaluation criteria were established in the fall of 1996; and

WHEREAS, The initial group of locations and evaluation criteria were reviewed by the public at workshops as well as by the JPACT and the Metro Council and feedback was reviewed by the Task Force and incorporated, where appropriate; and

WHEREAS, The final evaluation criteria are attached as Exhibit B; and

WHEREAS, A screening process considered the potential for options to improve transportation performance, financial feasibility, the availability of transportation options, impacts on neighborhood traffic and public acceptance; and

WHEREAS, The results of the analysis are contained in Working Paper #6 and summarized in a June 18, 1996 memorandum to the Traffic Relief Options Task Force; and

WHEREAS, based on Working Paper #6 and the results of workshops with the public, the Task Force has recommended that the options described in Exhibit A be carried forward for further study; and

WHEREAS, Further evaluation will consider the criteria listed in Exhibit B; and

WHEREAS, Further evaluation of the options in this study will include public review, including public workshops and a speakers bureau; now, therefore,

WHEREAS, The selection of the options for further study identified on Exhibit A is not intended to preclude consideration of peak period pricing or tolling elsewhere within the region.

BE IT RESOLVED:

1. That the primary goal of the Traffic Relief Options Study is to determine whether or not the concept of peak period pricing is a desirable traffic management tool within this region.

2. That the Traffic Relief Options Study evaluate the options recommended by the

study Task Force and shown on Exhibit A, including a regional alternative to be developed and studied for analytic purposes.

3. That the evaluation consider the criteria listed on Exhibit B.

4. That the evaluation continue to seek public review at key milestones including narrowing of options under study to approximately three and the final recommendation as to whether or not peak period pricing is a desirable tool and any associated demonstration project proposal.

ADOPTED by the Metro Council on this _____ day of _____, 1997.

Jon Kvistad, Presiding Officer

Approved as to Form:

Daniel B. Cooper, Legal Counsel

Log of TRO Outreach to Meetings and Organizations

<u>Organization</u>	<u>Date</u>	<u>Presenter</u>
County Transportation Coordinating Committees (Wash, Mult, Clackamas)	8-9/96	Bridget Wieghart
Hillsboro Chamber-Land Use & Trans. Subcmte	11/7/96	Bridget Wieghart and Chris Hagerbaumer OEC
Westside Transportation Alliance (Beaverton TMA)	11/26/96	Bridget Wieghart and Mike Hoglund
RTP CAC	fall 96	Bridget Wieghart
Reclaiming Our Streets Task Force	12/96	Bridget Wieghart
Marquam Hill Oversight Board	12/19/96	Bridget Wieghart
Washington County CPO #7	1/6/97	Bridget Wieghart
City of Portland Transportation System Plan CAC	3/3/97	Bridget Wieghart
Clackamas County Economic Development Commission Transportation Committee	4/97	Bridget Wieghart
Washington County Citizen Involvement Committee	4/15/97	Bridget Wieghart

This point marks the commencement of the TRO Task Force Speaker's Bureau.

Sunset Corridor Association	5/8/97	Carl Hosticka
N. Clackamas Chamber-Economic Development Council	5/12/97	Bridget Wieghart (for Jon Egge)

CPO-9 Hillsboro	5/13/97	Bridget Wieghart
Tualatin Chamber/Industrial Council	5/13/97	Steve Clark
Tigard Chamber of Commerce	5/20/97	Steve Clark
Clackamas County Coordinating Committee	6/97	Ron Weinman
Westside Transportation Alliance	6/24/97	Patti Seastrom (DEQ)
Forest Grove Chamber of Commerce	6/16/97	Betty Atteberry
Beaverton Chamber of Commerce	7/17/97	Steve Clark
ODOT Planners Team	7/18/97	Dan Layden (ODOT)
Southwest Washington Regional Transportation Advisory Committee	7/18/97	Bob Hart (RTC)
Washington County Coordinating Committee	8/11/97	Bridget Wieghart
Columbia Corridor Association	8/27/97	Mike Hoglund
City of Tigard Citizen Involvement Team	9/2/97	Mike Hoglund/Marci LaBerge
African American Roundtable	9/13/97	Claudiette LaVert

STAFF REPORT

CONSIDERATION OF RESOLUTION NO. 97-2546A FOR THE PURPOSE OF ENDORISING THE TRAFFIC RELIEF OPTIONS TASK FORCE RECOMMENDA- TION TO FURTHER EVALUATE PEAK PERIOD PRICING OPTIONS

Date: August 14, 1997

Presented by Andrew Cotugno

PROPOSED ACTION

Resolution No. 97-2546A endorses the recommendation of the Traffic Relief Options Task Force to further evaluate the options described in Exhibit A to the resolution.

FACTUAL BACKGROUND AND ANALYSIS

History

In 1991, as part of the Intermodal Surface Transportation Efficiency Act, Congress approved the funding of a series of demonstration projects and related studies to promote the implementation of congestion pricing. Metro and ODOT submitted a joint application and, in 1994, received approval to undertake a two-year pre-project study of congestion pricing, also known as peak period or variable pricing, in the region. The federal portion of the \$1.2 million project cost is 80 percent.

The goals of the study are to evaluate the desirability of peak period pricing as a traffic management tool within the Portland metropolitan region and to increase public understanding of the concept. The study approach is to develop and evaluate possible demonstration project proposals in order to evaluate the concept in terms of specific locations and implementation strategies. This approach allows the evaluation to analyze very concrete costs, benefits and other effects rather than remaining an abstract debate based on assumptions and principles. If at the end of the study the Task Force determines that peak period pricing has merit for the region, it may recommend implementation of a demonstration project to further test the concept.

Peak period pricing is a transportation management tool which applies market pricing principles to roadway use. It is a fairly new and controversial concept in the transportation field but has been used successfully for years by the utility industry to better manage peak period usage. It involves the application of user surcharges or tolls on congested facilities during peak traffic periods. It is the only fee system that is aimed specifically at managing peak period travel demand.

Peak period pricing represents a departure from traditional approaches to highway financing. It is more akin to tolling, where users pay a fee for service at the time of use. Interest in peak period pricing has increased in recent years due to continuing increases in demand for roadways at a time of decreasing financial resources for maintenance and expansion of the transportation network.

Task Force

Due to the relative newness of the concept and the potential for significant public concern, in June 1996, the Metro Council and ODOT approved a study advisory Task Force of business and community leaders. The Task Force is responsible for providing direction to the technical work and public outreach efforts throughout the study. At the end of the study, the Task Force is charged with making a recommendation to JPACT, the Metro Council and the Oregon Transportation Commission as to whether an appropriate congestion pricing demonstration pilot should be developed and tested within the Portland metropolitan area. The Task Force has held open meetings once a month since June 1996.

Study Status

The study commenced work during the summer of 1996. Since then, the following major activities have taken place:

- . research conducted on other study efforts
- . focus groups held to assess public attitudes towards the concept
- . outreach materials, including newsletters and fact sheets, developed and distributed
- . pricing types identified for inclusion in the study
- . congested locations reviewed for suitability for each pricing type
- . a comprehensive list of approximately 40 possible pricing options developed
- . evaluation criteria established

These initial actions were reviewed by representatives of a broad spectrum of interest areas through a series of workshops as well as by TPAC, JPACT and the Metro Council. Comments were reviewed by the Task Force and incorporated, where appropriate.

Since that time, a series of successive screenings have taken place which have resulted in the recommended list of options. The evaluation process is described in detail in Working Paper No. 6, a summary of which is contained in Attachment A, a June 18, 1997 memorandum to the Traffic Relief Options Task Force. The 40 options were first reviewed for projected transportation performance. About 20 that failed to meet minimum thresholds for cost effectiveness and congestion relief were set aside.

The remaining 20 options were assessed for their projected costs and benefits on the transportation system, availability of travel alternatives, effects on traffic in residential neighborhoods, financial feasibility and public acceptance. The public acceptance measure was developed based on results from public outreach efforts. It considers both the quality of available alternatives (including new capacity and transit) and the comprehensiveness of the congestion pricing option (since public reaction has consistently favored those options that allow more alternatives to the priced facility).

At its May 1996 meeting, the study Task Force preliminarily identified 11 options for detailed study. That selection process and group of options were reviewed by representatives of a broad range of interest areas through a series of workshops. At its June 26 meeting, the Task Force reviewed the results of the public outreach effort and recommendations of the

study Project Management Group (PMG) and recommended nine options for further study. Those options are described in Exhibit A to the attached resolution.

Recommended Traffic Relief Options for Further Study

Exhibit A to the resolution contains those options recommended for further evaluation. These options represent a range of pricing types and locations. The next phase of evaluation will include, for each option, a review of engineering feasibility, full travel forecasts on an upgraded travel forecasting model to assess effects on travel time throughout the network and consideration of the criteria listed on Exhibit B to the resolution.

Public outreach efforts will be expanded to include a speakers bureau and public workshops during the fall of 1997. Public input into the criteria and options will be assessed as part of the evaluation. It is anticipated that the Task Force, based on the results of the technical and public involvement efforts, will make a recommendation of three options for more detail study during the winter of 1998.

TPAC

TPAC reviewed the report and resolution and approved it with changes that have been incorporated. Comments included adding language to the Resolve section of the resolution in order to:

- highlight that the primary goal of the study, and one that precedes any determination on a pilot project, is to determine whether or not peak period pricing makes sense for the region; and
- clarify that a regional alternative will be developed based on findings about the different types and locations of options. It will be studied to help evaluate the merits of congestion pricing and will not be proposed for implementation as a pilot project; and
- describe future study milestones.

In addition, TPAC requested that the staff report and resolution elaborate on the study context and approach. Further, an introductory sentence was added to Exhibit A to clarify that only one of the nine options for further study might be chosen for a possible demonstration project. Finally, the description of the proposed location of tolling on the option on Highway 43 was corrected.

Specific concerns raised by individual members are as follows:

Christopher Kopca of the Downtown Development Group submitted a letter expressing support of the study with the conditions that the route not adversely impact Central City job growth, that funds raised through tolls be prioritized for maintenance or improvement to that portion of the network, and that existing travel lanes not be priced.

Keith Bartholomew of 1000 Friends of Oregon indicated concern about adding capacity as part of a possible peak period pricing demonstration project, particularly if the new capacity is not priced. He also commented that options which turn an existing lane into a reversible lane should be considered to add capacity.

Susie Lahsene of the Port of Portland stressed that future modeling should account for freight and any related traffic diversion. These comments will be forwarded to the Study Task Force for their review and will be addressed in the next phase of the study.

JPACT

At the August 14 JPACT meeting, the resolution was approved without changes. However, there was extensive discussion about the Beaverton area option (#20) under study. Mayor Drake stated that it was his belief that further study of the Beaverton area option would be informative from an analytic standpoint. He emphasized, however, that the option faces such severe technical and public acceptance obstacles that it has little or no chance for implementation. Don Wagner indicated that the analytic benefits to studying each discrete pricing type were significant enough to warrant continued study of the option. The concern was expressed that the study should focus only on options that have a chance of implementation. It was also stated that, unless there was some prospect for implementation, this option should be withdrawn due to the potential public opposition that could be engendered to the entire study from it.

Bridget Wieghart indicated that these concerns had been debated by the Traffic Relief Options Task Force and that group had determined that this option had enough potential to continue to the next step. Mike Heglund clarified that, as more is learned about the engineering or political feasibility, any of the options could fall out at any time. Councilor Washington said that he believed that the Task Force process was a good one and should be respected. In the end, it was agreed that these concerns would be raised with the task force for further consideration during the next phase of analysis but that the resolution should go forward as is.

M E M O R A N D U M

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METRO

DATE: August 22, 1997
TO: Metro Council
FROM: Transportation Planning Committee
RE: Traffic Relief Options Study Staff Report and Resolution (No. 97-2546A)

Attached are a staff report and resolution which confirm that the main goal of the two-year Traffic Relief Options (TRO) study is to determine whether or not congestion pricing is a desirable traffic management tool for the region and endorse the options and process for further study. The study approach to evaluating the merits of peak period pricing overall is to evaluate its projected effects in specific applications. This resolution endorses the TRO Task Force selection of nine options (as well as a regional application to be developed for analytic purposes) for detailed study. At the end of the study, should the determination be made that peak period pricing is a tool that makes sense for this region, one of these nine options might be recommended for implementation as a pilot to further test the concept.

This resolution was reviewed and approved by the Council Transportation Planning Committee. Changes made by that committee have been incorporated in this "A" version. The resolution is scheduled for consideration for adoption at the Council's September 11 meeting. It will be presented for information purposes on the September 4 meeting agenda.

Attached to this memorandum is a log of all previous and scheduled outreach presentations to other organizations. Note that many of these presentations were conducted in response to specific requests prior to the formation of the TRO Task Force Speakers Bureau in the spring of 1997.

BW:lmk

Attachments

BEFORE THE METRO COUNCIL

FOR THE PURPOSE OF ENDORSING THE) RESOLUTION NO. 97-2546
TRAFFIC RELIEF OPTIONS TASK FORCE)
RECOMMENDATION TO FURTHER) Introduced by Mike Burton,
EVALUATE PEAK PERIOD PRICING) Executive Officer
OPTIONS)

WHEREAS, Section 1012(b) of the Intermodal Surface Transportation Efficiency Act (ISTEA) of 1991 authorized the Secretary of Transportation to create a Congestion Pricing Pilot Program to fund a series of demonstration projects and related studies to promote the implementation of congestion pricing; and

WHEREAS, Metro and the Oregon Department of Transportation (ODOT) submitted a joint application to undertake a study to assess public attitudes to the concept, develop and evaluate a number of congestion pricing alternatives, and make a recommendation as to whether an appropriate demonstration project should be established in the Portland metropolitan area; and

WHEREAS, Resolution No. 93-1743A endorsed the region's application for a congestion pricing pilot study and directed Metro and ODOT staff to pursue ISTEA funds for this purpose; and

WHEREAS, Metro and ODOT have received approval and \$1.2 million in funding to undertake a Congestion Pricing Pre-Project Study (the study); and

WHEREAS, Ordinance No. 96-628 amended the FY 1995-96 budget and appropriations schedule for the purpose of conducting the study; and

WHEREAS, Due to the relative newness of the concept and the potential for significant public concern, Metro and ODOT have agreed to establish a Task Force of business and community leaders to provide advice and direction on the study; and

WHEREAS, Metro Council on April 25, 1996 passed Resolution No. 96-2333 endorsing the composition and mission of the Congestion Pricing Task Force for the purpose of providing oversight and direction to the Congestion Pricing Pre-Pilot Study and making a recommendation to the Joint Policy Advisory Committee on Transportation (JPACT) and the Metro Council as to whether a demonstration project of congestion pricing should be undertaken in the Portland metropolitan area and, if so, what its parameters should be; and

WHEREAS, the Task Force began meeting and work commenced on the Congestion Pricing Pre-Pilot study, renamed the Traffic Relief Options study, in June 1996; and

WHEREAS, The study process involved technical and senior management staff from jurisdictions in the region in a Technical Advisory Committee and a Project Management Group; and

WHEREAS, Metro established an extensive public involvement program that included research on public attitudes, workshops, newsletters and fact sheets, a speakers bureau and involved civic, environmental, social service, business and transportation organizations; and

WHEREAS, A comprehensive group of approximately 40 possible options were identified that covered the range of pricing types under consideration and congested locations within the region in the Fall of 1996; and

WHEREAS, Preliminary evaluation criteria were established in the Fall of 1996; and

WHEREAS, The initial group of location and evaluation criteria were reviewed by the public at workshops as well as by the JPACT and the Metro Council and feedback was reviewed by the Task Force and incorporated, where appropriate; and

WHEREAS, The final evaluation criteria are attached as Exhibit B; and

WHEREAS, A screening process considered the potential for options to improve transportation performance, financial feasibility, the availability of transportation options, impacts on neighborhood traffic and public acceptance; and

WHEREAS, the results of the analysis are contained in Working Paper #6 and summarized in a June 18, 1996 memorandum to the Traffic Relief Options Task Force; and

WHEREAS, based on Working Paper #6 and the results of workshops with the public, the Task Force has recommended that the options described in Exhibit A be carried forward for further study; and

WHEREAS, Further evaluation will consider the criteria listed in Exhibit B; and

WHEREAS, Further evaluation of the options in this study will include public review, including public workshops and a speakers bureau; now, therefore,

BE IT RESOLVED:

1. That the Traffic Relief Options Study evaluate the options recommended by the study Task Force and shown on Exhibit A.
2. That the evaluation consider the criteria listed on Exhibit B.
3. That the evaluation continue to seek public review at key milestones.

ADOPTED by the Metro Council on this _____ day of _____, 1997.

Jon Kvistad, Presiding Officer

Approved as to Form:

Daniel B. Cooper, Legal Counsel

EXHIBIT A





Traffic Relief Options Recommended for Further Study

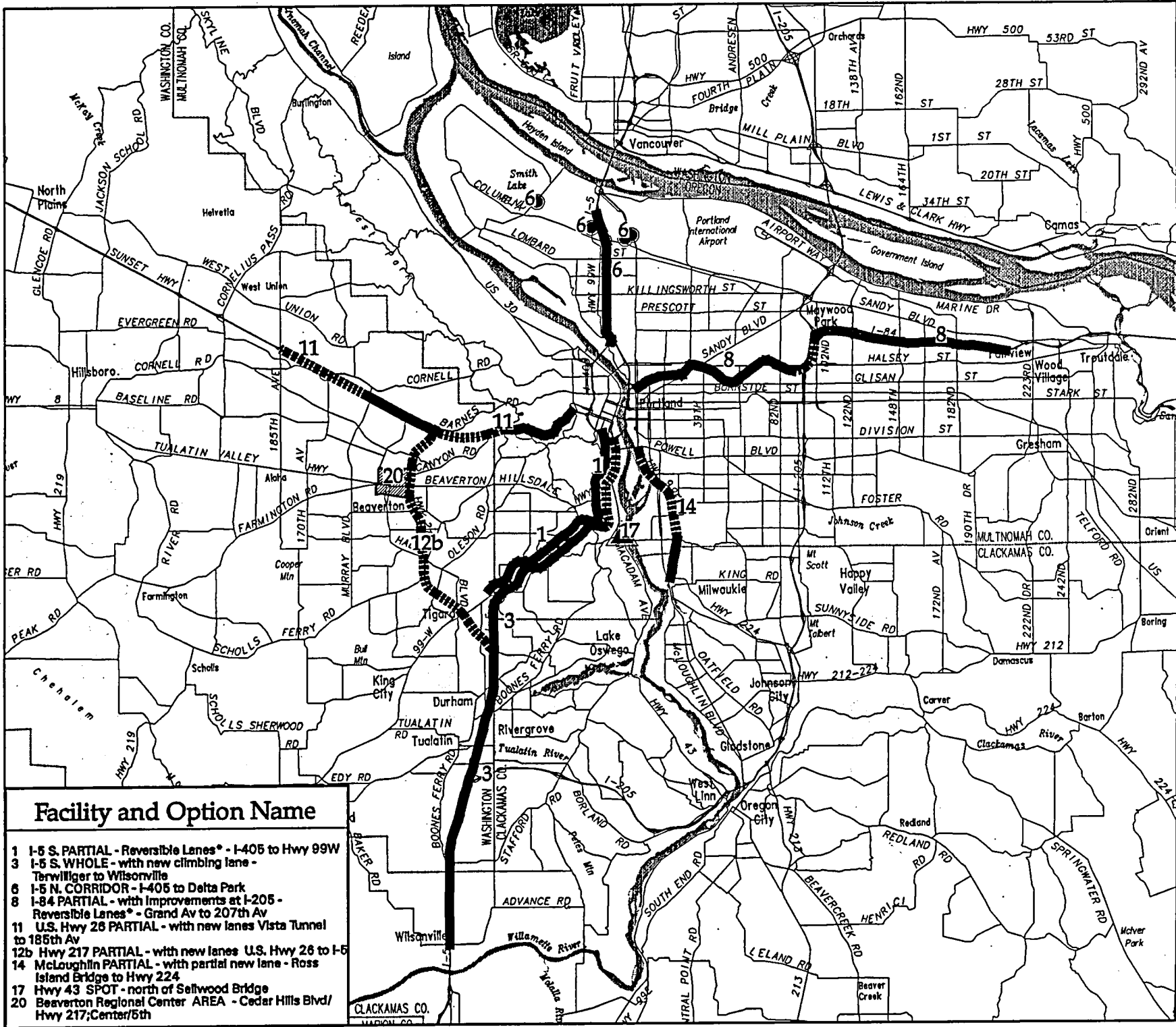
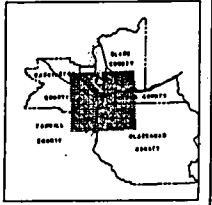
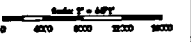
Road and Option Name	New Lanes ¹	Description
1 I-5 S Partial - Reversible Lanes* - I-405 to 99W	N	Tolls one express lane on I-5 south of I-405 (without widening) by taking a lane from the non-peak direction.
3 I-5 S Whole with part new climbing lane- Terwilliger to Wilsonville	Y	Constructs a new southbound climbing lane from I-405 to Terwilliger exit; tolls all lanes of I-5 from Terwilliger to Wilsonville.
6 I-5 N Corridor - I-405 to Delta Park	N	Tolls all lanes of I-5 from Fremont Bridge to Delta Park exit, plus spots on Portland Road, Denver, Vancouver, and Martin Luther King at the Columbia Slough.
8 I-84 Partial with improvements at I-205 - Reversible Lanes* - Grand to 207 th	Y	Tolls one express lane on I-84 from Grand to 207th by taking a lane from the non-peak direction; includes construction of a third lane around I-205 entrances.
11 US 26 (Sunset Hwy) Partial with part new lane - Tunnel to 185 th	Y	Tolls one lane on US 26 from Vista tunnel to 185th; adds new lane between Sylvan & Hwy 217, and Murray & 185th.
12b Hwy 217 Partial with new lanes - US 26 to I-5	Y	Tolls one express lane on Highway 217 from US 26 to I-5; includes construction of new lanes.
14 McLoughlin Partial with part new lane - Ross Island Bridge to Hwy 224	Y	Tolls one express lane on 99E; includes construction of a new lane from the Ross Island Bridge to Tacoma.
17 Hwy 43 Spot - north of Sellwood Bridge	N	Tolls all lanes at a single point (or points) on Highway 43 near the Sellwood Bridge
20 Beaverton Regional Center Area - Cedar Hills Blvd./Hwy 217; Center/5 th	N	Tolls roads that access or cross through the Beaverton Regional Center (west of Hwy 217, east of Cedar Hills Blvd., north of 5th, and south of Center).

Note: In addition to the above, a tenth option, a regional alternative to be defined, will be developed and studied for comparison purposes.

¹ Reversible lanes = During peak, lane is taken from non-peak direction and tolled. The lane reverts to its original direction and is not tolled at other times.

Legend

- Facilities**
-  Existing facility
 -  New capacity
 -  Spot facilities
 -  Corridor crossing facilities
 -  Beaverton Regional Center Area #20



Facility and Option Name

- 1 I-5 S. PARTIAL - Reversible Lanes* - I-405 to Hwy 99W
- 3 I-5 S. WHOLE - with new climbing lane - Terwilliger to Wilsonville
- 6 I-5 N. CORRIDOR - I-405 to Delta Park
- 8 I-84 PARTIAL - with Improvements at I-205 - Reversible Lanes* - Grand Av to 207th Av
- 11 U.S. Hwy 26 PARTIAL - with new lanes Vista Tunnel to 185th Av
- 12b Hwy 217 PARTIAL - with new lanes U.S. Hwy 26 to I-5
- 14 McLoughlin PARTIAL - with partial new lane - Ross Island Bridge to Hwy 224
- 17 Hwy 43 SPOT - north of Sellwood Bridge
- 20 Beaverton Regional Center AREA - Cedar Hills Blvd/ Hwy 217; Center/5th

Exhibit B

Traffic Relief Options Study EVALUATION CRITERIA

IMPLEMENTATION

Issues related to the feasibility of implementation. In some cases, they apply across the board to all alternatives.

- Legal issues
- Technological issues
- Privacy issues
- Impacts on local governments/institutions/jurisdictional coordination (including management issues of the proposed alternative and responsibility for costs of local road maintenance and improvements)
- Finance issues
- Use of revenues
- Demonstration value

TRANSPORTATION SYSTEM

Covers the overall effects on the performance of the transportation system through a comparison of the aggregate costs and benefits of a "base case" system with the system under the proposed pricing alternative. It includes the effects of improvements to the system and the costs of new road construction and any improvements to alternative modes. The evaluation here is on the aggregate effect, but information on distribution of costs and benefits will be provided for trip type (business, commuters, etc.), mode (HOV, SOV, etc.) and population segment (income and geographic location).

- Direct costs to develop and maintain, including equipment and road construction
- Costs to users - The evaluation here is on the total, system-wide user cost. Cost information will also be reported by segment of the population and the distribution of cost savings will be evaluated under "Equity" below.
- Benefits to users - Travel time savings (congestion reduction). The evaluation here is on the aggregate time savings. Distribution of effects by population segment will also be reported and evaluated under "Equity" (below).
- Safety

EQUITY

Examines the distribution of costs and benefits among various demographic, geographic and mode user groups to determine if disproportionate effects are borne by a particular population segment.

- Ability to pay for individuals and fairness to population groups
- Availability of transportation options and choices for individuals
- Fairness to various areas
- Fairness of cost assignment to businesses and commuters

CONFORMITY WITH LAND USE AND TRANSPORTATION PLANS AND POLICIES

Measures all land use and transportation effects including impacts on development patterns, compatibility with projected land uses and conformity with regional transportation goals.

- Regional growth and land use plans including Region 2040 Growth Concept and local Comprehensive Plans.
- Regional Transportation Plan measures such as use of alternative modes, vehicle miles traveled per capita, congested lane miles and average speeds.

SOCIETAL AND MARKET EFFECTS

Encompasses effects of an alternative outside of changes to the transportation system performance and includes effects on the environment, the economy and the neighborhood.

- Air quality
- Noise
- Energy
- Comprehensive economic impacts on employment, freight and commerce
- Effects on community/neighborhood/household consisting of traffic on local streets and visual impacts

PUBLIC ACCEPTANCE/POLITICAL FEASIBILITY

Final screen for each alternative at each stage of the evaluation. Covers the range of public acceptance issues.

- Public/Political acceptability, including general public, interest groups and decision makers.

June 18, 1997

TO: Traffic Relief Options Task Force
FROM: Terry Moore
**SUBJECT: WORKING PAPER 6: EVALUATION OF 40 PRICING OPTIONS
SUMMARY**

BACKGROUND

This report is a summary of Working Paper 6, which evaluates approximately 40 different pricing options to identify the 10 options that will be the focus of a more detailed evaluation that will occur in the Summer and Fall of 1997.

The 40 original options, and the methods used to identify them, are described in Working Paper 3. The criteria to be used to evaluate the options are described in Working Paper 4. The details of the methods used to conduct the evaluation (including how the criteria in Working Paper 4 would be applied) are summarized in Working Paper 6.

This summary is organized as follows:

- *Overview of the Pricing Options and Methods.* Summarizes what the options are, and how they will be evaluated.
- *Evaluation by Criterion.* Presents, for each category and sub-category of criteria that Working Paper 6 recommends be used at this level of evaluation, (a) the likely impacts of road pricing in general, and (b) what those general impacts suggest about the relative performance of the 40 pricing options on those criteria.
- *Summary Evaluation by Pricing Option.* Consolidates the results of the previous section to show impacts by pricing option.
- *The Next Steps.* Guidelines for the Task Force for using measures to identify 10 options for detailed review. What happens over the next year as 10 options get narrowed to a preferred option for the demonstration project.

OVERVIEW OF THE PRICING OPTIONS AND METHODS

Table 1 summarizes the pricing options that made it to this level of evaluation. An attached chart prepared by Metro staff describes the characteristics of the options that were selected for more detailed analysis.

Table 1: Summary of Pricing Options

Location	Spot		Partial Facility, Express Lane		Whole Facility		Corridor		Area		Subtotal Selected	TOTAL
	No	Yes	No	Yes	New Capacity?		No	Yes	No	Yes		
					No	Yes						
I-5 S			X+O2	X	○	○	○	○			5	7
I-5 DwnTwn N				X	○	○	○	X			1	3
I 205	○			X	X		X	X			1	5
I 184							○				2	3
26	○	X		○			X	X			2	5
217				X	○	X	X				1	4
Sunrise						○					1	1
HoodPky						X					0	1
McLoughlin				○	○						2	2
Sellwood	○										1	1
Hwy 43	○				X						1	2
Tual/Sherwood						X+O2					1	2
TV Hwy					○						1	1
Beaverton Sml									○		1	1
Beaverton Lrg									X		0	1
WillRvr Brdgs									X		0	1
TOTAL	4	1	2	7	6	6	6	5	3	0	20	40

○ = Made it through preliminary screening based on modeling

X = Eliminated based on modeling of travel performance

O2 = New variations added

As originally conceived, going from approximately 40 to approximately 10 pricing options was to be accomplished by reference to the professional literature, the results of related studies, and limited model runs on the existing model. The goal was to demonstrate the logic for eliminating options, and to support that logic by reference to accepted theory and empirical work. For travel performance, some modeling was required to be able to estimate changes in travel performance, by mode, that a pricing option would induce.

The key assumptions underlying the final evaluation methods, and the methods themselves, are:

- Among the 10 options must be a base case and a hypothetical regionwide pricing option which will be developed later in the analysis. Thus, we are really talking about picking a maximum of 8 or 9 other pricing options from the list in Table 1.
- In addition to the technical evaluation criteria, the evaluation should maintain a diversity of options (type and location) among the 10 recommended so that detailed modeling does not focus exclusively on one type or location.
- Because of the large number of pricing options (about 40) and criteria (about 25 separate sub-categories under six general headings), a score for each option on each criterion is not practical, nor is it necessary at this stage of the evaluation.
- The evaluation strategy was to first remove any pricing option whose performance on any criterion was unlikely to be acceptable in both an absolute sense and relative to other pricing options. Travel Performance was a key criterion here because of the importance of

this criterion as determined by the Task Force and the data that were available. Then, for the remaining options, their performance on all remaining criteria was estimated.

As Table 1 illustrates, several of the pricing options were eliminated prior to the evaluation presented in this working paper. Twelve were eliminated in March. In general, they were eliminated for one or more of the following reasons: (1) they are located in relatively uncongested corridors, and so likely to perform less well than other options, (2) better versions (i.e., likely better performance or lower cost) of the same type of option (e.g., without new capacity), or better versions of a similar type in the same corridor, were already being modeled, or (3) a lack of modeled diversion for a spot or partial facility on that route suggested no added benefit of analyzing a corridor option. An additional 5 were eliminated in April for similar reasons. The Willamette River bridges is a regional option. Since regional options will be developed later, it has been set aside for this evaluation. Some new variations were also added. The result is that there are 20 pricing options shown in Table 1 that are evaluated in more detail in the rest of this working paper.

EVALUATION BY CRITERION

Table 2 lists the criteria this section addresses. The highlighted criteria are those used at this level of screening.¹ The rest of this summary focuses only on those criteria for which measurement was attempted at this level of evaluation. The reasons that other criteria were not evaluated are described in Working Paper 6.

¹ The Task Force discussed and approved this subset of criteria, based on a presentation by Terry Moore of ECO, at its meeting in April.

Table 2: Evaluation Criteria and How They Are Used at This Stage of the Evaluation

Category	Sub-category	Likely to Affect Choices This Screening?
Implementation	Legality	N
	Technology	N
	Privacy	N
	Institutional Impacts	N
	Finance	Y
	Use of Revenues	N
	Demonstration Value	Y
Transportation System Performance	Costs: Facility Capital and Operation	Y
	Travel-time Savings	Y
	Safety	N
Equity	Availability of Transportation Options	Y
	Impacts by Population Group	N
	Impacts by Area	N
	Fairness of Cost Assignment to Businesses and Commuters	N
Conformity With Land Use And Transportation Plans And Policies	Land Use	N
	Transportation	N
Societal And Market Effects	Air Quality	N
	Other Environmental Impacts	N
	Energy	N
	Employment and Freight	N
	Community/Neighborhood Effects (Diverted Traffic)	Y
Public Acceptance	By Public, Interest Groups, Decisionmakers	Y

IMPLEMENTATION**Finance (amount of revenues from tolls)**

More important for selecting among alternative pricing options than the *use* of the revenue is the *amount* of revenue that a toll project will generate, both in absolute terms and as a percentage of project costs or benefits. Here the 40 options will differ from one another.

Working Paper 4 explained why this criterion can be tricky to evaluate, despite its apparent specificity. We are trying to evaluate the full cost of one alternative against the full cost of another. From that perspective, the revenues from pricing are not really a gain in real resources. Rather, the pricing, by causing consumers to face the full costs of their choices, has led to gains in efficiency that are captured generally by savings in travel time. However, the fact that the pricing

results in revenues may be important from a political and administrative perspective because the revenues provide cash to pay for the pricing option or other transportation projects.²

For the purposes of this evaluation, we define the criterion *Finance* to mean "For what proportion of the costs of the demonstration project can we identify funding sources at this point in time?" Then net revenue (toll revenue—amortized annual cost) shows what portion of project cost the option can finance via tolls. Table 3, at the end of this summary, reports the results for each option. Toll revenues are derived from modeling done for this level of evaluation; costs include construction, equipment (including computers and transponders, and operations and maintenance (see *Transportation Performance*, following).

Demonstration value

This subcriterion becomes more important toward the end of this project: other things equal, we want to select a demonstration project that has some broader application and we will know a lot more about what those regional implications might be as the study progresses. For this level, demonstration value is defined as having a diversity of option types and locations among the final 10. That diversity is subject to a few constraints:

- The possible number of combinations of project types and locations is greater than the 10 options (actually 8 or 9, since others may include a base case and a regional pricing option) that the Task Force must select for further review.
- There is probably a tradeoff between a diversity of locations and a diversity of types.

For this level of evaluation we recommend using demonstration value as a final screening criterion that checks to see whether there is an adequate mix of pricing types and locations among the options that are rated highest on other criteria. Since it is a criterion that can only be applied once a short list of projects has been selected based on other criteria, there is no further evaluation to present at this point: the Task Force will do that analysis at its May meeting.

TRANSPORTATION SYSTEM PERFORMANCE

The most quantifiable criterion is Travel Performance. Its main sub-category of benefits is travel time savings. Its main costs are the direct costs of implementing transportation improvements: new capacity and access, new technology, and new operations.

Facility Costs: Construction and Operation

To get the benefits that a pricing option provides, it must be constructed and operated. No additional literature review is needed to prove this point in theory: construction and operation are clearly costs that must be netted out from any estimate of benefits.

² Exactly how much any individual paid toward equivalent capacity improvements would be different under the pricing and no-pricing cases, however, because there is not a match between a charge based primarily on mileage (e.g., a gasoline tax) and one based on route, time, and congestion.

Working Paper 6 and an accompanying memorandum from Kittelson and Associates provide details on how costs were estimated. In sum, it looks to other studies for specifications and estimates of the cost of installing pricing technology, and adjusts estimates provided by Metro and ODOT where capacity expansion is included as part of the option. The purpose is to get order-of-magnitude estimates that allow comparisons across options to get a *rough* idea of costs.

Capital costs include civil work, toll collection facility construction and equipment, communication plant, and a central computer system and software development. Toll equipment costs include automatic vehicle identification (AVI), electronic toll collection (ETC) antennas and roadside readers, and enforcement equipment. We estimated total cost for transponders based on existing travel on the different corridors where the options are located, adjusting average daily traffic to get an estimate of peak period users. The analysis estimated low, medium, and high cost ranges. Capital costs used in this analysis were the low ones, whereas the O&M costs were high. The O&M costs are being revised and new tables will be presented at the meeting. That is not likely to change the rank order of the options on cost, but could change a few rankings on performance (e.g., net revenues and preliminary net benefits).

O&M costs should be correlated to use of facilities, which should be correlated to number of transponders. Methods used for estimating O&M costs make the estimates more likely to be high than low.

The cost estimates shown in Table 3 are order-of-magnitude planning estimates. As such, they are internally consistent and useful for the relative comparisons across options being done in this analysis, but should not be interpreted as firm estimates of project costs.

Travel Time, Vehicle Operating Cost Savings, and Net Benefits

The primary motivation for congestion pricing is to reduce the inefficiencies in roadway use that result from the absence of proper pricing of the roadway. By responding to prices that are usually too low in peak periods on metropolitan arterials, drivers choose to drive more than they would otherwise. The result is inefficient levels of roadway congestion (and delay), and secondarily, distortions in mode choice (toward driving in SOV). Hence, the primary benefit of congestion pricing is in the *reduction of delay* (i.e., travel time savings to auto and transit users) it induces through changes in the performance of the roadway. These factors, in turn, affect a variety of other aspects of transportation system cost elements, such as noise and air pollutant emissions, accident costs, and vehicle operating costs. Ideally, assessment of transportation system performance accommodates all of these factors, so that all costs and benefits associated with the system effects of congestion pricing can be accounted for.

For the purpose of the rough screening of a large number of alternatives, however, it is neither possible nor necessary to analyze all of these effects in detail. It is not possible because the currently available models do not accommodate congestion pricing and mode choice modeling in a conceptually acceptable way. In any case, such detailed modeling would have been prohibitively costly to apply to the large number of alternatives that needed to be screened. Fortunately, for reasons described in Working Paper 6, detailed modeling is not necessary to appraise the likely, relative attractiveness of congestion pricing options.

The modeling process used for this level of evaluation produces the information necessary to estimate the benefits from route diversion directly (i.e., it measures the reduction in delay), and also provides information on the level of congestion pricing as well as the revenue potential of that price. The level of congestion pricing, along with qualitative information on the transit-susceptibility of the affected corridor, can then be used to qualitatively assess the extent to which additional benefits from diversion to transit are likely, in addition to the route diversion benefits (we make some estimates in the next section). Although this approach is rough (because of the lack of formal trip generation, trip distribution, and mode split analysis), it permits a relatively good differentiation of project alternatives.

Working Paper 6 describes several measures of travel performance that the modeling generated. In this summary we report only two. *Revenue* is the annual revenue from tolls, calculated by converting the optimal toll back to the price/VMT and multiplying by the estimated VMT. *Time(Delay) Savings* are estimated time savings multiplied by an average value of time. The estimates from the model are increased by different factors depending on judgments about the quality of transit service and feasibility of carpooling in the area affected by the option. When we annualize these measures and subtract from them the annualized cost (above), we get the performance measures reported below in Table 3.

EQUITY

Any change in the pricing of highway services will have a mixture of good and bad impacts on certain types of travelers, and on businesses and residents in subareas of the region. Congestion pricing may provide net benefits for the region as a whole, while, at the same time, leaving some groups worse off. Sub-categories of interest typically include auto tripmakers compared to other tripmakers by other modes (particularly transit and trucking); low-income households; central cities compared to suburban areas; and impacts in general on businesses.

Working Paper 6 describes the literature as it relates to these issues.³ Most of it can only be addressed at a more detailed level of analysis, not appropriate for this phase of the evaluation. It is clear that equity impacts are complex and cannot be dealt with very well with general statements like "congestion pricing hurts low-income households" or "congestion pricing helps business."

To analyze specific equity impacts, a detailed description of travel patterns (origin, destination, mode, route, and time of day) by income and household type is needed. The model refinements occurring now will attempt to forecast these characteristics.

For this level of evaluation, therefore, we limit equity to simple proxy measure: to what extent do people have other transportation options that they could shift to in response to congestion prices? The Technical Advisory Committee (TAC) members looked at several measures of existing and planned transit service and travel characteristics to make a qualitative judgment about the ability of transit and car pooling to serve the different corridors in which pricing options are being considered. Table 3 shows that assessment.

³ Including, as the Task Force requested, an evaluation of the impacts of pricing on trucking.

Community and Neighborhood Effects

For this evaluation we define this criterion as the negative impacts of spillover traffic into neighborhoods. Theory predicts some spillover; intuitively it seems likely to occur; and the modeling that we are doing at this round of evaluation forecasts that it will occur. Thus, we are relatively confident in saying that spillover traffic will occur, to varying degrees by option.

How that spillover will affect neighborhoods, however, is more difficult to predict. Spillover could be cut-through traffic on residential collectors, or it could be on to existing arterials. In the latter case, the impacts on the neighborhood character and cohesion could be relatively small.

We found no empirical work in the professional literature that attempted to evaluate the impacts of spillover traffic on neighborhoods. We can, however, predict what it would say: (1) the impacts of some traffic increases are positive to the extent that they are simply correlates of improved access; (2) the impacts of too much traffic in residential neighborhoods increase are negative; and (3) the impacts are difficult to quantify. The best estimates will come from studies that try to estimate the capitalized affects on land values, but those who take a sociological perspective on the value of neighborhood will find the economic analyses inadequate.

The TAC members considered several measures of traffic diversion through existing neighborhoods, some of which were generated by the modeling done for the evaluation: the change in congested lane miles, the amount of VMT diverted off of the priced facility during peak hours, the relative amount of time savings that occurs off the priced facility, traffic volume changes on all network streets, and Volume-to-Capacity ratios. They combined these measures with their own knowledge about local traffic patterns to make the qualitative estimate of the relative impacts of diversion in the different options, which are reported in Table 3. The focus was on identifying traffic impacts on collector and local streets not intended to carry large volumes, on increasing congestion on both collectors and arterials, and on increasing congestion at freeway ramps. Smaller diversions or diversions to major arterials without major increases in congestion were considered acceptable at this level.

PUBLIC ACCEPTANCE AND POLITICAL FEASIBILITY

Overview of the issue and evidence

Public Acceptance and political feasibility is always a qualitative assessment. There is little we can add from a technical perspective that has not already been said under other criteria. The consultant's principal task, as technical analysts, is to describe the impacts of the pricing options in terms of performance, secondary effects, and equity. The policymakers (primarily the Task Force) and their advisors (TAC, the Project Management Group, and Metro staff) have more ability than we to interpret how the performance on those variables and others is likely to influence public acceptance.

Table 3 shows a preliminary assessment of public acceptance made by the study team based on public involvement work to date (focus groups, stakeholder interviews and targeted workshops). Research to date has indicated that public acceptance is likely to vary by pricing type and the quality of alternatives available. Generally public acceptance is likely to be higher with the less

comprehensive types of pricing (partial facility and some spots) where drivers have an on the road choice and lower as the alternative becomes more comprehensive (the least acceptable being the corridor and area). The quality of alternatives being provided will also influence public acceptance: new, more, and better alternatives, both for auto and transit travel, can increase public acceptance.⁴ As we noted in the sections on Technology and Privacy, it is possible that area licensing implementations might be more acceptable to some people than AVI technology.

SUMMARY EVALUATION BY PRICING OPTION

RELATIVE PERFORMANCE

Table 3 summarizes the results of the above analysis. It shows the subset of options that made it through the initial screening (the row headings in the left column); the subset of criteria that are germane to that choice (the column headings in the top row); and a summary of the performance of each option on each criterion (the remaining cells in the matrix).

The left part of each cell of Table 3 summarizes the *relative impacts* of each option on each criterion. For criteria that can be quantified with interval or ordinal data, the impacts can be shown by simple arithmetic; for nominal data, they are based on judgments about better or worse.

The shading at the right of each estimate of impact indicates the relative performance of each option on each criterion. We use three colors of shading. The three colors divide the options roughly into thirds on each criterion: the top third (those with the highest relative advantages on that criterion) in dark gray, the middle third in light gray, and the lower third left white. Though the colors allow a quick visual inspection of performance, note that it in many cases top performers may be numerically only slightly different than inferior ones. Thus, one must always consider the magnitude of the estimated relative advantages.

Table 3 shows *relative performance* only. It does not make a decision about the importance of the differences in performance either within or across criteria. Whether formally (through weights and scores) or informally (through discussion and consensus) the importance of the differences must be addressed. *Comparisons among options can be made only within a given criterion (i.e., within a column) because the different units of measurement for each criterion do not allow comparisons across criteria without some additional assumptions.*

GUIDELINES FOR TASK FORCE DELIBERATION AND DECISIONS

The Task Force discussed the pros and cons of having the consultant prepare illustrative scores based on the assumptions listed above, and concluded that this working paper should go no farther than summarizing relative performance as we have in Table 3. The chief reasons were (1) a feeling that the weighting was ultimately a policy judgment that they should make, not the consultant; and (2) concerns about whether any set of scores could ultimately be agreed upon. It

⁴ Note that this definition of the criterion probably conflicts with the travel performance criterion: supplying new capacity will decrease the effectiveness of the tolling. Here, as elsewhere, the Task Force will have to decide how to balance competing objectives.

decided that the results reported in Table 3 would inform its discussion in May at which point it would select the 10 alternatives by consensus and voting, without formal scoring.

Without weighting and scoring, there are many ways Table 3 could be interpreted. Here are some guidelines that the Task Force should consider in its deliberation.

- ***Focus on Travel Performance first.*** It is the relative performance that provides an estimate of whether a pricing option does the main thing it is supposed to do: improve transportation performance in a particular area. In previous discussion and exercises, the Task Force has consistently ranked this criterion at the top (along with Public Acceptance), as have other projects like this one with which we are familiar. The measurement in Table 3 is a subset, but an important one, of benefits and costs. It includes an estimate of the main benefits (time savings) and the main costs (construction and operation of the pricing option). In the opinion of the consultants, there would have to be political or methodological reasons (or doubts about the validity of the time savings or cost estimates) to carry forward options in the bottom third or eliminate options in the top third. Such reasons may exist: our guidance is simply that the Task Force should be explicit about those reasons.
- ***Look for fatal flaws second.*** The Task Force also rated *Public Acceptance* as a top criterion. We interpret this to mean, no matter how good its travel performance, an option may not survive if it has other characteristics that make it unacceptable to the public and their representatives. In that sense, all the other criteria in Table 3 address this question. An ability to self-finance (with toll revenue), more transit options, and less diversion of traffic into neighborhoods all should increase public acceptance. Public acceptance is also measured separately in the final column. It is these criteria that give information to allow the Task Force to make a judgment about whether there are sufficiently strong reasons to choose options other than those that appear likely to have the best impacts on travel performance.
- ***Remember that there are overlaps among criteria.*** For example, traffic diversion, evaluated as a neighborhood effect under the heading of *Societal and Market Effects*. From a travel performance perspective, diversion can be desirable if people move off the congested facility on to only slightly less desirable parallel routes with excess capacity. From a neighborhood perspective (or the perspective of a traveler who already uses the parallel routes as a primary route), diversion is clearly negative.
- ***Make sure your ratings are internally consistent.*** Meeting this guideline can be tricky without scoring, since it requires trying to balance by eye the relative advantages in Table 10. At the extremes the decisions are not difficult. An option that performs in the upper third on all criteria should probably be selected; one that performs in the lower third on all criteria probably should not. The problem is that no options are that clear cut. In the absence of weighting and scoring, the best guidance we can give about this problem is to make sure that if two options perform roughly the same on three or even two of the top criteria, that they are both chosen unless their differences are significant (a value judgment) on less important criteria.
- ***Do not add up the right hand column of each criterion to get a score for each option.*** Such addition is tempting but wrong. First, the numbers 1, 2, and 3 are only there to

divide the options into three categories on each criterion. In the jargon of policy evaluation and statistics, they are *ordinal* numbers and should probably not be added. More importantly, the only way that they might legitimately be added would be if all the criteria were of equal weight. Then one could add the rankings across criteria, divide by the number of criteria, and have an interpretable and defensible "average ranking" for each option. But by all accounts (other studies, our professional opinion, and previous discussion by the Task Force) *the criteria do not have equal weights* so such averaging is inappropriate.

- *Use Demonstration Value (i.e., a diversity of types and locations) as a final screen only after you have more or less rank-ordered the options based on the preceding criteria.*
- *Remember that the estimates in Table 3 are just that: estimates.* Working Paper 6 describes in detail the methods, assumptions, data, and limitations of the analysis. It describes why several measures are uncertain, and could change. The fact that Table 3 shows negative revenues or travel performance is not too important at this point. What is important is to pick the projects that have the best chances of showing positive values for those measures when more detailed analysis is completed (subject to constraints imposed by other criteria of concern).
- *The Sunrise Corridor has not been modeled.* The modeling done for this evaluation by Metro staff and consultants was extensive and complicated. It had the types of problems one would expect in an undertaking of this size, but ultimately all but one of the options were modeled, and the models provided intuitively plausible results. For the Sunrise Corridor, however, despite numerous attempts to find the errors that were keeping the model from processing correctly, we could not get a solid analysis before the deadline for this Working Paper. Moreover, given the level of checking we have already put into the model, it is not likely that a model for this corridor will run correctly if we decide to try again.

With that in mind, the Task Force should consider whether it has enough information to make a decision about whether to eliminate or include Sunrise. The arguments to eliminate it are that it is one of the most expensive options, is more at the urban fringe (with less congestion and less consistency with 2040 planning), and was rated low on transit alternatives. In fact, it shares most of these characteristics with the Tualatin-Sherwood option, so one might expect travel performance to be similar (which for Tualatin-Sherwood was always in the bottom third of the alternatives). Everything seems to argue for eliminating it.

THE NEXT STEPS

A draft of this working paper was reviewed by the Task Force at its meeting on 15 May, 1997. The Task Force discussed the working paper, focusing on the summary matrix contained in Table 3, and preliminarily identified 11 options for consideration. Eight of the options were selected more definitively and these are option #s: 1, 3, 6, 8, 10, 11, 14, and 20. Three others, options 12b, 16 and 17 were still under discussion.

At the meeting the Task Force requested that we consider altering options 1 and 12. As a result of the Task Force discussion, option #1 was shortened to terminate at 99W rather than continuing

to Wilsonville in order to mitigate serious diversion issues on the southern end. In the process of analyzing the modified alternative, an error in the original model was corrected and this resulted in a lower ranking on the transportation performance criteria. In addition, also at the Task Force's request, option 12 became 12a and a new option, 12b, was created which includes added capacity on 217. 12b ranked higher than anticipated on transportation performance due to the low cost of the tolling equipment for partial facilities, the time delay savings benefits of the new capacity and the fact that the construction costs at this point (for comparison purposes) are based on typical per lane mile numbers and are low. The toll price continues to be below the minimum standard of 3 cents per mile.

Other changes to Table 3 based on further analysis since the May 15 meeting include slight worsening of the diversion rankings for options #8 and #10 and a slight improvement in option #20 on the same criterion. Finally, the model results for #18 were obtained and the option performed as anticipated. Combining the pricing of 99W with the Tualatin Sherwood Connector improved the toll levels but it does not appear to justify the high cost of the proposed new four lane roadway.

The options the Task Force identified in May were carried forward to targeted workshops in June. At its June 26 meeting, the Task Force will review the results of those workshops and make a final decision on 9 options which, along with a regional options to be developed later, will be carried forward for detailed evaluation.

That evaluation will commence in the Summer of 1997. Results will be reviewed by the Task Force and the public in the Fall of 1997.

Table 3: Summary of Performance

Pricing Options	Criterion	Type of facility		IMPLEMENTATION		TRAVEL PERFORMANCE		EQUITY		NEIGHBORHOOD EFFECTS		PUBLIC ACCEPTANCE	
		New Capacity?		Relative Finance		Relative Performance		Travel Alternatives		Diverted Traffic			
				Toll Rev - Cost/yr (\$million) (1)		Time Savings - Cost/yr (\$million)		Based on multiple measures of transit avail (2)		Based on multiple measures of diversion (3)		Based on multiple measures (4)	
1 I-5 S: I-405 to 99W	P	N	.19 - 1.73 = -1.54	2	-.29 - 1.73 = -2.02	2	Good	1	Moderate	2		1	
2 I-5 S: Tigard to Wilsonville	W	N	3.92 - 4.90 = -.98	2	1.65 - 4.90 = -3.25	2	Good	1	Limited	1		2	
3 I-5 S: Terwilliger to Wilsonville	W	Y	4.87 - 5.31 = -.44	1	2.61 - 5.31 = -2.70	2	Good	1	Limited	1		1	
4 I-5 S: I-405 to Wilsonville	C	N	11.71 - 10.47 = 1.24	1	4.69 - 10.47 = -5.78	3	Good	1	Signfcent	3		3	
5 I-5 S: I-405 to Wilsonville	C	Y	11.48 - 10.75 = .73	1	5.11 - 10.75 = -5.64	3	Good	1	Signfcent	3		2	
6 I-5 N: I-405 to Delta Park	C	N	1.60 - 6.07 = -4.47	3	-.10 - 6.07 = -6.17	3	Good	1	Moderate	2		3	
7 I-205 S: Willamette Bridge	S	N	.31 - 1.20 = -.90	2	.11 - 1.20 = -1.09	2	Limited	3	Signfcent	3		3	
8 I-84: Grand to 207th	P	Y	.66 - 1.41 = -.75	2	3.05 - 1.41 = 1.64	1	Good	1	Moderate	2		1	
9 I-84: NE Grand to NE 207th	C	N	3.71 - 6.10 = -2.39	3	-.29 - 6.10 = -6.39	3	Good	1	Moderate	2		3	
10 Hwy 26: Tunnel	S	N	1.96 - .73 = 1.23	1	.61 - .73 = -0.12	1	Good	1	Moderate	2		2	
11 Hwy 26: Tunnel to 185th	P	Y	.68 - 1.09 = -.40	1	3.65 - 1.09 = 2.57	1	Good	1	Limited	1		1	
12a Hwy 217: Hwy 26 to I-5	W	N	2.55 - 4.86 = -2.32	3	1.32 - 4.86 = -3.54	3	Limited	3	Limited	1		3	
12b Hwy 217: US 26 to I-5	P	Y	.22 - 3.15 = -2.93	3	2.80 - 3.15 = -.35	1	Limited	3	Limited	1		1	
13 Sunrise Corridor	W	Y	MNR	MNR	MNR	MNR	Limited	3	Moderate	2		1	
14 McLoughlin: Rs Is. Br.-Hwy 224	P	Y	.23 - 1.06 = -.83	2	.61 - 1.06 = -.44	1	Good	1	Limited	1		1	
15 McLoughlin: Ross Is. Br to I-205	W	N	2.18 - 1.24 = .94	1	.85 - 1.24 = -.40	1	Good	1	Limited	1		2	
16 Sellwood bridge	S	N	1.15 - 4.28 = -3.13	3	-.26 - 4.28 = -4.54	3	Limited	3	Moderate	2		2	
17 Hwy 43: north of Sellwood bridge	S	N	.76 - .68 = .08	1	-.17 - .68 = -.85	1	Moderate	2	Signfcent	3		2	
18 Tualatin-Sherwood Connector	W	Y	0.87 - 12.28 = -11.41	3	1.26 - 12.28 = -11.02	3	Limited	3	Limited	1		1	
19 TV Highway: Bvrton to Hillsboro	W	N	1.87 - 2.57 = -.70	2	.32 - 2.57 = -2.25	2	Moderate	2	Signfcent	3		3	
20 Bvrton: Cedar Hills/217; Cntr/5th	A	N	.77 - 2.62 = -1.84	3	.35 - 2.62 = -2.27	2	Moderate	2	Limited	1		3	

Type: S = Spot, P = Partial Facility, W = Whole Facility, C = Corridor, A = Area

1,2,3 divide the pricing options in roughly thirds based on performance for each criteria.

MNR = Model Not Run

(1) Toll Rev based on tolls during four peak hours/day; 250 days/yr

(2) Including current and planned transit service and ability to serve

(3) Including congested lane miles, VMT diverted, value of time savings off priced link, measures of congestion

(4) Including quality of available alternatives (especially new capacity) and comprehensiveness of type

Traffic Relief Options

	Road and Option Name	New Lanes	Description
1	I-5 S Partial - Reversible Lanes* - I-405 to 99W	N	Tolls one express lane on I-5 south of I-405 (without widening) by taking a lane from the non-peak direction.
2	I-5 S Whole - Tigard to Wilsonville	N	Tolls the whole facility of I-5 from Highway 217 to Wilsonville.
3	I-5 S Whole with part new climbing lane- Terwilliger to Wilsonville	Y	Constructs a new southbound climbing lane from I-405 to Terwilliger exit; tolls all lanes of I-5 from Terwilliger to Wilsonville.
4	I-5 S Corridor - I-405 to Wilsonville	N	Tolls all lanes of I-5 from Highway 217 to Wilsonville and parallel facilities of 99W, Highway 43, Corbett, Terwilliger, 65th, 72nd, Carmen, Stafford, and Boones Ferry.
5	I-5 S Corridor with part new lane - I-405 to Wilsonville	Y	Same as #4 with the construction of an added southbound climbing lane from I-405 to Terwilliger exit.
6	I-5 N Corridor - I-405 to Delta Park	N	Tolls all lanes of I-5 from Fremont Bridge to Delta Park exit, plus spots on Portland Road, Denver, Vancouver, and Martin Luther King at the Columbia Slough.
7	I-205 S Spot - Willamette Bridge	N	Tolls the I-205 Bridge at the Willamette River.
8	I-84 Partial with improvements at I-205 - Reversible Lanes* - Grand to 207th	Y	Tolls one express lane on I-84 from Grand to 207th by taking a lane from the non-peak direction; includes construction of a third lane around I-205 entrances.
9	I-84 Corridor - NE Grand to NE 207th	N	Tolls I-84 from Grand to 207th, plus spots on Sandy, Glisan, Halsey, Burnside, and Stark where they cross I-205.
10	US 26 (Sunset Hwy) Spot - West of Tunnel	N	Tolls all lanes at a single point on the Sunset Highway west of the Vista tunnel.
11	US 26 (Sunset Hwy) Partial with part new lane - Tunnel to 185th	Y	Tolls one lane on US 26 from Vista tunnel to 185th; adds new lane between Sylvan & Hwy 217, and Murray & 185th.
12a	Hwy 217 Whole - US 26 to I-5	N	Tolls all lanes of Highway 217 from US 26 to I-5.
12b	Hwy 217 Partial with new lanes - US 26 to I-5	Y	Tolls one express lane on Highway 217 from US 26 to I-5; includes construction of new lanes.
13	Sunrise Highway Whole	Y	Builds and tolls a new facility from I-205 to US 26.
14	McLoughlin Partial with part new lane - Ross Island Bridge to Hwy 224	Y	Tolls one express lane on 99E; includes construction of a new lane from the Ross Island Bridge to Tacoma.
15	McLoughlin Whole - Ross Island Bridge to I-205	N	Tolls all lanes of Hwy 99E from Ross Island Bridge to I-205.
16	Sellwood Bridge Spot (with reconstruction)	N	Tolls a reconstructed Sellwood Bridge.
17	Hwy 43 Spot - north of Sellwood Bridge	N	Tolls all lanes at a single point on Highway 43 just north of the Sellwood Bridge
18	Tualatin-Sherwood Connector Whole with 99W Pricing	Y	Builds and tolls a new highway from Highway 99W to I-5 and prices trips on 99W from 217 to Tualatin-Sherwood.
19	TV Highway Whole - Beaverton to Hillsboro	N	Tolls all lanes of Tualatin Valley Highway from Highway 217 to 10th in Hillsboro.
20	Beaverton Regional Center Area - Cedar Hills Blvd./Hwy 217; Center/5th	N	Tolls roads that access or cross through the Beaverton Regional Center (west of Hwy 217, east of Cedar Hills Blvd., north of 5th, and south of Center).

* Reversible lanes - During peak, lane is taken from non-peak direction and tolled. The lane reverts to its original direction and is not tolled at other times.

STAFF REPORT

CONSIDERATION OF RESOLUTION NO. 97-2546 FOR THE PURPOSE OF ENDORSING THE TRAFFIC RELIEF OPTIONS TASK FORCE RECOMMENDATION TO FURTHER EVALUATE PEAK PERIOD PRICING OPTIONS

Date: July 25, 1997

Presented by: Andrew Cotugno

PROPOSED ACTION

Resolution No. 97-2546 endorses the recommendation of the Traffic Relief Options Task Force to further evaluate the options described in Exhibit A to the resolution.

FACTUAL BACKGROUND AND ANALYSIS

History

In 1991, as part of the Intermodal Surface Transportation Efficiency Act, Congress approved the funding of a series of demonstration projects and related studies to promote the implementation of congestion pricing. Metro and ODOT submitted a joint application and in 1994 received approval to undertake a two year pre-project study of congestion pricing, also known as peak period or variable pricing, in the region. The federal portion of the \$1.2 million project cost is 80%.

The goals of the study are to evaluate the desirability of peak period pricing as a traffic management tool within the Portland Metropolitan region and to increase public understanding of the concept. If appropriate, at the end of the study, the task force will recommend implementation of a demonstration project to test the concept.

Congestion pricing is a transportation management tool which applies market pricing principles to roadway use. It is a fairly new and controversial concept in the transportation field but has been used successfully for years by the utility industry to better manage peak period usage. It involves the application of user surcharges or tolls on congested facilities during peak traffic periods. It is the only fee system that is aimed specifically at managing peak period travel demand.

Task Force

Due to the relative newness of the concept and the potential for significant public concern, in June 1996, the Metro Council approved a study advisory Task Force of business and community leaders. The Task Force is responsible for providing oversight to the technical work and public outreach efforts throughout the study. At the end of the study, the Task Force is charged with making a recommendation to the JPACT, the Metro Council, and

the Oregon Transportation Commission as to whether an appropriate congestion pricing demonstration pilot can be developed and tested within the Portland metropolitan area. The Task Force has held open meetings once a month since June, 1996.

Study Status

The study commenced work during the Summer of 1996. Since then, the following major activities have taken place:

- research conducted on other study efforts
- focus groups held to assess public attitudes towards the concept
- outreach materials, including newsletters and fact sheets, developed and distributed
- pricing types identified for inclusion in the study
- congested locations reviewed for suitability for each pricing type
- a comprehensive list of approximately 40 possible pricing options developed
- evaluation criteria established

These initial actions were reviewed by representatives of a broad spectrum of interest areas through a series of workshops as well as by TPAC, JPACT and the Metro Council. Comments were reviewed by the Task Force and incorporated, where appropriate.

Since that time, a series of successive screenings have taken place which have resulted in the recommended list of options. The evaluation process is described in detail in Working Paper #6, a summary of which is contained in Attachment A, a June 18, 1997 memorandum to the Traffic Relief Options Task Force. The 40 options were first reviewed for projected transportation performance. About 20 that failed to meet minimum thresholds for cost effectiveness and congestion relief were set aside.

The remaining 20 options were assessed for their projected costs and benefits on the transportation system, availability of travel alternatives, effects on traffic in residential neighborhoods, financial feasibility and public acceptance. The public acceptance measure was developed based on results from public outreach efforts. It considers both the quality of available alternatives (including new capacity and transit) and the comprehensiveness of the congestion pricing option (since public reaction has consistently favored those options that allow more alternatives to the priced facility).

At its May 1996 meeting, the study Task Force preliminarily identified 11 options for detailed study. That selection process and group of options were reviewed by representatives of a broad range of interest areas through a series of workshops. At its June 26 meeting, the Task Force reviewed the results of the public outreach effort and recommendations of the study Project Management Group (PMG) and recommended nine options for further study. Those options are described in Exhibit A to the attached resolution.

Recommended Traffic Relief Options For Further Study

Exhibit A to the resolution contains those options recommended for further evaluation. These options represent a range of pricing types and locations. The next phase of evaluation will include, for each option, a review of engineering feasibility, full travel forecasts on an upgraded travel forecasting model to assess effects on travel time throughout the network and consideration of the criteria listed on Exhibit B to the resolution.

Public outreach efforts will be expanded to include a speakers bureau and public workshops during the Fall of 1997. Public input into the criteria and options will be assessed as part of the evaluation. It is anticipated that the Task Force, based on the results of the technical and public involvement efforts, will make a recommendation of three options for more detailed study during the Winter of 1998.