BEFORE THE METRO COUNCIL

AN ORDINANCE RELATING TO TAXATION, ESTABLISHING A CONSTRUCTION EXCISE TAX REDUCING THE METRO EXCISE TAX, REDUCING SOLID WASTE RATES AND REFUNDING PLANNING SERVICE FEES TO LOCAL GOVERNMENTS	)	ORDINANCE NO. 94-556B Introduced by Councilor Rod Monroe

THE METRO COUNCIL HEREBY ORDAINS AS FOLLOWS:

Section 1. Effective November 1, 1994 or the effective date of this Ordinance, whichever is the latest, the following Chapter 7.02 Construction Excise Tax is added to the Metro Code.

CHAPTER 7.02

CONSTRUCTION EXCISE TAX

SECTIONS:

7.02.010 Short title: This chapter shall be known as the "Construction Excise Tax Ordinance" and may be so pleaded.

7.02.020 Construction: The construction excise tax ordinance and all amendments hereinafter made thereto shall be referred to herein as "this chapter." This chapter and any terms not defined herein or elsewhere in this Code shall be construed to be consistent with definitions and terminology used in the Oregon State Building Code, 1993 Edition (the Uniform Building Code).

7.02.030 Definitions: As used in this chapter unless the context requires otherwise:

(a) "Building Official" means any person charged by a municipality with responsibility for the administration and enforcement of a building code.

(b) "Commercial Construction" means the construction of any building or structure, or portion thereof, that is classified as any occupancy other than a residential occupancy.

(c) "Construction" means erecting, constructing, enlarging, altering, repairing, moving, improving, removing, converting, or demolishing any building or structure for which the issuance of a building permit is required pursuant to the provisions of Oregon law. Construction also includes the installation of a manufactured dwelling.

(d) "Contractor" means any person who performs Construction for compensation.

(e) "Executive Officer" means the Metro Executive Officer.

(f) "Improvement" means any newly constructed structure or a modification of any existing structure.

(g) "Major Renovation" means any renovation, alteration or remodeling of an existing building or structure, or portion thereof, that will result in a change in occupancy classification of the building or structure, or portion thereof, from a residential occupancy classification to a non-residential occupancy classification, or from one non-residential occupancy classification to another.

(h) "Manufactured Dwelling" means any building or structure designed to be used as a residence that is subject to regulation pursuant to ORS ch 446, as further defined in ORS 446.003(26).

(i) "Occupancy Classification" means any occupancy group or division of any occupancy group as defined by the Oregon State Building Code.

(j) "Person" means and includes individuals, domestic and foreign corporations, societies, joint ventures, associations, firms, partnerships, joint stock companies, clubs or any legal entity whatsoever.

(k) "Residential Construction" means the Construction or installation of any building or structure, or portion thereof, that is classified as a residential occupancy and includes all accessory buildings and structures. The installation of a Manufactured Dwelling is included within the meaning of the term Residential Construction.

(l) "Total Combined Floor Area" means the sum of the floor areas of each floor created by the Construction. Total Combined Floor Area shall be also construed to mean the newly created floor area added to an existing building or structure by any renovation, alternation or remodeling.

(m) Total Renovated Floor Area" means the Total Combined Floor Area of an existing building or structure, or portion thereof, that is the subject of a Major Renovation.

7.02.040 Exemptions:

(a) No obligation to pay the tax imposed by Section 7.02.070 shall arise from the Construction of any Improvement that is owned by any government entity whether federal, state or local.

(b) The Executive Officer may pursuant to Sections 7.02.050, 7.02.060 and 7.02.110 exempt from the duty to pay the tax imposed by Section 7.02.070 any Person who would be entitled to a rebate pursuant to Section 7.02.120(a)(2) or Section 7.02.120(a)(3).

7.02.050 Rules and regulations promulgation: The Executive Officer may promulgate rules and regulations necessary for the administration and enforcement of this chapter.

7.02.060 Administration and enforcement authority:

(a) The Executive Officer shall be responsible for the administration and enforcement of this chapter. In exercising the responsibilities of this section of the Executive Officer may act through a designated representative.

(b) In order to carry out the duties imposed by this chapter, the Executive Officer shall have the authority to do the following acts, which enumeration shall not be deemed to be exhaustive, namely: administer oaths; certify to all official acts; to subpoena and require attendance of witnesses at hearings to determine compliance with this chapter, rules and regulations; to require production of relevant documents at public hearings; to swear witnesses; and take testimony of any Person by deposition.

7.02.070 Imposition of tax: An excise tax is imposed on every Person who engages in the act of engaging in Construction within the District. The tax shall be measured by the Total Combined Floor Area constructed or the Total Renovated Floor Area constructed as set forth in Section 7.02.080. If no additional floor area is created or added by the Construction and if the Construction does not constitute a Major Renovation then there shall be no tax due. The tax shall be due and payable at the time of the issuance of any building permit, or installation permit in the case of a manufactured dwelling, by any building authority. Liability for this tax shall attach upon every owner or occupant of property on which the is located and every Contractor who engages in Construction; provided, however, that only one tax must be paid.

7.02.080: Rate of tax: The rate of tax to be paid is set forth in this section for each specific category of Construction:

(a) The rate of tax to be paid for Residential Construction or Commercial Construction shall be 12 cents for each square foot of Total Combined Floor Area constructed.

(b) The rate of tax to be paid for any Major Renovation shall be one-half the rate for Commercial Construction per square foot of Total Renovated Floor Area.

(c) If any Major Renovation results in the addition of additional floor area to an existing building or structure, then the tax to be paid shall be the total tax due pursuant to subsections (a) and (b).

7.02.090 Failure to pay: It shall be unlawful for any Person to fail to pay all or any portion of the tax imposed by this chapter.

7.02.100 Statement of entire floor area required: It shall be unlawful for any Person to fail to state or to misstate the full floor area of any Improvement or Manufactured Dwelling. When any Person pays the tax, within the time provided for payment of the tax, there shall be a conclusive presumption, for purposes of computation of the tax, that the floor area of the Improvement or Manufactured Dwelling is the floor area as determined by the Building Official at the time of issuance of the building permit or installation permit. When any Person fails to pay the tax within the time provided for payment of the tax, the floor area constructed shall be as established by the Executive Officer who may consider the floor area established by the Building Official but may consider other evidence of actual floor area as well.

7.02.110 Intergovernmental agreements: The Executive Officer may enter into intergovernmental agreements with other governments to provide for the enforcement of this chapter and the collection of the Construction Excise Tax. The agreements may provide for the governments to retain no more than 5 percent of the taxes actually collected as reimbursement of administrative expense.

7.02.120 Rebates:

(a) The Executive Officer shall rebate to any Person who has paid a tax the amount of tax actually paid, upon the Person establishing that:

(1) The tax was paid for the Construction of a single family residence that was sold to its original occupant for a price less than $100,000; provided that the maximum amount that may be refunded for any one residence is $125; or

(2) The Person who paid the tax is a corporation exempt from federal income taxation pursuant to 42 U.S.C. 501(c)(3), or a limited partnership the sole general partner of which is a corporation exempt from federal income taxation pursuant to 42 U.S.C. 501(c)(3), the Construction is used for residential purposes and the property is restricted to being occupied by Persons with incomes less than 50 percent of the median income for a period of 30 years or longer; or

(3) The Person who paid the tax is exempt from federal income taxation pursuant to 42 U.S.C. 501(c)(3) and the Construction is dedicated for use for the purpose of providing charitable services to Persons with incomes less than 50 percent of the median income.

(b) In the event the tax was paid for Construction that is eligible for a rebate for only a portion of the Construction, the Executive Officer shall rebate only the tax paid for the eligible portion.

(c) The Executive Officer may require any Person seeking a refund to demonstrate that the Person is eligible for a refund and that all necessary facts to support the refund are established.

(d) The Executive Officer shall either rebate all amounts due under this section within 30 days of receipt of a complete application for the rebate or give written notice of the reasons why the application has been denied. Any denial of any application may be appealed as provided for in Section 7.02.140.

7.02.130 Hearings Officer: The Executive Officer shall appoint a hearings officer to conduct hearings related to enforcement or appeals of this Chapter. All hearings shall be conducted in accordance with rules and regulations adopted by the Executive Officer.

7.02.140 Appeals: Any Person who is aggrieved by any determination of the Executive Officer regarding liability for payment of the tax, the amount of tax owed, or the amount of tax that is subject to refund or rebate may appeal the determination in accordance with Section 7.02.140. All appeals must be in writing and must be filed within 10 days of the

determination by the Executive Officer. No appeal may be made unless the Person has first paid the tax due as determined by the Executive Officer.

7.02.150 Refunds:

(a) Upon written request, the Executive Officer shall refund any tax paid upon the Person who paid the tax establishing that Construction was not commenced and that any building permit issued has been cancelled as provided by law.

(b) The Executive Officer shall either refund all amounts due under this section within 30 days of a complete application for the refund or give written notice of the reasons why the application has been denied. Any denial of any application may be appealed as provided for in Section 7.02.140.

7.02.160 Occupation of improvement without payment unlawful: It shall be unlawful for any Person to occupy any Improvement unless the tax imposed by this chapter has been paid.

7.02.170 Enforcement by civil action: The tax and any penalty imposed by this chapter constitutes a debt of the Person liable for the tax as set forth in Section 7.02.070 of this chapter and may be collected by the Executive Officer in an action at law. If litigation is necessary to collect the tax and any penalty, the prevailing party shall be entitled to reasonable attorney fees at trial or on appeal. The Office of General Counsel is authorized to prosecute any action needed to enforce this chapter as requested by the Executive Officer.

7.02.180 Review: Review of any action of the Executive Officer taken pursuant to this chapter, or the rules and regulations adopted pursuant thereto, shall be taken solely and exclusively by writ of review in the manner set forth in ORS 34.010 through 34.100, provided, however, that any aggrieved Person may demand such relief by writ of review.

7.02.190 Failure to pay -- Penalty: In addition to any other fine or penalty provided by this chapter, failure to pay the tax within fifteen days of the date of issuance of any building permit for any Improvement or installation permit for any Manufactured Dwelling shall result in a penalty equal to the amount of tax owed or $50.00, whichever is greater.

7.02.200 Violation -- Penalty:

(a) In addition to any other civil enforcement provided herein, violation of this chapter shall be a misdemeanor and shall be punishable, upon conviction, by a fine of not more than five hundred dollars.

(b) Violation of this chapter by any officer, director, partner or other Person having direction or control over any Person violating this chapter shall subject each such Person to such fine.

7.02.210 Rate stabilization: In order to protect against the cyclical nature of the construction industry and development patterns, the Council shall annually as part of the budget process create reserves from the revenues generated by the construction excise tax that are designed to protect against future fluctuations so as to promote stability in the rate of tax needed to support required programs.

7.02.220 Needs assessment: Prior to July 1, 1998, the Council shall conduct a needs assessment review of the Construction Excise Tax to determine whether it is necessary to continue the tax beyond the period of adoption and implementation of the Regional Framework Plan. In conducting the assessment, the Council shall hold at least two public hearings.

7.02.230 Dedication of revenues: Revenue derived from the imposition of this tax after deduction of necessary costs of collection shall be dedicated solely to carrying out the Regional Planning Functions of Metro mandated by Section 5 of the 1992 Metro Charter.

Section 2. Section 7.01.020 of the Metro Code is amended to read as follows:

7.01.020 Tax Imposed:

(a) For the privilege of use of the facilities, equipment, systems, functions, services, or Improvements owned, operated, franchised, or provided by the District, each user shall pay a tax in the amount established in subsection 7.01.020(b) but not to exceed ~~seven and one-half (7.5)~~six (6) percent of the payment charged by the operator or the District for such use. The tax constitutes a debt owed by the user to the District which is extinguished only by payment of the tax directly to the District or by the operator to the District. The user shall pay the tax to the District or to an operator at the time payment for the use is made. The operator shall enter the tax on his/her records when payment is collected if the operator keeps his/her records on the cash basis of accounting and when earned if the operator keeps his/her records on the accrual basis of accounting. If installment payments are paid to an operator, a proportionate share of the tax shall be paid by the user to the operator with each installment.

(b) The Council may for any annual period commencing July 1 of any year and ending on June 30 of the following year establish a tax rate lower than the rate of tax provided for in subsection 7.01.020(a) by so providing in the annual budget ordinance adopted by the District. If the Council so establishes a lower rate of tax, the Executive Officer shall immediately notify all operators of the new tax rate. Upon the end of the fiscal year the rate of tax shall revert to the maximum rate established in subsection 7.01.020(a) unchanged for the next year unless further action to establish a lower rate is adopted by the Council as provided for herein.

Section 3. Metro Code Section 5.02.025 and 5.02.045 is amended to read as follows:

5.02.025 Disposal Charges at Metro South Station, Metro Central Station and the Metro Household Hazardous Waste Facilities:

(a) Total fees for disposal by credit account customers shall be ~~$75.00~~$73.00 per ton of solid waste delivered for disposal at Metro South Station or Metro Central Station.

(b) Total fees for disposal by cash account customers shall be $100.00 per ton of solid waste delivered for disposal at Metro South Station or Metro Central Station. A cash account customer delivering a load of waste such that no portion of the waste is visible to Metro scalehouse personnel (unless the waste is only visible through a secure covering), shall receive a 25 percent rebate.

(c) The total disposal fees specified in subsection (a) and (b) of this section include:

(1) A disposal fee of ~~$39.25~~$37.70 per ton;

(2) A regional transfer charge of ~~$7.20~~$7.10 per ton;

(3) The user fees specified in Section 5.02.045;

(4) An enhancement fee of $.50 per ton; and

(5) DEQ fees totaling $1.05 per ton.

(d) Notwithstanding subsection (b) of this section, cash account customers using Metro South Station or Metro Central Station, who have separated and included in their loads at least one half cubic yard of recyclable material (as defined in ORS 459.005) shall receive a $3.00 credit toward their disposal charge if their load is transported inside a passenger car or in a pickup truck not greater than a 3/4 ton capacity.

(e) The minimum charge shall be $19.00 for all credit account vehicles and shall be $25.00 for all cash account vehicles. The minimum charge shall be adjusted by the covered load rebate as specified in subseciton (b) of this section, and may also be reduced by application of the recycling credit provided in subsection (d) of this section. If both the rebate and the recycling credit are applicable, the rebate shall be calculated first.

(f) Total fees assessed at Metro facilities shall be rounded to the nearest whole dollar amount (a $.50 charge shall be rounded up) for all cash account customers.

(g) A fee of $5.00 is established to be charged at the Metro Household Hazardous Waste facilities for each load of Household Hazardous Waste.

(h) A fee of $10.00 is established at the Metro Household Hazardous Waste facilities for special loads.

(i) The following table summarizes the disposal charges to be collected by Metro from all persons disposing of solid waste at Metro South Station and Metro Central Station:

METRO SOUTH STATION
METRO CENTRAL STATION

Fee Component	$/Ton	Tonnage Rate
Disposal Fee		~~$39.25~~37.70
Regional User Fee		~~17.50~~17.25
Metro User Fee		~~9.50~~ 9.40
Regional Transfer Charge		~~7.20~~7.10
Total Rate		~~$73.45~~71.45
Additional Fees		
Enhancement Fee		$ .50
DEQ Fees		1.05
Total Disposal Fee		~~$75.00~~73.00
Minimum Charge		
Per Charge Account Vehicle		$19.00
Per Cash Account Vehicle (subject to possible covered load rebate and recycling credit)		25.00

Tires	Type of Tire	Per Unit
	Car tires off rim	$ 1.00
	Car tires on rim	3.00
	Truck tires off rim	5.00
	Truck tires on rim	8.00
	Any tire 21 inches or larger diameter off or on rim	$12.00

5.02.045 User Fees:

The following user fees shall be collected and paid to Metro by the operators of solid waste disposal facilities, whether within or outside of the boundaries of Metro, for the disposal of solid waste generated, originating, collected or disposed of within Metro boundaries, in accordance with Metro Code Section 5.01.150:

(a) Regional User Fee:

For compacted or noncompacted solid waste, ~~$17.50~~17.25 per ton delivered.

(b) Metro User Fee:

~~$9.50~~9.40 per ton for all solid waste delivered to Metro-owned or operated facilities.

(c) Inert material, including but not limited to earth, sand, stone, crushed stone, crushed concrete, broken asphaltic concrete and wood chips used at the St. Johns Landfill for cover, diking, road base or other internal use shall be exempt from the above user fees.

(d) User fees shall not apply to wastes received at franchised processing centers that accomplish materials recovery and recycling as a primary operation.

(e) Notwithstanding the provisions of (a) and (b) above, Metro User Fees may be assessed as may be appropriate for solid waste which is the subject of a Non-System License under Chapter 5.05 of the Metro Code.

Section 4. The Executive Officer shall rebate to each local government that has made a voluntary payment to Metro in lieu of the per capita payments required by the provisions of former ORS 268.513 for fiscal year 1994-95 an amount equal to amount of the payment made to Metro multiplied by a fraction equal to the number of days remaining in fiscal year 1994-95 on the effective date of this Ordinance divided by 365. Prior to making any rebate, however, the Executive Officer shall deduct from the amount to be paid to any local government the amount of start-up costs that Metro has agreed to pay pursuant to any intergovernmental agreement authorized by Metro Code Section 7.02.110.

ADOPTED by the Metro Council this _____ day of _____, 1994.

_____
Judy Wyers, Presiding Officer

ATTEST:

_____
Clerk of the Council

gl1166h

JAMES A. ZEHREN
SUITE 2300 900 SW FIFTH AVENUE
PORTLAND, OREGON 97204
(503) 294-9616

August 3, 1994

Dear Fellow MPAC Members:

Attached please find a copy of a letter that I have sent to the members of the Metro Council urging their approval of the new construction excise tax proposal explained to us by Councilor Rod Monroe at our last meeting on July 27 (with JPACT and the Future Vision Commission). My reasons for supporting the proposal are set out in the letter.

I wrote the letter because I learned that the proposal is deadlocked in the Metro Council's Finance Committee on a 4-4 vote and that it will only emerge and be approved by action of the full Metro Council. I also learned that while it appears there are the votes on the full Council to bring the proposal out of committee and approve it, some yes-vote Councilors apparently are "wavering".

I understand from Gussie that the construction excise tax proposal will be on MPAC's agenda for our next meeting on Wednesday, August 10. I hope that MPAC will formally endorse the proposal, at least in concept, at that meeting. However, in the meantime, I urge any and all of you who are so inclined to contact members of the Metro Council to urge them to support the proposal. In my judgement, it provides a sensible solution to the regional planning budget problem that has dogged RPAC's and MPAC's efforts and that generally has occupied altogether too much of our collective regional governance energies in the last two years.

In this regard, please know that the Metro Council vote on bringing the matter out of the Finance Committee will occur on August 11, and--if that vote is successful--that the Council action on approval of the proposal itself will occur on August 25.

Many of us wish that Metro's other programs somehow could be cut to provide the revenues needed to continue to adequately fund regional planning so as to maintain quality of life in this region in the face of upcoming growth. However, it now seems plain to me that additional Metro revenues will be

needed to maintain adequate funding for the planning program--to replace local government "dues" if nothing else.

MPAC and its members have actively supported adequate funding for Metro's planning program. It is only right for MPAC and its members also to support reasonable proposals by Metro to generate the revenue to fund that planning program. I believe the construction excise tax proposal is such a reasonable proposal, and on that basis I think we should support it. Bottom line, if this proposal fails at this time, the problem it is intended to solve will only continue and future such efforts could be stymied. And the effects of such an outcome on our regional future could be severe.

I urge you to support the construction excise tax proposal, and to communicate your support to Metro Councilors before the August 11 Metro Council vote.

Very truly yours,

James A. Zehren

JAZ:c-w
Enclosure
cc: The Honorable Rena Cusma
The Honorable Rod Monroe
Mr. Andrew Cotugno
Mr. John Fregonese
Mr. Ken Gervais
Mr. Mark Turpel
Ms. Barbara Duncan

SUITE 2300 900 SW FIFTH AVENUE
PORTLAND, OREGON 97204
(503) 294-9616

August 2, 1994

The Honorable Members
of the Metro Council
600 NE Grand Avenue
Portland, OR 97232-2736

Re: Construction Excise Tax

Dear Councilors:

I write in support of the proposed new Metro construction excise tax. I do so as a citizen member of MPAC, as someone who in the last two years has advocated adequate funding for Metro's planning program, and as a taxpayer living and working in Metro's jurisdictional area.

During the last two Metro budget cycles, a substantial number of us have argued to the Metro Council that under the new Metro Charter the Council has a first-priority obligation to adequately fund regional planning. Without this commitment of regional resources, we have asserted, Metro will not adhere to the dictates of the Charter and--ultimately more importantly--this metropolitan area will not be prepared to maintain its quality of life in the face of upcoming growth.

By virtue of certain stop-gap means, including reliance on receipt of local government "dues", a majority of the Council has managed to provide a reasonably adequate funding level for Metro's planning program in each of the last two fiscal years. As the Council faces next year's budget, however, it has become clear to most involved that additional revenues will be needed for adequate funding for planning to be maintained unless other Metro expenditures are significantly cut.

In this circumstance, I have been encouraged to learn of the proposed construction excise tax developed by Councilor Monroe and others on the Finance Committee. No tax is perfect, and there undoubtedly are details of the proposal that could be refined and improved. But as I understand the basic elements of the construction excise tax

proposal, it makes sense to me for five basic reasons:

First, the proposal would result in significant new revenue needed to pay for Metro's first funding priority: regional planning.

Second, the proposal would result in Metro's planning budget being funded equitably between new growth and existing taxpayers: roughly one-half from new regional growth (via the construction excise tax) and roughly one-half from the region's existing taxpayers (via the garbage excise tax).

Third, the proposal would result in Metro's planning budget being funded equitably between residential taxpayers and commercial and industrial taxpayers: both groups would be subject to the tax.

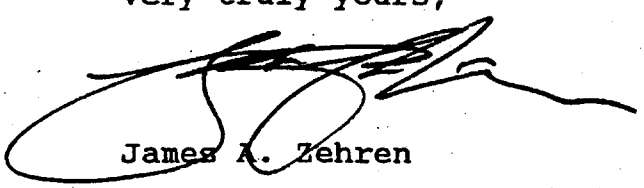
Fourth, the proposal would provide at least some incentives for regionally-beneficial redevelopment rather than land-consumptive new development: the tax would not be imposed on redevelopment not involving a change in use, and, the tax would be imposed at a lesser rate on redevelopment involving a change in use than on new development.

Fifth, the proposal would not result in a hardship on the taxpayers directly affected: the nominal per square foot tax rate being considered would not result in a large new tax burden on the taxpayers who end up paying it.

For these reasons, I support this proposal and hope that the Council will approve it. It is a sensible, easy-to-explain solution to a critical problem that has needed to be fixed. If this proposal is not approved, the problem simply will return and be more difficult to solve in a few months--because it will not go away and the complications will only get worse.

It has been easy for people like me to support funding for a needed public effort such as Metro's planning program. It is another matter for elected officials like you to provide the revenue to pay for such programs, especially given today's political environment. In preparing this construction excise tax proposal, however, Councilor Monroe and the proposal's other advocates on the Finance Committee have taken the difficult and important first step toward solving Metro's planning budget problem. They are to be commended for their work and vision. Now it is up to the full Council to finish the job. I urge you to do so.

Very truly yours,



James A. Zehren

JAZ:c-w

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SATURDAY, AUGUST 6, 1994

Adopt Metro construction tax

It makes good sense to have growth foot part of the bill for regional planning

It makes no sense for zoo admission fees to pay for the region's planning needs. Nor to have garbage rate-payers foot the bill.

But that is exactly what's been happening under Metro's piecemeal financial structure. The regional government has long needed to develop more rational tax sources, and the proposed construction excise tax the council vote on as early as this month is a good way to start.

The charter that voters approved for Metro clearly establishes regional planning as the agency's No. 1 priority. It also gave to Metro the power to enact a variety of specialty, or "niche," taxes. The construction excise tax represents the use of that new power and a recognition of the new planning responsibility.

The link between new construction and planning is a sensible one. While planning benefits everyone, growth accelerates the need to plan for such things as additional water supplies, transportation systems and greenspaces. The construction tax would pay part, but not all, of regional planning's costs.

The tax would assess 12 cents per square foot on all new construction and some remodeling work within the Metro boundaries. It would apply to residential, commerical and industrial property. It would be collected once.

To alleviate concerns about the tax's effect on affordable housing, all subsidized housing would be exempt, and a refund formula would make any home under $100,000 virtually exempt.

One big problem with a tax on new construction is that receipts are likely to change dramatically from year to year. The proposed ordinance deals with that by requiring the council to set aside some of the tax each year into a stabilization fund.

The tax isn't expected to represent a big net increase in the planning department's budget. Most of the anticipated $3 million collected annually would be used to reduce the excise tax on garbage and the zoo admissions and replace money local governments had been paying in voluntary dues.

The proposed ordinance spells out that garbage tipping fees would drop from $75 to $73 a ton. But voters should not expect zoo admission prices to come down. The excise tax reduction would return only about $70,000 to the zoo.

The council has one important question still to answer, though. It has not spelled out what it will do if building rates — and tax proceeds — are much higher than anticipated.

Something billed as a modest tax cannot be allowed to turn into a windfall.

The tax also fails to deal with Metro's most serious financing problem, which is its lack of a general tax base. The council must continue to move toward developing broad-based, voter-approved funding for Metro's many important regional activities.

Enacting a new tax two months before an election is not something most politicians relish. The Metro Finance Committee deadlocked on the proposal, but proponents are likely to succeed at putting it directly before the council.

The resulting decision will let Metro voters see which Metro councilors are focused on the region's future and which are more concerned with their own election chances in November.

LETTERS

Teens learn lesson in free speech and political dialogue

To the Editor: On July 22, we traveled to Portland with other teens to see Hillary Rodham Clinton and be part of our first national political event. While we arrived somewhat naive, we left shocked and discouraged.

Even as Clinton called for widespread dialogue and support for the health plan, rally organizers moved through the crowd insulting, pushing and threatening those who peacefully held signs opposing certain parts of the plan.

Huge guys wearing green AFSCME shirts (American Federation of State-County & Municipal Employees) pushed through people who had been standing in the sun for an hour to block signs they didn't like. Unsuccessful, they found folding chairs that they pushed through the crowd to stand on to block a large banner held by other teens.

Freedom of speech is a constitutional right, but it was definitely not part of the game plan for the Health Security Express team at the Portland kickoff rally.

PAUL WHITNEY, RON HUBBITZ, and JOSEPH McCARTY
Salem

STAFF REPORT

CONSIDERATION OF RESOLUTION NO. 94-2015 FOR THE PURPOSE OF AMENDING THE FY 1995 METRO TRANSPORTATION IMPROVEMENT PROGRAM TO ALLOCATE FUNDS TO TWO ROAD WIDENING PROJECTS AND ACKNOWLEDGING MISCELLANEOUS ADMINISTRATIVE AMENDMENTS

Date: July 21, 1994 Presented by: Andrew Cotugno

PROPOSED ACTION

Adoption of this resolution would amend the Metro FY 1994 TIP to approve allocation of local funds, state gas tax and federal bridge improvement funds to two road widening projects. It would also acknowledge notification to TPAC and JPACT of numerous administrative amendments of the FY 95 TIP per guidelines established in Metro Resolution No. 85-592. Finally, this resolution would declare to federal review authorities that the Metro FY 1995 TIP, as amended by this action, has been wholly incorporated in ODOT's FY 1995 STIP, without change, as required by recent federal planning regulations.

TPAC has reviewed this TIP amendment and recommends approval of Resolution No. 94-2015.

FACTUAL BACKGROUND AND ANALYSIS

Basis for the Amendment. Metro Resolution No. 94-1964 approved the Metro FY 1995 TIP. JPACT adopted the resolution at its regular meeting on June 9, 1994. Thereafter, ODOT identified two road widening projects included in its draft FY 1995 STIP which were not included in the draft Metro FY 1995 TIP. These were widening of Wilsonville Road at its undercrossing of I-5 and a bridge replacement project approved as the state's contribution to a locally funded widening of the Beaverton/Tualatin Highway (Durham Road between Hall Boulevard and Upper Boones Ferry Road). Under the region's Project Selection Procedures included in the Introduction of the FY 1995 TIP, these projects fall within Metro's authority to program in consultation with ODOT. ODOT has therefore approved the two projects contingent on Metro's inclusion of the projects in its FY 1995 TIP.

Project Descriptions. The Wilsonville project was approved in the spring of 1994 as an Immediate Opportunity Fund project. The project will widen Wilsonville Road from three lanes to six and will include bicycle and pedestrian facilities. To accommodate the wider road section, the I-5 bridge crossing will also require widening. Wilsonville Road will remain at three lanes east and west of the I-5 ramps. Improvement of the interchange, including the widening, is approved in the 1992 Regional Transportation Plan. Funding for this project will come from state gas tax revenues and local contributions. PE and ROW funds were previously allocated to the full interchange improvement project. Savings from some FY 1994 overlay projects and the IOF funds provide the bulk of the remaining revenue. No funding was

diverted from the FY 1995-1998 construction program. Because the project will affect a federal interstate facility, it must be included in the TIP.

The Durham Road bridge project is a small piece of a larger locally funded widening that had been identified in the TIP as a regionally significant, locally funded project. The project is also included in the RTP. Only after JPACT adoption of the draft Metro FY 1995 TIP was it discovered that ODOT had committed federal bridge improvement funds to assist the project. Moreover, because the bridge will be widened to three travel lanes, it requires amendment into the TIP by resolution.

Both projects are included in the network of projects assumed in the Air Quality Conformity network currently being developed by Metro for the FY 1995 TIP and RTP Conformity Determination. No funds are being diverted from other regionally approved projects to accommodate these projects.

Administrative Amendments. It was also discovered that numerous federal Hazard Elimination System (HES), Highway Bridge Replacement (HBR) and state overlay and preservation projects were included in the draft FY 1995 STIP that were not included in the Metro TIP approved by JPACT. However, none of these projects add capacity and all but one are under $2 million. The exception is painting of the Hawthorne Bridge ($16 million). Per the guidelines for administrative amendment of the TIP included in Metro Resolution No. 85-592, these projects do not require resolution action. However, they do require notification to TPAC, JPACT and Metro Council. Given the large number of projects, it was felt by staff to be appropriate to append this notification to the subject resolution. The overall intent of both actions is to assure consistency of the Metro TIP with the state TIP that will both be forwarded for federal review. New federal planning guidelines require that the Metro TIP be included without change in the state TIP. Adoption of this resolution would achieve this objective.

EXECUTIVE OFFICER'S RECOMMENDATION

The Executive Officer recommends adoption of Resolution No. 94-2015.

TPAC Recommendation
TW:lmk
94-2015.RES
7-27-94

BEFORE THE METRO COUNCIL

FOR THE PURPOSE OF AMENDING THE FY 1995 METRO TRANSPORTATION IMPROVEMENT PROGRAM TO ALLOCATE FUNDS TO TWO ROAD WIDENING PROJECTS AND ACKNOWLEDGING MISCELLANEOUS ADMINISTRATIVE AMENDMENTS	)	Resolution No. 94-2015 Introduced by the Planning Committee

WHEREAS, Metro adopted Resolution No. 94-1964 on June 23, 1994, approving the FY 1995 Transportation Improvement Program (MTIP); and

WHEREAS, New federal planning regulations require that the MTIP be adopted without change in the State Transportation Improvement Program (STIP); and

WHEREAS, ODOT identified two projects (see Exhibit A) which it wishes to include in the FY 1995 STIP which will be adopted by the Oregon Transportation Commission on July, 20, 1994; and

WHEREAS, ODOT has identified funding under its control for the two projects which would not otherwise be allocated to the region; and

WHEREAS, The two projects are included in the 1992 Regional Transportation Plan; and

WHEREAS, The two projects will be included in the FY 1995 (Air Quality) Conformity Analysis; and

WHEREAS, The two projects will obligate federal funds and/or will lead to an increase of vehicle capacity on the affected roadways; and

WHEREAS, Metro Resolution No. 85-592 requires that projects having these characteristics must be amended into the TIP by resolution action; and

WHEREAS, ODOT has identified other Hazard Elimination System, Highway Bridge Replacement and State Preservation/Overlay program

projects (see Exhibit B) that are contained in the FY 1995 STIP that were not included in the FY 1995 MTIP; and

WHEREAS, These projects will not increase vehicle capacity on existing roads, are categorically exempt from federal environmental review and otherwise conform with guidelines of Metro Resolution No. 85-592 for administrative amendment of the MTIP; now therefore

BE IT RESOLVED:

1. That the FY 1995 Metro TIP be amended to approve obligation authority for the two projects identified in Exhibit A up to the amounts identified in Exhibit A.

2. That the miscellaneous administrative amendments identified in Exhibit B are acknowledged as programmed.

3. That, as amended by this action, the Metro FY 1995 TIP has been wholly incorporated within ODOT's FY 1995 STIP without change.

4. That Metro staff is directed to request amendment of the state TIP to reflect these actions and/or to take such action as needed, within the guidelines established by Metro Resolution No. 85-592, to assure that the STIP and MTIP remain consistent with one another throughout the federal approval process.

ADOPTED by the Metro Council this ____ day of _____, 1994.

_____
Judy Wyers, Presiding Officer

94-2015.RES
7-29-94/LMK

EXHIBIT A

TWO SIGNIFICANT ROADWAY PROJECTS
REQUESTED BY ODOT
FOR INCLUSION IN THE METRO FY 1995 TIP

1. I-5: Wilsonville Road Widening and Bridge Reconstruction:

Widen Wilsonville Road beneath I-5 and between the north and southbound ramps from three lanes to six lanes; reconstruction of I-5 overcrossing bridges to accommodate road widening. The project was approved by the Oregon Transportation Commission as an Immediate Opportunity Fund project.

PE: $1.04 million in FY 95
ROW: 2.01 million in FY 95
Con: 5.35 million in FY 96

Funding: state gas tax for preliminary engineering and right-of-way; and local, developer fee and Immediate Opportunity Funds for construction.

2. Durham Road Bridge Widening:

Reconstruct and widen bridge from two lanes to three lanes with bicycle and pedestrian facilities as part of a locally funded project to widen Durham Road between Hall Boulevard and Upper Boones Ferry Road. The bridge widening will be federally funded and is needed to match the profile of the locally funded roadway improvements.

PE: $0.40 million in FY 1994
ROW: 0.25 million in FY 1995
Con: 0.60 million in FY 1995

Funding: Federal Highway Bridge Replacement program for the bridge widening; local funding for associated road widening.

EXHIBIT B: METRO FY 1995 TIP ADMINISTRATIVE AMENDMENTS

ODOT PCS #	PROJECT TITLE	DESCRIPTION	FY 95	FY 96	FY 97	POST FY 97
	STATE OPERATIONS					
07289	I-205: SE 82ND TO OR 212	SOUND WALL (PE, CON)	0.410			
07578	EAST PORTLAND FRWY (I-205) @ SUNNYSIDE ROAD	SCREENING (PE, CON)	0.730			
07577	VISTA RIDGE & JEFFERSON ST. TUNNELS	LIGHTING UPGRADES (CON)	1.700			
05294	U.S. 30 SAUVIE ISLAND BRIDGE	BRIDGE APPROACH REALIGN (CON)	0.220			
08231	I-5/I205 JOINT REPAIR	MP 283.21 FOR 22.53 MILES (PE, CON)	1.260			
03696	I-5: INTERSTATE BRDG - COLUMBIA	GRIND & REPAVE (PE)	0.271			*2.940**
07972	I-405: COLUMBIA TO STADIUM	GRIND & REPAVE (PE)	0.412			*20.900**
07973	I-405: STADIUM TO MARQUAM BRDG	GRIND & REPAVE (PE)	0.646			*33.400**
08050	I-205 @ SUNSET AVENUE	SCREENING (PE, CON)		0.033		
06970	JOHNSON CREEK @ I-205	STRIPE AN EB TURN LANE (PE, CON)		0.105		
08051	I-205 @ HOLGATE	PROTECTIVE SCREENING (PE, CON)		0.033		
04366	LINNTON / SAUVIE ISLAND BRIDGE	ROCK FALL PROTECTION (PE, CON)		0.360		
07167	US 30 B (SANDY BLVD): MLK JR TO 60TH	OVERLAY (PE, CON)		0.555		
06969	TSM-INITIATIVE	VARIOUS FREEWAY,		1.040		
07579	TSM-INITIATIVE	ARTERIAL, AND TRANSIT				
07961	TSM-INITIATIVE	FLOW IMPROVEMENT				
07962	TSM-INITIATIVE	PROJECTS TOTALING $1.04				
07963	TSM-INITIATIVE	MILLION (PE, CON)				
07964	TSM-INITIATIVE					
07965	TSM-INITIATIVE					
07966	TSM-INITIATIVE					
07967	TSM-INITIATIVE (FY 98 Construction)					
07156	99 W: TUALATIN RIVER BRIDGE TO KRUEGER ROAD	OVERLAY (PE, CON)		1.092		
07155	BARBUR: PEDESTRIAN O'XING TO SW 60TH	CONSTRUCT PED O'XING (PE, CON)		1.134		
05862	TRAFFIC LOOP REPAIRS UNIT 6	TRAFFIC LOOP REPAIRS (PE, CON)		0.585		
05866	TRAFFIC LOOP REPAIRS UNIT 7	TRAFFIC LOOP REPAIRS (PE, CON)			0.604	
06019	TRAFFIC LOOP REPAIRS UNIT 8	TRAFFIC LOOP REPAIRS (PE, CON)				0.612
08239	US 26:185TH SOUNDWALL	SOUNDWALL (PE, CON)			1.580	
07168	US 30: ST. JOHNS-CORNELIUS PASS ROAD	OVERLAY (CON)			1.570	
07162	OR 43: HUGHES AVENUE TO OREGON CITY BRIDGE	OVERLAY (PE, CON)				0.753
07163	OR 47: MP 90.4 TO 91.5	OVERLAY (PE, CON)				0.167
07169	99E: MILWAUKIE CITY LIMITS-CLACKAMAS RIVER BRIDGE	OVERLAY (PE, CON)				1.510
07186	OR 224: ROCK CREEK TO SE 197TH	OVERLAY (PE, CON)				0.291
07164	OR 8 (TV HWY): OR 47 TO QUINCE	OVERLAY (PE, CON)				0.565

EXHIBIT B: METRO FY 1995 TIP ADMINISTRATIVE AMENDMENTS

ODOT PCS NO.	PROJECT TITLE	DESCRIPTION	FY 95	FY 96	FY 97	POST FY 97
	HAZARD ELIMINATION SYSTEM (HES)					
08075	BNRR XING: LWR ROCKY BUTTE RD @ HOLBROOK	RAIL ROAD CROSSING (PE)	0.120			
07057	HALSEY @ 47TH	SIGNAL, LOOPS / SIGNAGE (PE)	0.020			
06711	SW ALLEN BLVD @ SW WESTERN AVENUE	INTERSECTION IMPROVEMENT	0.372			
07134	NORTH PORTLAND ROAD @ BNRR CROSSING	RAIL ROAD CROSSING (PE, CON)		0.105		
07045	ALLEN: 141ST TO SW MERLO	WIDEN TO 66' ADD LFT TURN POCKET (PE, ROW & CON)		0.705		
06971	N. FESSENDEN/BNRR X'ING	RAIL CROSSING (PE, CON)		0.065		
07136	OREGON CITY SIGNAL UPGRADE (OPTICOM)	SIGNAL UPGRADES (PE, CON)			0.235	
	BRIDGE PROJECTS					
07263	FANNO CREEK BRIDGE / GRANT STREET	REPLACE BRIDGE (PE,CON)	1.360			
07253	OSWEGO CANAL/CHILDS ROAD BRIDGE REPLACEMENT	REPLACE BRIDGE W/ 48' DECK (PE, ROW & CON)		0.315		
07264	FANNO CREEK BRIDGE/TIEDEMAN AVENUE	REPLACE BRIDGE (PE, CON)		0.752		
08052	HAWTHORNE BRIDGE PAINTING	PAINT BRIDGE (PE, CON)			16.600	
08500	NE 138TH/COLUMBIA SLOUGH BRDG	REPLACE BRIDGE #25T15 (PE, CON)			0.891	
	ODOT RECONNAISSANCE PROGRAM					
05330	I-205: GLADSTONE INTERCHANGE TO WEST LINN INTERCHANGE	NEEDS ASSESSMENT (PE)	0.045			
05279	I-405/1-5/US 26 CORRIDOR ASSESSMENT	NEEDS ASSESSMENT (PE)	0.071			
04820	OR 99W: PFAFFLE RD TO COMMERCIAL	CORRIDOR FEIS (PE)	0.517			
06578	REGION 1 CORRIDOR PLANNING	PLANNING BUCKET (PE)	3.450			
	MISCELLANEOUS					
08105	GOLF CREEK SECTION PH. 2, 3, & 4	LANDSCAPING (CON)	0.150			
06028	HALL BLVD. BV/TUALATIN HWY: SPRR CROSSING-GREENBURG ROAD	BIKE LANE (PE, ROW & CON)	0.310			
00335	US 30B: NE COLUMBIA BLVD TO NE LOMBARD (NE 60TH CONNECTOR)	CITY OF PORTLAND FUNDS TO COMPLETE FEIS. NO ROW OR CONSTRUCTION FUNDS APPROVED BY ODOT.	0.573			

Funds shown are PE, ROW and Construction cost (as appropriate) shown in estimated year of expenditure for most advanced work phase (e.g., for project with PE, ROW and Construction funding, year shown is expected year of construction activity).

* Sums listed in FY 95 are programmed PE dollars. Italicized Post-FY 97 dollars are anticipated construction cost. The construction. costs are provided for information purposes only and are not approved by this action.

To the extent possible, all projects will provide appropriate pedestrian, bicycle and transit facilities.

Portland Metro 2040 Commodity Flow and Requirements Study

Draft Final Report

Prepared by:
DRI/McGraw-Hill

In Conjunction with:
R. L. Banks & Associates, Inc.
Fred Cooper Consulting Engineers
Gene Leverton & Associates

July 1994

Executive Summary

The Portland economy is closely tied to the transportation and distribution sectors. The 2040 Commodity Flow study can lead to a better understanding of how freight moves through Portland, the linkage between the regional economy and the transportation sector, and to assess the implications of future freight volumes on the regional transportation system. The study has highlighted many key findings, including:

Freight movement has historically sparked Portland's economic growth. Distribution is an industry in Portland, rather that simply serving the local economy.

The Portland region has an abundance of high quality physical transportation assets and a central location in the Pacific Northwest, making the region a large distribution center and provide international markets for its products.

The region's transportation system is viewed as providing a high degree of mobility for freight, with relative ease of connectivity for intermodal activities. This was highlighted by numerous carriers as one of Portland's major assets.

Warehousing and distribution is relatively more important in Portland that in most other major cities. Portland shares with Los Angeles the highest ration of wholesale to retail trade on the West Coast. The national ratio is 1.7:1, and Portland had a ratio of 2.7:1 in 1987 (1987 represents the most recent data available; data for 1992 is expected in 1995). Another indicator is that Portland's 1987 value of wholesale trade is about 85% that of Seattle, and 42% that of the San Francisco/Oakland PMSA, much greater than the relative share of population would suggest.

Overall, freight volume is expected to grow more than double by 2040 - which is faster than population growth. While particular sectors will realize slower growth (i.e., grain and lumber), other sectors such as manufactured commodities are projected to triple over the forecast period.

Truck is the predominant mode for freight in the Portland region. In 1991 (the base year for the study), 60% of all freight tonnage moved on trucks, and portions of the rail and air traffic rely on truck for pickup or delivery.

However, Portland does have a higher than the U.S. average share of freight (in tonnage terms) which moves by rail. The following chart compares Portland intercity freight activity with that of the U.S. Intercity (or non-local) freight represents 55% of the total Portland freight market. This phenomenon is influenced by Portland's strong niche import and export markets, its concentration in goods (lumber, paper and minerals) which are relatively heavy and are typically rail-oriented, and the confluence of three major Class One railroads serving Portland.

Comparison of Portland and U.S. Freight Modal Splits for Rail and Truck Modes - 1991 (in percentages)

	Rail	Truck	Total
Portland (intercity*)	53	47	100%
U.S. (intercity**)	40	60	100%

* Source: Study estimate - Intercity for Portland includes all commodity flows except intra-regional (local)
** Source: USDOT Bureau of Transportation Statistics 1994 Annual Report

Trends indicate a growing share of rail relative to truck in the future. The increasing use of intermodal containers and the move to intermodal service from long-haul trucking both serve as contributing factors.

Rail is expected to increase share from about 27% in 1991 to 34% in 2040. This comes at the expense of truck, which drops from 66%,to 59% of total freight tons moved.

Freight volumes and modal shares for the 1991 base year and 2040 forecast period are displayed below (the long-term growth rates for grain, lumber and paper are currently being revised down):

Major Commodities	1991 Tons (in 000s)	1991 Shares Rail	Truck	Barge	2040 Tons (in 000s)	2040 Shares Rail	Truck	Barge
Grain	9,126	68	7	25	25,189	72	4	24
Bulks	33,574	21	77	3	95,397	28	69	2
Lumber	11,601	15	76	9	20,200	21	69	10
Paper	4,309	39	58	3	10,748	40	53	6
Metals	1,460	29	71	0	3,313	38	62	0
Tr. Equip.	748	70	30	3	2,556	78	22	0
Containerizable Freight	5,225	13	86	2	17,188	16	82	2
Air Cargo	138	0	100	0	986	0	100	0
Total	66,322	27	66	7	175,577	34	59	6

Air cargo is considered to be the fastest growing method of moving freight. It represents less than one percent of total freight movement on a weight basis, but the contribution to economic growth is far greater than what is implied by tonnage comparisons. Companies shipping products with high value and time sensitivity use air cargo. More specifically, many of the emerging high value technology-based industries rely extensively on air cargo services. Air cargo service creates additional demand for truck delivery and pickup, and has implications for intermodal access. Many integrated air carriers utilize air, highway and even rail service as part of a seamless transportation offering, and Portland is will poised to take advantage of this fast-growing freight segment.

The current transportation system is adequate to support current freight requirements, although there are specific points of congestion (particularly within the rail facilities and at some highway crossings). It is expected that operational improvements will be implemented which relieve these inefficiencies.

Over the longer term, there will be significant requirements from a transportation facilities and capacity perspective, placed on the Portland transportation system over the next fifty years in order to maintain access and service levels.

For example, on or near-dock rail facilities requirements are expected to increase by 400% by the year 2040 relative to current needs. The study highlighted, in general terms, the future requirements for acreage and access by mode and facility type. There are already investment plans which are targeted at addressing many of these requirements.

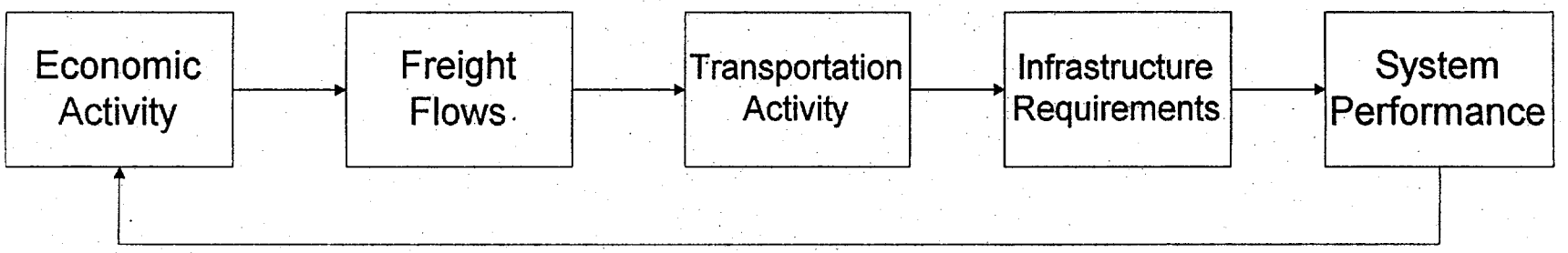
It is important to remember that while the region will need to allocate additional acreage for transportation infrastructure, the placement of these parcels will be important within the scheme of keeping the maintaining the current level of intermodal mobility. It is the ease of access of the current system which carriers and operators find desirable. Close public-private cooperation in the site location process will be critical.

For Portland to continue its strong economic growth, there needs to be a continued emphasis on maintaining and enhancing the transportation system. Portland has prospered as a distribution center and should continue to view transportation, distribution and the related services as an engine for prosperity. The quick transfer of goods between ship, rail, truck and air service is increasingly a competitive strength of an economy that is evaluated for relocation, plant expansion, or siting transportation service hubs. Commodity flows through Portland are vital both the Portland and broader Oregon economies.

The significant growth in freight projected by the study implies that in order to maintain its competitive advantage, Portland must make available adequate land for expansion, and that system access and performance, and freight mobility, be continued focal points for planners and policy-makers. One such approach is the development of "industrial sanctuaries" where manufacturing and distribution take place, and can help to ensure the excellent access between these areas and the transportation system.

These infrastructure improvements will allow the region to maintain the performance of the transportation system at current levels. If the region chooses to allow the performance of the system to decline, than Portland runs the risk of reversing the region's success in attracting distribution-related activity and jobs. Over the long-term, this could have a significant impact on the region's competitive position, and could negatively affect the standard of living.

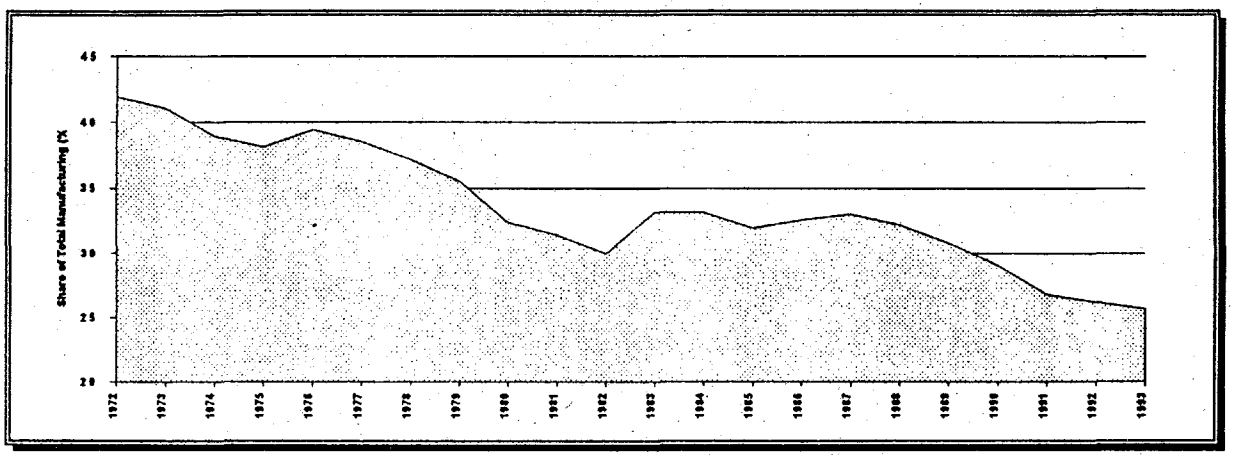
The 2040 Commodity Flow Study will help to increase awareness of the link between economic performance and freight activity



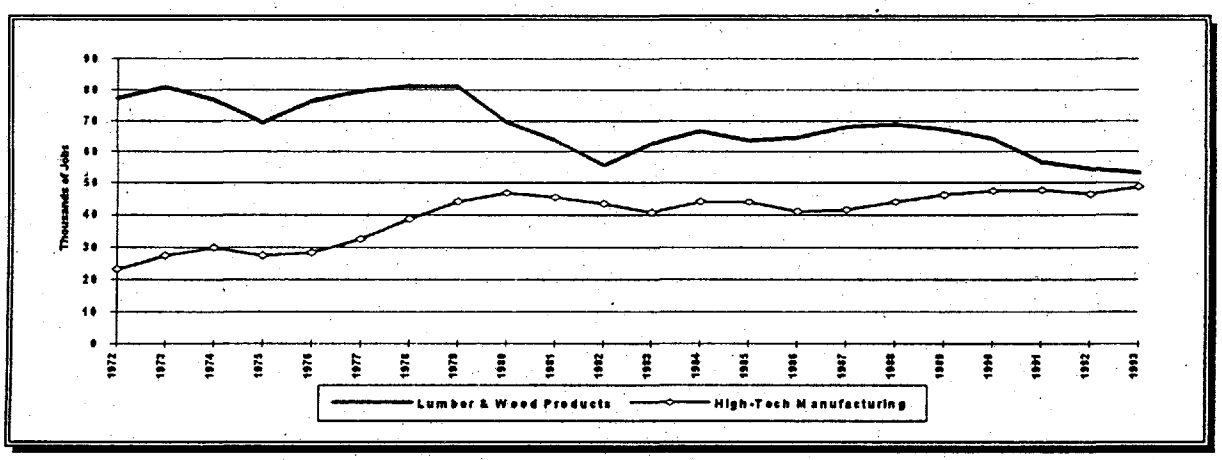
Portland's Economic Structure

Oregon has seen its largest industry, lumber and wood products, decline continually during the last twenty years. Portland's diversification from natural resource dependency highlights Oregon's shift to diversification.

Lumber & Wood Product's Share of Manufacturing Has Declined Dramatically in Oregon while...



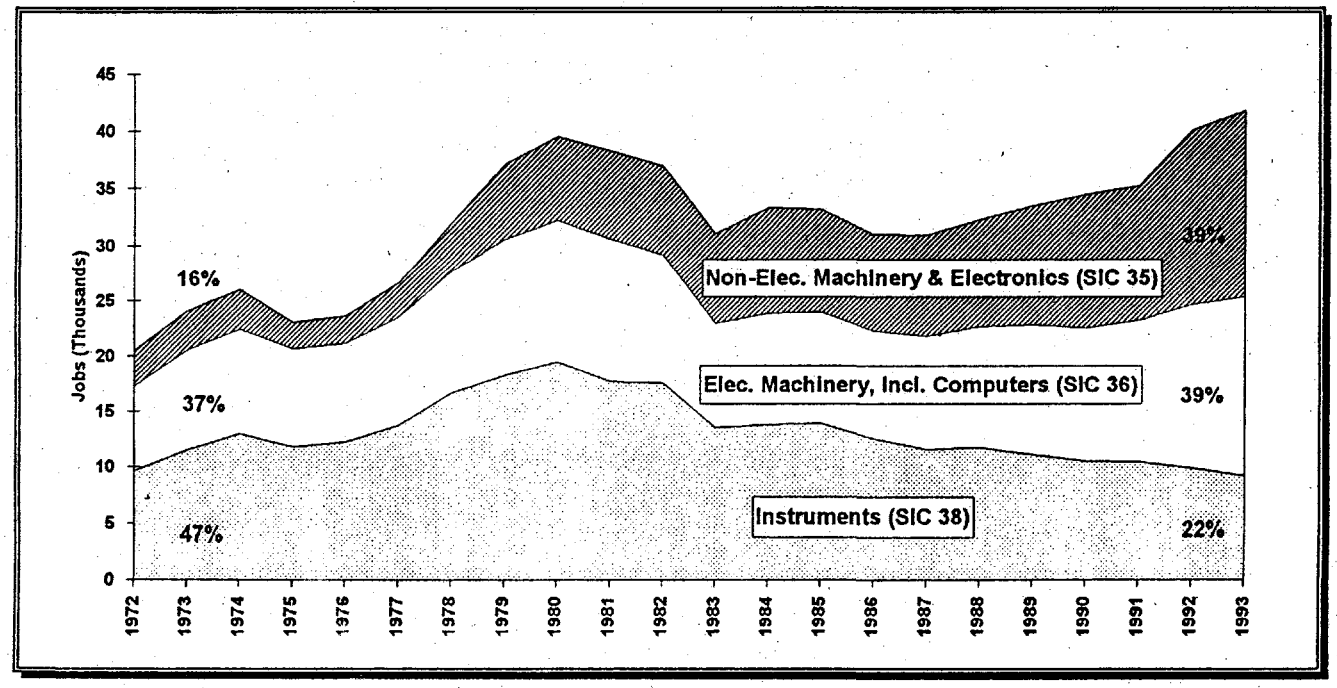
...High-Tech Manufacturing is Closing in on Lumber & Wood Products as Oregon's Largest Mfg. Employer



Portland's Economic Structure

High-tech manufacturing has changed since the emergence of the "Silicon Forest" in the early 1970s. Intel has passed long-time industry leader Tektronix as Oregon's largest high-tech employer, and with 6,150 (and counting) workers, Intel now employs more people in Oregon than in Silicon Valley. As the region's industries continue to diversify into higher value products, there will be increased demand on time-sensitive shipments. Portland's air cargo facilities will realize increase traffic as a result of this shift.

The Composition of Portland's High-Tech Sector has Changed as Employment Doubled



RESOLUTION 94-07-54

RESOLUTION OF THE TRI-COUNTY METROPOLITAN TRANSPORTATION DISTRICT OF OREGON (TRI-MET) TO SEEK VOTER APPROVAL OF BONDS TO MATCH FEDERAL FUNDS TO BUILD THE SOUTH-NORTH MAX LIGHT RAIL LINE

The Board of Tri-Met finds that:

1. Population growth will increase traffic and, unless well managed, lower air quality.

2. If the region does not maintain its air quality, federal rules could restrict economic development.

3. The region's transportation plans call for the construction of MAX light rail to help manage growth, improve traffic flow and maintain air quality.

4. MAX light rail is a necessary part of a balanced transportation system which provides for the efficient movement of goods and people at the lowest possible cost to users and taxpayers.

5. South-North MAX will connect communities in Oregon and Washington. Clark County and Vancouver will be connected to Portland and Clackamas County and to the Eastside and Westside MAX serving Multnomah and Washington counties. This enhances the value of the entire system and greatly increases transportation choices for residents of the whole region.

6. Unless local funding for South-North is approved this year, there is risk of missing the next opportunity for Congressional approval of an expected 50% federal share in the project cost.

7. Local bond approval is necessary to secure up to $5 from federal, State of Oregon, and State of Washington sources for every $1 approved by local voters.

8. No local bonds will be sold unless federal funds for this project are approved.

9. A committee of local and regional transportation officials has unanimously recommended that Tri-Met seek voter approval of bonds to build South-North MAX.

10. Opportunities for public and private cooperation and for innovative financing which will reduce the amount of funding needed from taxpayers to build South-North MAX should be pursued.

NOW, THEREFORE, BE IT RESOLVED THAT UPON ADOPTION BY THE BOARD, THIS RESOLUTION SHALL TAKE EFFECT IMMEDIATELY AS FOLLOWS:

There shall be submitted to the electors of the district the ballot title attached hereto and incorporated herein as Exhibit A ("Ballot Title") containing the question whether the district shall issue $475 million of general obligation bonds to match federal and State of

shington and State of Oregon funds to build the South-North MAX light
11 line, which Ballot Title shall be placed on the ballot for the general election to be held on November 8, 1994.

The General Manager is hereby authorized and directed to cause this resolution and the Ballot Title to be submitted to the Elections Officer and the Tax Supervising and Conservation Commission and to submit said resolution and Ballot Title to the Secretary of State for inclusion in the state voter's pamphlet in a timely manner as required by law and to perform all other acts which may be required or are convenient to submit this measure to the electorate.

Dated: August 9, 1994

Presiding Officer

Attest:

Diana K Smith
Recording Secretary

Approved as to Legal Sufficiency:

M Bruce Playfair
Legal Department

Exhibit A

BALLOT TITLE

MATCH FEDERAL FUNDS TO BUILD "MAX" SOUTH-NORTH LIGHT RAIL LINE

Question: Shall district issue $475 million of general obligation bonds to match federal funds to build South-North MAX light rail line? If the bonds are approved, they will be payable from taxes on property or property ownership that are not subject to the limits of section 11b, Article XI of the Oregon Constitution.

Explanation: Plans to manage growth, clean air, reduce traffic, call for building a MAX light rail system. South-North MAX will serve Clackamas and Clark Counties, Portland, Vancouver. Each dollar of bonds is needed to get up to $5 from Congress and the States of Washington and Oregon. No bonds will be sold unless Federal funds are approved. Bonds will mature in up to 30 years. Estimate of average year cost is 31 cents and highest year cost is 63 cents per $1000 of assessed value.

M E M O R A N D U M

METRO

PROPOSED TIER I SCHEDULE

TASK	DATE
Technical Work	May, 1994
Technical Reports	July, 1994
Financial Report	July, 1994
CAC & PMG Briefings	May - July, 1994
Steering Group Briefing	July, 1994
Public Meeting(s)	July, 1994
PMG Draft Recommendation	Early August, 1994
Final Draft PMG Recommendation	Mid August, 1994
CAC Discussions	Mid/Late August, 1994
Steering Group Public Meetings	Early September, 1994
Revised PMG & CAC Recommendation	September, 1994
Steering Group Recommendation	October, 1994
Jurisdictions	November, 1994
TPAC/RTC	November, 1994
Tier I Adopt - JPACT, Metro, JRPC, C-TRAN	December, 1994

KEY MILESTONES

TASK	DATE
Agreement on Legislative Package	September, 1994
Adopt South/North Tier I	November 1994
Success at Legislature on Gas Tax Increase:	
STP Shift, Constitutional Amendment Authority	July, 1995
"Mini" ISTEA Authorization - Establishes 50%:	
Section 3, Federal Participation	Fall, 1995
Vote on Constitutional Amendment	November, 1995 or May, 1996
Vote on Regional Transit Funding Package	May or November, 1996
Adopt S/N Locally Preferred Alternative (LPA)	August, 1996*
ISTEA Authorization	October, 1997
End South/North PE/FEIS	Summer 1998
Hillsboro Operations Start	September, 1998
South/North Full Funding Grant Agreement (FFGA)	Late 1998
Start South/North Construction Phase	Late 1998- Early 1999
Operations Start	2005

*This date assumes that the EIS is fairly straight-forward based on a significant narrowing of alignment options in Tier I. Failure to do so will result in an adjustment to this date and all subsequent dates.

CAC0808.ATT/bc

South North

Transit Corridor Study

Draft Briefing Document

Tier I Technical Summary Report

July 19, 1994

Metro

South North Transit Corridor Study

Briefing Document

Tier I Technical Summary Report

July 19, 1994 - DRAFT

Table of Contents

I. Introduction

Metro and C-TRAN, in cooperation with twelve state and local jurisdictions and agencies, are studying the South/North Transit Corridor to determine whether proposed light rail transit (LRT) improvements within the Corridor should be designed and constructed.

The South/North Transit Corridor Study was initiated in July 1993 following the region's decision in April 1993 to designate the South/North Corridor as the region's priority corridor within which to conduct the next Alternatives Analysis following the Westside Corridor to Hillsboro.

Because of the size of the South/North Corridor and the complexity of the issues involved, the South/North Alternatives Analysis was divided into two phases, or "tiers."

Tier I

The purpose of Tier I is to define the high capacity transit (HCT) alternative to be studied further within Tier II. Tier I will be used to: 1) select a preferred HCT mode; 2) to determine how far south and how far north within the Corridor to study further; and, 3) to reduce the number of HCT alignment alternatives throughout the corridor to one or two.

At the beginning of Tier I, the Region conducted a "Scoping" process where a wide range of alternative HCT modes (LRT, busway, river transit and commuter rail) were evaluated. Through the analysis prepared within Scoping, the Region determined that only LRT warranted further study within Tier I, in effect determining that the HCT mode that would advance into Tier II would be LRT. Therefore, within Tier I, the only alignment alternatives that have been developed and analyzed are LRT alternatives.

Tier II

The purpose of Tier II will be to evaluate the LRT alternative selected within Tier I and to compare it to a No-Build Alternative and an expansion of the bus system termed the Transportation Systems Management (TSM) Alternative. The performance, costs and impacts of these three alternatives will be documented within a draft environmental impact statement (DEIS) which will be used by the Region in selecting a locally preferred alternative. If the selected alternative is the LRT Alternative then the Corridor would advance toward final design and construction.

Narrowing LRT Alternatives: The Choice at Hand

The South/North Study is currently concluding Tier I. The purpose of this document is to summarize the data and information that have been prepared on the various LRT alternatives being studied within Tier I in order to allow the community and decision-makers to come to an informed determination on which alternatives should advance to Tier II for further study

The Tier I alternatives and this document have been structured to facilitate the understanding of the trade-offs (the benefits and the costs, the advantages and disadvantages) of the various LRT alternatives being considered. Again, because of the size and complexity of the Corridor, the choices have been divided into several groups (described in Section III of this report) where the differences between the alternatives can be isolated and better understood. By selecting the best LRT alternative within each group the region will define the optimum LRT alternative to advance into Tier II.

Other choices concerning the LRT alternatives also face the region but are not addressed within this document nor by the process at this time. They are at a finer level of detail and are called "design options," such as the placement of LRT tracks in the center or on the left or right side of a street. Design options exist for each of the alternatives being evaluated. Many design options have been evaluated within Scoping and Tier I. Throughout Tier I, design options have been screened out or have been developed to solve problems or to take advantage of opportunities. Design options associated with the alternatives selected to advance into Tier II will be further refined and screened before work is initiated on the DEIS. This screening will be conducted by the Steering Group and Project Management Group in consultation with the public and the Citizens Advisory Committee

Following is a description of the transportation problems within the Corridor and the goal and objectives of the South/North Study that were used to help define and evaluate the LRT Alternatives being considered.

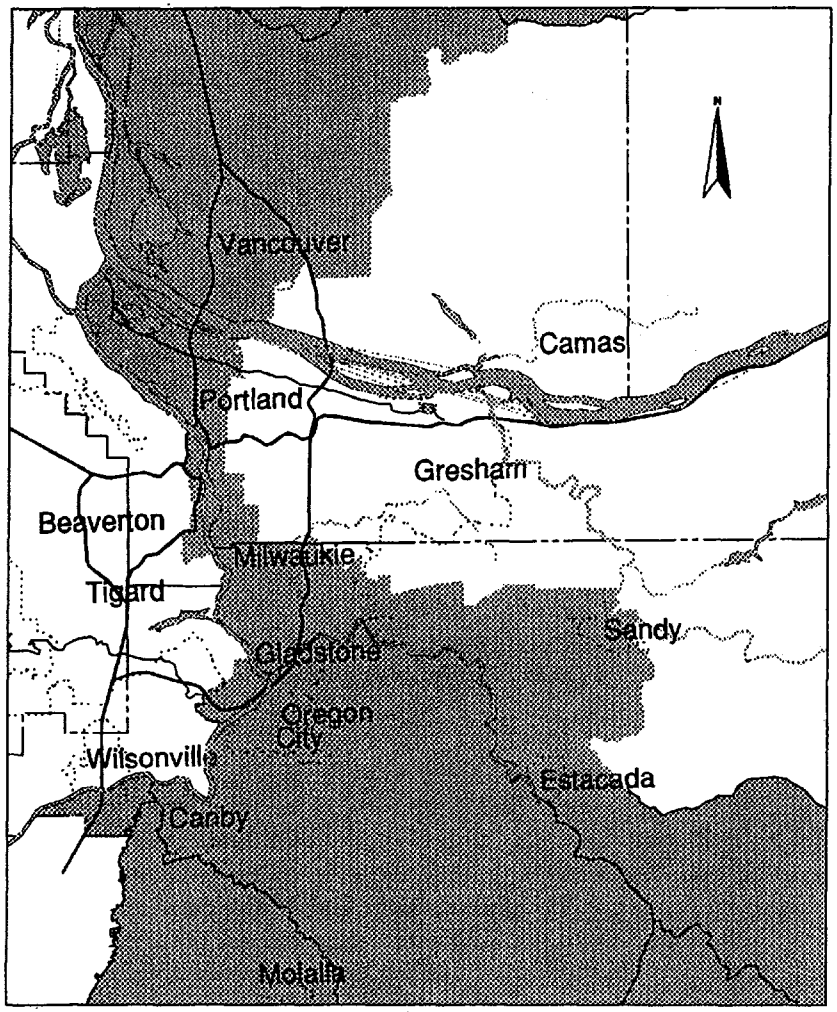


Figure 1 South/North Corridor

II. Purpose and Need

The purpose of the following two pages is to set a context for the South/North Transit Corridor Study: What area does the Study cover? Why are we studying the South/North Corridor? What purpose will the alternatives being studied serve? How will we evaluate the alternatives?

The South/North Corridor

Figure 1 illustrates the South/North Corridor. It is the travel shed extending north from the Oregon City area in Clackamas County, through downtown Portland and into Clark County beyond Vancouver. The Corridor is defined in this way because it captures the trips that could benefit from the major transit improvements being evaluated, either on LRT exclusively or fed through a system of connecting bus routes or park-and-ride lots.

Key activity centers within the Corridor help to define the points that LRT alternatives should connect to. The first three in the table below are common in all of the alternatives being studied, but the remaining centers present choices and trade-offs between the alternatives in the South and the North.

Major Activity Centers Within the Corridor

Common	South	North
Downtown Portland	Clackamas Town Center	I-5 & 134th
Downtown Milwaukie	Oregon City	Vancouver Mall
Downtown Vancouver		Jantzen Beach

The Corridor also includes other important centers such as the Central Eastside Industrial Area, OMSI, Portland State University, Johns Landing, Interstate Avenue and Portland Community College. The proposed LRT improvements could serve over twenty Portland neighborhoods, depending upon the alternatives selected.

In all, the South/North Corridor covers almost half of the metropolitan region. It is characterized by high employment and residential growth with the potential for worsening travel conditions. Population and employment growth in Clark and Clackamas Counties is projected be 32% to 48% over the next twenty years, exceeding the overall Regional growth rates.

Transportation Problems and Opportunities

The problems and opportunities that exist within the South/North Corridor set a context for defining and evaluating the transit alternatives.

- **Transportation Problems.** Traffic in the South/North Corridor is exceeding the capacity of many of the roads and intersections within highway system. For example, most of McLoughlin Boulevard is currently highly congested with a level of service of E or F. In the North, traffic across the Columbia River has almost doubled since the opening of the I-205 Bridge with projections for continued growth well into the future, causing demand to exceed capacity during the key commute periods.

- **Transit Problems.** As the highway network becomes congested the bus network, that shares the road with cars and trucks, experiences longer travel times and high levels of unreliability. Deterioration in speed and reliability of buses increases operating costs, deters ridership and costs transit riders thousands of person hours a day through longer bus trips.

- **Regional Plans.** For almost twenty years the Region has shaped its land use and transportation plans based upon the expectation that high capacity transit (HCT) would be provided within the South/North Corridor. Those plans have sized the road network, defined the comprehensive land use plans and implemented a bus network that would be served by and enhance an HCT facility.

- **New State Regulations.** Both Oregon and Washington jurisdictions face tougher state regulations effecting transportation and land use planning. Oregon now requires that the Region plan for a 20% reduction in the per capita vehicle miles traveled and a 10% reduction in the per capita number of parking spaces. In Washington, the Clark County area is required to adopt a commute trip reduction ordinance that would result in a 35% drop in trips to major employers by 1999.

- **Economic Health.** There is growing concern that reduced accessibility within the South/North Corridor may reduce its ability to attract and retain industrial and commercial development in the Corridor. This trend adds to the concern in Clark County regarding the relative loss of per capita income compared to the Region. Further, concurrency requirements within Washington may limit new developments if the transportation system is inadequate to handle new demand.

- **Air Quality.** The Region is currently "marginal" for ozone and "moderate" for carbon dioxide. Transit expansion is a key element of the Region's proposed Air Quality Maintenance Plan and could save new industry $2 million a year in air quality clean-up costs.

Goal and Objectives

To implement a major transit expansion program in the South/North Corridor which supports bi-state land use goals, optimizes the transportation system, is environmentally sensitive, reflects community values and is fiscally responsive.

1. Provide high quality transit service.

2. Ensure effective transit system operations.

3. Maximize the ability of the transit system to accommodate future growth in travel demand.

4. Minimize traffic congestion and traffic infiltration through neighborhoods.

5. Promote desired land use patterns and development.

6. Provide for a fiscally stable and financially efficient transit system.

7. Maximize the efficiency and environmental sensitivity of the engineering design of the proposed project.

Alternatives were developed that address the problems and opportunities within the Corridor and they are described in the following section of this report. The study's objectives provide a framework for evaluating the alternatives. Each alternative's ability to meet the study objectives was measured. Their performance is described in Sections V-X and summarized in a table format in Appendix A.

III. Tier I LRT Alternatives

The Tier I LRT Alternatives have been divided into six groups in order to isolate and better understand the choices to be made.

A. Study Terminus Alternatives

Study Terminus Alternatives will be used to define how far South and North to study within Tier II. Because of the time and costs associated with the Tier II analysis, it is important that the Region only study improvements that could potentially be funded and that provide adequate benefits in relationship to their costs. A set of Study Terminus Alternatives have been defined for the South and the North. They have been analyzed and are evaluated in sections V and VI separately so that decisions regarding the ultimate termini can be made independently of each other.

While selecting Study Termini short of the furthest points would not remove the furthest points from the Regional Transportation Plan's HCT Corridors, it could remove them from the list of Ten-Year Priorities.

Also, it is important to note that the determination of a Study Terminus in Tier I is different than the minimum operable segment analysis and selection of a locally preferred alternative that will occur in Tier II. The Study Terminus choice will be just that, how far North and South to *study* in Tier II. The Region may choose to, or the Federal Transit Administration may require us to, evaluate even shorter segments before the selection of the locally preferred alternative following the completion of the draft environmental impact statement. This analysis could also include the possible phasing of improvements with an opening of one segment followed a year or two later by the opening of another segment.

Finally, selection of a Study Terminus will not necessarily define the precise street or location of the terminus. Instead, it is intended to define the general vicinity of the terminus for study in Tier II. Design considerations such as station and park-and-ride lot locations, costs and traffic and environmental impacts may require that a terminus studied in Tier II to be several blocks from its designation as the Study Terminus at the conclusion of Tier I.

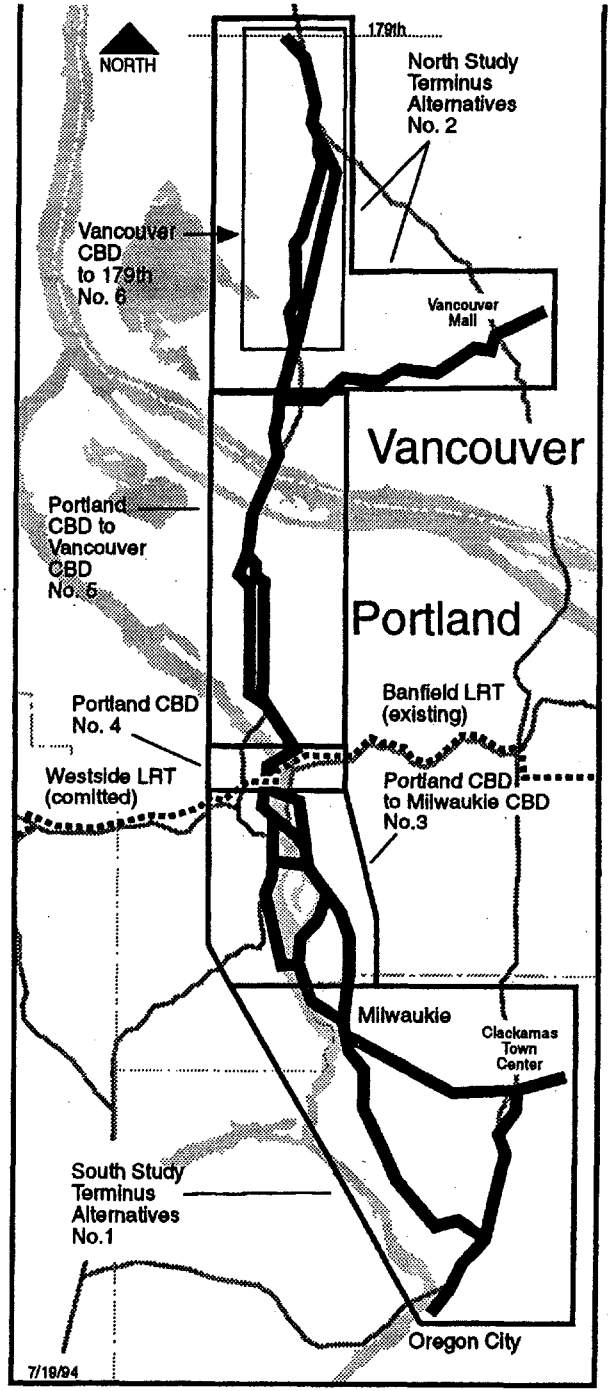


Figure 2 Tier I Groups of Alternatives

1. **South Study Terminus Alternatives**
   - **Milwaukie CBD.** This alternative would extend LRT from downtown Portland, across the Willamette River to south or east of the Milwaukie CBD.
   - **Clackamas Town Center.** This alternative would extend LRT from downtown Milwaukie to the Clackamas Town Center and possibly across I-205 to a park-and-ride in the vicinity of Sunnyside Road.
   - **Oregon City via McLoughlin Boulevard.** This alternative would extend LRT south from Milwaukie along McLoughlin Boulevard, through Gladstone and into the old town area of Oregon City.
   - **Oregon City via I-205 and Clackamas Town Center.** This alternative would extend LRT through the Clackamas Town Center, along I-205, through Gladstone and into the old town area of Oregon City.

2. **North Study Terminus Alternatives**
   - **Vancouver CBD.** This alternative would extend LRT from downtown Portland, across the Steel Bridge and across the Columbia River, through downtown Vancouver to 39th Street.
   - **88th Street.** This alternative would extend LRT from 39th Street, parallel, to I-5 to 88th Street.
   - **134th Street.** This alternative would extend LRT from 88th Street, parallel to I-5, to 134th Street near the future WSU branch campus.
   - **179th Street.** This alternative would extend LRT from 134th Street, parallel to I-5, to 179th Street near the Clark County Fairgrounds.
   - **Vancouver Mall.** This alternative would extend LRT east from the Vancouver CBD, parallel to SR-500, to the Vancouver Mall and possibly across I-205 to a park-and-ride lot in Orchards.

B. LRT Alignment Alternatives

Alignment alternatives are the major choices of where LRT improvements should be studied further within Tier II. As opposed to design options described in Section I, alignment alternatives are separated by several blocks or miles. Generally, the differences in alignments are great enough to cause significant differences in costs and ridership. There are four geographic areas within the Corridor that have Alignment Alternatives being evaluated:

3. **Portland CBD to Milwaukie CBD**
   a. **Willamette River Crossings:**
      - **Hawthorne Bridge.** This alternative could use the existing Hawthorne Bridge which would be retrofitted for LRT.
      - **Caruthers Bridge.** This alternative would use a new span under the Marquam Bridge from South Waterfront District to south of OMSI.
      - **Ross Island Bridge.** This alternative would use a new span just south of the existing Ross Island Bridge.
      - **Sellwood Bridge.** This alternative would provide service to Johns Landing and would use a new span north of the Sellwood Bridge.

   b. **Eastbank Alignments**
      - **McLoughlin Blvd.** This alternative would use McLoughlin Blvd. between the three northern river crossings and Sellwood.
      - **PTC Alignment.** This alternative would use the Portland Traction Company alignment next to the Willamette River between the three northern river crossings and Sellwood.

4. **Portland Central Business District**
   - **Surface.** This alternative would be on the surface streets of 5th and 6th Avenues on the Transit Mall between the Steel Bridge and connections to the South Willamette River crossings.
   - **Subway.** This alternative would be below ground from Union Station to connections to the South Willamette River crossings. A subway could be under 4th, 5th, 6th or Broadway Avenues but could not be connected to a Hawthorne Bridge crossing.

5. **Portland CBD to Vancouver CBD**
   - **Interstate Avenue.** This alternative would be within the Interstate Avenue right-of-way between the Kaiser medical facility and Kenton.
   - **I-5.** This alternative would be on the ridge above and parallel to I-5, generally within or adjacent to the Minnesota Avenue right-of-way between Kaiser medical facility and the Kenton neighborhood.

6. **Vancouver CBD to 179th Street**
   - **Highway 99.** This alternative would be in the median of Highway 99 between the Main Street/I-5 interchange and 179th Street.
   - **I-5.** This alternative would be directly adjacent to I-5 between Main Street/I-5 interchange and 179th Street.

IV. A Few Notes About the Numbers

Following is a description of how many of the measures within this report were developed:

- **Comparing the Alternatives.** Most important in using the comparative measures within this report is understanding the alternatives and how they have been developed for the purpose of this analysis. Within the grouping of alternatives (e.g. South Study Terminus Alternatives, Portland CBD to Vancouver CBD Alignment Alternatives, etc.) the alternatives have been held constant outside the segment in question. For example, when developing, modeling and comparing South Study Terminus Alternatives, changes were only made within the segment from Milwaukie to Oregon City. Each of the South Study Terminus Alternatives are the same north of Milwaukie: McLoughlin Boulevard, across the Hawthorne Bridge, through downtown Portland using the surface alignment on the Transit Mall, north on Interstate Avenue, through the Vancouver CBD and along I-5 to 179th Street. When evaluating the North Study Terminus Alternatives, the alignments south of Vancouver are similarly held constant terminating in the south in Oregon City via I-205.

  This method of analysis was employed to ensure consistency among the alternatives within a given segment or group. It also guarantees that the changes in the data can be attributed to the changes made to the alternatives within the segment in question. Finally, it allowed the number of alternatives developed and analyzed to be kept to a minimum, saving time and money.

  There are three important implications that lead from this way of analyzing the alternatives:

  1) The differences between the alternatives in ridership and costs are real and are tied directly to the variations in the alternatives;

  2) Much of the data from one set of alternatives should not be compared with an alternative from another set; and

  3) There are numerous combinations of projects which can be created by mixing and matching the alternatives within each of the segments. All of those combinations have not been presented or costed within this report. However, a matrix of the possible southern and norther terminus combinations is provided in Appendix B. By using add-ons or deductions for each of the alignment alternatives, one can develop a cost estimate for any of the possible combinations.

- **Ridership.** The light rail ridership forecasts are based upon changes in the LRT and bus networks within the Corridor. The forecasts are for the year 2015 and are based on existing land use plans and allocations developed by Metro and local jurisdictions.

- **1994 Capital Costs.** Capital costs for the alternatives have been developed in 1994 dollars by estimating the amount of material needed for each area of track that would be constructed, accounting for right-of-way purchase, related roadway reconstruction, structures, various trackway treatments, engineering and administration, system costs (e.g. signals system) and a contingency of about 25% to 35%. These costs also include light rail vehicles and maintenance facilities. The capital costs have been based upon recent experience with the Westside Project.

- **Year of Expenditure (YOE) Costs.** Because costs generally inflate over time and it would take approximately ten years to finish the planning, engineering and construction of the LRT alternatives, the projected inflated costs of the alternatives have been provided. The YOE costs depend upon the assumed inflation rate (6.2%) and the construction schedule (developed consistent with the Westside Project with construction completed by 2003 to 2005 depending upon the alternative). In general, the 1994 costs increase by about 60% to develop the year of expenditure costs.

- **Operating and Maintenance (O&M) Costs.** O&M costs within this report are the costs of operating the LRT alternative. The difference in bus O&M costs between the alternative with the highest bus operating costs and the other alternatives are subtracted from the LRT operating costs. The result is the *effective* LRT operating costs used in calculating the cost effectiveness estimate for the alternatives.

- **Cost Effectiveness.** Cost effectiveness analysis provides a means of comparing the benefits of each alternative with its costs. The Tier I cost effectiveness analysis focuses on two different costs: 1) Effective Operating Costs; and 2) Total Annualized Costs. Effective Operating Costs are the year

2015 operations and maintenance costs of the LRT minus the bus O&M costs saved by the subject LRT alternative from the highest bus O&M costs among the comparable alternatives. Total Annualized Costs includes annualized LRT capital costs plus the year 2015 Effective Operating Costs (in 1994 dollars). Annualized capital costs are based on the estimated LRT capital costs in 1994 dollars and assume a seven-percent discount rate and a 40-year economic life. The higher the cost effectiveness ratio, the less cost effective the alternative.

- **Environmental Analysis.** The estimates of environmental impacts (e.g. noise and vibrations, displacements, etc.) are based upon sketch-level analysis. While the data is accurate in comparing the alternatives, the actual environmental impacts may change as designs are refined, as more detailed analyses are done and as mitigation measures are developed and incorporated into the design. Tier II, with the preparation of the Draft Environmental Impact Statement, will provide a very high level of detail on a much wider array of potential impacts.

Technical Summary Report

The *Briefing Document* is in essence an executive summary of the *South/North Tier I Technical Summary Report,* which can be referred to for more detailed information.

Appendix A

At the end of this report in Appendix A are tables for each of the six sets of alternatives that present all of the criteria and measures for each of the alternatives. The tables within the body of the report summarize the ridership, cost and cost effectiveness for the alternatives included within the larger tables. Within the text of this report measures are referred to that are either within the summary table adjacent to the text or within the full tables included within Appendix A.

Glossary of Terms

Terminus: A terminus is the furthest north or south light rail station.

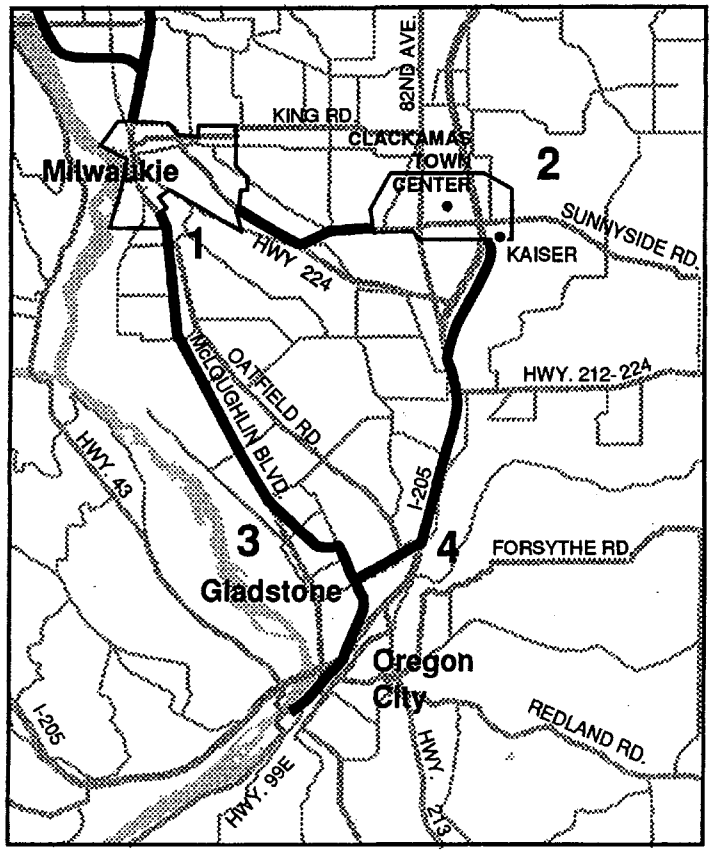
LRT Ridership: Light rail ridership includes any transit trip that would use light rail for a portion of that trip within the South/North Corridor

Total Transit Ridership: Total transit ridership is the total number of bus, light rail and combined bus and light rail trips taken within the corridor. They are one-way trips and a trip that involves a transfer is counted as one trip.

Total Transit Travel Time. Total Transit Travel Time is the combined time it would take to walk to a bus stop or station, wait for the bus or light rail vehicle, travel within the vehicle, and walk to the destination. Travel times used within this report are for the peak rush hour in the peak direction (traveling away from downtown in the evening).

Cutline. A cutline is an imaginary line drawn across one or more highways where the total number of cars or passengers crossing that line are added together. By comparing the highway or transit capacity across that line to the cars or passengers that would cross that line under any given alternative, a volume to capacity ratio can be calculated giving an indication of congestion at that location.

V. outh Study Terminus Alternatives



The map to the left illustrates the four terminus alternatives for the South that could be selected to advance into Tier II. The selection of a Study Terminus will define the southern limits of the Tier II analysis. Within those limits, shorter segments may be studied for either phasing opportunities or as required by the federal government to determine the minimum operable segment.

1. Milwaukie Terminus

Advantages:

- The least costly of the four alternative southern termini, with a capital cost savings in $YOE of $457 to $1,015 million compared with a terminus at Clackamas Town Center (CTC) or Oregon City.
- The least costly of the alternatives to operate, with annual savings in $1994 of approximately $70,000 (CTC) to $2.7 million (Oregon City via I-205).
- The most cost effective southern terminus alternative.
- Total transit travel time between Milwaukie and Portland CBDs would be less than auto travel times during the peak hour.

Disadvantages:

- Lowest LRT and total transit (LRT + bus) ridership, with 2,500 to 5,850 fewer LRT trips and 600 to 2,150 fewer total transit trips.
- Would provide only limited LRT service into Clackamas County and to major activity centers within the County.

Portland CBD to:	Milwaukie CBD	CTC	Oregon City via McLoughlin	Oregon City via I-205
Year of Expenditure Cost (millions)	$610	$1,068	$1,208	$1,625
LRT Weekday Ridership from 179th to:	56,900	59,400	61,900	62,750
Total Corridor Transit Weekday Ridership	129,200	129,800	131,750	131,350
Effective LRT Annual Operating Cost (millions) from 179th to:	$12.87	$12.94	$13.70	$15.58
Cost Effectiveness	$6.65	$7.34	$7.42	$8.32

- Limited park-and-ride lot opportunities with the highest park-and-ride demand would result in higher capital costs and/or lower ridership estimates with greater traffic impacts than are currently estimated.

- Would leave many of the transportation problems within the segment unaddressed, with slower total transit travel times for Oregon City and Clackamas Town Center to the Portland CBD than for the same trip using an automobile. In addition, volume to capacity ratios (congestion) at several cutlines would be highest among all the alternatives.

- Limited ability to respond to or shape development within the most rapidly growing areas of the segment.

2. Clackamas Town Center Terminus

Advantages:
- The lowest cost (both capital and O&M) and the most cost effective of the alternatives that extend well into Clackamas County.

- Would provide LRT access to Clackamas Town Center area, the highest growth rate area and the area with the highest planned density of uses within the Clackamas County segment of the Corridor.

- Total transit travel times between Clackamas Town Center and the Portland CBD would be one minute faster than the automobile travel times.

- The lowest (same as Oregon City via McLoughlin Boulevard) operating cost per trip of the alternatives.

Disadvantages:
- Higher cost (both capital and O&M) than the Milwaukie Terminus.

- Lower LRT and total transit ridership than either extension to Oregon City.

- McLoughlin park-and-ride demand must be accommodated with a lot near or north of the Milwaukie CBD which may result in more local traffic impacts within the downtown Milwaukie area.

3. Oregon City via McLoughlin Boulevard Terminus

Advantages:
- Highest total transit and second highest LRT ridership of the South terminus alternatives.

- Total transit travel times between Oregon City and downtown Portland would be two minutes faster than the auto travel times.

- Would provide direct LRT service to the County seat.

- The lowest (same as CTC) operating cost per trip of the alternatives.

- Some opportunities for redevelopment on McLoughlin Boulevard.

Disadvantages:
- Second highest capital cost southern terminus alternative, almost $600 million more costly than the Milwaukie Terminus and $140 million more than the CTC Terminus, and second highest O&M costs.

- The second highest cost effectiveness ratio.

- Park-and-ride demand from east of Milwaukie must be accommodated with a lot near or north of the Milwaukie CBD which may result in more local traffic impacts within the downtown Milwaukie area.

- Traffic impacts on McLoughlin Boulevard would include left turns being restricted to intersections and impacts during construction.

- Limited opportunities for new development.

4. Oregon City via I-205 Terminus

Advantages:
- Would have the highest LRT ridership and second highest total transit ridership of the southern terminus alternatives.

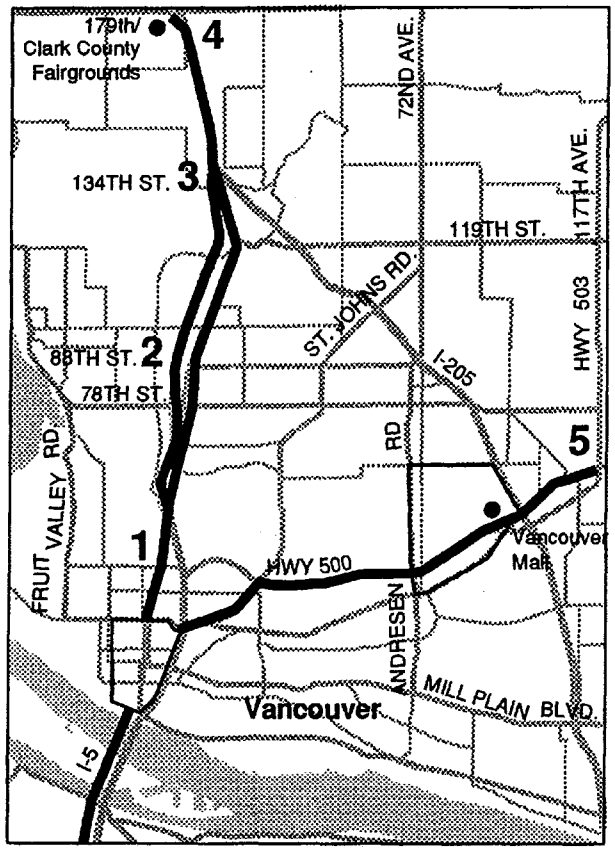
- Would provide LRT access to the CTC area, the highest growth rate and highest planned density use area of the County, and to Oregon City, the County seat.

Disadvantages:
- Highest cost alternative, with over $1 billion more capital costs than the Milwaukie Terminus and $2.5 million more annually in additional O&M costs.

- Least cost effective of the South Terminus Alternatives, with the highest annualized cost per LRT rider and the highest LRT operating costs per rider.

- Total transit times would remain longer for trips between Oregon City and downtown Portland than for trips taken using an automobile.

- Limited station opportunities between Clackamas Town Center and Gladstone.



The above map illustrates the five alternative terminus points for the North that could be selected to advance into Tier II. The selection of a Study Terminus will define the northern limits of the Tier II analysis. Within those limits shorter segments may be studied for either phasing opportunities or as required by the federal government to evaluate shorter segments. Note that the capital costs for the I-5/Highway 99 Alternatives are currently being revised and the new estimates will be incorporated into a later edition of this report.

1. Vancouver CBD/39th Street Terminus

Advantages:

- The least costly of the four alternative northern termini, with a capital cost savings in $YOE of $333 to $621 million.
- The least costly of the alternatives to operate ($530,000 to $2.3 million less annually).
- The most cost effective northern terminus alternative.
- Total transit travel time between Vancouver and Portland CBDs would be less than auto travel times during the peak hour.

Disadvantages:

- Lowest LRT and total transit (LRT + bus) ridership, with 1,550 to 2,750 fewer LRT trips and 700 to 1,350 fewer total transit trips.
- Would provide only limited LRT service into Clark County and to major activity centers within the county.
- Limited park-and-ride lot opportunities with the high park-and-ride demand would result in higher capital costs and/or lower ridership estimates with greater traffic impacts than currently estimated.
- Would leave many of the transportation problems within the Clark County segment unaddressed, with slower total transit travel times for north Clark County and Vancouver Mall.
- LRT would not extend far enough into Clark County to assist in the management of growth within Clark County.

2. 88th Street Terminus

Advantages:

- The lowest cost (both capital and O&M) and the most cost effective of the alternatives that extend well into Clark County. Total transit ridership is only slightly lower than the further termini but at a substantially lower cost.
- Would provide LRT access into the north I-5 corridor area, designated within the growth management plan as a high growth area with intense development pasterns.
- Would provide higher transit reliability for patrons than the Vancouver CBD Alternative and the same reliability as the further extensions at a much lower cost (based on the percent of passenger miles within protected ROW).
- The lowest (same as Vancouver CBD) operating cost per trip.
- Total transit travel time from Portland CBD to Vancouver CBD and 88th Street would be less than or similar to auto travel times during the peak hour.

Disadvantages:

- Higher cost (both capital and O&M) than the Vancouver CBD Terminus.

From Portland CBD to:	Vancouver CBD	88th	134th	179th	Vancouver Mall
Year of Expenditure Cost (millions)	$979	$1,312	$1,469	$1,600	$1,441
LRT Weekday Ridership from Oregon City to:	60,050	61,600	62,200	62,800	62,450
Total Weekday Corridor Transit Ridership	130,000	131,150	131,300	131,350	130,700
Effective LRT Operating Cost (millions) Oregon City to:	$15.27	$15.80	$16.47	$17.55	$17.60
Cost Effectiveness	$7.30	$7.87	$8.16	$8.41	$8.13

- Lower LRT ridership than extensions north and to Vancouver Mall.

- SR-500 park-and-ride demand would need to be accommodated with a lot near or north of the Vancouver CBD which may result in more local traffic impacts near central Vancouver.

3. 134th Street Terminus

Advantages:

- Second highest total transit ridership of the North terminus alternatives.

- Would provide LRT access to the 134th Street area with possible shuttle access to WSU Branch Campus. This area has been designated as a major growth and activity centers. Would forward growth management planning goals.

Disadvantages:

- Second highest capital cost of the northern terminus alternatives, almost $500 million more costly than the Vancouver CBD Terminus and $150 million more than the 88th Street Terminus.

- SR-500 park-and-ride demand would need to be accommodated with a lot near or north of the Vancouver CBD which may result in more local traffic impacts near central Vancouver.

- Total transit travel times would remain longer than the auto travel times for trips from 134th Street, 179th Street and Vancouver Mall to downtown Portland.

4. 179th Street Terminus

Advantages:

- Would have the highest LRT ridership and highest total transit ridership of the northern terminus alternatives.

- Would provide direct LRT access to the 134th Street area with possible shuttle service to the WSU Branch Campus area.

Disadvantages:

- Highest capital cost alternative, over $600 million more than the Vancouver CBD Terminus and $2.28 million more in O&M costs.

- Total transit travel times would remain longer than the auto travel times from 134th Street, 179th Street and Vancouver Mall to downtown Portland.

- Least cost effective of the North Terminus Alternatives.

- Terminus at 179th Street is very close to the interim growth boundary and could result in pressure to extend the boundary. If the boundary is not expanded it could lead to underutilization of the transit system.

4. Vancouver Mall Terminus

Advantages:

- Would have the second highest LRT ridership of the northern termini.

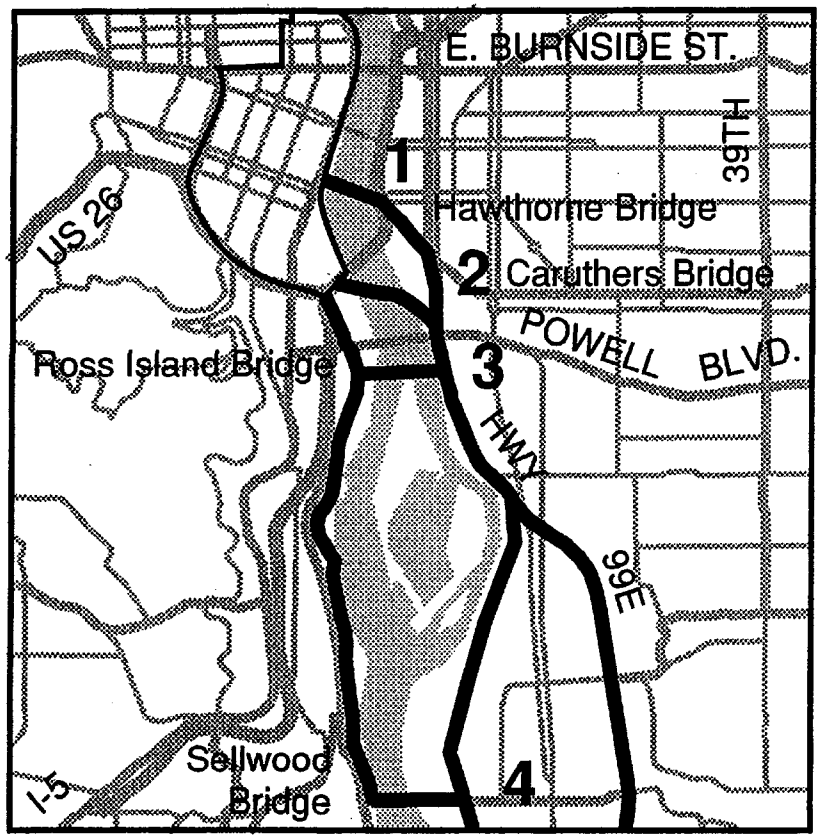
- Would provide LRT access to the Vancouver Mall area, a high growth rate and high intensity use area within Clark County.

Disadvantages:

- Highest LRT operating costs per rider.

- Total transit travel times would remain longer than auto travel times from Vancouver Mall, 134th Street and 179th Street to downtown Portland.

- I-5 park-and-ride demand would need to be accommodated with a lot near or north of the Vancouver CBD which may result in more local traffic impacts near central Vancouver.



The map to the left illustrates the alignment alternatives betwe he Portland CBD and downtown Milwaukie that could be selected to advance into Tier II for further study. Within this segment there are two different sets of alternatives being compared. First are the alternate locations for a crossing of the Willamette River south of the Portland CBD.

Second, for the Hawthorne, Caruthers and Ross Island Bridge Crossing alternatives, two Eastbank routes south are being compared: either the Portland Traction Company rail right-of-way or an alignment adjacent to McLoughlin Boulevard.

A. South Willamette River Crossings

1. Hawthorne Bridge Alternative

Advantages:

- The least costly of the four alternatives with a cost savings in $YOE of $59 to $65 million.
- Would provide the best LRT access to the Central Eastside and OMSI.
- The most cost effective river crossing alternative.
- May provide better opportunity for SE bus connections to LRT.
- Would provide LRT access to inner SE neighborhoods (Brooklyn and Moreland).

Portland CBD to Milwaukie via:	Hawthorne Bridge	Caruthers Bridge	Ross Island Bridge	Sellwood Bridge
Year of Expenditure Cost (millions)	$674	$740	$733	$739
LRT Weekday Ridership 179th to Oregon City	62,750	62,800	62,300	61,400
Total Corridor Transit Weekday Ridership	131,350	132,200	131,400	130,750
Effective LRT Operating Cost (millions) Oregon City to 179th	$17.93	$17.93	$17.93	$19.12
Cost Effectiveness	$8.44	$8.58	$8.63	$8.83

Disadvantages:

- Would provide the least LRT access to the southern portions of the Portland Central City including PSU, and no access to the North Macadam area and to the South Waterfront District.
- Frequent bridge openings for river traffic would cause LRT reliability problems and increase operating expenses.
- Difficult to bring the existing Hawthorne Bridge up to seismic and operational standards and a new span would increase costs and would significantly impact the Portland CBD.
- Total transit ridership would be lower than the Caruthers Bridge.
- Using the McLoughlin alignment on the eastside south to Sellwood would displace approximately 50 structures and could adversely impact historic structures. Use of the PTC alignment could have significant impacts upon the adjacent wildlife habitat and natural environment. (See *Disadvantages* for the McLoughlin and PTC alignments).

2. Caruthers Bridge

Advantages:

- Highest total transit and LRT ridership.
- Would provide LRT access to the South Central City area including PSU, Riverplace and the South Waterfront Development.
- Would provide LRT access to OMSI, inner SE neighborhoods (Brooklyn and Moreland).
- The lowest (same as Hawthorne Bridge) operating cost per trip and the lowest cost effectiveness ratio after Hawthorne.

Disadvantages:

- Highest cost (similar to Sellwood) Willamette River crossing ($65 million more than the Hawthorne Bridge).
- Severe design constraints due to the close proximity of the Marquam Bridge may increase costs.
- Known and possibly unknown hazardous material sites.
- Impacts of bridge construction to the Willamette River ecosystem.
- Using the McLoughlin alignment on the eastside south to Sellwood would displace approximately 50 structures and could adversely impact historic structures. Use of the PTC alignment could have significant impacts upon the adjacent wildlife habitat and natural environment. (See *Disadvantages* below for the McLoughlin and PTC alignments).
- Possible impact on design of future development in South Waterfront Development.

3. Ross Island Bridge

Advantages:

- Second highest total transit ridership.
- Would provide LRT access to the north Macadam redevelopment area and the South Central City area including PSU, Riverplace and the South Waterfront Development.
- Would provide LRT access to inner SE neighborhoods (Brooklyn and Moreland).
- Moderate operating costs, operating cost per trip, capital costs and cost effectiveness ratio, and lowest capital costs of the fixed span alternatives.

Disadvantages:

- Capital costs would be $59 million more than Hawthorne Bridge.
- Impacts of bridge construction to the Willamette River ecosystem.
- Using the McLoughlin alignment on the eastside south to Sellwood would displace approximately 50 structures and could adversely impact historic structures. Use of the PTC alignment could have significant impacts upon the adjacent wildlife habitat and natural environment. (See *Disadvantages* for the McLoughlin and PTC alignments).
- Possible impact on design of future development in South Waterfront and North Macadam Development areas.

- Would not provide direct LRT service to OMSI.

4. Sellwood Bridge

Advantages:

- Would provide LRT access to the North Macadam redevelopment area, the South Central City area including PSU, Riverplace, the South Waterfront Development and Johns Landing.

- May provide the opportunity to reduce total transportation costs and impacts by combining highway and transit river crossing.

Disadvantages:

- Second highest river crossing alternative ($64 million more than Hawthorne and similar to Ross Island).

- Lowest LRT ridership and total transit ridership.

- Highest operating costs, highest operating costs per rider and highest cost effectiveness ratio.

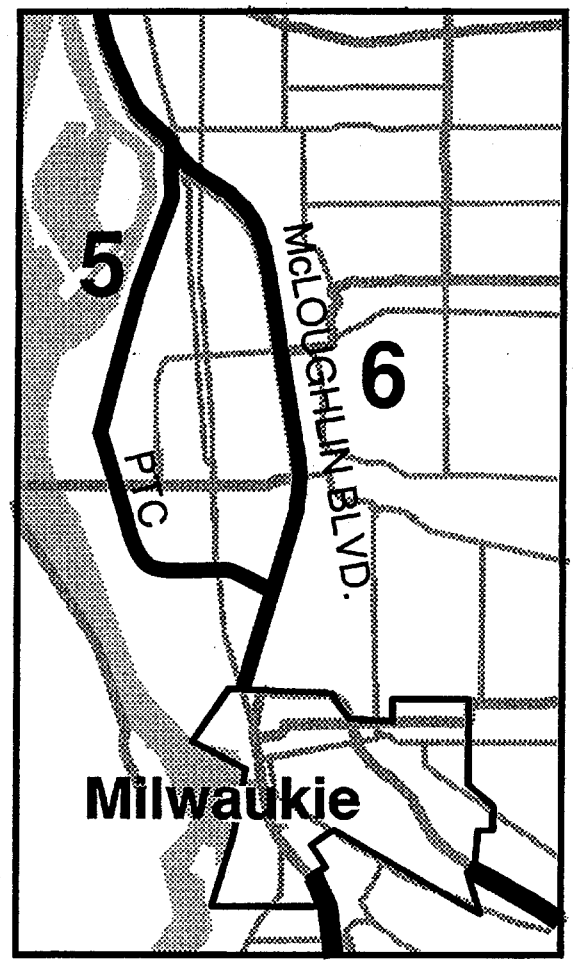
- Local neighborhood and social impacts (e.g. noise and vibration) in the Johns Landing area.

- Impacts due to bridge construction to the Willamette River ecosystem.

- Slowest travel times between Clackamas County and downtown Portland (approximately 5 minutes slower).

- Would not provide LRT access to Brooklyn and Moreland neighborhoods or OMSI.

B. Eastbank Alignments



The above map illustrates the Portland Traction Company Alignment Alternative and the McLoughlin Boulevard Alignment Alternative. The costs within the following analysis assume a Hawthorne Bridge crossing but the cost differential would apply to either the Hawthorne, Caruthers or Ross Island crossing.

5. Portland Traction Company Alignment

Advantages:

- Would have fewer residential displacements and fewer construction impacts on local neighborhoods and businesses.

Disadvantages:

- Higher O&M and higher capital costs than the McLoughlin Boulevard Alignment Alternative.
- Lower ridership due to longer travel times, fewer transfer opportunities and less access to eastside neighborhoods.
- Higher LRT operating costs per ride and highest cost effectiveness ratio.
- Possible significant environmental impacts due to the alignment's proximity to wildlife habitat which could lead to higher costs in order to avoid, minimize or mitigate impacts.
- Because of the restrictions placed on much of the land adjacent to the alignment it would have relatively little ability to shape and support transit supportive land use patterns and urban redevelopment.
- Would displace an active freight rail line.

6. McLoughlin Boulevard Alignment

Advantages:

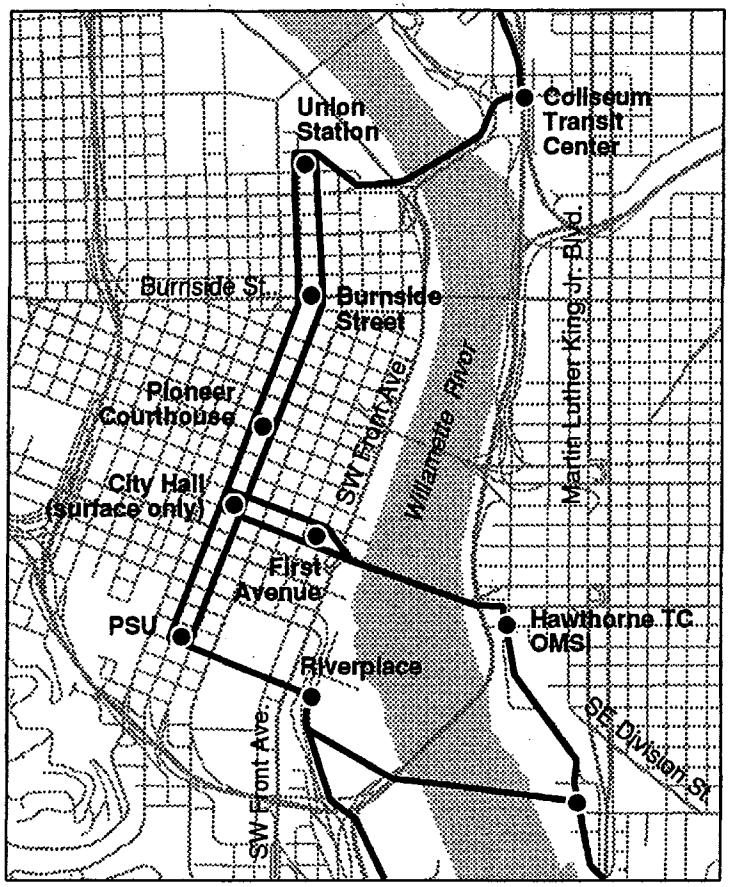
- Would have higher LRT and higher total transit ridership than the PTC Alignment Alternative due to shorter travel times and better access to eastside neighborhoods.
- Would have lower capital and O&M costs due in part to the shorter alignment length.
- Exhibits the lowest operating cost per rider and the lowest cost effectiveness ratio.
- Would provide the best opportunity to support and shape transit supportive and more intense urban development.
- Would have fewer significant environmental impacts, especially on wildlife habitat and the natural environment.

Disadvantages:

- Would displace approximately 50 residences/businesses along McLoughlin with potential impact on historical and cultural resources.

North River Crossings to Milwaukie Via:	PTC	McLoughlin
Year of Expenditure Cost (millions)	$695	$674
LRT Weekday Ridership from Oregon City to 179th	58,250	62,750
Total Corridor Weekday Transit Ridership	131,050	131,350
Effective LRT Operating Cost (millions) from Oregon City to 179th	$18.76	$18.19
Cost Effectiveness	$9.19	$8.45

VI Portland CBD Alignment Alternatives



The above map illustrates the alignment alternatives within the Portland Central Business District (CBD) from the Steel Bridge in the north to Riverplace in the south. Within this segment there are two different sets of alternatives being compared.

First is the Surface Alternative which would use the existing Transit Mall on 5th and 6th Avenues. Several options for the Surface Alternative have been developed and will be refined before Tier II is initiated.

Second is the Subway Alternative that could be built under one of four north/south streets: 4th, 5th, 6th, or Broadway Avenues. The subway would be built using tunnel boring and cut and cover techniques. For this analysis a dual tube subway (see Subway Cross-Section on pa 7) under Broadway Avenue (and 5th Avenue for additional cost analysis) has been assumed. If a subway is selected for further study within Tier II then further refinement of the subway options would be made prior to initiating the DEIS.

If a subway is selected for further study, the surface alignment will also advance into the DEIS, because of the high costs associated with a subway and the need to have intermediate cost alternatives within a DEIS.

Downtown Portland via:	Surface	Subway
Year of Expenditure Cost (millions)	$288 -$309	$562 - $584
LRT Weekday Ridership from Oregon City to 179th	61,400	64,900
Total Corridor Transit Weekday Ridership	130,750	132,850
Effective LRT Operating Cost (millions) from Oregon City to 179th	$19.12	$20.91
Cost Effectiveness	$8.83	$9.00

1. Surface Alignment Alternative

Advantages:

- The least costly of the alternatives to build and operate, with a capital cost savings in $YOE of approximately $275 million and O&M cost savings in $1994 of $1.8 million.
- Would have adequate operational capacity to accommodate additional South/North Corridor demand beyond the forecast year of 2015.
- Would have lower operating costs per rider and would be the most cost effective Portland CBD alternative.
- Would provide more visible and direct access from LRT to bus connections and to adjacent retail, commercial and residential properties.

Disadvantages:

- Would have lower LRT and total transit ridership.
- Spatial constraints on the Transit Mall will require some trade-offs between capacity for buses, LRT, pedestrian movements and general purpose auto access.
- Travel time through downtown Portland is approximately four minutes slower than with the subway alternative.
- Construction activities on the Transit Mall would affect bus and auto operations and pedestrian movements.

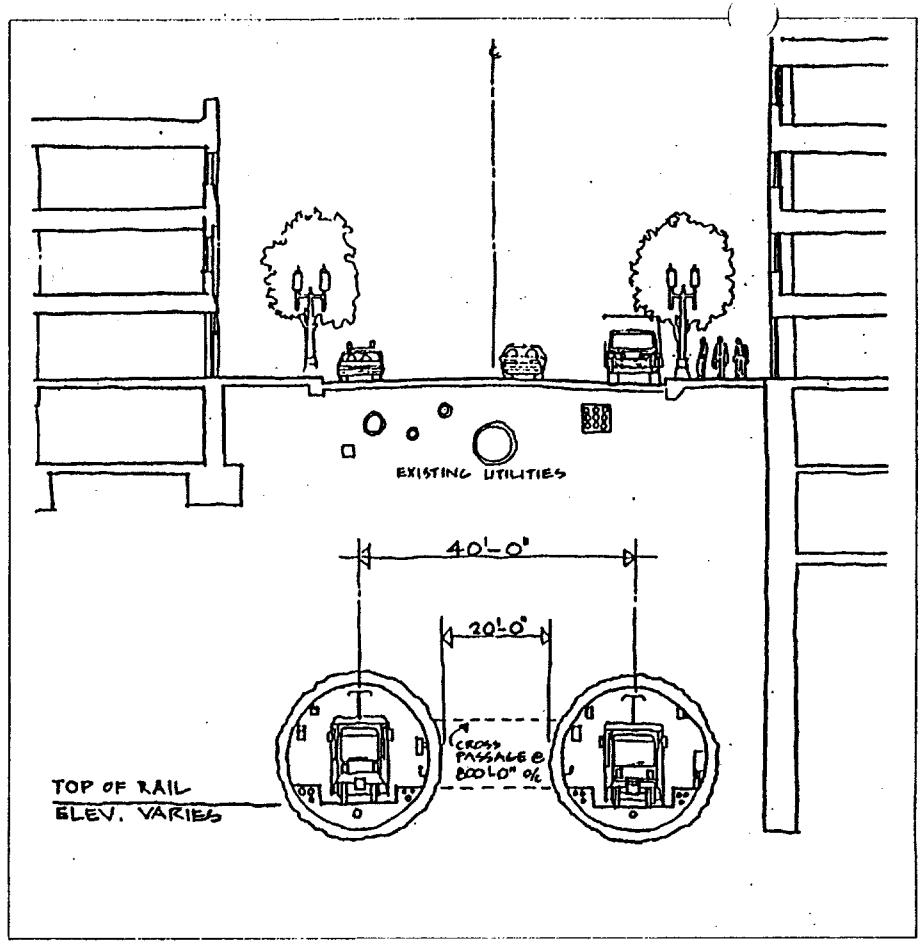
2. Subway Alignment Alternative

Advantages:

- Highest total transit and LRT ridership due to faster travel times (by four minutes) through downtown Portland.
- Would minimize changes to Transit Mall auto, pedestrian and bus travel patterns and existing auto capacity on the Mall could be maintained.
- Ultimate capacity would exceed the surface alignment.

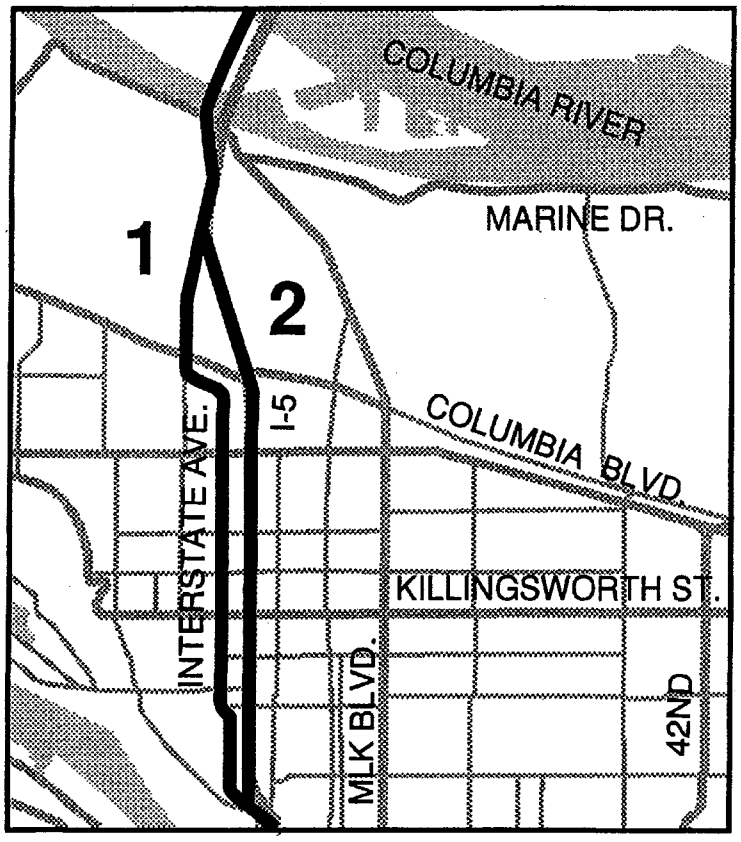
Disadvantages:

- Highest capital and O&M costs with approximately $275 million ($YOE) in additional capital costs and $1.8 million ($1994) in additional annual operating costs.
- Would have the highest operating cost per rider and the highest cost effectiveness ratio of the Portland CBD Alternatives.
- Traffic, displacements and other impacts during construction associated with the subway portals and stations would be significant.
- Would have a lower visibility and less direct access to bus connections and to adjacent retail, commercial and residential properties adjacent to the alignment.



Subway Cross-Section

IX ortland CBD to Vancouver CBD Alignment Alternatives



The above map illustrates the alignment alternatives between the Portland CBD in the south and the Vancouver CBD in the North. Within this segment there are two different sets of alternatives being compared. Appendix D includes cross-section drawings of the two alternatives.

First is the Interstate Avenue Alternative that would use an alignment generally within the center of Interstate Avenue. Several options for the Interstate Avenue Alternative have been developed for this analysis. First is a two-lane option that would use two general purpose lanes from Interstate Avenue to accommodate LRT, leaving two lanes, one in each direction. Second, the four-lane option would expand the Interstate Avenue right-of-way to accommodate both LRT within a median strip and four lanes of general purpose auto traffic, two in each direction. The costs of those two options are presented below. A third option, a two-lar nfiguration with four-lane expansion at the key intersections is currently being developed and costed. In general, its costs would fall between the less expensive two-lane option and the higher cost four-lane option. It would also reduce impacts (e.g. displacement) associated with the four-lane option while generally providing adequate roadway capacity for auto use.

Second is the I-5 Alternative that would be located just west of the existing I-5 freeway, up at the level of the neighborhood generally within or adjacent to the Minnesota Avenue right-of-way and generally separated from the neighborhood with noise walls. Pedestrian access improvements across I-5 would be included within the I-5 Alignment Alternative. There are no significant design options for the I-5 Alignment Alternative assumed within this analysis. However, design options could be developed for the I-5 Alternative which would provide direct LRT service to the Kenton business and neighborhood areas.

1. Interstate Avenue Alignment Alternative

Advantages:

- Would have higher LRT visibility and provide more direct LRT access to retail, commercial and residential properties on Interstate Avenue and within the Kenton area.
- Would provide good (and similar to the I-5 alignment) access to the planned mixed use and higher density housing between Interstate Avenue and I-5 designated within the Albina Community Plan.
- Would provide more direct LRT access to the residential areas west of Interstate Avenue.

Disadvantages:

- Would have lower LRT (1,400 fewer) and lower total transit ridership (1,450 fewer) than the I-5 Alignment Alternative.
- Would be more costly to construct (by about $89 million for the two-lane and $134 million for the four-lane) and more costly to operate (by about $120,000 a year in 1994 dollars).
- LRT travel time in this segment would be two minutes slower than the I-5 Alignment due to a longer alignment and a lower maximum operating speed.
- Would have higher operating costs per rider and a higher cost effectiveness

ratio than the I-5 Alignment Alternative.

- Would require approximately 40 residential/business displacements for a two-lane option and up to 120 residential/business displacements for the four-lane option. The combined two-lane/four-lane displacements would fall somewhere within the middle of that range.

- Potential noise impacts on Interstate Avenue would be more difficult to mitigate due to the difficulty of constructing noise walls within the median strip, where LRT would be located.

- Traffic impacts on Interstate Avenue would include left turns being restricted to intersections and the removal of parking near intersections.

- Construction impacts on local traffic using Interstate Avenue would be significant and construction impacts through the middle of the established neighborhoods would be more significant than with the I-5 Alternative which is on the edge of the neighborhoods.

2. I-5 Alignment Alternative

Advantages:

- Higher total transit (by 1,450 daily) and higher LRT (by 1,400 daily) ridership than the Interstate Alignment Alternative. Increased transit ridership would be generated both within Clark County and within north Portland.

- Lower capital costs (by $89 million for two-lane and $134 million for four-lane) and lower annual O&M costs (by $120,000 annually).

- Would have lower operating costs per rider and a lower cost effectiveness ratio than the Interstate Avenue Alternative.

- LRT travel times would be two minutes quicker through this segment because of the higher maximum LRT operating speeds between stations and the shorter alignment length.

- Would provide better access to the PCC campus on N.E. Killingsworth and neighborhoods east of I-5.

- Would provide good (and similar to the Interstate Avenue alignment) access to the planned mixed use and higher density housing between

From Portland CBD to Vancouver CBD via:	Interstate Avenue		I-5
	2-Lane	4-Lane	
Year of Expenditure Cost (millions)	$404	$449	$315
LRT Weekday Ridership from Oregon City to 179th	64,000	64,000	65,400
Total Weekday Corridor Transit Ridership	131,350	131,350	132,800
Effective LRT Operating Cost (millions) from Oregon City to 179th	$18.14	$18.14	$18.02
Cost Effectiveness	$8.17	$8.27	$7.81

Interstate Avenue and I-5 designated within the Albina Community Plan.

- Noise impacts caused by LRT could be more easily mitigated through noise walls west of the proposed LRT alignment. Those noise walls could have the added benefit of reducing existing freeway-generated noise to some of the neighborhoods west of the I-5 freeway.

Disadvantages:

- Would provide less LRT visibility and access to the properties along Interstate Avenue.

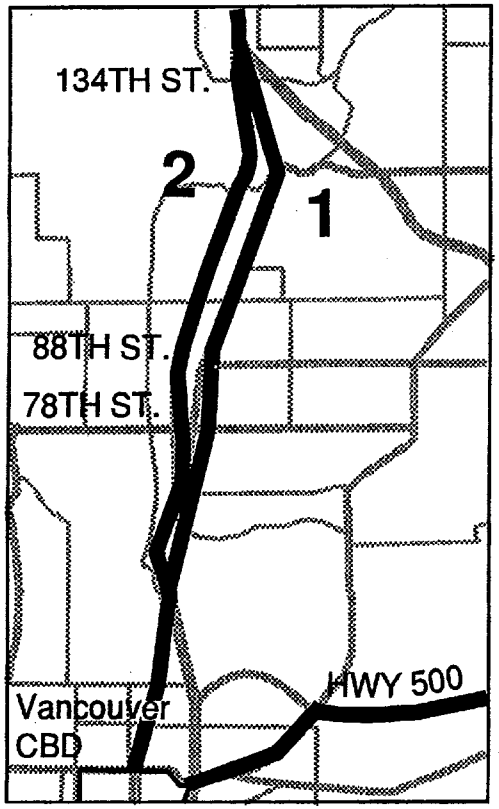
- The current design of the I-5 Alternative would provide only limited LRT access to the Kenton neighborhood and no LRT access to the Kenton business district.

- Would provide less LRT visibility and access to the neighborhoods west of Interstate Avenue.

- Physical constraints may make it more difficult to provide station sites and layouts that maximize development potential around the LRT station areas.

- Would require approximately 60, mostly residential, displacements.

X ancouver CBD to 179th Alignment Alternatives



The map to the left illustrates the alignment alternatives between the Vancouver CBD in the south and 179th Street in the north. Within this segment there are two different alternatives being compared. Both alternatives would use the same alignment south of the Main Street/I-5 interchange. The 88th Street, 134th Street and 179th Street North Study Terminus Alternatives are affected by these Alignment Alternatives.

First, the Highway 99 Alternative would use an alignment generally within the center of Highway 99.

Second, the I-5 Alternative would be located just west or east of the existing I-5 freeway.

1. Highway 99 Alignment Alternative

Advantages:

- Would have higher LRT visibility and provide more direct LRT access to retail, commercial and residential properties along Highway 99. Both alternatives would support the proposed transit overlay district (TOD) for this portion of the corridor.

Disadvantages:

- Would have lower LRT (1,150 fewer) and lower total transit ridership (1,250 fewer).
- Would be more costly to construct (revised cost estimates are currently being developed and will be inserted into the next version o s report) and more costly to operate by about $110,000 a year in 1994 dollars.
- Travel time through this segment would be three minutes slower than with the I-5 Alignment.
- Would have the highest operating costs per rider and the highest cost effectiveness ratio (revised cost effectiveness ratios are currently being developed and will be inserted into the next version of this report) of the two north Clark County alignment alternatives.
- Would require approximately 106 displacements, most of which would be commercial displacements.
- Traffic impacts on Highway 99 would include left turns being restricted to intersections and capacity reductions at intersections that are currently nearing capacity and significant traffic impacts would be caused by construction.

From 39th to 134th via:	Highway 99	I-5	
		West	East
Year of Expenditure Cost (millions)	$*	$*	$*
LRT Weekday Ridership from Oregon City to 179th	61,600	62,750	62,750
Total Corridor Weekday Transit Ridership	130,100	131,350	131,350
Effective LRT Operating Cost (millions) from Oregon City to 179th	$18.31	$18.20	$18.20
Cost Effectiveness	$*	$*	$*

** Note: Revised costs and cost effectiveness ratios for this segment are currently being developed and will be inserted into the next version of this report.*

2. I-5 Alignment Alternative

Advantages:

- Higher LRT ridership (by 1,150 daily) and higher total transit ridership (by 1,250 daily).

- Lower capital costs (revised cost estimates are currently being developed and will be inserted into the next version of this report) and lower annual operating costs (by $110,000 annually).

- Would have lower operating costs per rider and a lower cost effectiveness ratio.

- LRT travel times would be three minutes quicker through this segment because of the higher maximum LRT operating speeds between stations and the shorter alignment length.

- Noise impacts would be less and mitigation of noise impacts would be easier to design and implement.

- Would provide greater LRT visibility and would provide more direct LRT access to residential area west of I-5. Both alternatives would support the proposed transit overlay district (TOD) for this portion of the corridor.

Disadvantages:

- Would cause a variety of local traffic impacts due to park-and-ride lot access.

- Less direct LRT access to the properties along Highway 99.

Appendix A

Summary Tables

Summary of Measurement Criteria
South Study Terminus Alternatives

Criteria	Measure	Milwaukie	Clackamas TC	OC via McLoughlin	OC via I-205
Transit Service	Peak hour accessibility				
Ease of Access	Households within 45 minutes by transit to:				
	Milwaukie	101,890	103,370	103,720	102,710
	Clackamas Town Center	116,820	105,920	108,520	101,930
	Oregon City	60,370	57,460	56,610	54,380
	Employment within 45 minutes by transit to:				
	Milwaukie	381,350	384,780	380,290	383,250
	Clackamas Town Center	260,300	321,640	199,410	310,920
	Oregon City	85,710	80,770	166,270	96,630
Transferability	Mode of Access (south of Portland CBD)				
	Walk on	30%	34%	40%	35%
	Transfer	24%	25%	21%	26%
	Park-and-ride	46%	41%	39%	39%
Travel Time	Total Travel Time, PM Peak Hour (in minutes)				
	Transit from Portland CBD to Milwaukie (auto = 27)	26	26	26	26
	Transit from Portland CBD to Clackamas TC (auto = 37)	43	36	45	36
	Transit from Portland CBD to Oregon City (auto = 47)	64	64	45	53
Reliability	Miles of Reserved or Sepaerated ROW; W of Hawthorne Bridge	5.3	10.7	12.6	17.5
	% of Corridor Passenger-miles on Reserved ROW	28.8%	32.1%	35.0%	35.0%
Ridership	Weekday Corridor Transit Trips	129,200	129,800	131,750	131,350
	Weekday S/N LRT Trips	56,900	59,400	61,900	62,750
Traffic	PM Peak Hour, Peak Direction V/C Ratio at:				
Highway Use	Milwaukie, S of Monroe (Hwy 224, Lake, McL.)	1.24	1.14	1.10	1.14
	S of Sunnyside (I-205, 82nd)	0.91	0.91	0.92	0.92
	N of Roethe (McL., Oatfield, River)	0.84	0.79	0.83	0.80
	S of Arlington (I-205, McL.)	1.12	1.09	1.09	1.09
	At Boundary (Corbett, Macadam)	1.01	1.01	1.02	1.04
Traffic Issues		P&R volumes in Milwaukie	At grade crossings	At grade crossings	At grade crossings Left turn restrictions

Criteria	Measure	Milwaukie	Clackamas TC	OC via McLoughlin	OC via I-205
Fiscal Efficiency	Capital Cost (1994 $); West of Hawthorne Bridge	$383.9	$671.4	$760.0	$1,022.0
Cost	Capital Cost (YOE $); West of Hawthorne Bridge	$610.4	$1,067.5	$1,208.4	$1,625.0
(in millions of $)	Annual LRT Operating and Maintenance Cost (1994 $)	$12.87	$15.60	$16.59	$18.20
	Annual Bus Operating and Maintenance Savings (1994 $)	$0.0	$2.66	$3.24	$2.62
Cost Effectiveness	Effective LRT Operating Cost per Rider	$0.69	$0.66	$0.66	$0.76
	Total Annualized LRT Cost per Rider	$6.65	$7.34	$7.42	$8.32
Promote Desired Land Use *Support Major Activity Centers*	Major Activity Centers Served	Milwaukie CBD	Milwaukie CBD, Clackamas TC	Milwaukie CBD, Oregon City CBD	Milwaukie CBD, Clackamas TC, Oregon City CBD
Support Bi-State Policies	Maintain Urban Growth Boundaries	yes	yes	yes	yes

Notes:
All data is for year 2015, unless otherwise noted.
Data assumes LRT from Oregon City via I-205 to 179th St. in Clark County, unless otherwise noted.
Costs are in millions of $.
Bus O&M savings represents cost reduction from highest bus cost alternative.

Summary of Measurement Criteria
North Study Terminus Alternatives

Criteria	Measure	39th St.	88th St.	134th St.	179th St.	Van Mall
Transit Service	Peak Hour Accessibility					
Ease of Access	Households within 45 minutes by transit to:					
	Vancouver CBD	138,440	137,840	138,100	137,020	142,040
	134th St.	57,280	56,180	87,200	87,110	89,210
	Vancouver Mall	97,210	96,670	99,390	99,390	108,000
	Employment within 45 minutes by transit to:					
	Vancouver CBD	307,690	307,020	306,970	295,800	308,220
	134th St.	68,400	66,280	121,900	119,190	108,430
	Vancouver Mall	120,080	120,280	119,500	119,500	139,910
Transferability	Mode of Access (North of Coliseum TC)					
	Walk on	27%	31%	31%	33%	32%
	Transfer	49%	43%	46%	45%	45%
	Park-and-ride	24%	22%	23%	22%	23%
Travel Time	Total Travel Time, PM Peak Hour (in minutes)					
	Transit from Portland CBD to Vancouver CBD (auto = 40)	38	38	38	38	38
	Transit from Portland CBD to 88th St. (auto = 45)	53	46	46	46	55
	Transit from Portland CBD to 134th St. (auto = 48)	59	59	51	51	54
	Transit from Portland CBD to 179th St. (auto = 52)	74	75	63	55	68
	Transit from Portland CBD to Van Mall (auto = 44)	60	60	60	60	52
Reliability	Miles of Reserved or Sepaerated ROW; north of Coliseum TC	9.1	11.9	14.2	16.3	15.1
	% of Corridor Passenger-miles on Reserved ROW	35.1%	37.7%	37.6%	38.0%	37.7%
Ridership	Weekday Corridor Transit Trips	130,000	131,150	131,300	131,350	130,700
	Weekday S/N LRT Trips	60,050	61,600	62,200	62,800	62,450
Traffic	PM Peak Hour, Peak Direction V/C Ratio at:					
Highway Use	N of Mill Plain (I-5, Main, Broadway, Ft. Van.)	0.54	0.54	0.54	0.54	0.54
	N of 39th (15th, Main, I-5)	0.84	0.78	0.78	0.79	0.84
	S of 78th (Hwy 99, Hazel Dell Ave., I-205)	0.69	0.62	0.63	0.63	0.67
	W of Andreson (18th, 40th, 4th Plain, SR 500)	0.74	0.73	0.73	0.67	0.72
	I-5 Bridge	1.31	1.30	1.30	1.31	1.30
	W of I-205 (4th Plain, 63rd, Burton, SR 500)	0.89	0.89	0.88	0.88	0.87
	I-205 Bridge	0.94	0.94	0.94	0.94	0.94
Traffic Issues		P&R volumes in Vancouver	Main St.	Main St.	Main St.	At grade Xings P&R volumes

Criteria	Measure	39th St.	88th St.	134th St.	179th St.	Van Mall
Fiscal Efficiency	Capital Cost (1994 $); north of Coliseum TC	$616.0	$825.1	$924.1	$1,006.4	$906.1
Cost	Capital Cost (YOE $) north of Coliseum TC	$979.4	$1,311.9	$1,469.3	$1,600.2	$1,440.7
(in millions of $)	Annual LRT Operating and Maintenance Cost (1994 $)	$15.27	$16.21	$17.33	$18.20	$17.96
	Annual Bus Operating and Maintenance Savings (1994 $)	$0.0	$0.41	$0.86	$0.65	$0.36
Cost Effectiveness	Effective LRT Operating Cost per Rider	$0.78	$0.78	$0.81	$0.85	$0.86
	Total Annualized LRT Cost per Rider	$7.30	$7.87	$8.16	$8.41	$8.13
Promote Desired Land Use	Major Activity Centers Served	Vancouver CBD	Vancouver CBD	Vancouver CBD, Salmon Creek/ WSU	Vancouver CBD, Salmon Creek/ WSU	Vancouver CBD, Vancouver Mall
Support Major Activity Centers						
Support Bi-State Policies	Maintain Urban Growth Boundaries	yes	yes	yes	May encourage expansion	yes

Notes:
All data is for year 2015, unless otherwise noted.
Data assumes LRT from Oregon City via I-205 to 179th St. in Clark County, unless otherwise noted.
Costs are in millions of $.
Bus O&M savings represents cost reduction from highest bus cost alternative.

Summary of Measurement Criteria
Portland CBD to Milwaukie CBD South River Crossing Alternatives

Criteria	Measure	Hawthorne	Caruthers	Ross Island	Sellwood
Transit Service	Peak Hour Accessibility				
Ease of Access	Households within 45 minutes by transit to:				
	OMSI	160,400	167,950	169,300	168,200
	John's Landing	97,700	97,920	99,330	124,950
	Milwaukie	102,710	106,760	102,440	82,410
	Employment within 45 minutes by transit to:				
	OMSI	538,450	534,100	495,540	487,550
	John's Landing	353,570	350,990	350,070	449,110
	Milwaukie	385,150	393,090	389,130	348,490
Transferability	Mode of Access				
	Walk on	36.4%	35.8%	35.2%	34.1%
	Transfer	28.8%	28.1%	28.7%	32.2%
	Park-and-ride	34.8%	36.2%	36.1%	33.8%
Travel Time	Total Travel Time, PM Peak Hour (in minutes)				
	Transit from Portland CBD to Milwaukie (auto = 27)	27	27	27	32
	Transit from Portland CBD to Clackamas TC (auto = 37)	36	36	36	41
	Transit from Portland CBD to Oregon City (auto = 46)	53	53	53	58
Reliability	Miles of Reserved or Separated ROW	34.8	34.5	34.7	35.3
	% of Corridor Passenger-miles on Reserved ROW	36.7%	35.1%	32.0%	32.1%
Ridership	Weekday Corridor Transit Trips	131,350	132,200	131,400	130,750
	Weekday S/N LRT Trips	62,750	62,800	62,300	61,400
Traffic	PM Peak Hour, Peak Direction V/C Ratio at:				
Highway Use	River Crossings (Fremont - Ross Island)	1.07	1.07	1.06	1.07
	River Crossings (Sellwood Bridge)	1.23	1.23	1.23	1.23
	N of Prescott (Denver, I-5, Interstate, MLK, Vancouver)	0.76	0.76	0.76	0.76
	At Boundary (Macadam, Corbett)	1.04	1.03	1.02	1.03
Traffic Issues		Bridge lanes Main/Madison Sts.	Harrison St. Moody St.	Harrison St. Moody St.	Moody St. At grade Xings

Criteria	Measure	Hawthorne	Caruthers	Ross Island	Sellwood
Fiscal Efficiency	Capital Cost (1994 $) Pioneer Square to Milwaukie	$424	$465	$461	$465
Cost	Capital Cost (YOE $) Pioneer Square to Milwaukie	$674	$739	$733	$739
(in millions of $)	Annual LRT Operating and Maintenance Cost (1994 $)	$18.20	$18.17	$18.19	$19.12
	Annual Bus Operating and Maintenance Savings (1994 $)	$0.27	$0.24	$0.26	$0.0
Cost Effectiveness	Effective LRT Operating Cost per Rider	$0.87	$0.87	$0.88	$0.95
	Total Annualized LRT Cost per Rider	$8.44	$8.58	$8.63	$8.83
Promote Desired Land Use *Support Major Activity Centers*	Major Activity Centers Served	CEIC, OMSI SE Neighborhoods, Milwaukie CBD	PSU, Riverplace, OMSI, SE Portland Neighborhoods, Milwaukie CBD	PSU, Riverplace N Macadam, SE Neighborhoods, Milwaukie CBD	PSU, Riverplace N Macadam, John's Landing Milwaukie CBD
Support Bi-State Policies	Maintain Urban Growth Boundaries	yes	yes	yes	yes
Environmental Sensitivity	Possible Displacements	60+, commercial and residential	60+, commercial and residential	60+, commercial and residential	30+, commercial and residential
	Noise Impact Areas				Moody St., John's Landing, Sellwood
	Ecosystem Impacts	Willamette Xing	Willamette Xing	Willamette Xing	Willamette Xing
	Historical and Cultural Impacts	Existing bridge, Brooklyn Nh.	Brooklyn Nh.	Existing bridge, Brooklyn Nh.	Existing bridge, Sellwood Nh.

Notes:

All data is for year 2015, unless otherwise noted.

Data assumes LRT from Oregon City via I-205 to 179th St. in Clark County, unless otherwise noted.

Costs are in millions of $.

Bus O&M savings represents cost reduction from highest bus cost alternative.

Displacement data based on preliminary design without specific efforts to mitigate possible impacts.

Summary of Measurement Criteria
Portland CBD to Milwaukie CBD Eastbank Alignment Alternatives

Criteria	Measure	PTC	McLoughlin
Transit Service	Peak Hour Accessibility		
Ease of Access	Households within 45 minutes by transit to:		
	OMSI	153,290	159,700
	Milwaukie	88,420	102,710
	Clackamas Town Center	92,760	101,930
	Oregon City CBD	52,020	54,380
	Employment within 45 minutes by transit to:		
	OMSI	531,860	538,450
	Milwaukie	368,720	383,250
	Clackamas Town Center	292,500	310,920
	Oregon City CBD	90,810	96,630
Transferability	Mode of Access; Milwaukie to OMSI		
	Walk on	36%	42%
	Transfer	27%	26%
	Park-and-ride	38%	32%
Travel Time	Total Travel Time, PM Peak Hour (in minutes)		
	Transit from Portland CBD to Milwaukie (auto = 27)	28	27
	Transit from Portland CBD to Clackamas TC (auto = 37)	38	36
	Transit from Portland CBD to Oregon City (auto = 46)	55	53
Reliability	Miles of Reserved or Sepaerated ROW	7.1	6.2
	% of Corridor Passenger-miles on Reserved ROW	28.9%	35.0%
Ridership	Weekday Corridor Transit Trips	131,050	131,350
	Weekday S/N LRT Trips	58,250	62,750
Traffic	PM Peak Hour, Peak Direction V/C Ratio at:		
Highway Use	River Crossings (Fremont - Ross Island)	1.07	1.07
	River Crossings (Sellwood Bridge)	1.24	1.23
	Milwaukie, S of Monroe (Hwy 224, Lake, McL)	1.14	1.14
	N of Roethe (McL., Oatfield, River)	0.79	0.80
Traffic Issues		New freight spur across McLoughlin	Signal coordination on McLoughlin, close some local access to McLoughlin

Criteria	Measure	PTC	McLoughlin
Fiscal Efficiency	Capital Cost (1994 $); Pioneer Square to Milwaukie	$437.0	$424.0
Cost	Capital Cost (YOE $); Pioneer Square to Milwaukie	$695.0	$674.0
(in millions of $)	Annual LRT Operating and Maintenance Cost (1994 $)	$18.76	$18.20
	Annual Bus Operating and Maintenance Savings (1994 $)	$0.0	$0.01
Cost Effectiveness	Effective LRT Operating Cost per Rider	$0.98	$0.88
	Total Annualized LRT Cost per Rider	$9.19	$8.45
Promote Desired Land Use	Major Activity Centers Served	Milwaukie CBD	SE Neighborhoods, Milwaukie CBD
Support Major Activity Centers			
Support Bi-State Policies	Maintain Urban Growth Boundaries	yes	yes
Environmental Sensitivity	Possible Displacements (Residential/Commercial)	Existing freight service	50+, commercial and residential
	Noise Impacts	Greater risks due to lower existing noise	
	Ecosystem Impacts	Wetlands & wildlife habitat	
	Historical and Cultural Impacts		Greater risk due to more displacements

Notes:

All data is for year 2015, unless otherwise noted.

Data assumes LRT from Oregon City via I-205 to 179th St. in Clark County, unless otherwise noted.

Costs are in millions of $.

Bus O&M savings represents cost reduction from highest bus cost alternative.

Displacement data based on preliminary design without specific efforts to mitigate possible impacts.

Summary of Measurement Criteria
Portland CBD Alignment Alternatives

Criteria	Measure	Surface	Subway
Transit Service	Peak Hour Accessibility		
Ease of Access	Households within 45 minutes by transit to:		
	Vancouver CBD	114,750	143,710
	Portland CBD	219,150	234,580
	Milwaukie CBD	82,410	103,630
	Employment within 45 minutes by transit to:		
	Vancouver CBD	306,970	344,300
	Portland CBD	579,600	598,400
	Milwaukie CBD	348,490	382,970
Travel Time	Total Travel Time, PM Peak Hour (in minutes)		
	Transit from Portland CBD to Milwaukie (auto = 27)	32	28
	Transit from Portland CBD to Vancouver CBD (auto = 39)	38	36
Reliability	Miles of Reserved or Sepaerated ROW	35.3	35.2
	% of Corridor Passenger-miles on Reserved ROW	25.3%	23.7%
Ridership	Weekday Corridor Transit Trips	130,750	132,850
	Weekday S/N LRT Trips	61,400	64,900
Traffic	PM Peak Hour, Peak Direction V/C Ratio at:		
Highway Use	River Crossings (Fremont - Ross Island)	1.07	1.07
	River Crossings (Sellwood Bridge)	1.27	1.27
	N of Prescott (Denver, I-5, Interstate, MLK Blvd., Vancouver)	0.76	0.76
	At Boundary (Macadam, Corbett)	1.04	1.03
Traffic Issues		At grade crossings	Portal Impacts

Criteria	Measure	Surface	Subway
Fiscal Efficiency	Capital Cost (1994 $); South Waterfront to Union Station	$180.8 - $194.4	$353.2 - $367.3
Cost	Capital Cost (YOE $); South Waterfront to Union Station	$287.5 - $309.1	$561.6 - $584.0
(in millions of $)	Annual LRT Operating and Maintenance Cost (1994 $)	$19.12	$20.93
	Annual Bus Operating and Maintenance Savings (1994 $)	$0.0	$0.02
Cost Effectiveness	Effective LRT Operating Cost per Rider	$0.95	$0.98
	Total Annualized LRT Cost per Rider	$8.83	$9.0
Promote Desired Land Use	Major Activity Centers Served	Portland CBD	Portland CBD
Support Major Activity Centers			
Support Bi-State Policies	Maintain Urban Growth Boundaries	yes	yes
Environmental Sensitivity	Possible Displacements (Residential/Commercial)	Potential at mall connections	Potential at portals.
	Noise Impacts	Possible vibrations	Potential at portals.
	Ecosystem Impacts	No significant impacts	No significant impacts
	Historical and Cultural Impacts	Potenial Impacts	Potential at portals

Notes:

All data is for year 2015, unless otherwise noted.

Data assumes LRT from Oregon City via I-205 to 179th St. in Clark County, unless otherwise noted.

Costs are in millions of $.

Bus O&M savings represents cost reduction from highest bus cost alternative.

Summary of Measurement Criteria
Portland CBD to Vancouver CBD Alignment Alternatives

Criteria	Measure	Interstate Ave.	I-5
Transit Service	Peak Hour Accessibility		
Ease of Access	Households within 45 minutes by transit to:		
	Swan Island	126,840	131,810
	Kenton	178,050	184,810
	Hayden Island	163,300	170,270
	Vancouver CBD	138,650	150,000
	Employment within 45 minutes by transit to:		
	Swan Island	369,490	377,770
	Kenton	450,430	472,540
	Hayden Island	402,300	408,530
	Vancouver CBD	310,400	337,200
Transferability	Mode of Access		
	Walk on	60%	61%
	Transfer	40%	39%
	Park-and-ride	0%	0%
Travel Time	Total Travel Time, PM Peak Hour (in minutes)		
	Transit from Portland CBD to Swan Island (auto = 17)	29	28
	Transit from Portland CBD to Kenton (auto = 20)	26	24
	Transit from Portland CBD to Hayden Island (auto = 28)	33	31
	Transit from Portland CBD to Vancouver CBD (auto = 40)	38	36
Reliability	Miles of Reserved or Separated ROW	4.0	3.9
	% of Corridor Passenger-miles on Reserved ROW	38.0%	40.4%
Ridership	Weekday Corridor Transit Trips	131,350	132,800
	Weekday S/N LRT Trips	64,000	65,400
Traffic	PM Peak Hour, Peak Direction V/C Ratio at:		
Highway Use	Columbia River Crossing (I-5 Bridge)	1.31	1.30
	N of Columbia (I-5, Interstate, MLK Blvd.)	0.70	0.69
	N of Prescott (Denver, I-5, Interstate, MLK Blvd., Vancouver)	0.76	0.76
	River Crossings (Fremont - Ross Island)	1.07	1.07
Local Traffic		At grade crossings Changes street design Removes some parking	Ramp impacts Removes some parking

Criteria	Measure	Interstate Ave.	I-5
Fiscal Efficiency	Capital Cost (1994 $) (2-Lane/4-Lane Interstate Ave.)	$254 / $282	$198
Cost	Capital Cost (YOE $) (2-Lane/4-Lane Interstate Ave.)	$404 / $449	$315
(in millions of $)	Annual LRT Operating and Maintenance Cost (1994 $)	$18.20	$18.02
	Annual Bus Operating and Maintenance Savings (1994 $)	$0.06	$0.0
Cost Effectiveness	Effective LRT Operating Cost per Rider	$0.86	$0.84
	Total Annualized LRT Cost per Rider	$8.17 / $8.27	$7.81
Promote Desired Land Use	Major Activity Centers Served	Coliseum, N/NE Neighborhoods, Vancouver CBD	Coliseum, N/NE Neighborhoods, Vancouver CBD
Support Major Activity Centers			
Support Bi-State Policies	Maintain Urban Growth Boundaries	yes	yes
Environmental Sensitivity	Possible Displacements (Residential/Commercial)	40-120, mostly commercial	60+, mostly residential
	Noise Impacts	More difficult to mitigate	Replace existing and new noise wall
	Ecosystem Impacts	Columbia Slough and River Xing	Columbia Slough and River Xing
	Historical and Cultural Impacts	Slightly higer risk of impacts	

Notes:

All data is for year 2015, unless otherwise noted.

Data represents build out from Oregon City via I-205 to 179th St. in Clark County, unless otherwise noted.

Costs are in millions of $.

Bus O&M savings represents cost reduction from highest bus cost alternative.

Displacement data based on preliminary design without specific efforts to mitigate possible impacts.

Note capital costs and cost effectiveness for Interstate Avenue are for two-lane and four-lane options

A single option combining two-lane and four-lane segments is currently being developed and costed.

Summary of Measurement Criteria
39th to 179th Street Alignment Alternatives

Criteria	Measure	Highway 99	I-5
Transit Service	Peak Hour Accessibility		
Ease of Access	Households within 45 minutes by transit to:		
	Vancouver CBD	136,040	137,020
	134th St.	80,240	87,110
	Vancouver Mall	97,010	99,390
	Employment within 45 minutes by transit to:		
	Vancouver CBD	304,760	295,800
	134th St.	103,560	119,190
	Vancouver Mall	117,290	119,500
Transferability	Mode of Access; Vancouver CBD to 179th St.		
	Walk on	23%	23%
	Transfer	45%	45%
	Park-and-ride	32%	32%
Travel Time	Total Travel Time, PM Peak Hour (in minutes)		
	Transit from Portland CBD to Vancouver CBD (auto = 39)	38	38
	Transit from Portland CBD to 88th St. (auto = 44)	48	46
	Transit from Portland CBD to 134th St. (auto = 48)	54	51
	Transit from Portland CBD to 179th St. (auto = 52)	58	55
	Transit from Portland CBD to Vancouver Mall (auto = 44)	60	60
Reliability	Miles of Reserved or Sepaerated ROW	34.8	34.7
	% of Corridor Passenger-miles on Reserved ROW	37.7%	38.0%
Ridership	Weekday Corridor Transit Trips	130,100	131,350
	Weekday S/N LRT Trips	61,600	62,750
Traffic	PM Peak Hour, Peak Direction V/C Ratio at:		
Highway Use	Between Mill & 4th Plain (I-5, Main, Broadway, Ft. Van.)	0.54	0.54
	N of 39th (15th, Main, I-5)	0.79	0.79
	S of 78th (Hwy 99, Hazel Dell Ave., I-205)	0.63	0.63
	St. Johns/Andreson (18th, 40th, 4th Plain, SR 500)	0.72	0.72
Traffic Issues		Restricted left turns	

Criteria	Measure	Highway 99	I-5
Fiscal Efficiency	Capital Cost (1994 $); Vancouver CBD to 134th	$278	$183
Cost	Capital Cost (YOE $); Vancouver CBD to 134th	$442	$291
(in millions of $)	Annual LRT Operating and Maintenance Cost (1994 $)	$18.59	$18.20
	Annual Bus Operating and Maintenance Savings (1994 $)	$0.20	$0.0
Cost Effectiveness	Effective LRT Operating Cost per Rider	$0.91	$0.88
	Total Annualized LRT Cost per Rider	$8.66	$8.18
Promote Desired Land Use *Support Major Activity Centers*	Major Activity Centers Served	Vancouver CBD, Salmon Creek/WSU	Vancouver CBD, Salmon Creek/WSU
Support Bi-State Policies	Maintain Urban Growth Boundaries	yes	yes
Environmental Sensitivity	Possible Displacements (Residential/Commercial)	100+, mostly commercial	80+, mostly residential
	Noise Impacts	More difficult to mitigate	Can mitigate with noise walls
	Ecosystem Impacts	Salmon Creek Xing	Salmon Creek Xing
	Historical and Cultural Impacts	No difference	

Notes:

All data is for year 2015, unless otherwise noted.
Data assumes LRT from Oregon City via I-205 to 179th St. in Clark County, unless otherwise noted.
Costs are in millions of $.
I-5 data assumes an east of I-5 alignment.
Bus O&M savings represents cost reduction from highest bus cost alternative.
Displacement data based on preliminary design without specific efforts to mitigate possible impacts.
Capital cost and cost effectiveness are pending further cost analysis

Appendix B

Summary of Year of Expenditure Capital Costs

South/North Corridor Year of Expenditure Costs

I. Termini Alternative Costs
($Millions in Year of Expenditure)

By using the following table the various costs of the Tier I alternatives can be calculated. Select the cell that corresponds to the particular South and North Termini and then adjust that cost up or down according to the *Adjustment Factors* provided.

Note: These termini costs are based on the Order of Magnitude (OOM) cost estimate ($1994) of the generic representative alignment factored to year of expenditure through proto-typical construction schedules.

Terminus Alternatives	39th St	88th St	134th St	179th St	Vancouver Mall
Milwaukie CBD	$1,911	$2,241	$2,401	$2,531	$2,371
Clackamas Town Center	$2,361	$2,691	$2,851	$3,001	$2,821
Oregon City via McLoughlin	$2,511	$2,841	$3,001	$3,131	$2,971
Oregon City via I-205	$2,921	$3,251	$3,411	$3,541	$3,381

II. Adjustment Factors

Add (if a positive number) or subtract (if a negative number) these factors to any of the terminus alternatives above to determine year of expenditure capital cost of any combination of terminus and alignment alternatives. Costs are in millions of year of expenditure dollars.

1. *South Willamette River Crossings*

Hawthorne	*$ 0*
Caruthers	*$65*
Ross Island	*$59*
Sellwood	*$64*

2. *Eastbank Alternatives*

McLoughlin	*$ 0*
PTC	*$21*

3. *CBD Alternatives*

Surface	*$ 0*
Subway	*$275*

4. *Portland CBD - Vancouver*

I-5	*-$89 to -$124 (2-lane/4-lane)*
Interstate	*$ 0*

5. *Vancouver - 179th Alternatives*

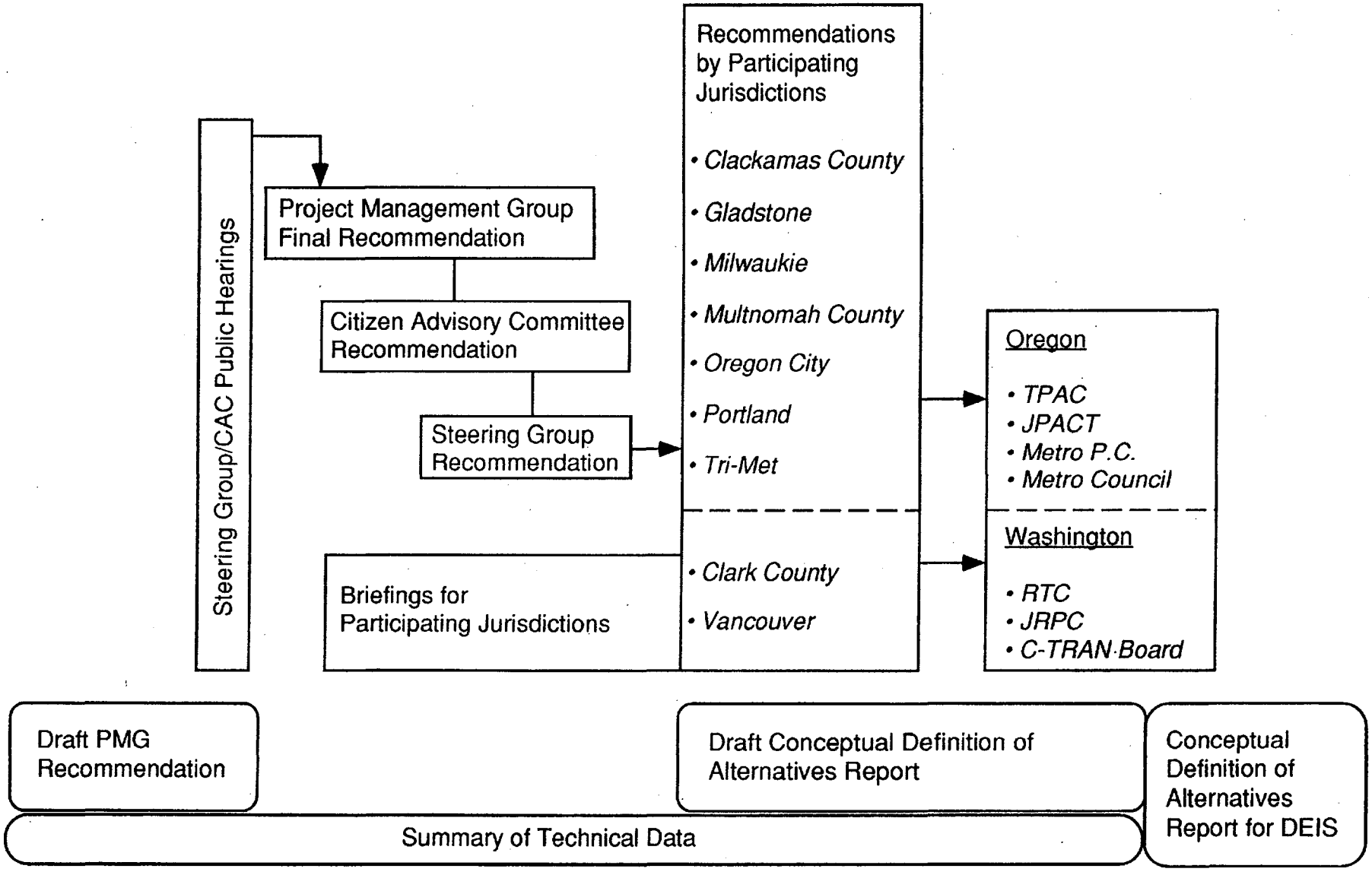
I-5 (east)	*$ 0*
I-5 (west)	*$**
Highway 99	*$**

* *Note: These are pending further cost analysis.*

Appendix C

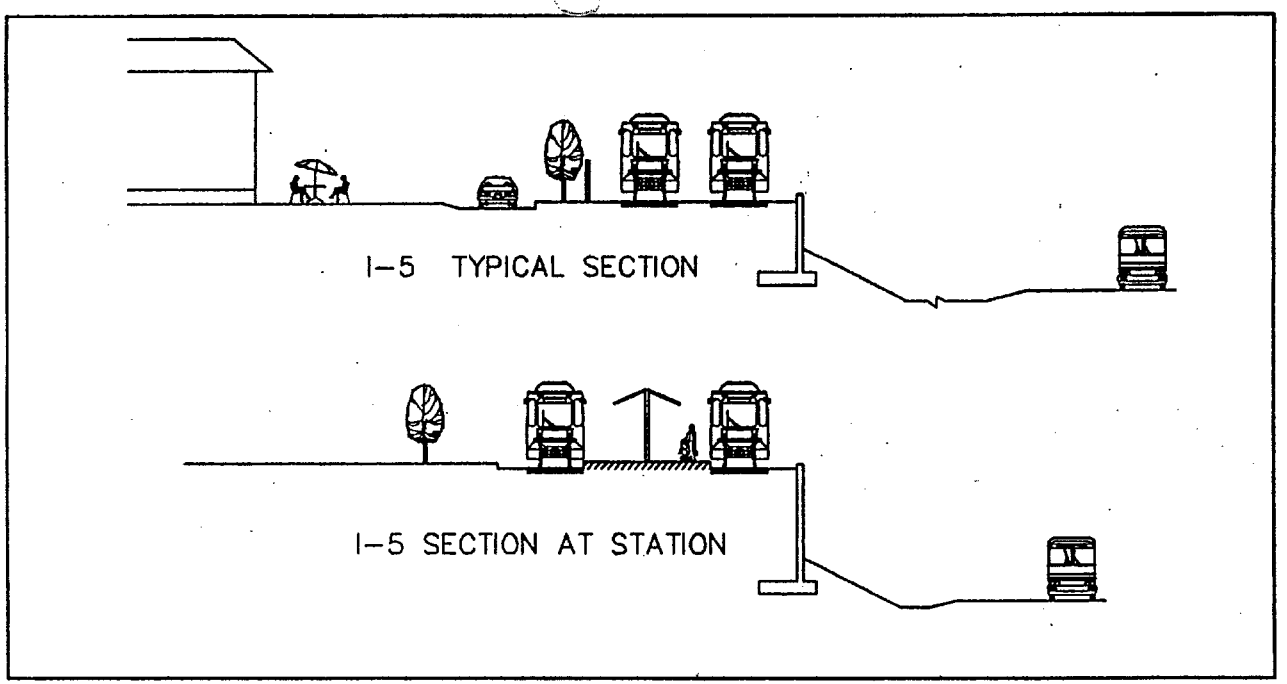
Tier I Process

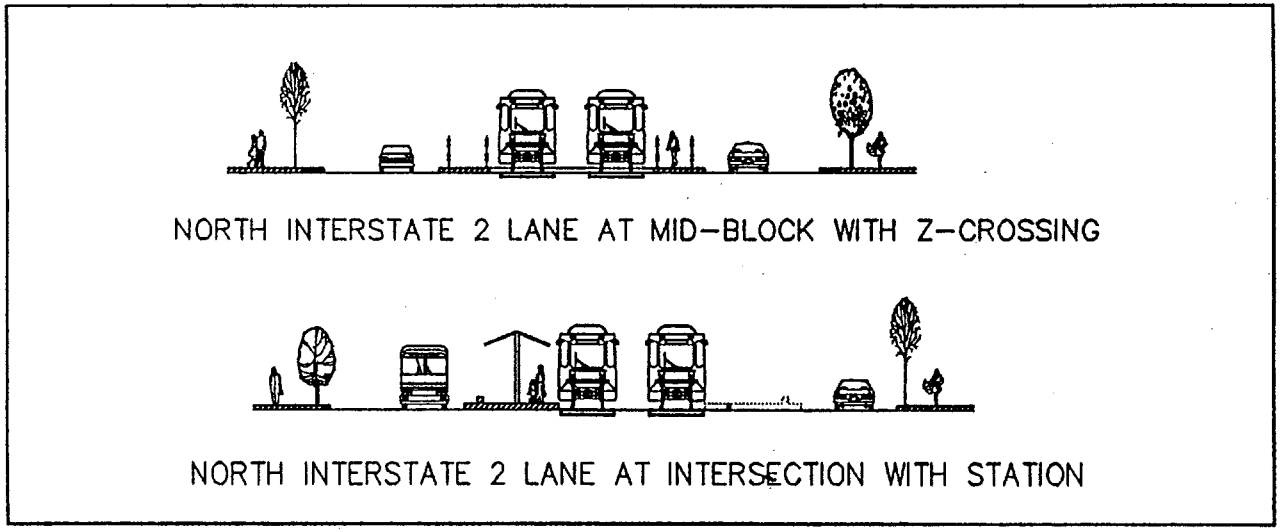
Tier I Decision Process



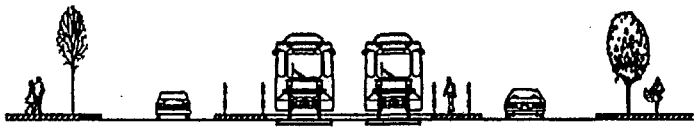
Appendix D

Sample Cross-Section Drawings

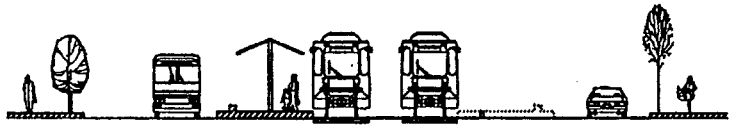




NORTH PORTLAND ALIGNMENT ALTERNATIVES
TYPICAL CROSS SECTIONS



SOUTH MCLOUGHLIN 4 LANE AT MID–BLOCK WITH Z–CROSSING



SOUTH MCLOUGHLIN 4 LANE AT INTERSECTION WITH STATION

SOUTH MCLOUGHLIN ALIGNMENT ALTERNATIVES
TYPICAL CROSS SECTIONS

COMMITTEE MEETING TITLE JPACT

DATE 8-11-94

NAME	AFFILIATION
TANYA COLLIER	MULTNOMAH COUNTY
ROB DRAKE	CITIES OF WASH. COUNTY
BERNIE GIUSTO	CITIES OF MULT CO.
Jon Kvistad	Metro Council
Susan McLain	Metro Council
[illegible]	Clackamas County
BRUCE WARNER	ODOT
Tom Walsh	Tri-Met
ROY ROGERS	WASHINGTON COUNTY
Rod Monroe	Metro Council
[illegible]	Metro
[illegible]	DEQ
[illegible]	Portland
Rex Gilley	Tualatin Comm
[illegible]	PDOT
DAVE WILLIAMS	ODOT
LEON SKILES	METRO
Jill Ryder	Metro
XAVIER FALCONI	CITY OF LAKE OSWEGO
Sandra Doubleday	City of Gresham
Kathy Lehtola	Washington County
Bob Bothman	MCCI

COMMITTEE MEETING TITLE _____

DATE _____

NAME	AFFILIATION
JIM HOWELL	CITIZENS FOR BETTER TRANSIT
Kathy Busse	Mult. Co.
Tom VanderZanden	Clackamas County
ROD SANDOZ	CLACKAMAS COUNTY
Gasia Ladsen	Port
STEVE DOTTERRER	CITY OF PORTLAND
David Calver	Tri-Met
Ted Spence	[redacted] Cty.
Gordon Oliver	Oregonian
Rosemary Brinson Sipola	PDOT
BRIAN CAMPBELL	PORT
Sandy Fox	Tri-Met.