CITY OF
PORTLAND, OREGON
DEPARTMENT OF PUBLIC WORKS

Earl Blumenauer, Commissioner
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December 7, 1994

Dear Rod,

Last week, the Portland City Council passed the Steering Group;s recommendation while asking for an "equal" study of the Caruthers Crossing over the next six months. The purpose of this additional study is to ensure that we have sufficient information to evaluate the benefits and disadvantages of both the Caruthers Crossing and the Ross Island Crossing before initiating the Draft Environmental Impact Statement (DEIS).

I recommend that the Joint Policy Advisory Committee on Transportation (JPACT) also pass the resolution as worded to ensure that the Caruthers Crossing receive equal treatment.

At the Portland City Council hearings, we heard extensive and thoughtful testimony urging us to develop the additional information needed to give the Caruthers Crossing equal footing with the Ross Island Crossing. In general, three types of additional information were requested:

1. Analysis of the benefits of linking the Caruthers Crossing with the Brooklyn Yards alignment, including increased neighborhood access to South/North light rail.

2. A re-evaluation of the ridership potential forecast by Metro models for OMSI, the Portland General Electric "Station L" redevelopment site and the Central Eastside Industrial Area.

3. An evaluation of the Caruthers Crossing bridge, to determine if it could service both the North Macadam Redevelopment Area and the OMSI area.

I understand that project staff have already started working on this information.

The process for deciding whether or not to advance the Caruthers Crossing into the DEIS should be the same as the process taken with

the other Tier I choices. This means that once the information has been developed, the Steering Group should take public testimony before taking recommendations from the Project Management Group or the Citizens Advisory Committee. Recommendations from the Steering Group would then move forward to participating jurisdictions, as before.

Metro and C-Tran should use the same criteria and measures to evaluate Ross Island and to determine whether or not the Caruthers Crossing advances into the DEIS. These measures include ridership, costs, design considerations, significant environmental impacts, and the ability to support local and regional land use an development goals and objectives. Metro's project management staff have provided assurances that evaluating two alternatives for the South Willamette River Crossing would not present significant additional costs or time delays that might jeopardize the project's timeline or federal funding deadlines.

Because it is critically important to provide a clear and understandable process to JPACT, the Metro Council, and the general public, I suggest the work plan be revised to reflect the changes needed to fully evaluate the Caruthers Crossing in the next four to six months.

Although the Caruthers Crossing issue presents additional complexities to the South/North project, I am encouraged by this discussion. It is clear that public agencies, private developers, neighborhood community groups, and citizens all view light rail as an essential element of a livable community. Their sophistication and commitment is clear testimony to light rail's value in our region.

I look forward to discussing this further at JPACT.

Sincerely,

Earl Blumenauer

Rod Monroe, Councilor
Metro
600 N. E. Grand Avenue
Portland, Oregon 97232

Proposed Amendment to Resolution No. 94-1989

BE IT RESOLVED, That the following general approach be adopted for the continuation of the South/North Transit Corridor Study:

Item 3.a

Between the Portland and Milwaukie central business districts, the Ross Island Bridge Crossing, generally between the Ross Island Bridge in the north and Bancroft and Holgate streets in the south, and the McLoughlin Boulevard alignment shall be developed for further study within the Draft Environmental Impact Statement. The Caruthers area crossing will be evaluated further in order for the Metro Council and the C-TRAN Board of Directors to determine whether it should also be included in the *South/North Detailed Definition of Alternatives Report* and developed further in the Draft Environmental Impact Statement. Both the Ross Island and Caruthers alternatives will be provided equal consideration through this further evaluation.

Proposed Amendment to the draft *South/North Tier I Final Report*

2.4 Portland CBD to Milwaukie/South Willamette River Crossing Alignment Alternative

1. The *Ross Island Bridge Crossing Alternative* and *McLoughlin Boulevard Alignment Alternative* are the LRT alignment alternatives in the segment from the Portland CBD to Milwaukie/South Willamette River Crossing that will be studied further within the Tier II of the DEIS.

2. The Caruthers area crossing will be evaluated further in order to allow the C-TRAN Board of Directors and Metro Council to determine whether it should also be included in the *Detailed Definition of Alternatives Report* and developed further in the DEIS. Accordingly, staff shall:

   [a] Determine the costs, travel demand and local and regional land use and development benefits of linking the Caruthers Crossing with the Brooklyn Yards alignment.

   [b] Refine the ridership potential of the OMSI Station to fully reflect current plans and policies regarding the Portland General Electrict "Station L" redevelopment site, the Central Eastside Industrial Area and OMSI. Determine whether local redevelopment opportunities are feasible and provide assurances necessary to meet local and regional land use and development objectives.

   [c] Evaluate Caruthers Bridge designs to see if they could provide adequate access to both the North Macadam Redevelopment Area **and** the OMSI area.

[d] Evaluate alternate bridge designs, alignment options and station locations for a Caruthers area crossing and recommend a refined bridge, alignment and station location design for inclusion within the *Detailed Definition of Alternatives Report* if a Caruthers area crossing is selected for advancement into the DEIS.

3. The location of the Ross Island area river crossing, bridgeheads and stations in this segment will receive further analysis to determine how to serve as much of the North Macadam redevelopment area and S.E. residential areas as possible. Further, if a Caruthers area crossing is selected to advance into the DEIS then its design will be refined and included within the *Detailed Definition of Alternatives Report.* Accordingly, staff shall:

[a] Establish special study areas on the east and west banks of the Willamette River which are generally bounded by the Ross Island Bridge and S.W. Gibbs Street in the north and Bancroft Street and Holgate Boulevard in the south.

[b] Evaluate alternate bridge locations, alignment options and station location(s) within these study areas which provide for optimal light rail coverage to S.E. Portland neighborhoods and the North Macadam Area.

[c] Recommend a refined location for the Ross Island area LRT bridge, associated alignment and stations in the *Detailed Definition of Alternatives Report* based on an assessment of development opportunities, costs, environmental considerations and engineering constraints.

[d] Refine the ridership potential of westbank stations to fully reflect current plans and policies for the North Macadam Redevelopment Area. Determine whether local redevelopment opportunities are feasible and provide assurances necessary to meet local and regional land use and development objectives.

4. Both the Ross Island and Caruthers Alternatives will be provided equal consideration through this further evaluation. Accordingly, staff shall:

[a] Provide a local selection process identical to the process that led to the adoption of this report to consider this further analysis and to determine whether to advance the Caruthers Crossing Alternative into the Tier II DEIS.

[b] Work with interested parties to develop and evaluate the design options described above.

[c] Continue to undertake planning and engineering work for the LRT alignment alternatives that allows for an Eastside transit connection.

South North
Transit Corridor Study

EXHIBIT A

DRAFT

Tier I Final Recommendation Report

Metro Council

C-TRAN Board of Directors

November 23, 1994

METRO

Tier I Final Recommendation Report

South/North Corridor Alternatives Analysis

November 23, 1994

Metro Council
C-TRAN Board of Directors

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EXECUTIVE SUMMARY

Figure 1 illustrates the Tier I terminus and alignment alternatives that will advance into the Tier II Draft Environmental Impact Statement (DEIS) for further study.

Following is a summary of the South/North study approach adopted by the Metro Council and C-TRAN Board of Directors:

- The South/North Corridor Project will be pursued in two study phases:

  [a] Phase I will consider a Light Rail Transit project between the Clackamas Town Center area and the 99th Street area in Clark County.

  [b] Phase II will consider an extension of the Phase I Light Rail Transit Project south to Oregon City and north to the 134th Street/Washington State University area.

- The study phases will be implemented as follows:

  [a] Preparation of the Draft Environmental Impact Statement (DEIS) and funding plan for the Phase I LRT alternative will begin immediately.

  [b] If LRT is selected as the Locally Preferred Alternative in Phase I, a DEIS and funding strategy for the Phase II LRT extension will be prepared upon completion of the Final Environmental Impact Statement (FEIS) for Phase I.

- The following alignment alternatives will be studied further within the Phase I Draft Environmental Impact Statement:

  [a] Between the Portland and Milwaukie Central Business Districts, the Ross Island Bridge Crossing, generally between the Ross Island Bridge in the north and Bancroft and Holgate streets in the south, and the McLoughlin Boulevard alignment will be developed for further study within the DEIS. The Caruthers area crossing will be evaluated further in order for the C-TRAN Board of Directors and Metro Council to determine whether it should also be included in the *Detailed Definition of Alternatives Report* and developed further in the DEIS.

  [b] Within the Portland CBD a Surface LRT Alternative on 5th and 6th Avenues will be developed based upon several principles for further study within the DEIS. If at the

time the DEIS is initiated it is concluded that a 5th/6th Avenue surface alignment cannot be developed that addresses those principles, other alternatives will be developed for further study in the DEIS.

[c] Between the Vancouver CBD and the vicinity of 99th Street, the I-5 East Alignment Alternative with station areas between I-5 and Highway 99 will be developed for further study within the DEIS.

- Because further discussions and analysis should occur, the selection by the Metro Council and the C-TRAN Board of Directors of an alternative for further study for the segment between the Portland and Vancouver central business districts shall wait completion of additional technical work and evaluation.

- The following alignments will be considered for the Phase II extensions:

  a. Following completion of the *Detailed Definition of Alternatives Report*, an analysis of the I-205 alignment from the CTC terminus and the McLoughlin alignment from the Milwaukie CBD will be made to determine which alignment will advance into the Phase II DEIS. The Portland Traction (PTC) right-of-way will not be considered as a Phase II alignment.

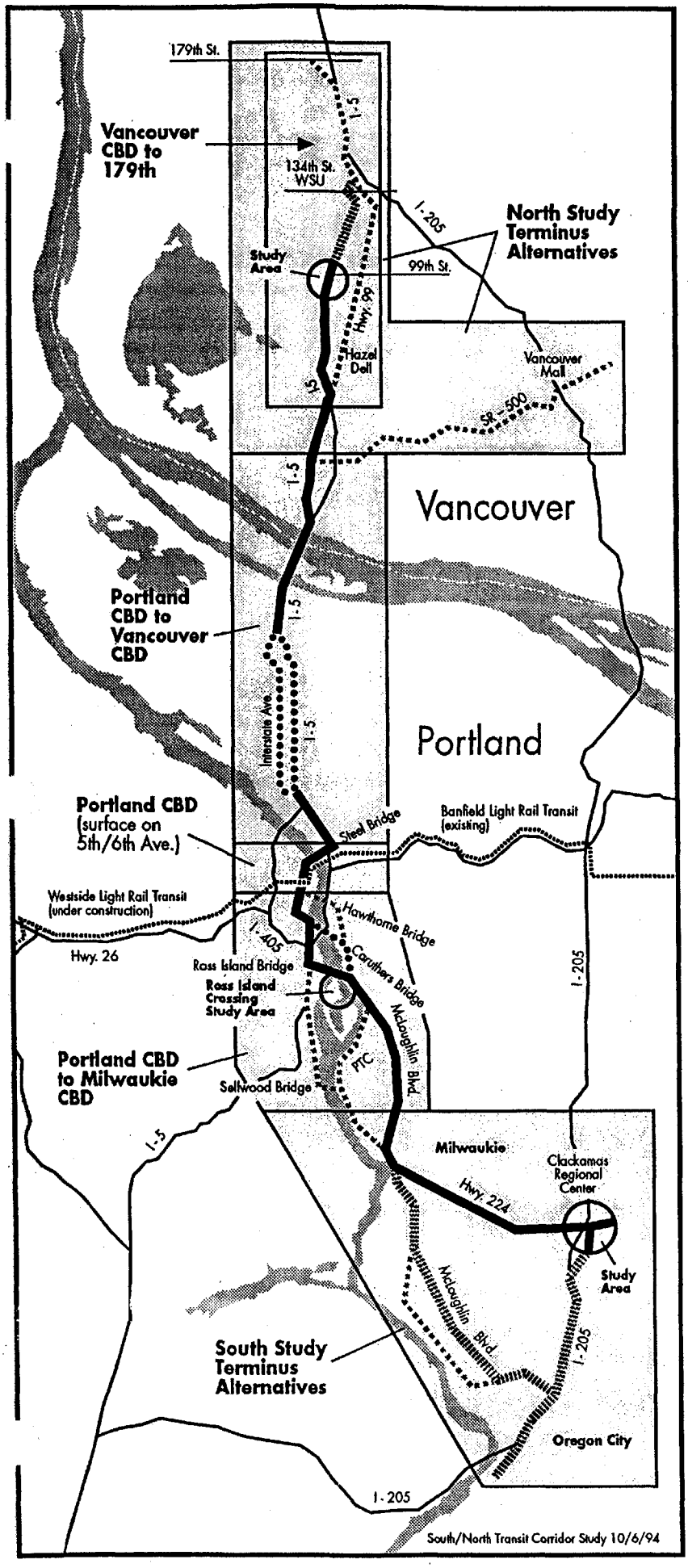
  b. Between the vicinity of 99th Street and the area of 134th Street/WSU Branch Campus, the I-5 East alignment will advance into the Phase II DEIS.

- The Phase I LRT alignment alternative between Clackamas Town Center and 99th Street area is estimated to:

  [a] Serve almost 20 million trips per year,

  [b] Help manage growth and reduce air pollution, traffic and vehicle-miles-of-travel; and

  [c] Cost approximately $2.85 billion in inflated (year-of-expenditure) dollars.



South North
Transit Corridor Study

Steering Group Final Recommendation

- Recommended for immediate DEIS Analysis
- Recommendation pending further Tier I analysis and public comment
- Recommended to be studied later in Phase II
- Recommended to be removed from further study

Figure 1

INTRODUCTION

1.1 Purpose

This *South/North Tier I Final Report* identifies (1) the South/North Light Rail Transit (LRT) terminus and alignment alternatives to be advanced into the Tier II Draft Environmental Impact Statement (DEIS) and (2) policies and actions related to other aspects of the South/North Transit Corridor Study. As the alignment alternatives are narrowed, more detailed "Design Options" will remain under study and will be addressed in the *Detailed Definition of Alternatives Report.*

The C-TRAN Board of Directors and Metro Council adopted this report at their regular meetings in December 1994. Adoption of the *Tier I Final Report* concludes a public selection process that was initiated in August 1994 with the preparation of draft terminus alternative recommendations by the South/North Project Management Group (PMG). On September 14, 1994, following conclusion of the Tier I public comment period, the PMG adopted its final Tier I terminus and alignment recommendations. After receiving the PMG final recommendation the South/North Citizens Advisory Committee (CAC) adopted its Tier I final recommendation on September 29, 1994. Both the PMG and CAC final recommendations were forwarded to the South/North Steering Group which adopted its final recommendation on October 6, 1994. Next, the participating jurisdictions and agencies reviewed the Steering Group recommendation and adopted independent recommendations in November and early December 1994. Those recommendations were forwarded to the C-TRAN Board of Directors and Metro Council for final adoption of this *Tier I Final Report* that delineates the LRT alternatives to advance into the Tier II DEIS for further study. Remaining alignment alternative choices described below will be made through a similar process.

1.2 Background

Because of its size and complexity, the South/North Transit Corridor Study and Draft Environmental Impact Statement (DEIS) process is being undertaken in two steps called "Tiers":

- Tier I focused on evaluating modal alternatives (busways, river transit, commuter and light rail), alignment alternatives, design options and terminus alternatives in order to narrow the number of alternatives to be addressed in the DEIS.

- Tier II will focus on preparing a DEIS on the narrowed set of LRT alternatives and a No-Build alternative. Tier II will conclude with the selection of the Locally Preferred Alternative.

Tier I started in mid-1993 with the initiation of the federally-mandated Scoping Process. The Federal Transit Administration's intent to publish an environmental impact statement for the South/North Transit Corridor was issued in the *Federal Register* on October 12, 1993. Based on analyses and public input provided during Scoping, the high capacity transit alternatives were narrowed to one mode -- light rail transit. Scoping (as amended by the Steering Group in May 1994) also identified:

- Four south (Clackamas County) and five north (Clark County) *Terminus Alternatives* for the LRT.

- Two or more *Alignment Alternatives* for each of five defined segments of the LRT alignment.

- Detailed *Design Options* for several of the LRT alignment alternatives.

After Scoping, staff prepared technical analyses of the terminus and alignment alternatives. These analyses are documented in the *Tier I Technical Summary Report* and the *Tier I Briefing Document*. In addition, an extensive public involvement process on the alternatives and options was conducted. These data and public input serve as the basis for this draft recommendation.

This *Tier I Final Report:*

- Defines a two-phase study approach for pursuing the proposed project.

- Identifies the Terminus and Alignment Alternatives which will be advanced into the Tier II Draft Environmental Impact Statement (DEIS).

- Identifies strategies regarding how to proceed with yet-to-be decided issues and/or refinements associated with the recommended alternatives.

In addition to the *Tier I Final Report*, two other reports will be prepared before work starts on the DEIS:

- The *Conceptual Definition of Alternatives Report* will be based upon the actions of the C-TRAN Board of Directors and Metro Council and will provide a general description of the LRT alignment, termini and other project elements for information purposes, primarily for the Federal Transit Administration (FTA). It will also provide a general description of the No-Build alternative.

- The *Detailed Definition of Alternatives Report* will specify the proposed LRT alignment, design, park-and-ride lot locations, station locations, maintenance facility and other project elements in detail and will serve as the basis for the DEIS. It will also provide a detailed description of the No-Build alternative.

Those elements of the LRT alternative that are not addressed in the *Tier I Final Report* will be addressed in these reports.

1.3 Public Involvement

The adoption of the *Tier I Final Report* by Metro Council and the C-TRAN Board of Directors follows a lengthy period and numerous opportunities for public review of the Tier I technical

information and public comment on the Tier I alternatives. The public comment period began in July 1994 with notification of the availability of the draft *Tier I Technical Summary Report,* the draft *Briefing Document* and the draft *Tech Facts.* The public was also invited to attend four public open houses to review the Tier I alternatives and technical information and to discuss the information and alternatives with project staff and participating agency representatives. In July and August 1994, meetings with individual neighborhood and business associations were held throughout the Corridor by study staff and participating jurisdictions.

In August 1994, the *Briefing Document* and *Tech Facts* were revised to reflect new or corrected information and the public was asked to attend four meetings to allow the Steering Group to receive public comment on the Tier I technical information. Oral and written comments were received at the four meetings and additional written comments were received during the comment period which ran through September 13, 1994. Those oral and written comments have been compiled and summarized in a report titled *Narrowing the Options: Summary of Tier I Public Meetings and Comments.* A supplement to the *Summary of Public Meetings and Comments* has been issued documenting the public meetings held and comments received between the close of the public comment period and the adoption of the *Tier I Final Report.*

1.4 Organization of the *Tier I Final Report*

This report is divided into four chapters:

- **Chapter 1: Introduction** defines the purpose and background of the report.

- **Chapter 2: South/North Alternatives Adopted for Further Study** defining the Phase I and Phase II terminus alternatives and alignment alternatives that will be advanced for further study..

- **Chapter 3 : Rationale for Selection of Terminus Alternatives for Further Study** documents the reasons for the Steering Group's recommendations regarding the Phase I and Phase II terminus alternatives.

- **Chapter 4: Rationale for Selection of Alignment Alternatives for Further Study** documents the reasons for the Steering Group's recommendations regarding the alignment alternatives.

ALTERNATIVES SELECTED FOR FURTHER STUDY

2.1 Project Phasing

1. The South/North Project will be pursued in two study phases:

   [a] Phase I will consider the light rail transit alternative, described below, which Metro Council and the C-TRAN Board of Directors have found best meets the evaluation criteria established for Tier I and is also constrained by current estimates of potential funding. Work on the Draft Environmental Impact Statement for the Phase I alternative will begin immediately.

   [b] Phase II will consider a future extension of the South/North LRT to the potential end-points in Clackamas and Clark Counties, if LRT is selected as the locally preferred alternative in Phase I. The DEIS and funding plan for the Phase II LRT extension will be prepared upon completion of the Final EIS for Phase I.

2. In compliance with FTA requirements, Minimum Operable Segment(s) will be identified in each DEIS. Construction of a Phase may occur in Minimum Operable Segment(s) to accommodate funding schedules and/or availability.

2.2 South Terminus

2.2.1 Phase I South Terminus

1. The *Clackamas Town Center* area will be the Phase I South Terminus of the S/N LRT Alternative studied in the Draft Environmental Impact Statement (DEIS).

2. The specific location of the Phase I terminus within the Clackamas Town Center area and the associated alignment, station locations and park-and-ride location within the area need further analysis. Accordingly, staff shall:

   [a] Establish a special study area in the Clackamas Town Center area which extends east to Sunnyside and south to Highway 224.

   [b] Evaluate specific "eastward-oriented" (e.g. heading toward Kaiser Hospital) and "southward-oriented" (e.g. heading toward Oregon City) Phase I terminus and alignment options within the Town Center study area.

   [c] Ensure that appropriate park-and-ride access and capacity be provided with the Phase I terminus.

[d] Recommend a refined Phase I terminus and alignment within the Clackamas Town Center area in the *Detailed Definition of Alternatives Report.*

3. Clackamas County shall be asked to review revised land use plans for the Clackamas Town Center area to ensure a more pedestrian and transit friendly land use pattern which supports the Town Center area's designation as a Regional Center in the draft 2040 Plan and as the Phase I South Terminus of the South/North LRT alternative.

2.2.2 Phase II South Terminus

1. Metro will consider the incorporation of policies in the Regional Transportation Plan (RTP) and Regional Framework Plan which call for a Phase II extension of the South/North LRT Alternative to *Oregon City.*

2. In conjunction with the analysis described in Section 2.2.1.2(b), staff will evaluate alignment alternatives for the Phase II extension to Oregon City and establish a preferred Phase II alignment for consideration by Metro Council for inclusion in the RTP and Regional Framework Plan. Work on selecting a preferred Phase II alignment will begin upon completion of the Phase I *Detailed Definition of Alternatives Report.* The Portland Traction (PTC) right-of-way will not be considered as a Phase II alignment.

3. Local jurisdictions along the proposed Phase II alignment shall be asked to consider revisions to their land use plans which encourage transit supportive land uses along the Phase II alignment. Such revisions, if adopted, will be outlined in the Phase II DEIS as "committed actions" and could greatly facilitate Federal Transit Administration (FTA) approval of a Phase II extension. Such actions, if adopted, will also be reflected in the Phase II land-use analysis and ridership forecasts.

4. The Cove development currently being pursued by Oregon City through its urban renewal plan is regionally significant in terms of (i) the alignment choice and future feasibility of the Phase II LRT extension to Oregon City and (ii) regional objectives encouraging Transit Oriented Districts (TODs). Accordingly, Metro and Oregon City shall pursue the following course of action:

   [a] The alignment and policies regarding the Phase II extension of the South/ North LRT being prepared by Metro and the site plan and land uses for the Cove development being prepared by Oregon City should be integrated.

   [b] The site plan for the Cove development should preserve right-of-way for the Phase II extension of South/North LRT.

   [c] Plans for feeder bus service for the Phase I LRT alternative should provide service to the Cove development in a manner which supports a transit supportive land use pattern during the interim period.

[d] Based on the resulting RTP and Regional Framework Plan, funding for improvements which are needed to support a transit oriented development within the Cove area and/or are needed to preserve the right-of-way for the proposed Phase II LRT extension through the Cove development shall be a priority for the allocation of regional TOD or other appropriate funds.

5. If LRT is extended along I-205 to Oregon City and if a development proposal and plan for the 80-acre Seventh-Day Adventist (SDA) property in Gladstone is prepared and moves toward implementation, an approach similar to that described above in Section 2.2.2(4) for the Cove development shall be undertaken for the SDA property by Metro, the City of Gladstone and Clackamas County.

6. Tri-Met shall be asked to plan for high-quality feeder bus service between Oregon City and the Phase I LRT transit centers to help develop transit and land use patterns which facilitate a future Phase II extension of the South/North LRT.

2.3 North Terminus

2.3.1 Phase I North Terminus

1. The *99th Street* area is the Phase I North Terminus for the South/North LRT Alternative that will be studied further in the DEIS.

2. The specific station and park-and-ride lot locations within the 78th Street to the 99th Street area need further analysis to determine how best to accommodate park-and-ride demand. Accordingly, staff shall:

   [a] Establish a special study area between 78th Street and 99th Street area.

   [b] Evaluate park-and-ride lot opportunities and the land use and transportation impacts associated between 78th Street and the 99th Street area.

   [c] Recommend a refined station and park-and-ride lot locations within the special study area in the *Detailed Definition of Alternatives Report.*

2.3.2 Phase II North Terminus

1. Metro and RTC shall be asked to consider incorporating policies in their respective Regional Transportation Plans (RTPs) and Clark County and the City of Vancouver shall be asked to incorporate policies in their Growth Management Plans that call for a proposed Phase II extension of the South/North LRT Alternative to the *134th Street/WSU area.*

2. Clark County, RTC, the City of Vancouver and C-TRAN staff shall be asked to review land use plans for the proposed Phase II LRT terminus area to ensure transit supportive land use patterns are integrated with the proposed Phase II terminus and alignment alternatives. The resulting actions, if adopted, will be outlined in the Phase II DEIS as "committed actions" and could greatly facilitate FTA approval of a Phase II extension. Such actions, if adopted, would also be reflected in the Phase II land-use analysis and ridership forecasts.

3. The planned activity center and Washington State University (WSU) campus development in the vicinity of 134th Street and I-5 are critical to the future feasibility of the Phase II LRT extension to the 134th Street/WSU area. Accordingly, Clark County, RTC, the City of Vancouver and C-TRAN staff shall work with WSU officials and other developers in the area to ensure transit supportive land uses are developed in and around the proposed Phase II LRT terminus area and that required right-of-way is preserved.

4. C-TRAN shall be asked to plan for provision of high-quality feeder bus service between the 134th Street/WSU area (in particular, the WSU campus) and the 99th Street area (the Phase I north terminus) to help develop transit and land use patterns which facilitate a future Phase II extension of the South/North LRT.

2.4 Portland CBD to Milwaukie/South Willamette River Crossing Alignment Alternative

1. The *Ross Island Bridge Crossing Alternative* and *McLoughlin Boulevard Alignment Alternative* are the LRT alignment alternatives in the segment from the Portland CBD to Milwaukie/South Willamette River Crossing that will be studied further within the Tier II of the DEIS.

2. The Caruthers area crossing will be evaluated further in order to allow the C-TRAN Board of Directors and Metro Council to determine whether it should also be included in the *Detailed Definition of Alternatives Report* and developed further in the DEIS.

3. The location of the Ross Island area river crossing, bridgeheads and stations in this segment will receive further analysis to determine how to serve as much of the North Macadam redevelopment area and S.E. residential areas as possible. Further, if a Caruthers area crossing is selected to advance into the DEIS then its design will be refined and included within the *Detailed Definition of Alternatives Report.* Accordingly, staff shall:

   [a] Establish special study areas on the east and west banks of the Willamette River which are generally bounded by the Ross Island Bridge and S.W. Gibbs Street in the north and Bancroft Street and Holgate Boulevard in the south.

   [b] Evaluate alternate bridge locations, alignment options and station location(s) within these study areas which provide for optimal light rail coverage to S.E. Portland neighborhoods and the North Macadam Area.

[c] Recommend a refined location for the Ross Island area LRT bridge, associated alignment and stations in the *Detailed Definition of Alternatives Report* based on an assessment of development opportunities, costs, environmental considerations and engineering constraints.

[d] Evaluate alternate bridge designs, alignment options and station locations for a Caruthers area crossing and recommend a refined bridge, alignment and station location design for inclusion within the *Detailed Definition of Alternatives Report* if a Caruthers area crossing is selected for advancement into the DEIS.

[e] Work with interested parties to develop and evaluate the design options described above.

[f] Continue to undertake planning and engineering work for the LRT alignment alternatives that allows for an Eastside transit connection.

2.5 Portland CBD Alignment Alternative

1. The Surface LRT Alternative on 5th and 6th Avenues within the Portland CBD will be developed in detail for further study within the Tier II DEIS.

2. Because of the critical function that the Portland CBD segment plays in the South/North Corridor, the study of the 5th/6th Avenue Surface Alignment is based upon the following principles:

   [a] To accommodate bus, light rail, general purpose automobile and pedestrian travel on the 5th/6th Avenue Transit Mall.

   [b] To develop for further evaluation Surface LRT Transit Mall design options that accommodate those modes of travel using both a three-lane and a four-lane configuration. The designs will address sidewalk widths, street trees and other amenities which are critical to a pedestrian friendly environment.

   [c] To retain automobile access on essential blocks that directly serve the Hilton Hotel, parking garages that enter and/or exit onto the Transit Mall and other important locations as determined through a collaborative process with interested downtown parties.

   [d] To establish the light rail station locations that will optimize both light rail access and automobile access on the Transit Mall. In general, those locations will be (1) near the PSU campus; (2) near City Hall; (3) near Pioneer Square; (4) south of Burnside; and (5) one or two stations to serve the Old Town, Union Station and north River District areas.

   [e] To work with the Downtown Portland community in developing the Surface LRT Transit Mall options for further study and in selecting the locally preferred alternative.

[f] To develop the refined surface alternative(s) that address these principles for inclusion in the adoption of the *Detailed Definition of Alternatives Report*, and that if at that time it is concluded that a 5th/6th Avenue Surface Alignment cannot be developed that addresses those principles, other alternatives would be developed for further study within the Draft Environmental Impact Statement.

2.6 Portland CBD to Vancouver CBD Alignment Alternative

1. While the existing technical data and public comments have been valuable in understanding tradeoffs between the Interstate Avenue and I-5 alignments, additional information and discussions are needed to produce a clear basis for a determination of the preferred LRT alignment between the Portland and Vancouver CBDs. Therefore project staff shall:

   [a] Conclude discussions on the relative land use impacts of the alignment alternatives and their ability to meet community objectives; and,

   [b] Conclude more detailed analysis of traffic and pedestrian movement impacts of the alignment alternatives.

2. Further, modified alternatives which merge the I-5 alignment with portions of the Interstate Avenue alignment north of Skidmore Street shall be undertaken to determine if a modified I-5 alignment can achieve the land use and neighborhood benefits associated with the Interstate alignment at a lower cost. Therefore, project staff shall:

   [a] Establish a special study area bounded by Skidmore Street and the Columbia Slough.

   [b] Identify and evaluate modified I-5 alignment alternatives which (i) merge segments of the I-5 alignment with segments of the Interstate Avenue alignment within the special study area and/or (ii) more centrally serve the Kenton neighborhood.

   [c] Address issues regarding the location of the Columbia Slough crossing.

3. Finally, the Metro Council and the C-TRAN Board of Directors intend to determine the preferred alignment between the Portland and Vancouver CBDs by the time the *Detailed Definition of Alternatives Report* is finalized using the following: (i) existing technical information and public comment; (ii) new technical information and discussions described in section 2.6.2 (a) and (b); and, (iii) the analysis of modified alignment alternatives described in section 2.6.3.

2.7 Vancouver CBD to 134th Street/WSU Area Alignment Alternative

1. The *I-5 East Alignment Alternative* is the alignment alternative in the segment from Vancouver CBD to the vicinity of 99th Street that will be studied further in the Tier II DEIS.

2. The *I-5 East Alignment Alternative* is the alignment between the vicinity of 99th Street and 134th Street/WSU area that will be proposed for inclusion in the RTP and Growth Management Plan policies regarding the Phase II extension of the South/North LRT.

3. Prior to finalizing the *Detailed Definition of Alternatives Report*, project staff will conduct a study of station areas in the Hazel Dell area to determine the best east/west cross-street locations for stations, pedestrian connections and park-and-ride lots and to determine the best location for those stations between I-5 and Highway 99. Following conclusion of the DEIS based upon those station locations, further study and refinement of the station locations may be required to meet transportation, transit service and development/redevelopment objectives.

2.8 Design Options

1. Within the alignment alternatives recommended above, the following more detailed "Design Options" remain under study and will be addressed in the *Detailed Definition of Alternatives Report*:

   [a] The alignment through the Vancouver CBD.

   [b] The Columbia River Crossing (high bridge, lift span bridge or tunnel).

   [c] The alignment between the Steel Bridge, Emanuel Hospital and the Kaiser Medical Center.

   [d] The alignment through Milwaukie.

   [e] The alignment between Milwaukie and the Clackamas Town Center.

   [f] The locations of park-and-ride lots, transit centers, stations and maintenance facilities.

   [g] Downtown Portland alignment details.

   [h] Other design options as required.

RATIONALE FOR TERMINUS ALTERNATIVES SELECTED FOR FURTHER STUDY

The following conclusions and supporting information summarize the basis for Metro Council's and the C-TRAN Board of Director's selection of the South/North LRT terminus alternatives:

3.1 Rationale for the Two-Phase Implementation

- *Ultimately, a South/North LRT line which serves Oregon City, Clackamas Town Center and the 134th Street/WSU area in Clark County would maximize the benefits of the LRT alternative.*

  The eastern portion of urban Clackamas County provides a unique opportunity to develop transit-oriented land uses in support of LRT. Within this area, there are three major development nodes -- Milwaukie, Oregon City and the Clackamas Town Center vicinity (CTC). At the beginning of Tier I, the "terminus issue" was framed as selecting one of these three nodes as the "South Terminus" of the S/N LRT.

  Based on the analyses and public comment received during Tier I, it became evident that the desired end-result is to provide light rail service to Milwaukie, CTC and Oregon City. Such a system would maximize the ridership and land use benefits of the light rail line.

  A similar but slightly different situation exists in Clark County. As Tier I began, the issue was whether the South/North line should terminate along I-5 or in the vicinity of the Vancouver Mall. However, staff found that transit travel patterns in the Vancouver Mall area are oriented more towards transit service in the I-205 corridor than towards a South/North LRT line. As a result, the issue of choosing a north terminus for the South/North LRT alternative focused on selecting between the terminus alternatives in the I-5 corridor.

  The higher costs associated with a 179th Street terminus outweigh its added benefits. As a result, the 179th Street terminus can not be justified as the Phase II terminus. Instead, 134th Street/WSU area is recommended. The combination of (i) the Growth Management Plan establishing the 134th Street area as an activity center and (ii) Washington State University developing a campus in this area, establishes 134th Street/WSU area as a major LRT opportunity.

- *The amount of capital funds potentially available at this time are insufficient to construct a light rail line serving Oregon City, Clackamas Town Center, Milwaukie, Portland, Vancouver and 134th Street/WSU area.*

  The estimated maximum amount of capital funds available for a first phase of construction is $2.85 billion. This estimate assumes that 50% of the cost would be funded by a federal LRT construction grant. Based on recent LRT federal funding trends, a maximum federal

contribution of about $1.4 billion can potentially be achieved over two federal authorization cycles. It also appears that about $1.4 billion is a practical limit on the amount of LRT capital funds which can be locally assembled.

Based on Tier I engineering and costing studies, the least expensive options for a LRT line between Oregon City, the CTC area and 134th Street/WSU area would cost approximately $3.55 billion in inflated dollars -- $700 million more than that which is achievable in Phase I.

- *The phased approach maximizes the likelihood of realizing a South/North LRT project which would ultimately serve the proposed termini.*

  The basic criteria for securing FTA approval for federal funds are: (i) evidence that sufficient development exists to support the project, (ii) cost-effectiveness and (iii) evidence that sufficient funds are committed to build the project. A project between 134th Street/WSU area and Oregon City would currently perform poorly with respect to the first two criteria. More importantly, it would not be possible to demonstrate sufficient committed funds. As a result, if the proposed LRT alternative project and extensions were pursued now, it would put the entire project in jeopardy.

  The phased approach avoids these problems. A Phase I project between the 99th Street area and the CTC area would exhibit better levels of existing development and cost-effectiveness than a longer project. Furthermore, the proposed funding plan, if successfully implemented, would demonstrate the level of commitment sought by FTA. And finally, a phased approach would allow for adoption of land-use plans and implementing ordinances, which are more transit-supportive and would therefore exhibit higher ridership and better cost-effectiveness.

3.2 Rationale for Phase I Termini

A Clackamas Town Center area to 99th Street area LRT Alternative best meets the Tier I evaluation criteria within the financial threshold as described below.

- *An LRT line with termini in the vicinity of the Milwaukie CBD and 39th Street in Vancouver would barely penetrate into Clackamas or Clark Counties, providing insufficient coverage to accomplish land use or transportation objectives.*

  To best achieve the land use and transportation objectives established for the project, the South/North LRT alternative should serve regional and intra-county trips in both Clark and Clackamas counties. The Milwaukie CBD and 39th Street terminus alternatives do not accommodate intra-county trips. Furthermore, there are significant opportunities for encouraging transit-oriented land uses not far beyond these termini. These transit-oriented land use opportunities are worthy of consideration within the DEIS process. The Milwaukie CBD to 39th Street terminus does not provide the occasion to consider such land use opportunities.

- *The Clackamas Town Center area terminus alternative exhibits lower costs, greater cost-effectiveness and greater consistency with existing regional policy than the Oregon City terminus alternatives.*

  The CTC area terminus alternative is approximately $140 - $560 million (in Year of Expenditure (YOE) dollars) less expensive to construct than an Oregon City terminus alternative. In addition, the CTC area terminus alternative is estimated to cost $1 - $2.6 million per year less to operate than an Oregon City terminus. As a result, the Tier I measure of cost-effectiveness for the CTC area terminus is 1% - 12% better than that for an Oregon City terminus.

  Metro's Regional Transportation Plan (RTP) has identified a light rail line to CTC as the region's next LRT priority after the Hillsboro extension. The transportation and land use benefits associated with Oregon City are not sufficient to modify this long-standing policy.

- *The 99th Street area north terminus alternative is consistent with Growth Management Plan objectives and exhibits lower costs and greater cost-effectiveness than the 134th Street/WSU area, 179th Street and Vancouver Mall terminus alternatives.*

  Both the 99th Street area terminus and the 134th Street/WSU area terminus are consistent with and would support the proposed Growth Management Plan objectives for Clark County, the City of Vancouver, C-TRAN, RTC and WSDOT.

  The 99th Street area terminus is approximately $105 million (in YOE dollars) less expensive to construct and $0.9 million per year less expensive to operate than the 134th Street/WSU area terminus. As a result, the Tier I measure of cost-effectiveness for the 99th Street terminus is 2% better than that for the 134th Street/WSU area terminus.

  The 99th Street area terminus is approximately $202 million (in YOE dollars) less expensive to construct than the Vancouver Mall terminus alternative (which includes the Orchards extension). In addition, the 99th Street area terminus alternative is estimated to cost $1.6 million per year less to operate than a Vancouver Mall terminus. As a result, the Tier I measure of cost-effectiveness for the 99th Street area terminus is 5% better than that for a Vancouver Mall terminus.

  The 99th Street area terminus is approximately $236 million (in YOE dollars) less expensive to construct and $1.8 million per year less to expensive to operate than the 179th Street terminus. As a result, the Tier I measure of cost-effectiveness for the 99th Street area terminus is 5% better than that for the 179th Street terminus.

3.3 Rationale for the Recommended Implementation Strategy

- *Questions remain as to whether the Phase I south terminus should head eastward (e.g. toward Kaiser Hospital) or southward (e.g. toward Oregon City).*

While it is determined that Oregon City be the Phase II terminus, there is not yet a preferred Phase II alignment alternative. Two options exist: one would extend from the Phase I terminus in the CTC area to Oregon City via I-205 and one would extend from the Milwaukie CBD to Oregon City via McLoughlin Boulevard (creating a two-branch system in Clackamas County). The PTC alignment in this segment, south of Milwaukie and west of McLoughlin Boulevard, would no longer be considered. The determination of the preferred alignment to Oregon City will effect both the location and orientation of the Phase I terminus within the CTC area. The proposed action plan prescribes a process for making these determinations.

- *Questions remain as how best to accommodate park-and-ride demands in the vicinity of the 99th Street area.*

  Because of the availability of a major interchange at I-5 and 99th Street and other travel demand and land use patterns and opportunities, the area of 99th Street has been identified as the proposed Phase I Northern Terminus. However, the 99th Street area may not provide the best opportunity to accommodate park-and-ride demand. As a result, further analysis will be conducted to determine the best placement of stations and park-and-ride lots between 78th Street and the 99th Street vicinity.

- *Local and regional government commitments towards densification and transit-oriented land use patterns along the proposed Phase II alignment could facilitate federal funding for the Phase II extension.*

  Section 3010 of the Intermodal Surface Transportation Efficiency Act of 1991 (ISTEA) establishes the criteria to be used by the Secretary of Transportation in making recommendations on LRT capital (Section 3) grants. Therein, the Secretary is required to "identify and consider transit supportive existing land use policies and future patterns and ... the degree to which the project ... promotes economic development" in allocating Section 3 funds. Because the existing development levels in the Oregon City and 134th Street areas are not as high as in areas surrounding competing projects in other regions, the strongest case for a Phase II extension may hinge on the densification and transit-oriented land use commitments called for in the proposed action plan.

RATIONALE FOR ALIGNMENT ALTERNATIVES SELECTED FOR FURTHER STUDY

The following conclusions and supporting information summarize the basis for Metro Council's and the C-TRAN Board of Director's selection of the South/North LRT alignment alternatives.

4.1 Portland CBD to Milwaukie/South Willamette River Crossing Alignment Alternative

4.1.1 Rationale for Alignment Recommendation

The *Ross Island Bridge Crossing* and *McLoughlin Boulevard Alignment Alternative* are the alignment alternatives that will be studied further within the Tier II DEIS and the *Caruthers Area Crossing* will receive further study within Tier I to determine whether it should also be advanced into the Tier II DEIS for the following reasons:

- *The Hawthorne Bridge River Crossing Alternative would exhibit substantial reliability and operations problems caused by numerous bridge openings and would not allow direct LRT access to Portland State University and South Downtown Portland.*

  The frequency of openings associated with the Hawthorne Bridge is considered to be a significant disadvantage of this alternative. A bridge opening during the peak-hour would likely disrupt the train schedule for the entire peak-period. Effective travel times would increase and reliability would suffer. As a result, ridership would decline, operating costs would increase and the cost-effectiveness of the alternative would deteriorate over time. Further, an alignment using the Hawthorne Bridge would increase the distance between and LRT station and PSU, a major transit attraction, by approximately 7 blocks. In addition, other activity points in South Downtown Portland would not receive direct LRT access.

- *The Sellwood Bridge alternative would generally exhibit lower ridership, longer trip times, higher operating costs and a higher cost-effectiveness ratio and would not provide direct LRT access to several S.E. Portland neighborhoods and bus routes.*

  The additional length of the Sellwood Bridge alternative would increase transit travel times between the Portland CBD and locations within Clackamas County by up to five minutes more than other alternatives. In addition, the Sellwood Bridge alternative would have the lowest projected total transit ridership (189,800 to 474,000 per year fewer), the lowest LRT ridership (131,000 to 460,000 per year fewer) and the highest operating costs ($690,000 to $1,190,000 per year more), resulting in the highest cost effectiveness ratio of the South Willamette River crossing alternatives. Finally, the Sellwood Bridge alternative would not provide direct LRT access to several S.E. Portland neighborhoods and bus routes that would have LRT access with other river crossing alternatives.

- *While the Ross Island Bridge River Crossing Alternative generally exhibits the same costs and transportation benefits as the Caruthers Bridge alternative, the Project Management Group's and the Steering Group's recommendations to advance the Ross Island Bridge alternative into Tier II were based upon their judgement that a Ross Island crossing exhibits superior land use and development benefits.*

  The Ross Island Bridge alternative would be approximately $6 million (in inflated dollars) less expensive to construct and serve 160,000 less LRT riders per year than the Caruthers Bridge alternative. In combination, these cost and ridership factors are not considered decisive. The choice between these two alignment alternatives is effected by determining which are the most important areas to be served by light rail: (1) OMSI and its surrounding area available for Eastside development and redevelopment or (2) the North Macadam Development and Redevelopment Area. Because of its amount of vacant developable and redevelopable land, its proximity to downtown, its ability to support housing and the role that redevelopment of urban land can play in maintaining a compact urban area, the land use benefits of direct LRT access to the North Macadam Area were determined by the PMG to be greater than in the OMSI area. The Steering Group concurred with the PMG on the importance of serving the North Macadam Redevelopment Area and on the importance of serving established Southeast Portland neighborhoods and recommended that the Ross Island Bridge Alignment be forwarded into Tier II for further study within the DEIS.

- *The Citizens Advisory Committee recommended that the Caruthers Bridge alternative be advanced into the DEIS for further study.*

  The Citizens Advisory Committee recommended that the Caruthers Bridge alternative be advanced into the DEIS for further study generally because it felt that the Caruthers Bridge alternative would provide better service to OMSI, the surrounding redevelopment area and the established S.E. Portland neighborhoods in that area. The Steering Group concurred that the Caruthers Bridge alternative warrants further study and recommended that prior to the adoption of the *Detailed Definition of Alternatives Report* there be a determination of whether the differences between the Ross Island Bridge and the Caruthers Bridge alternatives warrants inclusion of the Caruthers Bridge alternative within the Tier II DEIS.

- *There is a desire to try to serve both the North Macadam area and the southeast Portland area with LRT, expressed both by the PMG and more strongly by the Citizens Advisory Committee.*

  The Tier I analysis assumed that the new LRT bridge would be located south of and adjacent to the existing Ross Island Bridge. A Ross Island crossing close to the existing Ross Island Bridge would provide the highest level of LRT access to the northern parcels of the redevelopable land with less direct access to parcels further south in the district. A crossing further south and closer to Bancroft Street would provide more centralized access to the redevelopable land. On the eastside there is also a desire to provide LRT station access to eastside residential and development areas. A crossing near the existing Ross Island Bridge may provide the best opportunity for a potential station to serve that area, while a crossing

further South may be limited to station access near Holgate Boulevard. As a result of these trade-offs, the recommended action plan proposes further analysis of the location of the river crossing, bridgehead and stations in the North Macadam Area on the westbank and north of Holgate on the eastbank to determine the best opportunities for serving established neighborhoods and development opportunities on both sides of the river.

- *The McLoughlin Boulevard alignment alternative exhibits less cost, greater ridership, higher cost effectiveness and less environmental impact than the Portland Traction (PTC) alternative.*

  Within this segment, the McLoughlin Boulevard alignment alternative is approximately $21 million (in inflated dollars) less expensive to construct and $560,000 per year less expensive to operate than the PTC alternative. (In addition, the McLoughlin alternative serves almost 1.5 million annual LRT riders more than the PTC alternative. As a result, the Tier I measure of cost-effectiveness for the McLoughlin alignment is 7% better than that for the PTC alternative. Furthermore, the PTC alignment would traverse Oaks Bottom--a very sensitive wetlands and wildlife area.

4.1.2 Rationale for the Recommended Implementation Strategy

- *Questions remain as to the precise location of the bridge crossing.*

  Further research is needed on three key issues before the bridge location(s) to be brought into the DEIS can be finalized. First, more research is needed on the site plans for development in the areas. Second, the environmental impacts of the bridge crossing on the river eco-system and wildlife habitat and visual resources need to be better understood. Third, the opportunities and constraints for station locations and the effect that those locations would have in optimizing LRT access to established residential areas and connections to local transit service.

4.2 Portland CBD Alignment Alternative

4.2.1 Rationale for Alignment Recommendation

The *5th/6th Avenue Surface Alignment Alternative* is the alignment alternative in this segment that will be developed further for study within the Tier II DEIS for the following reasons:

- *The 5th/6th Avenue Surface Alignment Alternative is most consistent with the Downtown Plan*

  The Downtown Plan calls for the region's highest density commercial uses along the 5th/6th Avenue spine. Alignment alternatives, whether they be surface or subway, employing other streets places transit further away from these densities and, as a result, fail to maximize the

quality of the service. The Downtown Plan also calls for an active pedestrian environment at street level. This is the basic policy implicit in many aspects of the development requirements for downtown -- for example, the requirement for first-floor retail in parking garages. A surface alignment best provides for such a pedestrian environment.

- *The 5th/6th Avenue Surface Alignment Alternative exhibits lower capital costs and operating costs than the Subway alternative.*

  The 5th/6th Avenue Surface Alignment would be $242 - $296 million (in inflated dollars) less expensive to construct and $1.8 million per year less expensive to operate than the Subway Alternative.

- *Despite its lower ridership, the 5th/6th Avenue Surface Alignment Alternative is more cost-effective than the Subway alternative.*

  Overall weekday corridor ridership would be 2,100 greater with the Subway Alternative. Nonetheless, these ridership benefits are outstripped by the higher capital and operating costs of the Subway Alternative. As a result, the 5th/6th Avenue Surface Alignment Alternative is more cost-effective.

4.2.2 Rationale for the Recommended Implementation Strategy

- *Additional information on the Surface Alignment is needed to determine the design options to be evaluated in the DEIS.*

  Recently, concept plans for the *Surface Alignment Alternative* were circulated for preliminary comment. These plans include two design options which would accommodate LRT, bus, auto and pedestrian circulation on the Transit Mall. One design option would have a three-lane configuration and may require the platooning of certain buses while the other would have a four-lane configuration and may require narrowing some sidewalks.

  Other design options are also being looked at and developed both for the central mall south of Burnside and for the mall north of Burnside. Further analysis and discussion with the public, businesses and various agencies need to be conducted before these designs can be finalized. This additional work will refine station locations (within the general locations specified in the recommendation) and the location of auto circulation and access (hotel and parking garage accesses will be retained, the location of other auto lanes depends on the refined designs). Because of the sensitivity and complexity of these issues, special efforts will be made to involve the downtown Portland community.

4.3 Portland CBD to Vancouver CBD Alignment Alternative

The Metro Council and C-TRAN Board of Directors have yet to determine the alignment alternative(s) in this segment to advance into the DEIS for further study for the following reasons:

- *While the Interstate Avenue alignment alternative costs more than the I-5 alternative, further analysis is needed to determine if there are land use and development benefits of the Interstate alignment that outweigh its additional cost.*

  The I-5 alignment alternative in this segment is approximately $114 million (in inflated dollars) less expensive to construct, $120,000 per year less expensive to operate and serves 460,000 more LRT riders per year than the Interstate Avenue alternative. However, the relative land use and development benefits are of critical importance and therefore merit additional consideration before a draft recommendation is proposed.

- *Further analysis is needed to identify and evaluate modified alternatives which merge the I-5 alignment with portions of the Interstate alignment.*

  In Tier I, it was assumed that the I-5 alignment would parallel the freeway. As a result, the I-5 alignment would serve the Kenton neighborhood with a station location on the fringe of the neighborhood. There is a desire to determine if the I-5 alignment can be merged with the Interstate alignment at a location between Skidmore Street and Columbia Boulevard to achieve the benefits associated with the Interstate alignment at a reduced cost -- in particular more centrally located service within Kenton.

- *Further public input is needed to determine community preferences.*

4.4 Vancouver CBD to 134th/WSU Area Alignment Alternative

4.4.1 Rationale for Alignment Alternative

The I-5 East Alignment Alternative is the alignment alternative in this segment that will be advanced into the DEIS for further study for the following reason:

- *The I-5 East Alignment Alternative is consistent with Growth Management Plans, exhibits less cost, greater ridership and higher cost effectiveness than the Highway 99 alternative.*

  The I-5 East Alignment Alternative is consistent with the Growth Management Plans for the Hazell Dell area prepared by Clark County, the City of Vancouver, C-TRAN, RTC and WSDOT. The LRT running alignment between stations is best located next to I-5 because it will avoid the traffic pattern disruption and local impacts associated with the Highway 99 alignment. However, the optimal locations for stations, pedestrian connections and park-and-ride lots between Highway 99 and east of I-5 need to be studied further within the 99th Street

area special study to maximize the transportation and land use benefits in the proximity of Highway 99.

In addition, the I-5 alignment alternative is approximately $167 million (in inflated dollars) less expensive to construct between 39th and 134th Streets than the Highway 99 alternative. In addition, the I-5 alignment alternative is estimated to cost $190,000 per year less to operate than the Highway 99 alternative. Furthermore, the I-5 alternative serves 400,000 annual LRT riders more than the Highway 99 alternative. As a result, the Tier I measure of cost-effectiveness for the I-5 alignment is 11% better than that for the Highway 99 alternative.

4.4.2 Rationale for the Recommended Implementation Strategy

- *Additional information on the segment between 78th Street and 99th Street is needed to determine the location of stations and park-and-ride lots to be included in the DEIS.*

  The design studies and technical analyses conducted in Tier I included an alternative terminus in the vicinity of 88th Street. In adopting the *Tier I Final Report* it was determined that the area of 99th Street would be a more appropriate location for the terminus given its proximity to a major arterial and interchange with I-5. This determination creates additional opportunities for stations and park-and-rides which were not considered to date in Tier I. One of the objectives of the 99th Street area special study is to determine more precisely where within the vicinity of 99th Street the terminus station should be located.

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CITY OF
PORTLAND, OREGON
DEPARTMENT OF PUBLIC WORKS

Earl Blumenauer, Commissioner
1220 S.W. 5th Avenue, Room 407
Portland, Oregon 97204
(503) 823-3589
Fax (503) 823-3596

December 7, 1994

Dear Rod,

Last week, the Portland City Council passed the Steering Group;s recommendation while asking for an "equal" study of the Caruthers Crossing over the next six months. The purpose of this additional study is to ensure that we have sufficient information to evaluate the benefits and disadvantages of both the Caruthers Crossing and the Ross Island Crossing before initiating the Draft Environmental Impact Statement (DEIS).

I recommend that the Joint Policy Advisory Committee on Transportation (JPACT) also pass the resolution as worded to ensure that the Caruthers Crossing receive equal treatment.

At the Portland City Council hearings, we heard extensive and thoughtful testimony urging us to develop the additional information needed to give the Caruthers Crossing equal footing with the Ross Island Crossing. In general, three types of additional information were requested:

1. Analysis of the benefits of linking the Caruthers Crossing with the Brooklyn Yards alignment, including increased neighborhood access to South/North light rail.

2. A re-evaluation of the ridership potential forecast by Metro models for OMSI, the Portland General Electric "Station L" redevelopment site and the Central Eastside Industrial Area.

3. An evaluation of the Caruthers Crossing bridge, to determine if it could service both the North Macadam Redevelopment Area and the OMSI area.

I understand that project staff have already started working on this information.

The process for deciding whether or not to advance the Caruthers Crossing into the DEIS should be the same as the process taken with

Port of Portland

Box 3529, Portland, Oregon 97208
503/231-5000

December 7, 1994

Members of JPACT

PORT POSITION ON SOUTH/NORTH RESOLUTION

The Port would like to raise an issue concerning this resolution and have it officially placed into the record. Unfortunately, neither of the Port's official representatives is able to attend the December 8 meeting.

First, we want to assure JPACT that the Port strongly supports the advancement of the south/north light rail line into the draft environmental impact stage for further study. The Port Commission passed a resolution in July of this year stating the Port's support for the development of the regional light rail system. The Port staff representative to TPAC only voted against this resolution because of her concern with the process for the second phase of decisionmaking, which is outlined below, not because the Port is opposed to the main point of the resolution.

The Port's concern, which we believe should be a regional concern, is that the language in Paragraph 2b seems to imply that the Phase II LRT extensions to Oregon City and north of Vancouver are the region's next priority projects. The Port does not sit on the South/North Steering Group and, therefore, has not had the benefit of the discussion surrounding the recommended language in the resolution. We understand that it is not the intent of the resolution to grant priority status to these extensions, and that the staff report addresses this issue. Nevertheless, we continue to be concerned that this language will raise expectations within the region that these projects are being advanced ahead of other potential lines.

The place for the next regional light rail priority discussion to occur is in the context of planning for the remainder of the HCT system, not within the context of the request for approval to move the agreed upon regional priority forward into a DEIS. At a minimum, the resolution should make it clear that the region does not mean to grant priority status to the south/north extensions. The Port suggests that JPACT consider adding a sentence to the end of 2b, stating: "This information will be used in an overall evaluation of the regional high capacity transit system in anticipation of a decision on the next regional priority corridor(s) after South/North Phase I."

Thank you for considering this issue. I regret that neither Mike nor I can attend the meeting. The Port's Planning Manager, Brian Campbell, will be there to answer any questions you may have of Port staff on this issue.

Sincerely,

Dave Lohman

Dave Lohman
Director, Policy and Planning

THE AMERICAN INSTITUTE OF ARCHITECTS/
PORTLAND CHAPTER

TO: The Citizen's Advisory Committee
South/North Transit Corridor Study
Metro-Transportation Planning
600 NE Grand Avenue
Portland, OR. 97232-2736

FROM: AIA/Portland Chapter Urban Design Committee

RE: Alternative Alignments Recommendations

DATE: September 8, 1994

Dear Committee Members:

The Urban Design Committee is a volunteer professional group of planners, architects and landscape architects which monitors and advocates a quality public realm throughout the Portland region. Transit alignments have tremendous urban design implications; well positioned stations are critical pedestrian public spaces; these stations can energize new and existing mixed use districts; and light rail alignments if located properly, can activate transit orientated community developments (TODS) which will help relieve the region's housing, auto congestion and pollution woes.

We have been monitoring the south/north process over the past two years and several of our members have detailed knowledge of the issues along the corridor. Based on this information and our experience with the successes and failures of the Banfield and Westside LRT's, we offer the following comments as you consider the recommendations:

1. TOD potential and land use planning should be more emphasized in alignment evaluations. If the region is to address sprawl comprehensively and fully capitalize on the massive public investment in light rail, it is imperative to think of light rail as a land use catalyst as well as a commuter devise. Too often alignments are selected primarily for ease of implementation, because of right of way convenience, political pressure or citizen opposition, literally the path of least resistance. Maximum ridership and community development potential must be equally factored in with the engineering, political and cost criteria. The region must capture more population within 1/2 mile of existing and proposed LRT lines, and stations should serve as the mixed use focus of community developments.

For example: comparing the Eastside vs. the Westside alignments through downtown and south, we believe there is more ridership, vacant land and community development potential on the East. The Central Eastside and other areas along McLoughlin Blvd have great potential to become TODs, yet have received superficial study as all emphasis shifted to the Westside. The Central

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Eastside connector should be included in the current evaluation, especially when considering the enormous costs of a new bridge crossing and the possibility of an additional $275. million for a downtown tunnel. The only viable TOD potential on the narrow, already developed Westside is the Schnitzer riverfront property at North Macadam. All alternatives should be evaluated based on objective criteria, not political forces. However, if the Westside alignment is pursued, the river crossing should occur in order to serve the North Macadam District, and at least two stations be located and coordinated with a TOD Master Plan for the Schnitzer parcel.

2. Alignments and stations should be positioned to not penalize transit users. Significant portions of existing and proposed light rail lines directly parallel major highways (approximately 60% of S/N alignments). The noise, fumes and difficult access make stations along highways completely unfriendly to LRT users. Developing mixed use TODs and housing adjacent to highways is very difficult. TODs should be 1/4 to 1/2 mile from arterial roads or highways. Stations should be at least 400 feet from arterials to encourage safe pedestrian access.

For example: Comparing the I-5 vs. Interstate Avenue alignments; north of downtown, we believe an improved, well designed Interstate has more promise to develop pedestrian orientated stations and TODs as land use transitions over time. Stations along I-5, especially if depressed to highway level, will be unfriendly and land use will change little directly along the freeway. Whenever the LRT leaves the highway, station and TOD potential must be maximized.

In summary, to further ridership and TOD potential, we recommend the McLoughlin Eastbank and the McLoughlin South terminus, the Highway 99 Vancouver alignment, the Interstate Avenue alignment, and a downtown surface option. We strongly recommend you balance your criteria more than seen on the Banfield and Westside: balance ridership with engineering efficiency, balance land use potential with transportation planning, balance long-term station and user amenity with first time construction costs. We look forward to reviewing TOD Master Plans, station designs, and other urban design issues in Phase II.

Sincerely,

Garry Papers, AIA, Chair
American Institute of Architects/Portland Chapter Urban Design Committee

cc: Bob Hastings, AIA, President, AIA/Portland Chapter
Bill Hart, Director, AIA/Portland Chapter
Saundra Stevens, Executive Director, AIA/Portland Chapter

[d] Recommend a refined Phase I terminus and alignment within the Clackamas Town Center area in the *Detailed Definition of Alternatives Report.*

3. Clackamas County shall be asked to review revised land use plans for the Clackamas Town Center area to ensure a more pedestrian and transit friendly land use pattern which supports the Town Center area's designation as a Regional Center in the draft 2040 Plan and as the Phase I South Terminus of the South/North LRT alternative.

2.2.2 Phase II South Terminus

1. Metro will consider the incorporation of policies in the Regional Transportation Plan (RTP) and Regional Framework Plan which call for a Phase II extension of the South/North LRT Alternative to *Oregon City.*

2. In conjunction with the analysis described in Section 2.2.1.2(b), staff will evaluate the I-205 alignment from the CTC area terminus and McLoughlin Boulevard alignment from the Milwaukie CBD for the Phase II extension to Oregon City and establish a preferred Phase II alignment for consideration by Metro Council for inclusion in the RTP and Regional Framework Plan. Work on selecting a preferred Phase II alignment will begin upon completion of the Phase I *Detailed Definition of Alternatives Report.* The Portland Traction (PTC) right-of-way will not be considered as a Phase II alignment.

3. Local jurisdictions along the proposed Phase II alignment shall be asked to consider revisions to their land use plans which encourage transit supportive land uses along the Phase II alignment. Such revisions, if adopted, will be outlined in the Phase II DEIS as "committed actions" and could greatly facilitate Federal Transit Administration (FTA) approval of a Phase II extension. Such actions, if adopted, will also be reflected in the Phase II land-use analysis and ridership forecasts.

4. The Cove development currently being pursued by Oregon City through its urban renewal plan is regionally significant in terms of (i) the alignment choice and future feasibility of the Phase II LRT extension to Oregon City and (ii) regional objectives encouraging Transit Oriented Districts (TODs). Accordingly, Metro and Oregon City shall pursue the following course of action:

   [a] The alignment and policies regarding the Phase II extension of the South/ North LRT being prepared by Metro and the site plan and land uses for the Cove development being prepared by Oregon City should be integrated.

   [b] The site plan for the Cove development should preserve right-of-way for the Phase II extension of South/North LRT.

Proposed Amendment to Resolution No. 94-1989

BE IT RESOLVED, That the following general approach be adopted for the continuation of the South/North Transit Corridor Study:

Item 3.a

Between the Portland and Milwaukie central business districts, the Ross Island Bridge Crossing, generally between the Ross Island Bridge in the north and Bancroft and Holgate streets in the south, and the McLoughlin Boulevard alignment shall be developed for further study within the Draft Environmental Impact Statement. The Caruthers area crossing will be evaluated further in order for the Metro Council and the C-TRAN Board of Directors to determine whether it should also be included in the *South/North Detailed Definition of Alternatives Report* and developed further in the Draft Environmental Impact Statement. Both the Ross Island and Caruthers alternatives will be provided equal consideration through this further evaluation.

Proposed Amendment to the draft *South/North Tier I Final Report*

2.4 Portland CBD to Milwaukie/South Willamette River Crossing Alignment Alternative

1. The *Ross Island Bridge Crossing Alternative* and *McLoughlin Boulevard Alignment Alternative* are the LRT alignment alternatives in the segment from the Portland CBD to Milwaukie/South Willamette River Crossing that will be studied further within the Tier II of the DEIS.

2. The Caruthers area crossing will be evaluated further in order to allow the C-TRAN Board of Directors and Metro Council to determine whether it should also be included in the *Detailed Definition of Alternatives Report* and developed further in the DEIS. Accordingly, staff shall:

   [a] Determine the costs, travel demand and local and regional land use and development benefits of linking the Caruthers Crossing with the Brooklyn Yards alignment.

   [b] Refine the ridership potential of the OMSI Station to fully reflect current plans and policies regarding the Portland General Electrict "Station L" redevelopment site, the Central Eastside Industrial Area and OMSI. Determine whether local redevelopment opportunities are feasible and provide assurances necessary to meet local and regional land use and development objectives.

   [c] Evaluate Caruthers Bridge designs to see if they could provide adequate access to both the North Macadam Redevelopment Area **and** the OMSI area.

Portland Metro 2040 Commodity Flow and Requirements Study

Final Report

Prepared by:
DRI/McGraw-Hill

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

November 1994

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Introduction

The following report has been prepared as part of the 2040 Commodity Flow Study for the Port of Portland and Portland Metro. This report was prepared by DRI/McGraw-Hill, in conjunction with Gene Leverton and Associates. The consultant team also includes R.L. Banks and Associates, Inc., and Fred Cooper Consulting Engineers.

One out of every ten vehicles moving over Portland's roadways is a truck involved in moving freight. Over 100 trains can move through Portland in one day. However, few tools are available with which to determine truck and rail freight movements and their impact on the utilization and adequacy of the region's future transportation infrastructure. By examining the flow of commodities exported, imported or moved about by the economic activities in an urban area, one can begin to relate the importance of such activities on future land use and transportation infrastructure needs.

The rate of population growth in the Portland Metropolitan area can be expected to be exceeded by rate of growth in movements of goods and materials, particularly the growth in urban trucking. This growth in freight movement is not solely the result of consumptive requirements but the continuing trend in Portland's strategic location as a transportation hub. Market forces affecting international and domestic cargo movement, as well as changing trends in technology, can be expected to have a dramatic impact commodity flow over and above that which is derived from residential growth and economic activity within the Portland region.

The projected growth in commodity flow will put added pressures and competition on the development of available land and transportation access routes. Therefore, it is important to understand this part of the region's growth needs and to provide land use planning options - availability of land for port operations and additional rail intermodal and trucking terminals, plus improvements to strategic rail lines and highway arterials.

This study does not address the specific details of forecasted transportation system improvements such as geographic location, timing or cost. This type of information is beyond the scope of this analysis. The findings and conclusions which have been presented are qualitative and based upon clear trends in the freight movement industry and changes experienced in similar activities in other areas of the United States.

Findings and conclusions are based on the economic model presented in the Phase I and II reports where data was developed for the Portland SMA. For most freight movement the region represented encompasses the Portland metropolitan planning area in Multnomah, Clackamas, Washington and Columbia Counties as well as Clark County in Washington. Long range facility requirements for intermodal facilities could be met by through development anywhere in this region and in some cases near but outside the region for example in the Lower Columbia River below Portland Harbor to Longview, Washington.

The consultants wish to express their appreciation to all who have contributed to this study, either through direct participation or through their comments and suggestions. In particular, the input and direction of Ms. Rene Dowlin and Ms. Susie Lahsene of the Port of Portland have provided invaluable , coordination and oversight during the project. Finally, DRI/McGraw-Hill wishes to extend their appreciation to Gene Leverton and Fred Cooper for their tireless and professional support throughout the project process.

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, a central location in the Pacific Northwest, and international markets for its products, has helped to make region a large regional distribution center.

- 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.

- Freight volume is expected to grow 2 to 3 times by 2040 - which is faster than population growth.

- Truck is the predominant mode for freight in the Portland region. In 1991 (the base year for the 2040 commodity study), 60% of all freight tonnage moved on trucks, and an additional portion 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	66,185	27	66	7	175,577	34	59	6

Source: DRI/McGraw-Hill Estimates

- 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.

- 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-dock 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.

- 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 citing 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.

The Portland metropolitan area has grown impressively over the past 10 years, recovering from the depths of a deep statewide recession in the early 1980s to emerge as a commercial, manufacturing, trade, and service center with a modern, competitive economy.

Portland's diversification from natural resource dependency has been the key element enabling the metro economy to thrive, and has emphasized the division between the prospects for Portland and the rest of the state.

Key manufacturing industries have flourished in Portland by exploiting market niches: primary and fabricated metals, transportation equipment, and high-tech manufacturing, along with computer software.

With a population of just over 1.3 million and a labor force of 725,000, Portland while not among the largest metro areas nationally, is of vital importance to the Oregon, Washington, and Idaho economies.

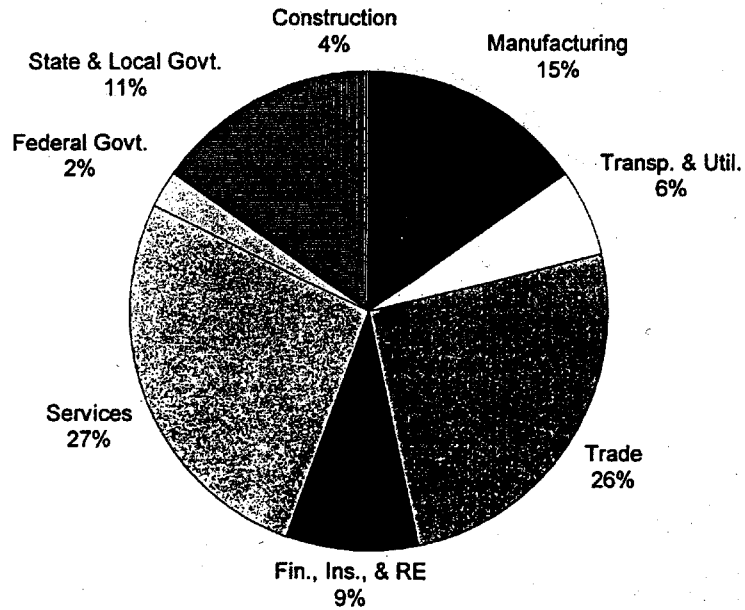
Portland serves as the employment, commercial and service center for most of Oregon and much of southern Washington. In fact, the Vancouver, Washington MSA across the Columbia River is in many ways an integral part of the greater Portland economy, adding another quarter million people to the metro area. Portland's influence also takes in the Willamette Valley, stretching south to Eugene/Springfield, and encompassing the state capitol.

Since 1988, population growth been one of the driving forces behind economic growth in Portland and Oregon, reversing the historical relationship between jobs and in-migration. In the past, if the number of jobs expanded, only then did the number of people moving here.

Like many medium-sized metropolitan areas in the West, Portland has escaped the brunt of the industrial restructuring that has swept the nation over the past few years. Industries including aerospace & airlines, financial services, computers, telecommunications, retailing, utilities and government have been among the hardest hit.

The impact of this restructuring has been focused on the major business or industry centers of the nation, such as New York, Chicago, Los Angeles, Washington, D.C.. None of these industries is highly concentrated in Portland, and even restructuring industries with an important presence, such as electronics and computers, are focused locally on lines of business that are flourishing.

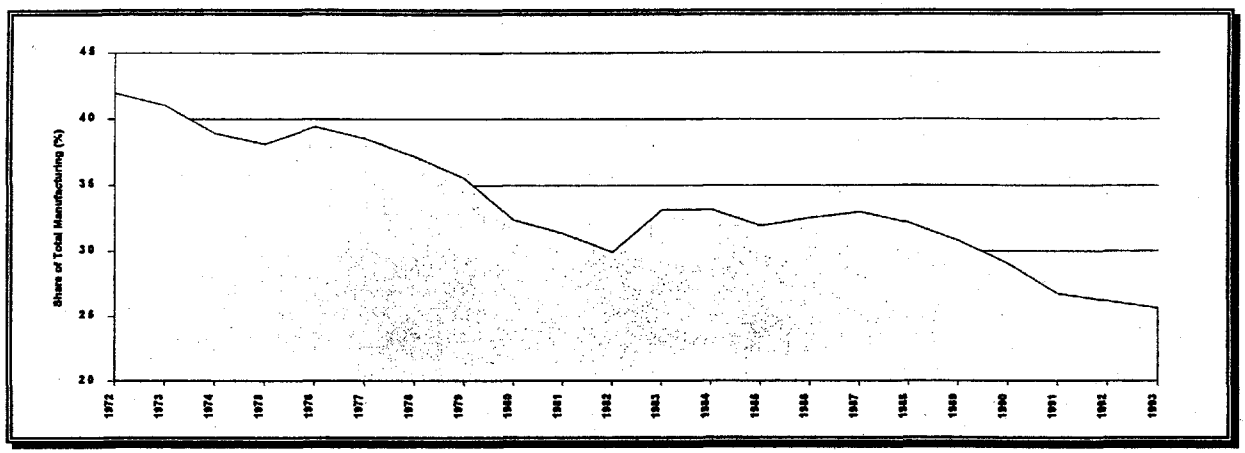
The Structure of the Portland Economy - 1993



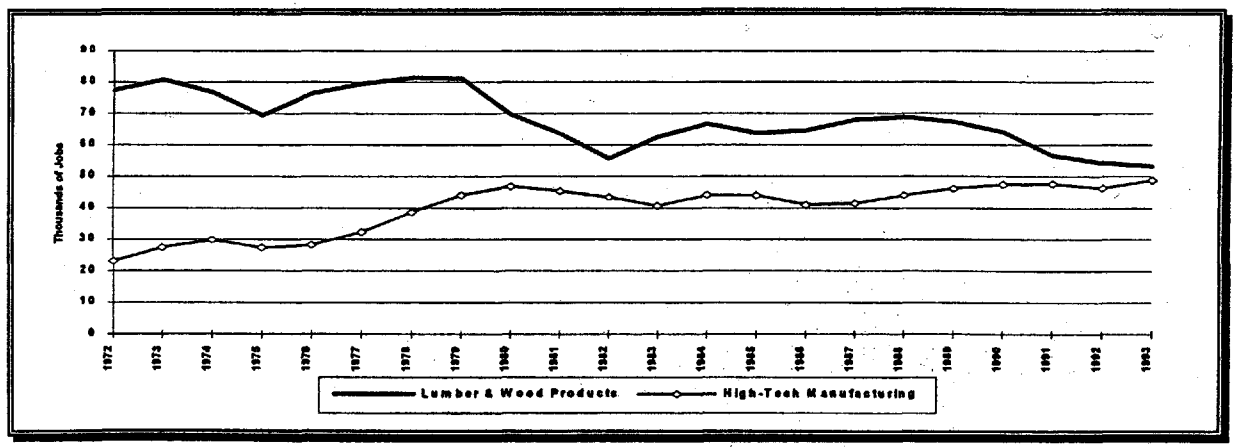
Source: U. S. Dept. of Commerce data and DRI/McGraw-Hill Regional Information Service

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...



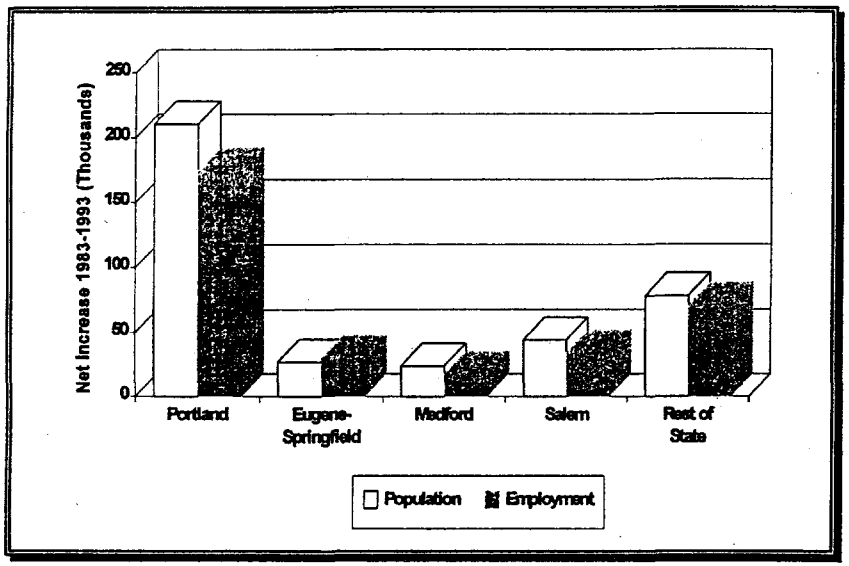
...High-Tech Mfg. is Closing in on Lumber & Wood Products as Oregon's Largest Mfg. Employer



Source: U. S. Dept. of Commerce data and DRI/McGraw-Hill Regional Information Service

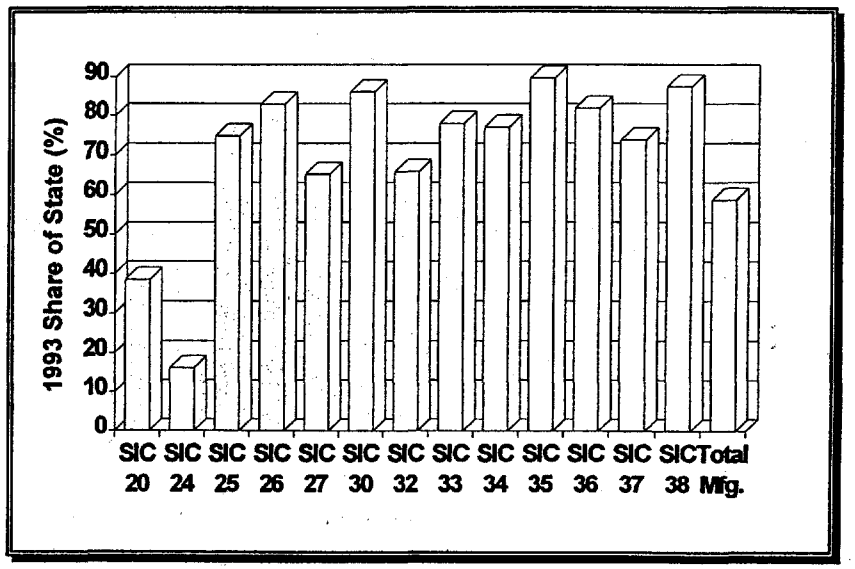
Most of the key manufacturing industries in Oregon are located in Portland, and the MSA has been sheltered (relative to the rest of the state) from the problems plaguing lumber and wood products over the past five years.

Portland Gained the Lion's Share of the Oregon's New Jobs and Residents Over the Past Ten Years



Source: U. S. Dept. of Commerce data and DRI/McGraw-Hill Regional Information Service

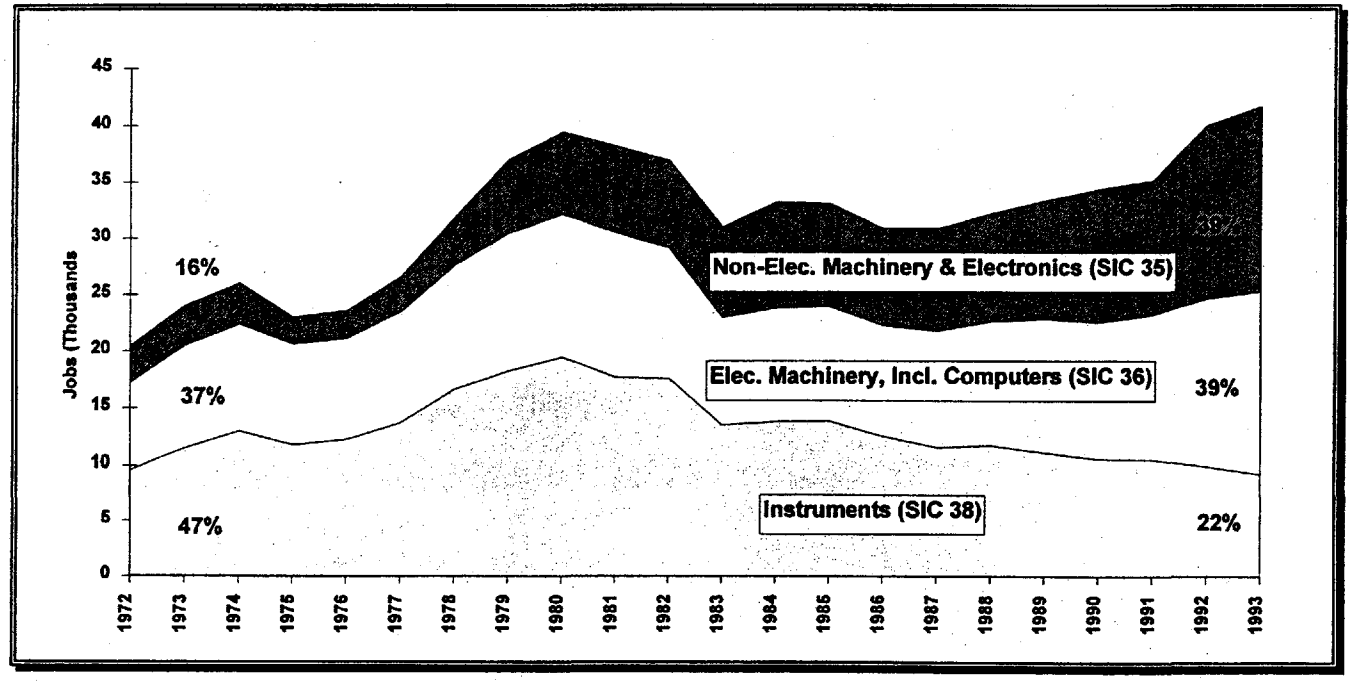
Portland Dominates the State Economy in Manufacturing



Source: U. S. Dept. of Commerce data and DRI/McGraw-Hill Regional Information Service

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.

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



Source: U. S. Dept. of Commerce data and DRI/McGraw-Hill Regional Information Service

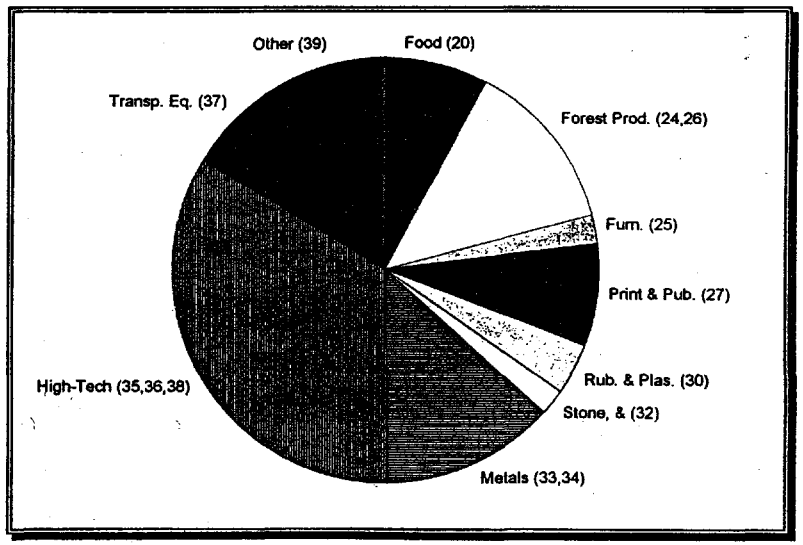
Portland's manufacturers have been well-positioned to take advantage of the recent national boom in spending on business equipment and capital goods, exploiting particularly niches in:

- Primary and fabricated metals - aluminum smelting, fabricated metal parts for defense and aerospace in California and Washington
- Transportation equipment - trucks (Freightliner), rail cars (Gunderson)
- High-tech manufacturing - instruments (Tektronix), electronics and computer chips (Intel)

Computer software firms have mushroomed in the Portland MSA. Estimates of the number of firms now stand at 1,400, with employment between 7,000 and 8,000. Unlike Washington, which is concentrated in "off the shelf" software, Oregon's software industry is more concentrated in the development of custom applications.

The Structure of Manufacturing Employment in Portland - 1993

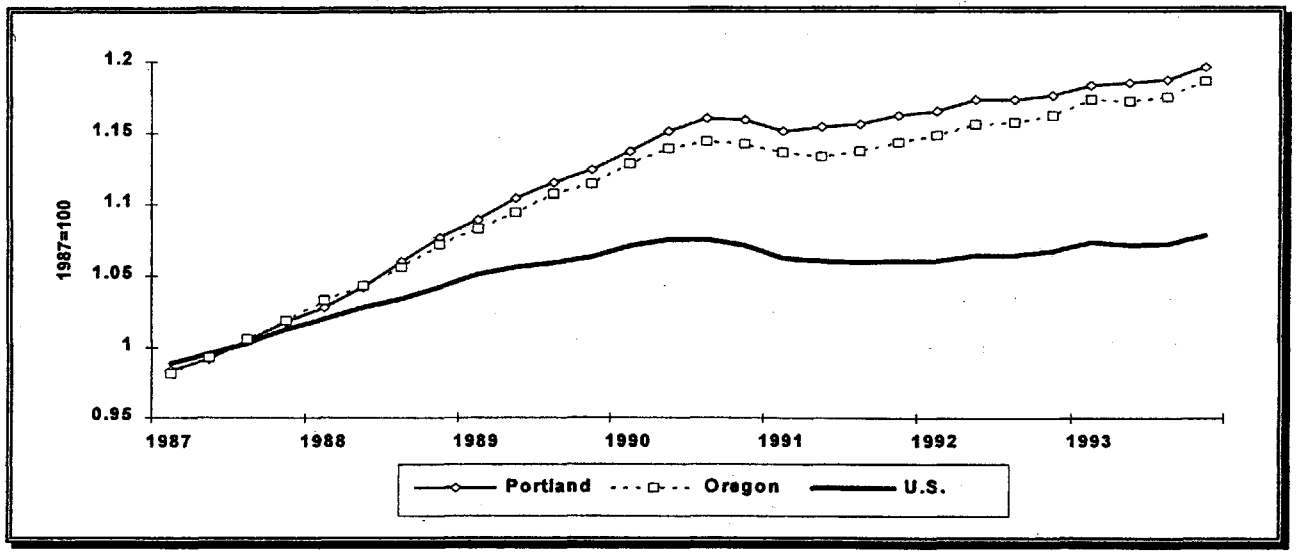
Industry	1993 Employment
Food & Food Products (SIC 20)	9,700
Lumber & Wood Products (SIC 24)	8,700
Furniture & Fixtures (SIC 25)	2,600
Pulp & Paper (SIC 26)	7,500
Printing & Publishing (SIC 27)	9,800
Rubber & Plastics (SIC 30)	4,700
Stone, Clay & Glass (SIC 32)	2,600
Primary Metals (SIC 33)	7,500
Fabricated Metals (SIC 34)	8,600
Non-Electrical Mach., Inc. Computers (SIC 35)	16,100
Electrical Machinery & Electronics (SIC 36)	16,500
Transportation Equipment (SIC 37)	10,000
Instruments (SIC 38)	9,200
Other Manufacturing (SIC 39)	10,000
Total Manufacturing	**123,500**



Source: U. S. Dept. of Commerce data and DRI/McGraw-Hill Regional Information Service

The Portland metropolitan area suffered just two quarters of declining employment during the recent recession, and total employment returned to its pre-recession peak in just five quarters. This performance is in marked contrast to the lingering doldrums plaguing many metropolitan economies across the nation, and differs dramatically from the experience of the early 1980s, when it took over *five years* for the Portland economy to recover from the last recession.

Portland Has Outperformed the State and the Nation in Job Growth Since 1988 and ...



Source: U. S. Dept. of Commerce data and DRI/McGraw-Hill Regional Information Service

...has plenty of potential for continued growth with:

- Strong in-migration attracted by a high quality of life and lower costs of doing business.
- Successful diversification away from natural resources to higher value-added industries.
- Strong national and international markets for the goods of Oregon producers.

Portland Has Outperformed the Nation Over the Past Five Years: Comparison of the Portland Economy vs. Oregon, Pacific Northwest, and the U.S. 1983 - 1993

	1989	1990	1991	1992	1993	Average Annual Growth 1983-88	1989-93
Employment (Annual Growth)							
Portland	5.4	4.0	0.3	1.4	1.4	3.8	1.8
Oregon	4.6	3.5	-0.1	1.6	1.8	3.6	1.7
Pacific Northwest	5.0	4.3	1.1	2.2	1.6	3.0	2.3
U.S.	2.5	1.5	-1.2	0.3	0.9	3.1	0.4
Unemployment Rate (%)							
Portland	4.5	4.2	4.7	6.4	5.9	n/a	n/a
Oregon	5.7	5.5	6.0	7.5	7.2	n/a	n/a
Pacific Northwest	5.9	5.3	6.3	7.3	7.2	n/a	n/a
U.S.	5.3	5.5	6.7	7.4	6.8	n/a	n/a
Income (Annual Growth, %)							
Portland	10.5	8.2	5.5	6.1	5.7	6.7	6.4
Oregon	9.7	7.8	5.3	6.9	6.4	6.4	6.6
Pacific Northwest	9.8	9.0	6.8	7.7	5.7	5.7	7.3
U.S.	7.5	6.6	3.8	6.1	4.7	7.3	5.3
Population (Annual Growth)							
Portland	2.3	2.7	2.4	2.1	2.3	1.1	2.4
Oregon	1.9	2.3	2.1	1.9	2.0	0.7	2.1
Pacific Northwest	1.7	2.3	2.2	2.3	2.1	0.9	2.2
U.S.	0.9	1.0	1.1	1.1	1.1	0.9	1.1

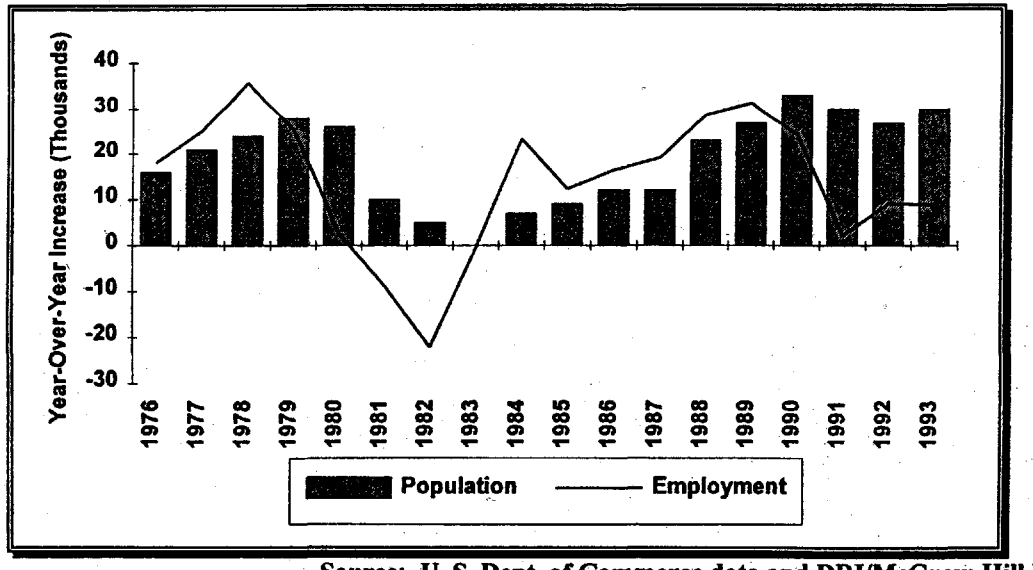
Source: U. S. Dept. of Commerce data and DRI/McGraw-Hill Regional Information Service

Since 1988, population growth been one of the driving forces behind economic growth in Portland and Oregon. In-migration has fueled gains in construction, finance, insurance and real estate, trade, and services, and has carried the regional economy through the recent national recession.

The historical relationship between jobs and in-migration in Oregon has been reversed. In the past, Oregon's economic growth has driven population growth - if the number of jobs expanded, so did the number of people moving here. Jobs now rank third behind family concerns and "livability" as the most important factor behind new residents' decisions to relocate to Oregon.

Net in-migration to Oregon reached 42,000 in 1993, with over 40% of new residents coming from California and 12% from Washington. While many Californians have fled the congestion and the high cost of living, prolonged weakness in the California economy has actually restricted even higher migration to Oregon, as many homeowners cannot escape the current moribund real estate markets, particularly in Southern California.

Population Gains Have Driven the Portland Economy Since 1988



Source: U. S. Dept. of Commerce data and DRI/McGraw-Hill Regional Information Service

Summary of the Portland Economy, 1983-1993

	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993
Employment (Thousands, seas. adj.)											
Total Employment	483.4	506.7	518.9	535.2	554.3	583.0	614.2	638.5	640.6	649.6	658.4
Manufacturing	86.5	92.4	92.9	91.9	94.4	98.3	101.7	104.8	104.0	101.5	101.4
Durables	61.3	66.5	67.1	65.9	67.3	71.2	73.8	75.4	74.0	71.6	71.2
Non-Durables	25.2	25.9	25.8	26.0	27.1	27.1	27.9	29.4	30.0	29.9	30.1
Non-Manufacturing	396.9	414.3	426.0	443.4	459.9	484.8	512.5	533.7	536.6	548.1	557.0
Transp. & Util.	33.0	33.9	33.8	33.7	34.6	35.7	37.3	38.0	38.4	38.7	38.2
Trade	129.2	135.9	137.9	141.5	145.1	154.3	161.4	165.0	165.6	167.1	169.0
Fin., Ins., & RE	41.1	41.3	42.2	44.5	47.4	48.0	49.5	51.6	53.6	55.8	57.3
Services	106.7	113.6	119.8	128.9	135.6	145.2	156.9	165.3	164.5	170.3	175.9
Federal Govt.	13.6	13.7	14.1	14.3	14.7	15.0	15.3	15.9	15.6	15.9	15.8
State & Local Govt.	58.8	59.3	59.8	61.1	63.0	64.3	65.9	68.0	70.4	73.4	73.8
Construction	13.9	16.1	17.8	18.8	19.1	22.0	25.9	29.4	28.0	26.4	26.6
Mining	0.6	0.5	0.5	0.5	0.5	0.4	0.5	0.5	0.6	0.6	0.5
Population & Unemployment											
Population (Million)	1.129	1.136	1.145	1.157	1.169	1.192	1.219	1.252	1.282	1.309	1.339
Unemployment Rate (%)	10.1	8.0	7.4	7.2	5.3	4.7	4.5	4.2	4.7	6.4	5.9
Income											
Total ($ Billions)	14.551	15.892	16.784	17.636	18.559	20.078	22.189	24.001	25.331	26.867	28.411
Wages & Salaries	8.958	9.769	10.327	10.978	11.716	12.927	14.151	15.535	16.342	17.458	18.5
Nonwage	5.593	6.123	6.457	6.658	6.843	7.151	8.038	8.466	8.989	9.409	9.911
Residence Adjustment	-0.467	-0.479	-0.56	-0.577	-0.668	-0.72	-0.836	-1.138	-1.216	-1.289	-1.393
Real Per Capita ($1987)	14.955	15.609	15.754	15.874	15.877	16.163	16.661	16.685	16.483	16.567	16.677
Avg. Annual Wage ($ Thous.)	18.261	18.989	19.592	20.292	20.876	21.912	22.783	24.067	25.236	26.588	27.812
Housing Permits Authorized											
Total Permits	4,142	4,643	7,326	6,684	7,515	8,137	14,601	12,363	7,430	7,834	9,343
Single-Family	3,308	3,283	3,571	3,861	4,160	4,736	5,583	6,355	5,198	5,892	7,137
Multi-Family	835	1,360	3,755	2,823	3,355	3,401	9,018	6,008	2,232	1,942	2,206

Source: U. S. Dept. of Commerce data and DRI/McGraw-Hill Regional Information Service

Summary of the Portland Economy, 1983-1993 -(Annual Rate of Change, %)

	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993
Employment											
Total Employment	-0.1	4.8	2.4	3.2	3.6	5.2	5.4	4.0	0.3	1.4	1.4
Manufacturing	-5.0	6.7	0.6	-1.1	2.8	4.1	3.5	3.0	-0.8	-2.4	-0.1
Durables	-4.3	8.3	1.0	-1.9	2.1	5.8	3.7	2.2	-1.8	-3.3	-0.5
Non-Durables	-6.7	2.8	-0.5	0.8	4.4	-0.2	3.1	5.2	1.9	-0.3	0.8
Non-Manufacturing	1.0	4.4	2.8	4.1	3.7	5.4	5.7	4.1	0.5	2.2	1.6
Transp. & Util.	-1.3	2.9	-0.3	-0.4	2.6	3.1	4.7	1.8	0.9	0.9	-1.3
Trade	1.0	5.2	1.5	2.6	2.5	6.3	4.6	2.3	0.3	0.9	1.2
Fin., Ins., & RE	-1.1	0.4	2.2	5.5	6.4	1.4	3.0	4.4	3.8	4.1	2.5
Services	3.9	6.4	5.4	7.6	5.2	7.1	8.0	5.4	-0.5	3.5	3.3
Federal Govt.	0.0	1.1	2.8	0.9	2.9	2.5	1.6	4.3	-2.2	1.9	-0.6
State & Local Govt.	0.3	0.9	0.8	2.2	3.1	2.1	2.5	3.2	3.6	4.2	0.6
Construction	-4.3	15.4	10.6	6.1	1.5	14.9	18.0	13.3	-4.5	-5.7	0.6
Mining	-3.2	-7.3	0.1	-1.7	-12.1	-17.6	15.9	18.7	3.8	-0.3	-13.4
Population											
Population	0.0	0.6	0.7	1.1	1.0	2.0	2.3	2.7	2.4	2.1	2.3
Income											
Total	5.1	9.2	5.6	5.1	5.2	8.2	10.5	8.2	5.5	6.1	5.7
Wages & Salaries	2.8	9.1	5.7	6.3	6.7	10.3	9.5	9.8	5.2	6.8	6.0
Nonwage	9.1	9.5	5.4	3.1	2.8	4.5	12.4	5.3	6.2	4.7	5.3
Residence Adjustment	5.6	-2.7	-17.0	-2.9	-15.9	-7.8	-16.1	-36.1	-6.9	-6.0	-8.1
Real Per Capita ($1987)	0.3	4.4	0.9	0.8	0.0	1.8	3.1	0.1	-1.2	0.5	0.7
Avg. Annual Wage	2.7	4.0	3.2	3.6	2.9	5.0	4.0	5.6	4.9	5.4	4.6
Housing Permits Authorized											
Total Permits	20.5	12.1	57.8	-8.8	12.4	8.3	79.5	-15.3	-39.9	5.4	19.3
Single-Family	50.9	-0.8	8.8	8.1	7.7	13.9	17.9	13.8	-18.2	13.4	21.1
Multi-Family	-33.0	63.0	176.1	-24.8	18.9	1.4	165.2	-33.4	-62.9	-13.0	13.6

Source: U. S. Dept. of Commerce data and DRI/McGraw-Hill Regional Information Service

Portland's freight market can be segmented into three distinct but complementary components:

Freight activity which supports local consumption

Portland has been a regional distribution center for over 100 years. With its central location in the region, Portland is a major shipping and receiving point for products moving not only to Oregon, but throughout the greater Pacific Northwest.

Freight activity which is generated by local production industries

Portland is the primary gateway for many goods shipped to and from major Pacific Rim markets, due to its ideal location on the Columbia River, sophisticated port facilities, and excellent transportation network. Focusing on particular niches of trade suited to its location and facilities, Portland is a major export gateway for grains, agricultural products, lumber and paper products.

Freight activity which is tied to the presence of a successful distribution system

Leveraging its transportation assets, Portland has developed both a regional and national presence as a transshipment point for intermodal freight activity, much of which is targeted to international markets. This traffic is highly competitive, and is more dependent on routing and hubbing decisions by transportation carriers. This market segment can also be influenced by planning decisions to invest/focus in particular facilities/market niches. Portland's emphasis on shipments of finished automobiles and bulk minerals is representative of this market.

All of these segments of the freight market depend on access to an efficient transportation network. Each segment, however, will realize different rates of growth as their fortunes are tied to forces beyond local control. To varying degrees, each segment enjoys a unique set of linkages to economic, market, competitive, technology or environmental factors which provide both an opportunity and challenge for the Portland region.

These freight segments cut across traditional market segmentation schemes such as modes, commodities and even equipment types. The following example describes how each segment's influences can be identified for the air cargo market

Freight activity which supports local consumption

Inbound air cargo, which traditionally moved in the bellies of passenger airlines, is tied to the economic base of the Portland region, and as such, will be affected primarily by growth in population and employment, and by added passenger plane service. This would replace traffic which is moving into Portland by truck from other airports

Freight activity which is generated by local production industries

Outbound air cargo, again that segment which historically moved on passenger planes, is dependent on the demand for Portland's products by outside consuming markets - as the region moves from resource base product manufacturing (which rarely moves by air) to higher-technology industries (very air-intensive), this market will grow

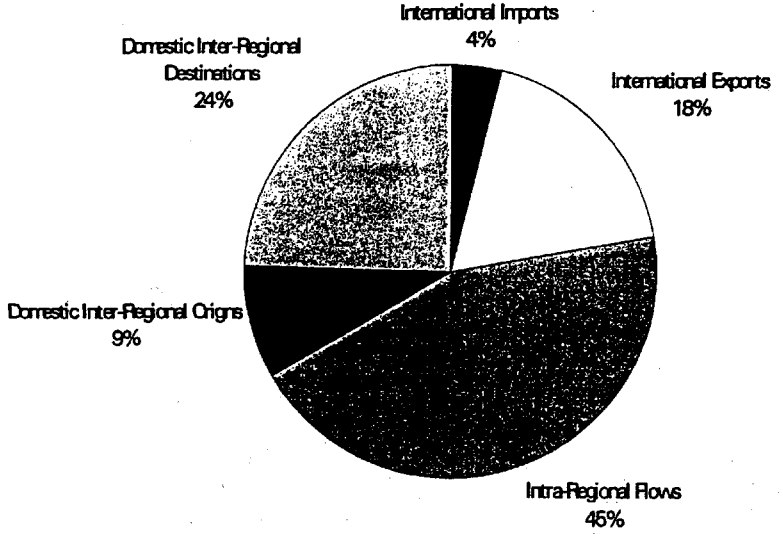
Freight activity which is tied to the presence of a successful distribution system

Inbound and outbound air cargo carried by integrated transportation providers who utilize Portland as a transshipment point - this segment is tied less to the overall performance of the region and more so to the region's location, transportation network, and industry dynamics.

For the purposes of this study, the consultant team has focused on a definition of the Portland local market area which includes imports and exports moving through Portland Harbor. This distinction is important, since one-half of the foreign trade leaving the Portland customs district is generated through facilities outside the harbor.

In order to properly gauge the size of the Portland freight industry, significant efforts were made to capture the unique composition of the local freight market by commodity, mode and route. All available data sources were reviewed and a base year of 1991 was established in order to include the latest available rail waybill data. Additional data sources utilized include the U.S. Dept. of Census 305/705 waterborne trade series, U.S. Corps of Engineers Waterborne Commerce Statistics, DRI/McGraw-Hill' s FreightScan commodity flow model, and Port of Portland's Aviation Dept. data.

Composition of Portland Freight Market
Base Year 1991

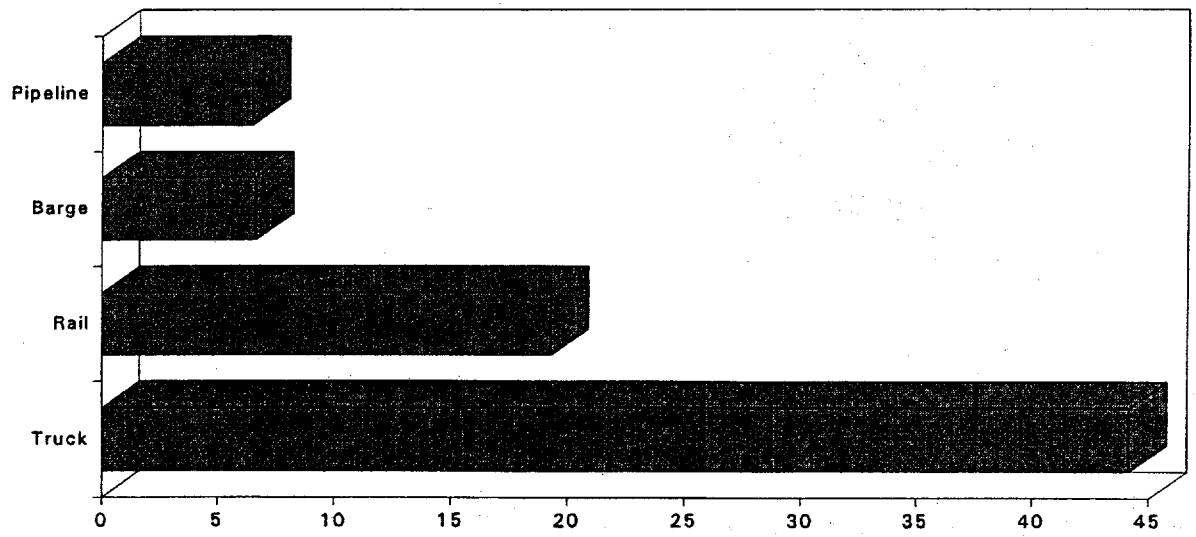


Source: DRI/McGraw-Hill Estimates

A detailed dataset of freight activity was developed which identified commodity product movements into and out of the Portland region at a two-digit STCC commodity level. A large portion of the moves impacting the Portland region are intermodal, meaning that they transfer from one mode to another. For intermodal moves involving import water, export water, and air cargo moves, factors were developed to identify the ground based mode supporting the water or air shipment. For ocean moves, factors were developed for rail, barge and truck. For air cargo moves, it was assumed that all air cargo shipments were supported by trucking. In summary, both the ocean and air moves can be further segmented by their ground-based mode.

DRI/McGraw-Hill developed a model which estimated freight tonnage which originates, terminates or transits Portland. Much of the freight market, however, both originates and destines in the Portland MSA. In order not to double-count this segment, these intra-regional flows are counted only once, and are identified separately.

Ground-Based Modes for Total Portland Freight Market - 1991
Millions of Metric Tons



Source: DRI/McGraw-Hill Estimates

In the freight model developed for this study, it was assumed that local production would be the most likely source available to meet local demand, followed by imports and inter-regional shipments. Conversely, once local demand was met, exports and inter-regional shipments would be generated. The following table provides a summary of the major flows by commodity impacting the Portland metropolitan area.

Summary of Portland Total Freight Market - 1991
Thousands of Metric Tons

	Int'l Imports	Int'l Exports	Intra-Regional	Domestic Origins	Domestic Destin.	Total Freight
Grain	8.2	7,916.1	583.8	617.9	0	9,126.1
Containerized	165.1	149.5	1,591.9	280.9	3,033.1	5,225.1
Bulks	1,837.2	2,104.6	17,429.2	66.2	12,121.1	33,574.0
Lumber	10.7	1,413.9	7,556.1	1,789.7	831.2	11,601.6
Paper	1.5	139.2	1,427.4	2,740.7	0	4,309.3
Metals	251.9	241.1	602.9	344.5	19.9	1,460.3
Autos/Trans. Equip	408.2	34.2	0	74.8	230.9	748.2
Air Cargo/Pass. Airline	3.65	2.1	0	20.9	18.3	42.4
Air Cargo/Freight	.7	.3	0	44.6	48.7	98.3
Total	**2,687.3**	**12,001.2**	**29,191.7**	**5,980.4**	**16,303.3**	**66,185.5**

Source: DRI/McGraw-Hill Estimates

Despite the abundance of local export products, the largest segments of the Portland freight market are those supporting local consumption. Some of these products are sourced from within the region, some are supplied from outside domestic trading regions, and finally some enter the region as imports. The largest of these flows is inbound petroleum products. The most significant flows include:

- Intra-Regional Shipments: Sand and Gravel, Lumber, Food Products
- Domestic Inbound Inter-Regional Shipments: Petroleum, Food Products, Chemicals
- International Imports: Alumina, Salt, Cement, Petroleum, Iron & Steel

Key Freight Segments Supporting Local Consumption - 1991
Thousands of Metric Tons

	Int'l Imports	Int'l Exports	Intra-Regional	Domestic Origins	Domestic Destin.	Total Freight
Grain			583.8			583.8
Containerized	165.1		1,91.9		3,033.1	4,790.1
Bulks	1,837.2		17,429.2		12,121.1	31,387.5
Lumber			7,556.1		831.2	8,387.3
Paper			1,427.4			1,427.4
Metals	251.9		602.9		19.9	874.7
Autos/Trans. Equip					230.9	230.9
Air Cargo/Pass. Airline	3.6				18.3	21.9
Air Cargo/Freight	.7				48.3	49.0
Total	**2,258.5**		**29,191.7**		**16,303.3**	**47,753.5**

Source: DRI/McGraw-Hill Estimates

This segment of the freight market has historically been one of the most important and largest freight markets in Portland. The region's rich natural resource base in lumber and grain products has made the region a net exporter on a tonnage basis (meaning more exports than imports). Over time, as the region shifts away from its dependence on lumber and paper towards other manufacturing industries, freight tonnages will likely decrease (or increase at a slower rate) but product values will rise, reflecting the value-added associated with manufacturing.

Key Freight Segments Supporting Local Production - 1991
Thousands of Metric Tons

	Int'l Imports	Int'l Exports	Intra-Regional	Domestic Origins	Domestic Destin.	Total Freight
Grain		7,916.1		617.9		8,834.0
Containerized		149.5		280.9		430.4
Bulks		2,104.6		66.2		2,170.8
Lumber		1,413.9		1,789.7		3,203.6
Paper		139.2		2,740.7		2,879.9
Metals		241.1		344.5		585.6
Autos/Trans. Equip		34.2		74.8		109.0
Air Cargo/Pass. Airline		2.1		20.9		23.0
Air Cargo/Freight		.3		44.6		44.9
Total		**12,001.2**		**5,980.4**		**17,981.6**

Source: DRI/McGraw-Hill Estimates

Portland's Freight Market - Supports Distribution and Transshipment

This has been the fastest growing freight market segment as transportation providers, operating in highly competitive markets, seek opportunities to find centrally-located, efficient distribution hubs. A number of factors contribute to Portland's growing success in this market:

Geography

- The Columbia River Gorge provides a low grade crossing into the Pacific Northwest region
- The Columbia River is navigable by ocean-going vessel, providing direct access to Portland

Location

- Portland is among the most centrally located major cities in the Pacific Northwest region
- Portland is within ten hour driving time of San Francisco, Seattle, Vancouver and Boise

Transportation Assets

- Portland combines both international shipping terminals tied to a navigable river system
- Major east/west and north/south interstate highways crossing through Portland, complimented by goods quality additional state and local highways
- Portland is served by three major national railroads, the only Pacific Northwest city with that distinction
- A major regional airport with expansion capacity

To effectively compete in this market segment, markets like Portland can be successful in leveraging their central location, access to growing markets, and their enhanced and efficient transportation system.

During interviews with railroads, motor carriers, and integrated carriers (parcel/air express companies), local executives have expressed their satisfaction with the facilities and services available to them in the Portland area. Without exception, they cited their firm's plans to continue to expand their distribution activities in the Portland area.

Transportation interchange remains critical to economic vitality, both for regions and the companies in that region. The quick transfer between ship, rail, truck and air service is increasingly a competitive strength of an economy that is evaluated for relocation, plant expansion, or citing of transportation service hubs.

As this freight segment grows, it can serve as a magnet for additional jobs and transportation services. These expansions, particularly as they become more diversified across products, modes and origins/destinations, can provide insulation from downturns in specific local markets or transportation segments.

It is often difficult to observe the growth in the distribution and transshipment industry. It is more often evidenced in increases in employment in transportation, warehousing and distribution industries, and in operational measures. One such measure of Portland's regional and national dominance in distribution-related activity is highlighted by the fact that Portland's ratio of wholesale to retail trade is the highest of any major city in the Pacific Northwest, and almost twice that of the U.S.

The Portland Region relies heavily on all modes of transportation to support its extensive freight industry. Truck, ocean, rail and barge modes all enjoy significant market shares, with truck traffic comprising the largest segment. Air cargo traffic, while small in the Portland region, brings with it a high product value which could be ten or twenty times higher than cargoes moving by sea or rail (depending on the commodity).

Modal Summary by Key Freight Segment - 1991
Thousands of Metric Tons

	Int'l Imports	Int'l Exports	Intra Regional	Domestic Origins	Domestic Destin.	Total Freight
Rail	474.8	7,700.1	0	3,436.2	6,488.1	18,099.2
Truck	2,177.7	1,833.2	27,355.2	2,477.6	9,628.4	43,473.9
Barge	30.3	2,465.6	1,836.4	0	140.6	4,472.9
Subtotal	2,682.8	11,999.0	29,191.7	5,913.8	16,236.3	66,023.3
Air (& Truck)	4.3	2.3	0	65.5	67.0	139.2
Total All Modes	2,687.1	12,001.4	29,191.7	5,979.3	16,303.3	66,185.5
Total Truck	2,182.0	1,835.6	27,355.2	2,543.2	9,695.5	43,613.1

Source: DRI/McGraw-Hill Estimates

In order to provide a context for expected future intermodal trends, it is useful examine the forces which are shaping today's intermodal marketplace and the changes which are occurring in the technology particularly in container shipment. Nationally, over 7.15 million intermodal containers were moved in 1993 and the figure is growing at a rate of 5-6% per year.

Many observers would describe the present state-of-the-art in intermodal rail transportation as double stack equipment moving international traffic originating at an on-dock terminal. In fact, there are many other significant recent advances and variations in service practices, terminals and technology which are part of today's intermodal picture and which will help shape intermodal transportation of the future. Some are identified below; although grouped under the headings of service, technology and terminals, all have impacts in all three categories.

Joint Venture Truck-Rail-Truck Services. Many truck lines and railroads have teamed up to offer premium intermodal service which takes advantage of each party's strengths: the rail carrier's long haul speed and economy on the one hand, and customary truckload carrier customer service on the other. Truckers solicit and pick up freight and then hand it off to the rail carrier for the long distance haul. The trucker performs final delivery at the end of the rail portion of the movement.

Intermodal Service Using Multiple Railroads. Intermodal services have breached the boundaries of railroad geographical service areas, due in large measure to the advent of doublestack service and the appearance of integrated intermodal companies. Rather than confining intermodal shipments to a the territory of a single railroad or searching for one of the few effective run-through or interchange arrangements, shippers now can contact a single entity which connects many U.S. commercial centers. American President Lines, CSX Intermodal and BN America are among the intermodal marketing companies (IMCs) which have organized networks using multiple rail carriers. CSX Intermodal, for example, routes traffic over Norfolk Southern and Illinois Central lines despite being an affiliate of their competitor, CSXT. IMCs handle all aspects of intermodal shipping, including equipment supply, dray, coordination among participating railroads and consolidated billing.

Other carriers are using run-through trains and cooperative agreements in efforts to extend their traditional boundaries, recognizing that large shippers are moving toward dealing with fewer, larger transportation carriers and are expecting more in terms of routes and services from their chosen carriers. Conrail and Santa Fe team up to offer run-through intermodal service from New York to Southern California with daily departures and fourth morning availability in Los Angeles or San Bernardino. This is one of only a few railroad-sponsored run-through services. Burlington Northern (BN) and Santa Fe established a voluntary coordination agreement, now converted to trackage rights, under which Santa Fe operates "single-source" intermodal service between the Western and Southeastern portions of the U.S. BN and Santa Fe are expected to merge into a single operating rail system in the near future.

"Sprint-type" Intermodal Trains and Networks. Several U.S. railroads have initiated networks of scheduled "Sprint" intermodal trains. The "Sprint" term implies dedicated, scheduled, intermodal trains operating with favorable crew arrangements and operating on a firm schedule with whatever traffic is available at the time even if business is light. A well known example is BN's Expediter network; Southern Pacific and Santa Fe have similar arrangements.

Solid Waste Movement. Intermodal service (as well as conventional service with customized equipment) is being used for some U.S. movements of solid waste and/or the ash residue from incinerated waste to landfill sites, sometimes at remote locations and in other instances in order to keep the movements off public highways. This is a young, but growing market; many more movements are in the planning or proposed stages than are presently in place.

Electronic Data Interchange (EDI). Automation of shipment data (manifest) will provide a boost to intermodal freight by streamlining the interface among separate maritime, trucking and railroad companies. EDI systems are still under development, and standards have not fully matured, but are being selectively implemented.

Doublestack. Doublestack rail service began as a means of moving international container traffic overland and inland. Domestic rail container services capitalizing on doublestack technology began as an effort to solicit backhaul cargo to reduce empty returns of containers from inland points to ports. Domestic services began where they could be incorporated with maritime movements. Doublestack technology now is accommodated at many terminals, including some recently developed to serve domestic doublestack traffic, notably in California to handle food and wine shipments to Midwestern and northeastern states.

Autostack. A concurrent development to double stack containers is Autostack, a virtually no-hands-on system, used to move automobiles from the Detroit area to Portland as well as other regions. Autostack, manufactured by Greenbrier Industries in the Portland area, reduces the labor requirements and damage experience of conventional autorack cars. Moreover, the rack collapse upon delivery, freeing boxes for back-haul merchandise movements. At least one turn around use of Autostack technology has already occurred with the domestic inbound and import markets for autos.

Norfolk Southern's Triple Crown RoadRailer Service. Triple Crown's success is based upon both service and technology, using RoadRailers (truck trailers which are temporarily mounted on railroad wheels for the rail movement) to offer premium door-to-door service designed to compete with trucks in both service quality and price. NS has positioned Triple Crown as a premium service competing in markets which are shorter than most intermodal corridors. Some corridors have more than one daily RoadRailer train and volume has grown to 90,000-plus trailers per year. NS believes that most of the freight attracted to Triple Crown has come from over-the-road trucks rather than from conventional intermodal service.

Hub Centers. Development of rail "hub centers" demonstrates the increased focus on single-line intermodal traffic. The hub center concept calls for freight to move as much as approximately 150 miles by truck either before or after the rail portion of its journey. This has the benefit of concentrating business at larger intermodal facilities and resultant operating efficiencies. Additionally, it extends the railroad's intermodal service area and reduces the need to interchange intermodal shipments with other carriers. As an example of this, CSX restructured its intermodal network, terminating direct service to 12 of the smaller eastern terminals, while implementing major expansions of facilities in Chicago, Little Ferry, and New Orleans.

Off-Line Satellite Intermodal Terminals. BN has expanded its service area without expanding its system by opening off-line intermodal terminals in Detroit, Louisville, and Remington, Indiana. These terminals are located on smaller railroads which are under contract to BN to move its intermodal traffic in dedicated, or at least scheduled, service. Trains from these cities make connections with BN Expediter and conventional intermodal trains. BN controls all commercial and marketing aspects of the movement.

On-Site or Private Intermodal. Mazda (Flat Rock, MI) and Honda (Marysville, OH) are examples of shippers with doublestack container facilities on their plant grounds. United Parcel Service, in Orlando, Chicago (Willow Springs), and other cities, has located its terminal facilities adjacent to rail intermodal yards in order to take advantage of "through the fence" access without a dray move over public roads.

Existing Transportation System - Regional Rail System and Intermodal Facilities

The Portland region is served by over 126 railroad route-miles of which 26 miles are double track, together with seven principal yards situated in a rail corridor extending between North Vancouver south to Oregon City. The region is served by three major railroads, all class one carriers - Burlington Northern, Southern Pacific and Union Pacific. In addition, there are yards and intermodal facilities operated by the Port of Portland, Portland Terminal Railroad and other private companies. Amtrak also utilizes the corridor serving Portland's Union Station and Vancouver. Major conventional rail terminals, rail intermodal ramps and auto ramps are listed in Tables 2.1 and 2.2. The Port of Portland Intermodal Container Facility (ICTF) handles international import and export containers as well as transiting of containers to and from the Columbia/Snake River inland waterway. The private rail intermodal facilities handle domestic freight.

Most private rail yard and intermodal facility operations are currently congested. Reconfiguration of yards has been indicated as possible in many existing yards allowing for 50 to 100% expansion (8,10,11). Relocation of rail car maintenance and engine servicing operations and some rail car storage could also provide improved efficiency.

Currently, there are major constrictions to the efficient operation of freight, passenger and container or unit trains over the trackage and yards in the Portland rail terminal area. Schedule conflicts, yard switching operations, double line movement over the Burlington Northern Columbia River bridge and access to the major import/export facility at Terminal Six are major factors. Backups of rail cars outside the Portland Terminal and delays in passenger train arrivals and departures are common occurrences.

Portland Metropolitan Area - Major Conventional Rail Terminals

	Tracks		Train Movements		
	Number	Total Length	Orig.	Term.	Local/Ind.
BN-Vancouver, WA (Complex - 4 Yards)	37	110,000 Ft.	25-30	25-30	7
BN-Willbridge Yard	24	46,000 Ft.	3-4	3-4	5
BN-Terminal #6-E St. Johns Yard	14	33,000 Ft.	4-5	4-5	5
PTRR-Lake Street Yard	34	4/101,000 Ft.	6-8	5/6-8	6
SP-Brooklyn Yard	16	53,000 Ft.	5	5	10
UP-Barnes Yard	22	55,000 Ft.	4-6	4-6	14
UP-Albina Yard	50	187,500 Ft.	15	15	17
Totals	197	585,500 Ft.			

Portland Metropolitan Area - Major Rail Intermodal and Auto Ramps

INTERMODAL RAMPS	Acres	Tracks (length)	Estimated Parking Slots (Contain./Auto)	Acres Available for Growth
BN - Lake St.	19	4 @ 10,000'	1000	None
UP - Albina	21	5 @ 5,500'	550	None
SP - Brooklyn	23	5 @ 5,500'	500	10
Port - Rivergate	42	6 @ 17,900'	1960	29
AUTO RAMPS				
BN-Terminal #6	27	3 @ 3,600'	1043	2
UP-Barnes Yard	N/A	5 @ 4,750'	N/A	None
Port-Honda	52	5 @ 2,750'	6580	None
Port-Hyundai	47	5 @ 2,750'	5880	None
Port-Toyota	53	5 @ 2,750'	6720	None

Ref. (9,12,13,14,15,16,17)

Existing Transportation System - Regional Highway System and Trucking

The Portland region has over 444 miles of major freeways and urban arterials within the Urban Growth Boundary which serve 27 distinct industrial areas distributed throughout four counties in Oregon and one in Washington. Some 100 trucking companies operate in the Portland market with a number of long haul and regional carriers having developed major trucking terminals in the metropolitan area. In addition, there is a substantial support industry involved in truck servicing, maintenance and repair.

Major freeways or access routes which are important to the movement of freight throughout the Portland region include the following:

Interstate 5. One of the key elements of Portland's highway system is I-5. This freeway serves as a critical route for the north-south movement of freight from California north to the Puget Sound Area in Washington. It is also the terminus of I-84 from the east. The section of I-5 from I-84 north to Vancouver has experienced total vehicle ADT growth of 5 percent per year since 1970. In 1990, total average daily traffic on the I-5 Columbia River Bridge was 94,574. Peak total truck volumes were measured by the City of Portland in 1993 and was determined to be 627 trucks per hour (2). The percent total truck to total ADT was 7.3% in 1990. A 1991 bi-state transportation study projects many parts of I-5 will have capacity problems by 2005 with the I-5 Bridge becoming over-capacity north-bound and marginal south-bound (1).

Interstate 205. With the completion of the Glen Jackson Bridge in 1982, I-205 became a major reliever to traffic on I-5. However, growth in the I-205 corridor both in Washington and Oregon has added dramatically to use of this north-south alternative and its ADT is approaching that of the I-5 Bridge. In 1990, weekday ADT on the I-205 Bridge was 88,606 with a five year growth rate of nearly 70% (2). Portland's 1993 truck survey indicated that peak truck volume on the I-205 Bridge was 519 trucks per hour, about 83% of the level measured for the I-5 Bridge.

North Portland/Rivergate Area. Important travel corridors in this area include Marine Drive, Columbia Blvd., and Lombard Street - Sandy Blvd. (US 30 Bypass). Recent traffic surveys by the City of Portland indicated that during the period of peak truck volume, 1:30 to 2:30 PM, truck traffic can be over 40% of the total vehicle ADT on two of these routes - east-bound on Columbia Blvd. and North Marine Drive west of I-5.

Northwest Portland Industrial Area. This is a major industrial area and includes the BN rail hub center. Key access routes are I-405 via the Fremont Bridge and the St. Johns Bridge (US 30/NW Yeon). Truck peak hour volumes on the Fremont Bridge has been measured by the City of Portland at 532 and 97 at the St. Johns Bridge (US 30/NW Yeon)(2).

Existing Transportation System - Area Waterway System and Major Port Facilities

The Lower Columbia River channel is maintained up to Portland Harbor and serves ocean marine terminals located in Portland and Vancouver. The Upper Columbia River/Snake River channel terminates in Portland and is utilized by seven inland barge lines predominantly to move bulk cargoes. Containerized cargo shipment via barge is increasing. For the base year about 97,000 metric tons or over 10,000 TEUs originated or terminated in Portland. The figure is considerably higher, about 54,000 TEUs with inclusion of transiting freight.

Major public port facilities for general, container and dry bulk cargoes are Terminals 2, 4, 5 and 6 operated by the Port of Portland and West Vancouver operated by the Port of Vancouver. There are also private port facilities handling grains, metals and other dry bulks.

Forecasting Portland's Long-Term Freight Market - Methodology

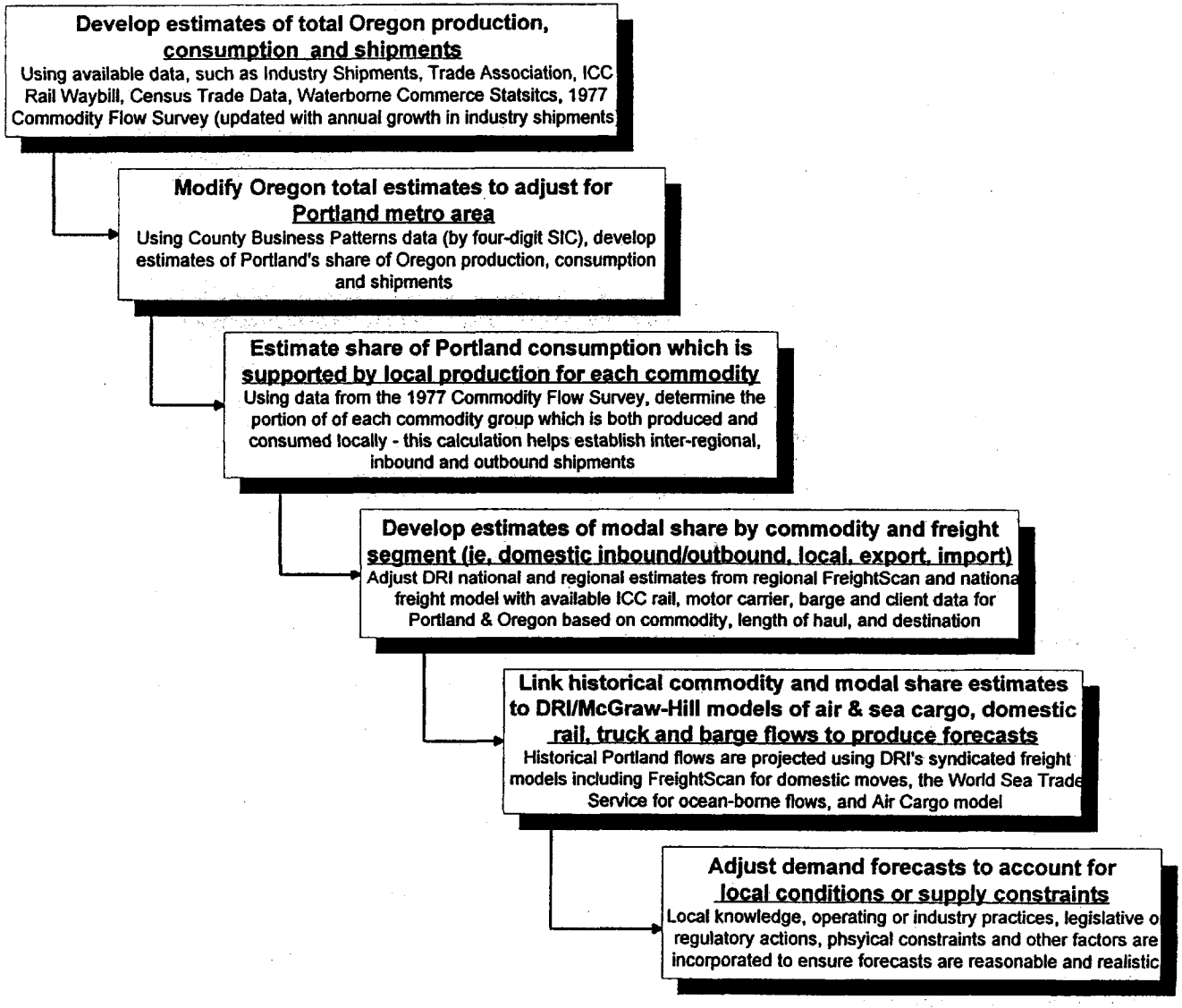
Using the 1991 freight and commodity base developed in the first phase of this study, DRI applied its models of world trade and domestic freight to establish future estimates of commodity flows impacting the Portland region. The international movements were projected using DRI's World Sea Trade Forecasting system, which projects international seaborne flows on a commodity and route-specific basis. The domestic movements were projected using DRI's FreightScan commodity flow modelling system, which produces commodity, route and mode-specific estimates. For this study, route detail has been aggregated in order to maintain a manageable information set.

DRI's models incorporate forces capturing export-based economic theory and a demand driven, gravitational approach. The first step begins with projections of a given market's ability to produce goods. These projections are then balanced against the region's requirements. If the requirements cannot be satisfied by local production, regions look to those external markets that can supply the needed product at the most reasonable price and transit time. As a result, factors such as natural resources, manufacturing capacity and expertise, and relative cost considerations (whether for labor, housing, electricity or exchange rates in the case of international trade) all impact a region's ability to serve external markets in a cost competitive manner.

Finally, DRI developed long-term projections of modal share changes for the land-based segment of international flows and for all domestic flows.

The forecasts presented in this report have been developed with what DRI/McGraw-Hill believes are reasonable and conservative assumptions. However, when looking out 25 or 50 years into the future, policy-makers and analysts must remember that even relatively low growth rates, when compounded annually, can imply massive increases in activity. An annual average compound growth rate of 2.5% for 50 years implies a 350% increase in activity from the base period, while a 5% compound growth rate implies growth of over ten times the base amount. The models used to project freight activity in this study are demand-driven and do not incorporate local transportation supply constraints (if they exist).

The consultant team implemented a multi-stage process to develop the base year estimates and future year projections of commodity flows for this study - key steps included:



Forecasting Portland's Long-Term Freight Market - Key Assumptions

In the process of developing these forecasts, DRI incorporated the following assumptions concerning key economic and market conditions into the Portland commodity forecast:

Portland Economy

The Portland economy will continue to outpace the Oregon and Pacific Northwest regions in terms of population and job growth over the next ten years (income and employment growth will rise about 25% faster that the total region). Over the longer-term horizon, Portland will keep pace or slightly ahead of Oregon and the broader region.

Product Markets

The region will continue to reduce its dependence on natural-resource products and will observe the fastest growth in the containerized product areas (i.e., machinery and electronics) and transportation equipment. Even with this assumption, the largest risk to the forecast is downward pressure on the grain and lumber/paper, which dominate Portland's export activity (see "Risks to the Forecast")

International Trade

Overall, as in the past, international trade is expected to grow at rates which are 50% to 100% higher than those of domestic growth. Portland also benefits extensively from this phenomena, as it trades extensively with Asia, the fastest growing major trading partner. Nationally, grain exports continue to grow, but the rate of growth to Asian and European markets decline to rates near 5% per year. Lumber, paper and pulp exports grow to Asia continue to grow at rates near 7% annually.

Modal Shares

With the increasing competitiveness of rail intermodal and improved non-intermodal service, DRI has incorporated assumptions which imply increased rail market share over the forecast horizon. Motor carriers lose some market share, but remain the dominant mode of freight transportation throughout the forecast period.

Forecasting Portland's Long-Term Freight Market - Key Highlights

In order to appropriately summarize the results of this multi-dimensional commodity forecast, the results have been organized into three groupings, which we have termed:

Freight Segments

Commodity forecasts have been organized into five freight segments - international imports, international exports, domestic intra-regional (or local) shipments, domestic inbound (or terminating) shipments, and domestic outbound (or originating) shipments

Commodities

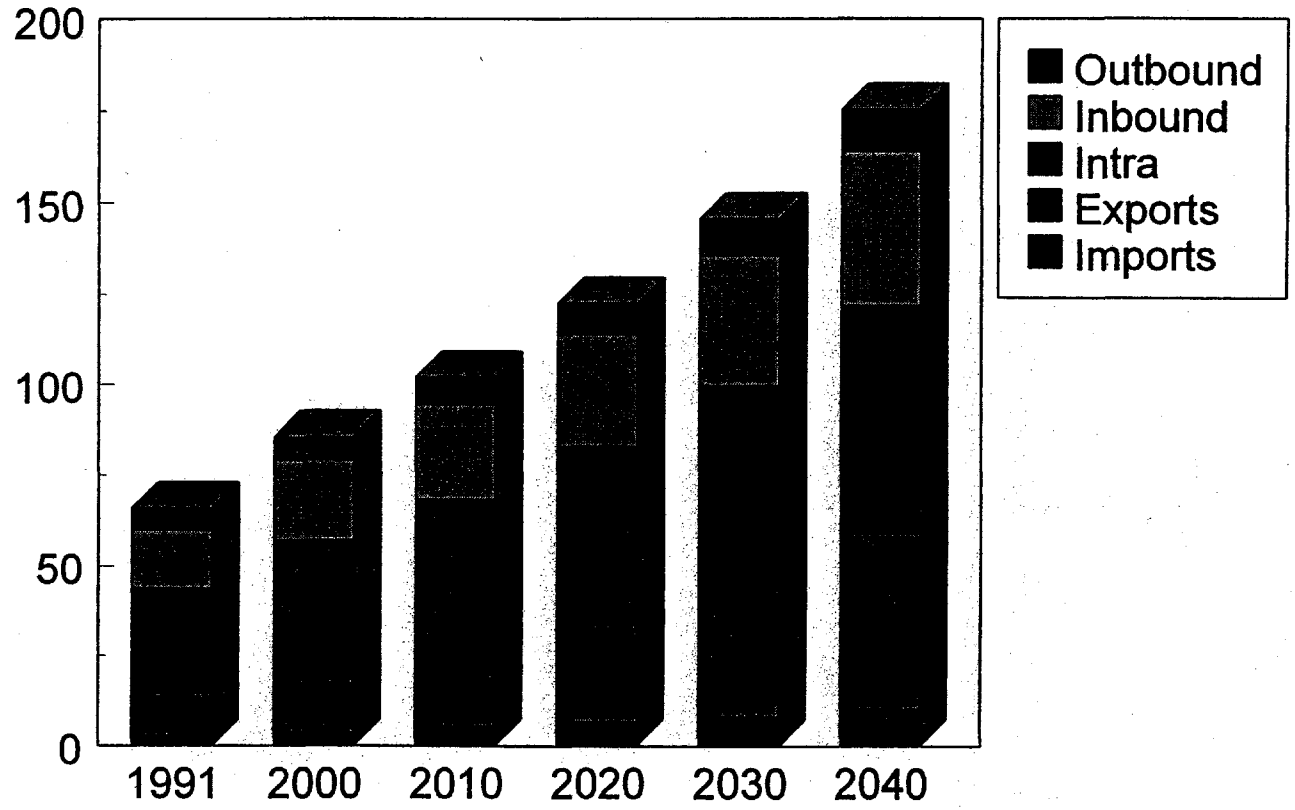
Freight shipments been organized into seven major commodity groupings, including grain, containerized products, bulk products, lumber, paper, metals and transportation equipment

Modes

Modes included in the commodity forecast include international ocean, international and domestic air, rail, truck and barge

With international trade continuing to outpace all measures of domestic production (such as gross domestic product and industrial production), the Portland region will see ocean-based trade increase from its 1991 share of 22% to a share of 33% by the year 2040. Air cargo, which DRI expects to grow at rates between 4% and 5% annually, will actually comprise the fastest growing freight segment in the Portland region

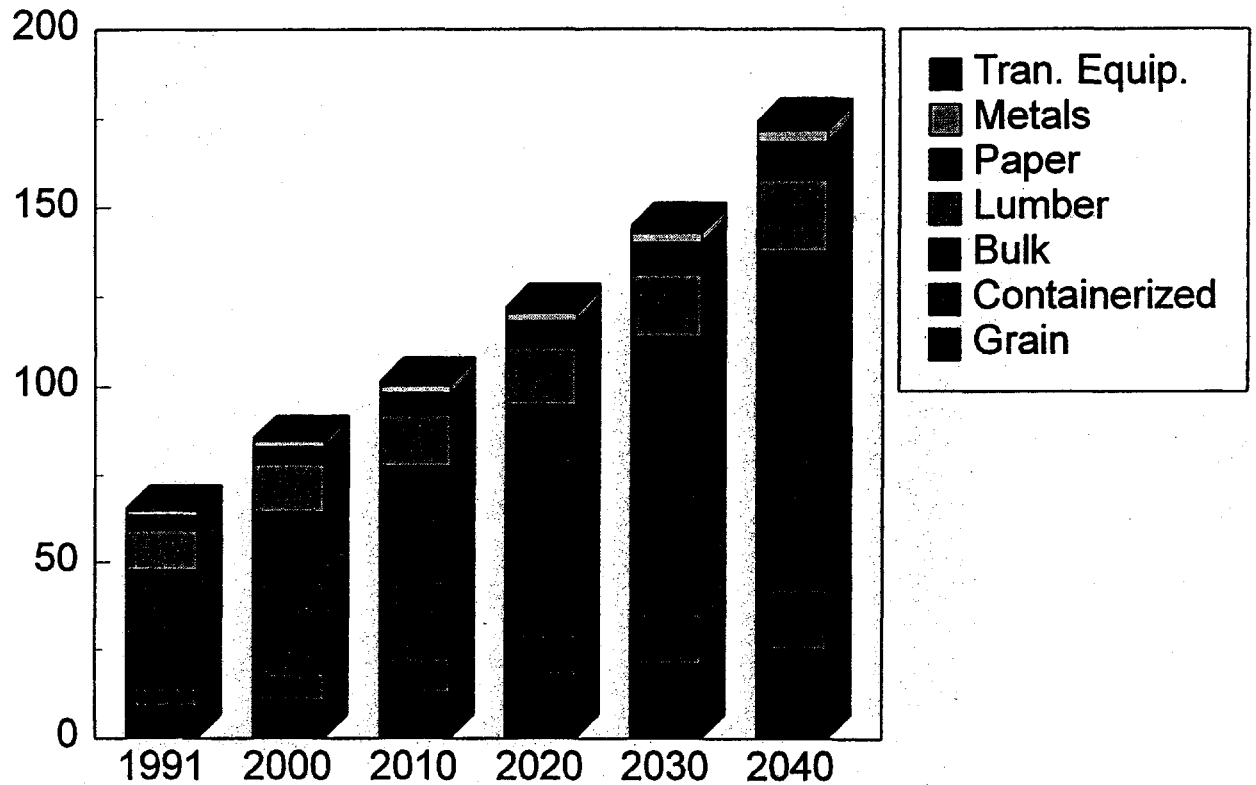
Overview of Portland Freight Market
(Millions of Metric Tons)



Source: DRI/McGraw-Hill Estimates

The region's biggest three commodity groups--bulks (which include petroleum, stone/gravel/cement, and chemicals), grain, and lumber--comprised over 82% of the 1991 Portland freight market. By the year 2050, these three groups, while still the largest, will comprise less than 80%. As the region continues to add jobs in high-value industries such as computer production, software, and transportation equipment, the containerized commodity group will realize the fastest rate of growth during the forecast period

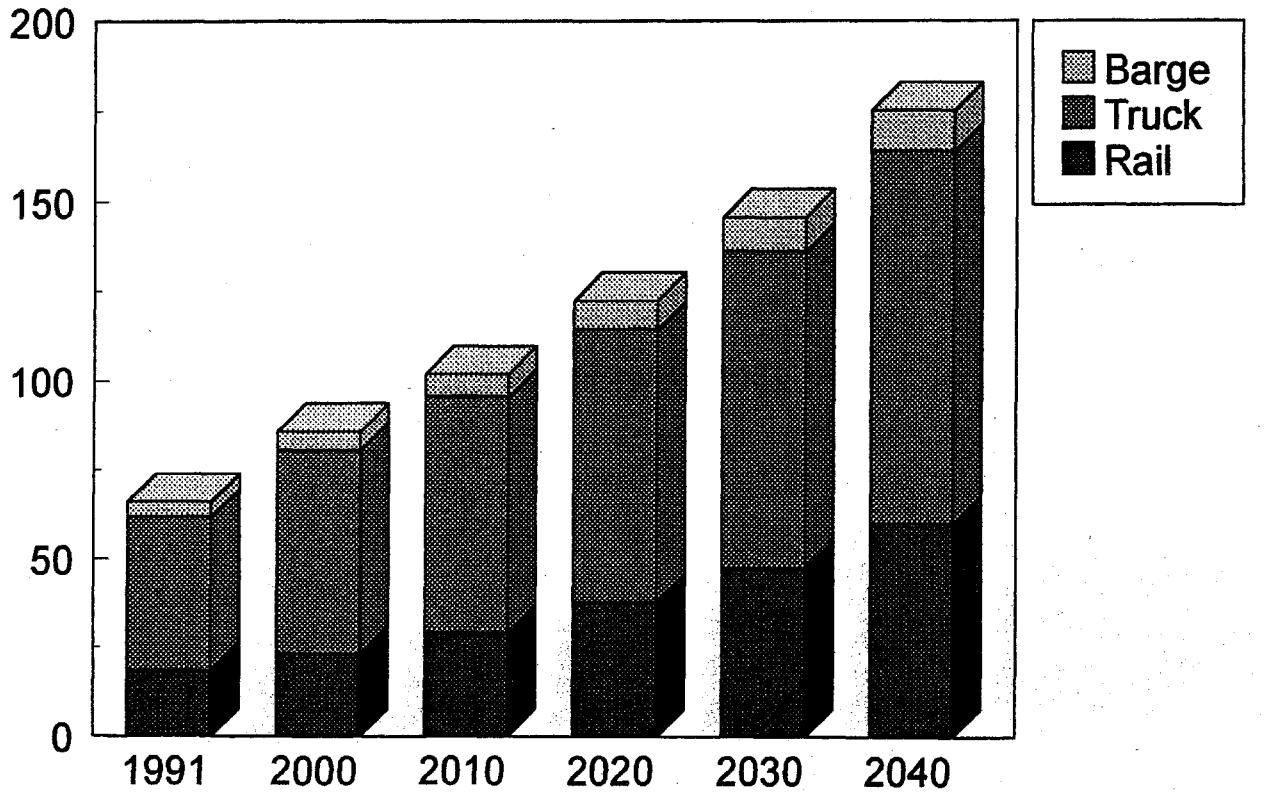
Overview of Portland Freight Market
(Millions of Metric Tons)



Source: DRI/McGraw-Hill Estimates

While all three major land modes will realize significant increases (many doubling or tripling over the 50 year forecast horizon), rail will enjoy the most dramatic increase in share among the three land based modes, increasing from its current 27% to 34% by the year 2040. With its current low penetration rate, air cargo will enjoy the fastest growth rate of any of the modes, including ocean trade. However, ocean, rail and truck will also observe healthy growth over the long term

Overview of Portland Freight Market
(Millions of Metric Tons)



Source: DRI/McGraw-Hill Estimates

(Metric Tons)

1991 Total		Land Total			
	Ocean	Rail	Truck	Barge	Total
Grain	7,924,304	6,164,709	680,096	2,281,322	9,126,127
Containerized	314,770	660,362	4,479,003	85,818	5,225,182
Bulks	3,941,807	6,920,195	25,741,195	912,660	33,574,050
Lumber	1,424,630	1,704,026	8,818,661	1,078,891	11,601,578
Paper	140,800	1,698,924	2,496,031	114,322	4,309,278
Metals	493,066	426,134	1,034,190	0	1,460,324
Tr. Equip	442,445	525,047	223,153	0	748,200
Air - Pass	0	0	42,429	0	42,429
Air Cargo	0	0	98,343	0	98,343
TOTAL	14,681,822	18,099,397	43,613,100	4,473,013	66,185,510
Modal Share		27%	66%	7%	

2000 Total		Land Total			
	Ocean	Rail	Truck	Barge	Total
Grain	9,471,649	7,283,048	708,741	2,628,669	10,620,459
Containerized	504,421	992,207	6,569,014	142,912	7,704,132
Bulks	5,523,982	9,889,863	35,072,809	1,247,174	46,209,847
Lumber	1,621,922	1,937,462	10,402,228	1,283,758	13,623,448
Paper	237,293	1,923,566	2,920,363	159,560	5,003,489
Metals	543,965	471,850	1,274,787	0	1,746,636
Tr. Equip	562,337	676,027	261,502	0	937,529
Air - Pass	0	0	74,382	0	74,382
Air Cargo	0	0	180,554	0	180,554
TOTAL	18,465,569	23,174,023	57,464,381	5,462,073	86,100,477
Modal Share		27%	67%	6%	

Source: DRI/McGraw-Hill Estimates

(Metric Tons)

2010 Total		Land Total			
	Ocean	Rail	Truck	Barge	Total
Grain	11,773,622	9,054,851	782,898	3,143,434	12,981,183
Containerized	724,068	1,325,405	8,087,678	182,482	9,595,565
Bulks	7,958,725	12,662,478	40,873,467	1,421,367	54,957,312
Lumber	2,142,366	2,306,078	11,371,294	1,430,125	15,107,498
Paper	408,282	2,345,683	3,422,644	226,059	5,994,386
Metals	647,829	554,944	1,461,171	0	2,016,115
Tr. Equip	775,034	903,702	311,067	0	1,214,769
Air - Pass	0	0	89,433	0	89,433
Air Cargo	0	0	215,548	0	215,548
TOTAL	24,429,926	29,153,141	66,615,199	6,403,468	102,171,808
Modal Share		29%	65%	6%	

2020 Total		Land Total			
	Ocean	Rail	Truck	Barge	Total
Grain	16,289,708	12,329,885	860,239	4,331,514	17,521,639
Containerized	1,049,273	1,718,388	9,789,774	226,668	11,734,830
Bulks	10,631,244	16,037,355	47,950,699	1,653,065	65,641,120
Lumber	2,908,452	2,775,493	11,782,889	1,527,492	16,085,875
Paper	690,510	2,928,541	4,108,097	330,955	7,367,593
Metals	932,123	709,158	1,650,822	0	2,359,980
Tr. Equip	1,202,515	1,274,083	438,763	0	1,712,846
Air - Pass	0	0	131,389	0	131,389
Air Cargo	0	0	318,820	0	318,820
TOTAL	33,703,826	37,772,903	77,031,492	8,069,695	122,874,091
Modal Share		31%	63%	7%	

Source: DRI/McGraw-Hill Estimates

(Metric Tons)

2030 Total		Land Total			
	Ocean	Rail	Truck	Barge	Total
Grain	19,663,028	14,937,140	944,215	5,025,978	20,907,333
Containerized	1,321,948	2,220,214	11,714,028	278,699	14,212,941
Bulks	14,812,610	20,560,737	56,106,985	1,908,245	78,575,967
Lumber	4,139,060	3,423,253	12,601,524	1,713,791	17,738,568
Paper	1,103,527	3,583,314	4,868,333	477,592	8,929,239
Metals	1,338,225	931,618	1,826,537	0	2,758,155
Tr. Equip	1,517,279	1,618,982	490,557	0	2,109,539
Air - Pass	0	0	193,967	0	193,967
Air Cargo	0	0	471,747	0	471,747
TOTAL	43,895,676	47,275,258	89,217,894	9,404,305	145,897,457
Modal Share		32%	61%	6%	

2040 Total		Land Total			
	Ocean	Rail	Truck	Barge	Total
Grain	23,969,647	18,048,657	1,022,677	6,117,955	25,189,289
Containerized	1,787,484	2,746,479	14,101,677	339,770	17,187,926
Bulks	21,881,791	27,231,318	65,979,219	2,186,302	95,396,839
Lumber	5,782,386	4,159,540	14,035,972	2,004,747	20,200,259
Paper	1,666,130	4,350,568	5,726,040	671,580	10,748,188
Metals	1,948,070	1,252,056	2,060,992	0	3,313,048
Tr. Equip	1,861,673	1,999,814	556,002	0	2,555,816
Air - Pass	0	0	287,370	0	287,370
Air Cargo	0	0	698,214	0	698,214
TOTAL	58,897,182	59,788,433	104,468,162	11,320,355	175,576,949
Modal Share		34%	59%	6%	

Source: DRI/McGraw-Hill Estimates

Many of the commodity markets in which Portland is a dominant player - lumber, paper and grain in particular - have been and will continue to face pressures which may reduce the potential freight volumes available for carriage. Environmental concerns, reductions in harvestable land, self-sufficiency or new suppliers serving traditional markets may all contribute to lower growth potential for Portland freight volumes.

The consultant team prepared an alternative scenario which incorporated many of the potential factors described above. This forecast would result in a significant reduction in freight volumes from the base case scenario, as growth in these commodities would be at rates less than half those of recent history. Still freight activity would grow slightly in these categories in the alternative scenario, and the overall impact on total Portland freight volumes would be minor.

Alternative Scenario Forecasts for Key Commodity Groups
Thousands of Metric Tons

	2000	2010	2020	2030	2040
Grain	9,817.7	10,784.3	11,814.2	14,143.7	16,944.4
Lumber	12,654.4	13,609.9	14,021.4	14,640.6	15,638.2
Paper	4,920.5	5,756.8	6,866.9	8,037.3	9,342.8
Subtotal	27,392.6	30,150.9	32,702.6	36,821.6	41,925.4
% Diff. from Base Case	-6.3%	-11.5%	-20.2%	-22.6%	-25.3%
Total All Commodities	84,242.4	98,236.4	114,596.8	135,136.8	161,354.1
% Diff. from Base Case	-2.1%	-3.8%	-6.7%	-7.3%	-8.1%

Source: DRI/McGraw-Hill Estimates

Railroads and truckload carrier cooperation will cause intermodal to dominate today's major long-haul truck traffic lanes.

The market will increasingly demand that services not be bound by geographical limits based on railroad ownership. Railroads will enter into more cooperative agreements to extend their reach and will act as contractors providing long haul transportation to intermodal marketing companies with nationwide networks.

Niche and specialty services will continue to exist, serving specific market needs. Specialized equipment and terminals will be a part of the service package.

Containers will increase penetration of commodity groups now handled infrequently, including lumber, automobiles and some bulks.

Assumptions for Changes in Technology and Freight Operations - Service

Freight traffic and market share will increase.

Mergers will reduce the number of major U.S. railroads, however, mergers between directly competing railroads (such as BN and UP) are not expected. The number of railroads serving the Portland market is not expected to increase but could decrease.

The Canadian transcontinental railroads, CP and CN, will become more competitive with U.S. carriers, whether or not merged in part or in whole.

Intermodal Marketing companies (IMCs) are playing an increasing and more important role by developing sophisticated information systems to maximize equipment utilization, tightening turn time and reducing or eliminating empty backhauls. IMCs will likely be instrumental in developing secondary intermodal markets by marketing agreements with smaller truckload carriers.

Service coordination and scheduling will improve, including coordination among connecting railroads and trucking companies involved in providing "door to door" shipments.

Increased intercity and commuter passenger traffic will consume some available line capacity, although corresponding public funding of improvements and additions is likely. (This likely will affect north-south lines more than east-west lines serving Portland.)

Containers will dominate trailers in intermodal use.

Various intermodal technologies will continue to coexist, taking advantage of different logistics cost structure for commodities with varying demand, supply, movement and physical characteristics.

Container and trailer cube and weight capacity will increase, bounded by considerations related to street and highway movement. These increases will taper off as practical ceilings are approached. Capacity increases will offset volume growth only to a slight degree.

Maximum net and gross weights for four axle railcars will increase. The maximum gross weight presently is being increased on many lines from 263,000 to 286,000 pounds. Another increase to the 310,000 pound range is conceivable.

Line capacity will become an issue at critical locations as traffic increases, and may at select times and places constrain service quality or growth. It will be dealt with incrementally, through gradual track and signal enhancements and other technology enhancements.

Communications and train control technology will improve, increasing line capacity Braking systems will be improved to incorporate immediate response to brake settings by all cars. This will improve stopping distances and increase capacity modestly.

Clean air concerns will prompt electrification of some heavily used main lines, at least in regions where air quality is a major problem.

All transportation modes will increase their use of advanced communication and tracking technologies such as EDI. This trend will allow shippers to effectively manage inventories, while providing carriers the opportunity to provide a wider range of value-added services.

Terminal efficiency will continue to improve, aided by EDI and the eventual shift of much intermodal business into containers, but it will top out. Efficiency gains will not be sufficient to accommodate volume increases. Service competition will demand, and increasing shipment volumes will permit, each carrier's continued development of its own intermodal facilities. Joint or public-owned terminals will find only limited application in heavy volume areas.

"Greenfield" terminals will be developed (but not without challenge) near some major metropolitan areas: completely new intermodal terminals constructed outside the urban area where sufficient land is available to support projected growth.

Terminals owned by or dedicated to a single shipper will remain the exception, although IMCs could operate their own facilities.

Some specialty terminals related to specific technologies (i.e., RoadRailer or Iron Highway) will develop. These terminals could be located away from conventional intermodal terminals in order to save space at conventional terminals.

Drayage movements are becoming a critical concern at existing rail hub centers and parking and container storage area requirements at local hubs could cause more capacity constraint than train movement, trackage or lift capacity. This could lead to citing of satellite facilities.

Terminal efficiency will increase because of: 1) improved single car movement planning and schedule adherence; 2) better coordination of interchange and run-through freight; and 3) more flexible operations aimed at by-passing terminals, such as shorter or more frequent freight trains, mini-unit trains or shuttles

Railroads will continue efforts to reduce terminal handling, cost and facilities; however, increased traffic will limit ability to reduce or eliminate terminals.

New terminal facilities of modest size will need to be constructed where required by more efficient train operations or as a result of arterial traffic congestion.

Future freight movement in the Portland area will be heavily dominated by truck mode and the location of rail intermodal facilities. Trends in freight technology and how it is utilized in the global and domestic marketplace could have considerable influence on both inter-regional and intra-regional freight activity. In Tables 3.1 through 3.6 long range forecasts of commodity flows have been summarized by rail and truck mode together with estimates of potential train and truck movements. These factors affect the relationship between freight volumes, transportation activity and transportation system requirements over time.

Despite the clear trend for increased modal split for shipment by rail, movement of all types of commodities by truck will increase dramatically. Tables 3.3 and 3.4 present the forecasts of commodity flows for truck mode. Commodity data is again composited and shown in total metric tons and equivalent FEUs. Total truckload (TL) and Less Than Truckload (LTL) equivalent freight movement, including intra-regional commodity flow, are projected to increase by 119% by 2040 and bulks by 170%.

Projections of daily truck movements are shown in Table 3.5. Equivalent full loads were estimated based on average loads per truck and then the number of loads to and from terminals, warehouse/distribution centers and rails hubs determined. Columns are shown for truck movement of bulks, such as grains or sand and gravel, for Truckload (TL) and Less than Truckload (LTL) freight, and for rail intermodal drayage. Projections of full truckloads for TL/LTL and intermodal drayage have been adjusted by 170 % for empty backhauls, size of load and incidental local movements based on historical data collected for the T-6 intermodal facility. A figure of 200 % was applied to bulks because of the need for single purpose hauling equipment. The combined truck ADT, projected in equivalent heavy trucks, could increase nearly 2.5 times the 1991 base year from 12,000 to over 29,000. Total Truck ADT projections are based on equivalent full truckloads for all originating and terminating commodity flow including rail intermodal but exclude ADT on major freeways or routes which are transiting the Portland area to other destinations.

Total Equivalent Train Movements are projected to increase nearly 3.5 times the 1991 base year level. A train movement was assumed as a 100 car length train equivalent for freight only. Daily train movements have not been estimated due to the irregular schedule of unit trains and different operating period for intermodal facilities. Operations to assemble or breakdown full trains originating and terminating within the Portland Terminal Area will increase local car movements. Backhaul of empty rail cars and containers will also increase estimates by 10 to 20%. Data does not include passenger trains which could add 70 to 84 train movements per week. While passenger trains affect the operating and scheduling problems on mainlines they are considerably smaller in size.

Both trains and interstate truck movement which are considered to be transiting or "through traffic" will affect regional system capacity and add to congestion. It is difficult to quantify the impact of transiting train and truck traffic because of availability of alternate routes. A rough estimate of added train movements resulting from container shipment through Puget Sound can be made by assuming that 10% of the year 2010 additional east-bound container movements from the Seattle International Gateway (SIG) are transited through Portland. This growth would add approximately 60 trains per week through Vancouver and North Portland.

Forecasted Annual Rail Mode Freight Movement
Portland Metropolitan Area 2040 Commodity Flow Analysis

Cargo Type: Containerized	Units	1991	2000	2010	2020	2030	2040
Imports	TONS	278,067	344,258	441,364	669,694	794,832	870,474
	(FEUs/YR)	15,328	18,977	24,330	36,917	43,815	47,985
Exports	TONS	498,413	666,556	1,029,412	1,509,700	2,299,261	3,334,212
	(FEUs/YR)	27,475	36,744	56,746	83,222	126,747	183,798
Intra-Regional	TONS	0	0	0	0	0	0
	(FEUs/YR)						
Domestic Inbound	TONS	1,023,273	1,411,880	1,748,028	2,102,497	2,546,951	3,021,338
	(FEUs/YR)	56,408	77,830	96,360	115,900	140,401	166,551
Domestic Outbound	TONS	2,788,606	3,106,569	3,662,065	4,414,614	5,204,719	6,030,378
	(FEUs/YR)	153,722	171,250	201,871	243,356	286,910	332,425
Totals	TONS	4,588,359	5,529,263	6,880,869	8,696,505	10,845,763	13,256,402
% Increase from 1991 Base Year			20.51%	49.96%	89.53%	136.38%	188.91%

Source: DRI/McGraw-Hill, R.L. Banks & Associates, Inc., and Fred Cooper Consulting Engineers Estimates

TONS: Metric Gross Tons
FEUs: Forty Foot Container Equivalent Units
COMMODITIES:
Lumber, Paper, Transportation Equipment and other containerized.

Forecasted Annual Rail Mode Freight Movements
Portland Metropolitan Area 2040 Commodity Flow Analysis

Cargo Type: Bulks	Units	1991	2000	2010	2020	2030	2040
Imports	TONS	196,776	274,051	429,275	527,792	649,582	834,604
	(FEUs/YR)	10,847	15,107	23,664	29,095	35,808	46,008
Exports	TONS	7,201,759	8,880,570	11,409,048	16,124,616	21,103,544	28,362,027
	(FEUs/YR)	396,997	489,541	628,924	888,869	1,163,333	1,563,457
Intra-Regional	TONS	0	0	0	0	0	0
	(FEUs/YR)						
Domestic Inbound	TONS	5,464,878	7,915,066	9,862,559	11,911,419	14,239,405	17,011,359
	(FEUs/YR)	301,251	436,318	543,674	656,617	784,947	937,751
Domestic Outbound	TONS	647,625	575,074	571,399	512,570	436,965	324,042
	(FEUs/YR)	35,700	31,701	31,498	28,255	24,088	17,863
Totals	TONS	13,511,038	17,644,761	22,272,281	29,076,397	36,429,496	46,532,032
% Increase from 1991 Base Year			30.60%	64.85%	115.20%	169.63%	244.40%

Source: DRI/McGraw-Hill, R.L. Banks & Associates, Inc., and Fred Cooper Consulting Engineers Estimates

TONS: Metric Gross Tons
FEUs: Forty Foot Container Equivalent Units
COMMODITIES: Grain, Metals and other Bulk loads.

Projections of Total Equivalent Train Traffic,
Originating and Terminating in Portland Metropolitan Area

	Container Trains Per Week(2)	% Change from 1991 Base year	Other Trains Per Week(3)	% Change from 1991 Base Year
1991	22	-	65	
2000	27.5	25.0	85	30.8
2010	33	50.0	107	64.7
2020	41.8	90.0	140	115.1
2030	52	136.4	175	169.4
2040	63.7	189.5	224	244.2

Source: DRI/McGraw-Hill, R.L. Banks & Associates, Inc., and Fred Cooper Consulting Engineers Estimates

(1) Projections based upon DRI/McGraw-Hill international import/export and domestic inbound/outbound commodity flow forecasts.
(2) All containerized commodities; 7,000 Foot Trains (50% TOFC/COFC, 50% DS); 4,000 net tons train equivalent
(3) All bulk, grain and metal commodities; 8,000 net tons train equivalent; 1:1 ratio full to empty car

Forecasted Annual Truck Mode Freight Movement
Portland Metropolitan Area 2040 Commodity Flow Analysis

Cargo Type: TL & LTL	Units	1991	2000	2010	2020	2030	2040
Imports	TONS	310,473	393,795	478,767	682,483	806,663	1,005,760
	(FEUs/YR)	17,115	21,708	26,392	37,622	44,467	55,443
Exports	TONS	995,115	1,235,794	1,695,398	2,403,004	3,321,512	4,659,044
	(FEUs/YR)	54,856	68,123	93,459	132,466	183,098	256,830
Intra-Regional	TONS	9,669,120	12,401,061	14,020,195	15,112,220	16,570,628	18,594,705
	(FEUs/YR)	365,412	468,657	529,847	571,116	626,232	702,725
Domestic Inbound	TONS	3,019,301	3,855,861	4,436,547	4,998,052	5,731,678	6,655,430
	(FEUs/YR)	166,439	212,554	244,565	275,518	315,959	366,881
Domestic Outbound	TONS	2,163,611	2,475,797	2,872,922	3,386,748	3,933,213	4,531,402
	(FEUs/YR)	119,269	136,478	158,370	186,694	216,818	249,794
Totals	TONS	16,157,620	20,362,308	23,503,829	26,582,507	30,363,694	35,446,341
% Increase from 1991 Base Year			26%	45%	65%	88%	119%

Source: DRI/McGraw-Hill, R.L. Banks & Associates, Inc., and Fred Cooper Consulting Engineers Estimates

TONS: Metric Gross Tons
FEUs: Forty Foot Container Equivalent Units
Commodities:
Lumber, Paper, Air Cargo, Transportation Equipment and other Containerized

Forecasted Annual Truck Mode Freight Movement
Portland Metropolitan Area 2040 Commodity Flow Analysis

Cargo Type: BULK	Units	1991	2000	2010	2020	2030	2040
Imports	TONS	1,871,619	2,722,930	4,022,265	4,729,260	5883250	7,339,557
	(TLs/YR)	103,173	150,102	221,727	260,700	324,314	404,593
Exports	TONS	840,517	1,071,421	1,409,160	2,126,364	3,188,341	5,179,679
	(TLs/YR)	46,333	59,062	77,680	117,216	175,757	285,530
Intra-Regional	TONS	17,686,132	23,978,463	27,057,410	31,302,176	35,800,788	40,548,807
	(TLs/YR)	802,066	1,087,423	1,227,054	1,419,554	1,623,566	1,838,888
Domestic Inbound	TONS	6,676,163	8,921,462	10,261,249	11,906,993	13,675,961	15,697,951
	(TLs/YR)	368,023	491,796	565,651	656,373	753,887	865,350
Domestic Outbound	TONS	381,051	362,062	367,452	346,966	329,399	296,892
	(TLs/YR)	21,005	19,959	20,256	19,127	18,158	16,366
Totals	TONS	27,455,482	37,056,338	43,117,536	50,411,759	58,877,739	69,062,886
% Increase from 1991 Base Year			35%	57%	84%	114%	152%

Source: DRI/McGraw-Hill, R.L. Banks & Associates, Inc., and Fred Cooper Consulting Engineers Estimates

TONS: Metric Gross Tons
TLs: Truckloads; LTL: Less than Truckload (Forty Foot Container Equivalent Units)
COMMODITIES: Grains, Metals and other bulk loads.

Future Transportation Requirements - Introduction

Future transportation infrastructure requirements due to commodity flow have been identified in general terms and land use considerations by general time frame - 1991 to 2040. There are many factors which may redefine requirements identified in this report, factors which could either accelerate or slow their need. These include transportation industry expansion plans, market decisions on facility citing, specific facility planning, cost of development, competition from other geographic areas, short term changes in economic trends and regional transportation priorities. Regional transportation planning and implementation projects must address freight movement or there will be impacts on the area's economic development potential and quality of life within the region.

Facilities for movement of freight which have been assessed in terms of future requirements include:

- Rail intermodal facilities - international
- Rail intermodal centers/hubs - domestic
- Rail trackage and yards
- Marine cargo terminals
- Trucking terminals and intermodal access linkages
- Air cargo terminal facilities

The region's primary ICTF is owned and operated by the Port of Portland with rail operations provided under an agreement with the Burlington Northern (BN) Railroad. The facility is currently operated five days per week. One of the current constraints to be resolved is the need for unit trains to be broken up and dispatched to the ICTF in segments. BN currently utilizes their North Vancouver yard for storing trains arriving or departing the facility. This operation involves crossings on the mainline Columbia River bridge which increases congestion and affects scheduling of other train movements. Assembly time and improved switching efficiency could be achieved through availability of another mainline rail access point, additional trackage and storage yard in the T6 area.

Regional on dock or near dock intermodal facility needs are projected to increase by 400 % by 2040. A portion of the regional need can be met by improved technology and efficiencies in operations plus greater throughput due to added hours of operation at the Port of Portland ICTF. Expansion of existing facilities should meet capacity needs through about 2015; however, an additional 75 acres will be needed by 2040 to handle future international trade.

Facility expansion will have a significant impact on the capacity of major roadway arterials serving them. In 1991, there were approximately 1.75 truck movements for every container movement through the Portland ICTF. Gate records for 1991 indicate 229,000 movements or nearly 900 per weekday. The forecasted commodity flows could result in over 445,000 truck movements or 1,250 per day assuming seven days per week operation and all flow is through the T6 area.

While the Port of Portland T6 marine terminal handled 1.6 million metric tons and 176,000 TEUs in 1991, the Seattle International Gateway (SIG) handled 12.7 million metric tons of cargo and over 1.15 million TEUs. This facility currently generates at least eight double stack "land bridge" unit trains over UP and BN tracks whereas Portland generates only one train. Container movements at SIG are projected to grow to 1.6 million TEUs by 2000 and 2.5 million by 2010 or an annual growth rates of 4 to 6%. At least $ 300 million in intermodal capacity improvements are planned by the Port of Seattle with additional investment probable in the Tacoma area. Increased commodity flow through SIG and other Puget Sound ICTFs will have secondary impacts on the capacity of the Portland region. However a full assessment of this impact is beyond the scope of this report.

Future Transportation Requirements - Rail Intermodal Facilities/Hub Centers - Domestic

The growth of domestic rail intermodal facilities in the last ten years has been phenomenal. While industry experts project that growth rates of 7% to 8% could be experienced nationally for the next few years, rates for the Portland MPO could be closer to 10%. In the Pacific Northwest, domestic "hubs" have an important strategic relationship to international intermodal facilities by virtue of the backhaul traffic essential to alleviating the imbalance of originating and terminating international container movement. Railroads are being particularly aggressive in this type of marketing. Reports of several investigators (see references) indicate that the historical imbalance of originating to terminating freight loads is improving. The Northwest ports are in a better competitive position than other Pacific ports. Its transportation links and intermodal facilities have available capacity.

Increased domestic container traffic terminating in the Portland area has dramatically affected local facilities. The three principal rail intermodal centers are: Union Pacific's hub at Albina, Burlington Northern's hub at Lake Yard and Southern Pacific's hub at Brooklyn Yard. These three facilities occupy 63 acres and handle, in aggregate, about 380,000 lifts per year and over 1,800 truck movements per operating day. All three facilities anticipate expansion prior to 2000. Capacity can be nearly doubled to 715,000 lifts per year primarily through reconfiguration and relocation of conventional switching and storage operations in adjoining yards. With probable development of private hubs to handle specific commodities (i.e. autos, lumber or paper) and further changes in hub technology and operating efficiency, the expansion of existing domestic rail intermodal facilities should be adequate through 2040. Abandonment and relocation of some operations could occur due to delays in train movements in the rail corridor from North Vancouver to South Portland. Availability of space for storage yards and intermodal facilities in the Rivergate area should provide adequate opportunity for such relocation while alleviating problems of train movements and their associated auto/truck traffic conflicts.

Future Transportation Requirements - Rail Trackage and Yards

Improving the efficiency for movement of trains within the Portland Terminal area is one of the biggest issues for unrestrained growth in commodity flow. Improvements will require removal of certain constrictions to train scheduling, provisions for movement of a greater number of longer trains, up to 100 rail cars or platforms, and improved double track access, particularly from the north over the Columbia River.

Planned rail improvements to the Rivergate Area will be critical to providing future flexibility and options for citing of rail intermodal facilities, rail car storage and servicing and other support operations.

Expected growth in cargo volumes are generally consistent with those developed in the Port of Portland's 1991 Marine Terminal Master Plan (although it should be noted that almost half of the ocean borne freight moving through Portland moves through private terminals). Historic growth of the total cargo base moving through public port facilities over the past ten years has been at a rate of 3.1% per year. Total cargo is forecast to grow at annual rates ranging from 2 to 4.6%. The lowest rate assumes no major new business and a weaker regional economy. Higher growth assumes capture of additional cargo markets from outside the region a stronger regional economy.

Conclusions from the Port of Portland's 1991 Master Plan and other available analysis on breakbulk commodities indicate the following:

Container Port Facilities. Growth in container movement for import/export market can be accommodated at the existing ICTF until after the year 2000 and later at West Hayden Island.

Breakbulk Terminal Facilities. Market demand for breakbulk space should not exceed existing capacity.

Grain Terminal Facilities. Grain elevators at T4 and T5 are operating at about 60% of their capacity which could be further increased through rail improvements described in Section 4.5 below.

Mineral Bulk Facilities. Throughput capacity for mineral bulks can be expanded at existing facilities at T5 and Port of Vancouver if demand develops.

Future Transportation Requirements - Trucking Terminals and Intermodal Linkages

The commodity forecasts support an increased need for additional trucking terminals and support facilities particularly to handle intra-regional and inter-regional usage of rail intermodal facilities. Future trucking terminals should be located in close proximity to rail hub centers and have improved route access to the region's freeways

In addition, major freeway system in the Portland area and key access routes falling under the above criteria and requiring special consideration are those serving major industrial and marine terminal areas which generate high truck movements. With the increasingly dominant role of rail intermodal facilities, their locations and access requirements should cause greater transportation impacts. Commodity movement forecasts and truck modal share unfortunately can not be quantified in terms of specific affected routes in this study.

Future Transportation Requirements - Air Cargo Terminal Facilities

Movement of freight by air is projected to be the fastest growing mode of transportation during the next 50 years. In the Portland region only 3.7% of domestic inbound and outbound cargo, exclusive of grain and other bulk commodities, moved by air cargo in 1991. About 2.1% of international commodity flow, excluding bulks, was by air. By 2040, air cargo movement is projected to increase by 730% with the largest increase from domestic inbound cargo. This increase will have significant impact on truck movements and need for access route or highway corridor improvements.

As has been previously noted in this report, air cargo's small volumes in tonnage terms is not representative of its importance to the region. Air cargo typically has a product value typically five to ten times that of trucked commodities, and can be 20-30 times the value of many of the bulk products frequently handled in Portland. As manufacturing and service industries continue to exploit services such as "just-in-time" delivery as part of their inventory management strategies, air cargo will services and facilities will become even more important in the future.

Air cargo land requirements at Portland International Airport should be sufficient to handle forecasted requirements. Some additional near airport land for freight forwarders and cargo breakdown may be necessary however changes in technology could result in this activity being accommodated by seamless approaches to multimodal shipment or where the cargo is placed in containers at the point of origin or removed from containers at its final destination. It is also important to remember that a growing portion of the traffic handled by air cargo operators and "integrated carriers" (i.e., Federal Express and UPS), is moved by truck rather than by air. This trend will continue as carriers seek innovative methods for meeting customer needs while minimizing costs.

Rail Intermodal Facilities - International Cargo

International cargo movement will grow at a rate requiring significant expansion in on dock and near dock intermodal facilities with good rail and road access. Needs include:

1. A 25% expansion of existing near dock intermodal facility by 2015.
2. A second facility or doubling of capacity of current facility by 2040. Land requirements: additional 75 acres.
3. Improved urban arterial access to Interstate 5.
4. Improved mainline rail access.
5. Adequate land area for parking and storage of containers.

Rail Intermodal Centers/Hubs - Domestic Cargo

Existing rail intermodal centers are severely under capacity to handle both near term and long term needs. Future transportation and land use planning needs to include:

1. Rail intermodal facility expansion to handle a one hundred percent increase in lift capacity at existing hubs by 2000; minimum land requirement: approximately 25 acres.
2. Space for specialized hub or ramp facilities with both rail and highway access, on-site storage and parking; land requirement: 100 acres.
3. Provisions for at least 100 acres of hub support facility space for container storage, parking and equipment servicing.

Transportation Infrastructure Constraints Rail Trackage and Yards

Much of the Portland Terminal Area has problems in moving trains efficiently due to lack of double tracks, centralized traffic control, at grade crossings and the rail bridge over the Columbia River. Critical projects include:

1. Improved rail access to Terminals 5 and 6 (Rivergate Area), including a single track rail crossing of Columbia Slough and mainline access.
2. Mainline access and single track construction for service to future West Hayden Island marine terminal area.
3. Additional storage yard capacity near Terminals 5 and 6.
4. Grade crossing eliminations throughout the Portland Terminal Area particularly along Columbia Blvd. and in South Portland.

Transportation Infrastructure Constraints - Marine Cargo Terminals

Marine cargo terminals, other than container handling facilities, appear to be well planned to handle future commodity flow. Facilities in the Portland Harbor area could have the following needs:

1. Reconfiguration of existing break bulk/auto terminals to adjust to market demands.
2. Minor expansion of existing on dock container facilities for inland waterway barge movement.
3. Improvements to rail access and expansion of storage for existing grain terminals.

Transportation Infrastructure Constraints - Trucking Terminals

The Portland region should continue to be a strategic center for trucking operations. It will be important to allow such facilities in close proximity to major freeways as well as future intermodal facilities. Discussions with local trucking and shipping representatives identified several broad categories where acreage will be needed to accommodate future freight volumes. These include:

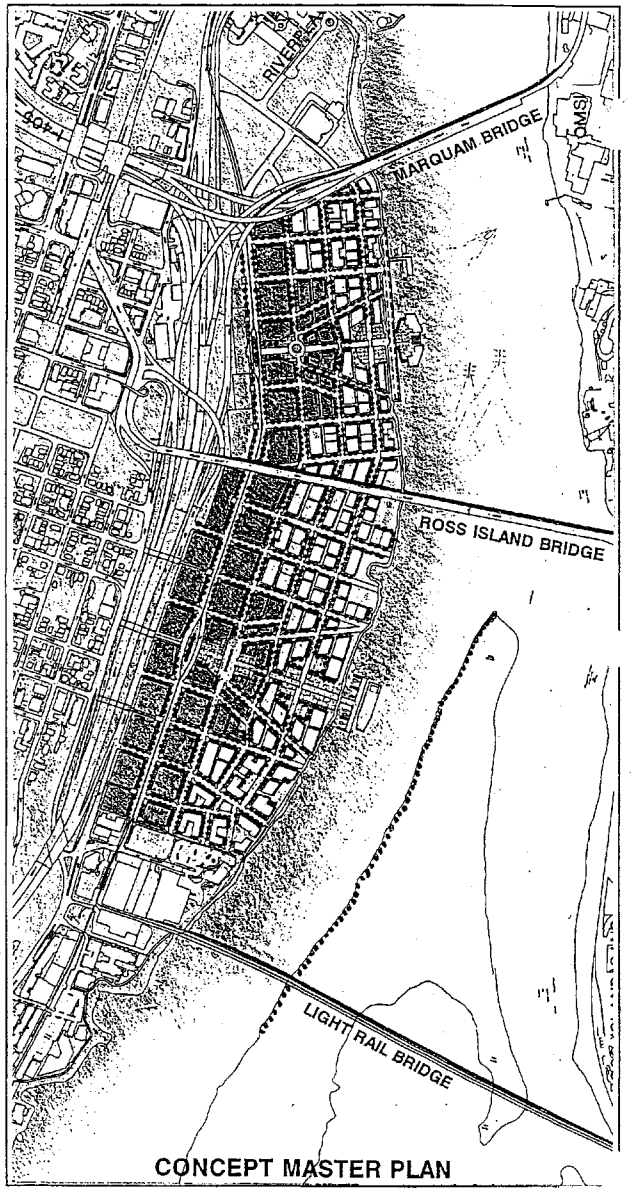
1. Additional 75 acres for trucking terminals primarily in North Portland - Rivergate Corridor
2. Additional 55 acres for truck servicing, parking and support facilities.
3. Additional 100 acres for warehousing and distribution facilities related to intermodal freight operations.

REFERENCES

1. Bi-State Transportation Study, Kittleson & Associates, 1991.
2. Columbia Corridor Transportation Study, Technical Report 2: Truck Routing Model, City of Portland Office of Transportation, 1994
3. "A Clear Track for Double Stack," Railway Age, April, 1994.
4. "Truckers Are Some of Our Best Customers," Railway Age, April, 1994.
5. "Act Now, Keep Intermodal Moving," Transportation & Distribution, April, 1994.
6. "Port of Seattle Fights Back," Railway Age, April, 1992.
7. "The War of the Ports," International Business, March, 1994.
8. Private Communication, Mr. Paul Bergeland, Burlington Northern
9. Private Communication, Mr Craig Levie, Port of Portland
10. Private Communication, Mr. Bill Carter, Union Pacific
11. Private Communication, Mr. Pat Ryan, Southern Pacific
12. Private Communication, Mr. Dave Matheson, Portland Terminal Railroad
13. Private Communication, Mr. Dan Weger, Union Pacific
14. Private Communication, Mrs. Cleo Childress, Burlington Northern
15. Private Communication, Mr. Mark Bruce, Burlington Northern
16. Private Communication, Mr. Ben Laughlin, Union Pacific
17. Private Communication, Mr. Jack Gutier, Southern Pacific
18. Private Communication, Mr. Rex Gilley, Jubitz Truck Stop
19. Draft Oregon Rail Plan, Oregon Department of Transportation, 1994.
20. "Double Stack Container Systems: Implications for U.S. Railroads and Ports, Department of Transportation, 1990.

A Clear Choice

- Where should the South/North light rail line cross the Willamette River?
- Look at which crossing is most consistent with the region's adopted plans and policies.
- Compare the housing, employment and ridership potential.
- Contrast their capacity for leveraging private investment.
- Remember the promises made to voters who supported light rail as a means of managing growth.
- Based on these factors, the choice is clear: **the Ross Island crossing gets the most out of light rail.**



Light rail is the catalyst needed to turn the North Macadam District into a new transit-oriented community

A Ross Island Crossing

Getting The Most Out Of Light Rail

Critical Choice

In November, 1994, metropolitan area voters passed a $475 million bond measure to help finance the construction of the South/North Light Rail Line. In many ways it was an act of faith. Voters were not told how all the public funds - nearly $3 billion in total -- would be raised or where exactly the line would run. But they were told that this light rail investment was essential to managing the region's growth.

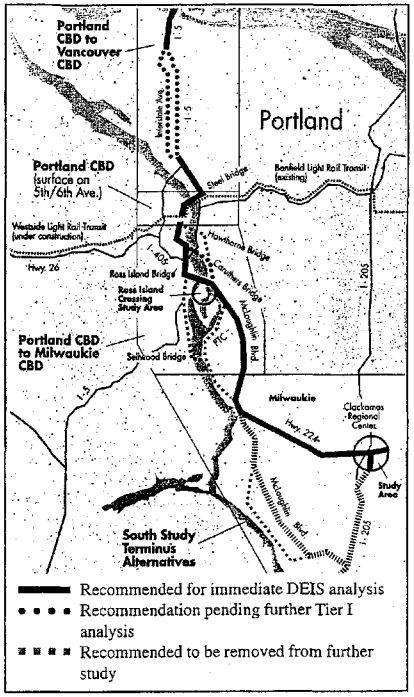
And that was enough. Voters passed the measure by a margin of two-to-one because they value ''-ht rail and the contribution it .kes to their quality of life.

But a critical choice remains to be made about the South/North line, one that will determine just how great a return the investment will bring in managing the region's growth. It is a decision that will determine how faithfully we will live up to our adopted growth management plans and to the commitments made to the region's voters.

The choice is between two options for where the South/North line will cross the Willamette River. One option, called the Caruthers Street Crossing, is near the Marquam Bridge. It would provide service to OMSI and the ''rrounding industrial area. The other, led the Ross Island Crossing, is rarther south near Bancroft Street. It would provide service through the North Macadam area, a one-mile stretch of land along to the river recognized for its enormous development potential and the contribution it could make to downtown housing and jobs.

A crossing south of the Ross Island Bridge would also connect the Corbett, Terwilliger, and Lair Hill neighborhoods to light rail and the river as well as provide transit service to existing centers of activity, such as the Old Spaghetti Factory and John's Landing.

The two crossing options offer very different benefits. One provides transit service to an important regional attraction. The other has the potential to reshape and revitalize a significant part of our City.



How should the decision be made? The answer isn't difficult. We must choose the alternative that provides the greatest possible return from this $3 billion public investment in Light rail.

A Commitment to Growth Management

Over the last two decades, there have been numerous planning efforts to address the region's deep concerns about growth. In most cases, these were extensive, multiple-year processes that involved thousand of citizens. Their work produced an array of adopted plans and policies aimed at maintaining the economic vitality of the region while reducing sprawl and the traffic and air quality problems that accompany it.

The Central City Plan says:

Policy 3. Maintain the Central City's status as Oregon's principal high density housing area by keeping housing production in pace with new job creation.

Portland Future Focus. Called for an increase of 15,000 new housing units and 75,000 new jobs in the City by the year 2010. These objectives are being made part of the Central City Plan.

Without exception, these plans and policies recognize that successfully managing growth depends, more than anything else, on linking transportation investments and land use regulations. Only through this linkage will the region be able to create the high density, mix-use communities necessary to contain sprawl while accommodating population growth.

The region's adopted plans and policies lay out very clear criteria for land use and transportation decisions. It is this criteria which should drive the selection of a crossing. This means making the decision based on which alternative does the most to:

- **Increase transit ridership;**
- **Encourage the growth of transit-oriented communities;**
- **Meet the City's housing and job density goals;**
- **Create new, transit friendly jobs;**
- **Reduce auto congestion and improve air quality; and**
- **Contain the urban growth boundary.**

Following these criteria will guarantee the best return for our investment in light rail. Ignoring them will undermine years of planning and citizen involvement and violate the trust of voters who supported light rail this past November.

Best Return on Investment? A Ross Island Crossing.

There is little doubt that a Ross Island crossing best meets the land use and transportation policies found in region's planning documents. In fact, the Central City Plan says:

The City of Portland's Comprehensive Plan says:

2.12 Transit Corridors. Provide a mixture of activities along major transit routes to augment travel options. . . Encourage increased residential density, when in compliance with the Comprehensive Plan Map, near transit routes especially where vacant land affords an opportunity for infill development.

2.15 Living Closer to Work. Locate greater residential densities near major employment centers. . .

2.17 Transit Stations. Where new regional transit facilities and stations are to be sited, increase opportunities for commercial activities, the development of medium and high density apartments, and increased single-family density.

6.9 Transit-Oriented Development. Reinforce the link between mass trans and land use by increasing residentia densities along Major City Transit Streets and Regional Transitways, as well as activity centers. . . Encourage transit-oriented development patterns at transit stations in order to provide for easy access to transit service. Transit-oriented development should be composed of mixed use neighborhoods, with a full range of housing types, and should be located within one-quarter mile distance of the transit station.

6.9 (C). The city should provide needed infrastructure to support public and private transit-oriented development.

"The District with the greatest potential for new residential development is the North Macadam corridor where presently over 100 acres have a strong potential for development over the next 20 years."

Light rail is the key to unleashing that potential. The South/North Project Management Group, a technical committee made up of staff from Tri-Met, the City of Portland, METRO and other jurisdictions in the region, agree. Their alignment recommendations stated:

"Because of its amount of vacant developable and redevelopable land, its proximity to downtown and its ability to support housing, the land use benefits of LRT on the North Macadam Area are judged to be greater than on the OMSI area."

A concept master plan has been drafted for the North Macadam area based on the possibility that light rail will cros south of the Ross Island Bridge. The plan calls for the creation of a new, transit-oriented community that would include several thousand new medium and high density housing units and a mix of retail, commercial and office development. The community would house 5,400 people and offer more than 8,000 new jobs.

Light rail in the North Macadam area would leverage $500 to $700 million in private investment for housing and commercial structures. But it would also leverage tremendous private investment in public assets. This new community would include a major public attraction and a dramatic expansion of the City's river front park. In fact, it would create a nearly uninterrupted greenway stretching from Willamette Park to the downtown core. The public attraction and expanded ess to the river would draw residents rom across the region.

The Region 2040 Plan says:
"The primary function of light rail in the Growth Concept is to link regional centers and the Central City, where concentrations of housing and employment reach a level that can justify th cost of developing a fixed transit system."

The Regional Urban Growth Goals and Objectives say:

Objective 14.1 (Transportation) ystem Priorities. In developing new regional transportation system infrastructure the highest priority should be meeting the mobility needs of mixed use urban centers, when designated.

Objective 19. Urban Design. The identity and functioning of communities in the region shall be supported through:

19.iii. ensuring that incentives and regulation guiding the development and redevelopment of the urban area promote a settlement pattern which
19.iii. a. is pedestrian "friendly" and reduces auto dependence;
19.iii. b. encourages transit use;
19.iii. c. reinforces nodal, mixed use, neighborhood oriented design;
19.iii. d. includes concentrated, high density, mixed use urban centers developed in relation to the region's transit system;

With so much vacant land in the area, this isn't a plan that must wait for decades. There is a significant opportunity for immediate development, projects that would generate large numbers of new transit riders. This would add to the transit ridership created by the existing array of housing and commercial uses in the North Macadam and John's Landing area, including the Old Spaghetti Factory, which alone generates 500,000 visitors each year.

It's projected that the development proposed in the master plan, along with existing uses, would generate 2.9 million transit riders.

A Ross Island crossing creates the greatest potential for transit ridership. That means we get the most from our investment in light rail. It also means lower taxes for the region's businesses, who subsidize a significant portion of Tri-Met's operating expenses through a payroll tax.

Without light rail, a high density, transit-oriented community in the North Macadam area is not financially feasible. Some development would probably still occur, but it wouldn't be as dense or as diverse. And it probably wouldn't happen as quickly.

This is a testament to the power of light rail. It is a remarkable redevelopment tool, one that we can not afford to misuse.

It is also important to recognize that a Ross Island crossing is not just the best option for the North Macadam area. It in fact takes advantage of the best redevelopment opportunities on both sides of the river.

Visitors/Employment/Households

Ross Island Crossing		Caurthers Crossing	
1. North Macadam District (w/ Spaghetti Factory)	4,929,900	1. OMSI	1,100,000
2. River Forum/Johns Landing	1,593,840	2. PCC-Work Force Center	416,000
3. Corbett- Terwilliger and Lair Hill	3,539,210	3. Central Eastside	2,416,708
4. OHSU (not including V.A. & Shriners)	1,716,000	4. Abernathy & Brooklyn	1,045,272
Total per year *(without OHSU)*	11,778,950 *10,062,950)*	Total per year	4,977,980

Transit Ridership

11,778,950 x 2.5 x 10% = *(assume 2.5 trips to and from/ visitors)* *(assumed 10% ridership)*	2,944,737	4,977,980 x 2.5 x 10% = *(assume 2.5 trips to and from/ visitors)* *(assumed 10% ridership)*	1,244,495

Portland Development Commission's 5 Year Business says:

"Today, South Waterfront/North Macadam is the logical extension of Portland's downtown, adding significantly to the city's commercial and residential expansion capacity. It can help the city reach its targets for increased housing and jobs density, while attracting businesses in target industry clusters designed to expand the economic base."

The South/North Project Management Group concluded that a crossing by the Ross Island Bridge "exhibits the same costs and transportation benefits as the Caruthers Bridge alternative but provides superior land use and development benefits."

RTC

Resolution 12-94-31

STAFF REPORT

TO: Southwest Washington Regional Transportation Council Board of Directors

FROM: Dean Lookingbill, Transportation Director

DATE: November 29, 1994

SUBJECT: **South/North Transit Corridor Tier I Final Report, Resolution 12-94-31**

BACKGROUND

RTC in cooperation with C-TRAN, Vancouver, Clark County, WSDOT, Metro, and eight other agencies in Oregon has been involved in an extensive study of high capacity transit options for the I-5 corridor since September of 1993. The RTC Board has been briefed at key points throughout the process. Numerous public meetings, workshops, and information packets as well as technical and policy meetings have all helped to formulate the Tier I Light Rail Transit terminus and alignment recommendations.

The *South/North Transit Corridor Tier I Final Report*, attached as Exhibit A, is being recommended for RTC Board adoption. The Tier I recommendations listed in the report were presented for review and comment at the September 27, 1994, RTC Board meeting. As a reminder, it's important to note that Tier I has focused on evaluating modal alternatives, alignment alternatives, design options, and terminus alternatives in order to narrow the number of alternatives to be addressed in the Tier II Draft Environmental Impact Statement (DEIS). Tier II will focus on preparing a DEIS on the narrowed set of LRT alternatives and a No-Build alternative. Tier II will result in the selection of a *Locally Preferred Alternative*.

The Regional Transportation Advisory Committee (RTAC) has reviewed the Tier I recommendations and have recommended RTC Board adoption. The Tier I recommendations identify the LRT alternatives that best meet the project's goals and objectives as adopted in December 1993. The Tier I recommendations also identify the following general approach for the continuation of the South/North Transit Corridor Study:

1. The South/North Corridor will be conducted in two study phases:

   a. Phase I will consider a light rail transit project between the Clackamas Town Center area and the 99th Street area in Clark County.

b. Phase II will consider an extension of the Phase I light rail transit project south to Oregon City and north to the 134th Street/Washington State University branch campus area.

2. These study phases will proceed as follows:

a. Preparation of the Draft Environmental Impact Statement and funding plan for the Phase I light rail transit alternative will begin immediately.
b. If light rail transit is selected as the Locally Preferred Alternative in Phase I, a Draft Environmental Impact Statement and funding strategy for the Phase II LRT extension will be prepared upon completion of the Final Environmental Impact Statement for Phase I.

3. The following alignments are the alternatives for further study within the Phase I South/North Draft Environmental Impact Statement:

a. Between the Portland and Milwaukie central business districts, the Ross Island Bridge Crossing, generally between the Ross Island Bridge in the north and Bancroft and Holgate Streets in the south, and the McLoughlin Boulevard alignment shall be developed for further study within the Draft Environmental Impact Statement. The Caruthers area crossing will be evaluated further in order for the Metro Council and the C-TRAN Board of Directors to determine whether it should also be included in the *South/North Detailed Definition of Alternatives Report* and developed further in the Draft Environmental Impact Statement.
b. Within the Portland central business district, a surface light rail transit alternative on 5th and 6th Avenues shall be developed based upon several principles, for further study within the Draft Environmental Impact Statement. If at the time the Draft Environmental Impact Statement is initiated it is concluded that a 5th/6th Avenue alignment cannot be developed that addresses those principles, other alternatives will be developed for further study in the DEIS.
c. Between the Vancouver central business district and the vicinity of 99th Street, the I-5 East Alignment Alternative with station areas between I-5 and Highway 99 shall be developed for further study within the Draft Environmental Impact Statement.

4. Because further discussions and analysis should occur, the selection by the Metro Council and the C-TRAN Board of Directors of an alternative for further study within the segment between the Portland and Vancouver central business districts shall wait completion of additional technical work and evaluation.

5. The following alignments will be considered for the Phase II extensions:

a. Following completion of the *Detailed Definition of Alternatives Report*, an analysis of the I-205 alignment from the CTC terminus and the McLoughlin alignment from the Milwaukie CBD will be made to determine which alignment will advance into the

Phase II DEIS. The Portland Traction Company (PTC) right-of-way will not be considered as a Phase II alignment.

b. Between the vicinity of 99th Street and the area of 134th Street/WSU Branch Campus, the I-5 East alignment will advance into the Phase II DEIS.

In addition to the adoption of the South/North Transit Corridor Tier I Final Report, action on this resolution affirms that C-TRAN's South/North System Plan is consistent with RCW 81.104.080 and is in conformity with the Metropolitan Transportation Plan (MTP) for Clark County. The MTP has identified the I-5 corridor as the priority high capacity transit corridor and will include the System Plan in the Metropolitan Transportation Plan review and update process.

POLICY IMPLICATION

Adoption of the South/North Transit Corridor Tier I Final Report is consistent with the Metropolitan Transportation Plan (MTP) for Clark County and represents a major multi-modal policy decision. The Report's recommendations are also consistent with the MTP goal of improving travel mobility within Clark County and across the Columbia River and with the long-term air quality goals.

BUDGET IMPLICATION

Adoption of this resolution recognizes the estimated costs for the South/North Transit Corridor Project are in the range of $2.85 billion. Funding for the project is anticipated to be from federal, state, and local sources.

ACTION REQUESTED

Adoption of Resolution 12-94-31, South/North Transit Corridor Tier I Final Report (Exhibit A). Adoption of this resolution also recommends C-TRAN Board of Directors adoption of Resolution No. 94-010 (Exhibit B) and that C-TRAN's South/North System Plan is consistent with RCW 81.104.080 and is in conformance with the Metropolitan Transportation Plan for Clark County.

ADOPTED this 6th day of December 1994,

by the Southwest Washington Regional Transportation Council.

SOUTHWEST WASHINGTON REGIONAL TRANSPORTATION COUNCIL

ATTEST:

COMMITTEE MEETING TITLE JPACT

DATE 12-8-94

NAME	AFFILIATION
David Rasmussen	CWG #1
JIM HOWELL	AORTA
Mike Burton	metro
Robert Harrison	OMSI Board
Tom Griewell	SEWL Board
Brent Curtis	Wash Co
Timothy Baker	SE Uplift
Chuck Steinwandel	R.L. Jaeger Co.
Chris Matthews	Perkins Coie
Keith Ahola	WSDOT
BRIAN CAMPBELL	PORT OF PORTLAND
JOAN A. Kvgler	CH2M Hill
RODSANDOZ	CLACKAMAS COUNTY
✓ STEVE DOTTERRER	CITY OF PORTLAND STAFF
Ce.B. ARRINGTON	TRI-MET
✓ Meeky Blizzard	Earl Blumenauer's staff
Les White	C-TRAN
Bob Bothman	MCCI
Dave Unsworth	Metro
Molly O'Reilly	STOP
Heather Nelson	metro
Pati Collmeyer	Neil Goldschmidt, Inc.
Bob Boileau	SEDA
GORDON OLIVER GINA Whitehill-Baziuk	OREGONIAN Metro

COMMITTEE MEETING TITLE JPACT

DATE 12-8-94

NAME	AFFILIATION
Earl Blumenauer	Portland
Gerry Smith	WSDOT
Dave Sturdevant	CLARK CO.
LEN SKILES	METRO
RICHARD BRANAMAN	METRO
Rod Monroe	Metro Council
Andy Cotugno	Metro
Bob Post	TRI-MET
Jon Kvistad	Metro Council
Craig J Lommedahl	Cities of Clackamas Co.
Susan McLain	Metro Council
R E Pollard	Vancouver
[illegible]	Clackamas Co.
Bernie [illegible]	CITIES OF MULT COUNTY
ROB DRAKE	CITIES OF WASHINGTON CO.
BRUCE WARNER	ODOT
RICHARD ROSS	CITIES OF MULT CO.
BING SHELDON	ROSS ISLAND CROSSING
LEONARD BERGSTEIN	NORTHWEST STRATEGIES / CARTHERS CROSSING
DARIN ARTHEBERRY	VANCOUVER
Dean Lookingbill	RTC
Mary Legry	WSDOT
Peter Fry	Central Eastside Industrial Council