# Memorandum

U.S. Department
of Transportation
**Federal Transit**
**Administration**

Subject: ACTION: Approval to Initiate Preliminary Engineering for the Portland-Milwaukie Light Rail Project

Date: March 20, 2009

From: Rick Krochalis
Regional Administrator, TRO-10

Reply to
Attn. of: Amy Changchien, TRO-10

To: Susan Borinsky
Associate Administrator for
Planning & Environment, TPE-1

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Associate Administrator for
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FTA Region 10 (TRO-10) is seeking TPE and TPM concurrence to approve the Portland-Milwaukie Light Rail Transit (LRT) project into preliminary engineering (PE). The Tri-County Metropolitan Transportation District of Oregon (TriMet) is the grantee and will be responsible for design, construction and operations. The project is considered a mega project, as its baseline cost estimate is $1.47 billion. FTA performs a risk assessment on mega projects prior to determining whether the project should be approved into PE.

TriMet submitted a PE request on July 31, 2008. Following revisions to additional documents submitted by TriMet in September 2008, FTA's Project Management Oversight Contractor (PMOC) conducted a technical capacity and capability review and a pre-PE risk assessment workshop. In addition, TriMet's operating and maintenance cost estimation methodology was reviewed to ensure compliance with FTA guidelines. Subsequently, TriMet submitted additional information in December 2008. FTA determined that the PE request was complete on December 18, 2008.

The New Starts team believes that TriMet has met all FTA requirements and is ready to initiate PE.

## PROJECT DESCRPTION

The project includes a 7.3-mile, double-track LRT extension of TriMet's existing Yellow Line from the downtown Portland transit mall to the City of Milwaukie, including LRT service to the Central City, South Waterfront District, Central Eastside Industrial District, Southeast Portland neighborhoods, the Milwaukie Town Center and urbanized areas of northern Clackamas County. The project includes a new multimodal bridge across the Willamette River (a 1.3-mile segment that will include joint operations for buses, light rail vehicles (LRV), and streetcars), ten new LRT stations and two 1,000-space structured park-n-ride facilities. The proposed LRT line would connect downtown Portland with regional educational institutions, dense urban neighborhoods, and

emerging growth areas in East Portland and Milwaukie, providing greater speed and reliability for transit and direct connections to TriMet's three other LRT lines, one existing and one planned streetcar line, Amtrak passenger rail service and almost all of TriMet's bus routes.

The LRT extension would connect with the downtown Portland Transit Mall (currently under construction) at Southwest 5th and SW 6th Avenues. It would then head easterly into the South Waterfront District where it crosses a new Willamette River bridge, touching down near the Oregon Museum of Science and Industry (OMSI) on the east side of the river. The LRT would then run along side the Union Pacific Railroad (UPRR) where it would veer south then run parallel and between Southeast McLoughlin Boulevard and the Tillamook Branch of the UPRR to Lake Road in Milwaukie. The alignment would then extend south to its terminus at SE Park Avenue. Park-and-ride structures of approximately 1,000 spaces each would be located at the SE Tacoma Boulevard and the SE Park Avenue stations. The project also includes an expansion of TriMet's Ruby Junction Operations and Maintenance Facility in the City of Gresham to accommodate the LRVs.

## BACKGROUND

TriMet originally included the Portland-Milwaukie LRT line in the South / North Corridor Draft Environmental Impact Statement (DEIS) that was completed in February 1998. The DEIS was subsequently updated as the South Corridor Supplemental DEIS in December 2002, which resulted in the South Corridor locally preferred alternative (LPA) in 2003. The LPA was reaffirmed in the Metro Council's (local metropolitan planning organization-MPO) long-range plan in May 2003. The LPA was included in the MPO's financially-constrained long-range plan in June 2007. TriMet also completed a supplemental DEIS in May 2008. The LPA was also reaffirmed in the MPO's long-range plan in July 2008. The project is included in the Statewide Transportation Improvement Program.

In April 2003, the MPO adopted a two-phased major transit investment strategy for the South Corridor. The Interstate 205 / Portland Mall LRT project was selected as the Phase I LPA, to be followed by Phase II (Milwaukie LRT). Phase I is under construction, with revenue operations scheduled to begin in September 2009. Phase II would connect with Phase I via the downtown Portland Mall.

## PROJECT CORRIDOR

The Portland-Vancouver metropolitan area currently has approximately 1.7 million residents, an increase of 76 percent over the past 30 years; and it has nearly one million jobs, a 113 percent increase. The region's South Corridor extends southeast from downtown Portland into urban Clackamas County and is home to approximately 206,000 residents (12 percent of the region) and 237,000 jobs (24 percent of the region).

The transit network in the South Corridor is structured around five north/south and three east/west trunk bus lines that operate across the Willamette River each weekday. The north/south trunk bus routes all operate on Highway 99E. The Highway 99E routing provides the most direct service into downtown Portland, but it is generally removed from and poorly serves the inner southeast Portland residential neighborhoods and the OMSI/Portland Central City area. All of the north/south trunk routes operate across the Hawthorne Bridge, which has slow operating speeds due to congestion, narrow clearances, and frequent lift span openings. The corridor's east/west trunk bus lines all cross the Ross Island Bridge, which has congested approaches that operate at level-of-service F. The

Ross Island Bridge requires a circuitous routing of buses into downtown Portland and all the east/west trunk bus lines bypass the Central Eastside and the South Waterfront.

The primary transit market in the South Corridor is the commute market (i.e., home-based work and college), with 27,400 trips from the corridor's residential areas to the Portland Central City, of which 21 percent are currently on transit. Of those, 18,800 (69 percent) are from the inner southeast Portland and Milwaukie neighborhoods and 8,600 (31 percent) are from Clackamas County neighborhoods. Of the three Central City districts (i.e., downtown Portland, Central Eastside/OMSI and South Waterfront/Oregon Health & Sciences University), downtown Portland draws the largest number and percent of those commute trips on transit – 4,800 trips and 29 percent, respectively. Non-commute trips from the corridor's residential areas (58,300) make up 68 percent of corridor trips and six percent of those trips (3,400) are on transit. Of the transit trips to the Portland Central City generated in the corridor's residential areas, 63 percent are commute trips and 37 percent are non-commute trips.

Oregon land use laws require regional and local plans to be consistent with and meet the State's goals and objectives. Metro's Region 2040 Growth Concept emphasizes a strong Central City and accommodates population and employment growth largely in the designated centers and corridors, which are to be connected with light rail or other high-capacity transit modes. By law, all local plans and policies must comply with the Region 2040 Growth Concept.

## TRANSPORTATION ISSUES ADDRESSED BY THE PROJECT

### Limitation of Existing Roadway Conditions

The Portland metropolitan region has neither short nor long-term plans to increase radial highway capacity in the South Corridor, consistent with the region's long-standing policy to accommodate the growth in radial travel demand by increasing the capacity and effectiveness of transit in those corridors. Further, the costs and impacts of increasing radial highway capacity in the South Corridor would be prohibitively expensive. Likewise, there are no current plans in either the financially-constrained or long-range Regional Transportation Plan to increase radial roadway capacity in the corridor. Additional roadway expansions to address identified bridge deficiencies would create significant financial and environmental burdens. Thus, adding highway capacity in the corridor would be considerably more costly than the LRT project.

### Improvement in Transit Travel Times

The proposed LRT extension would improve transit travel times in the corridor. Transit travel times during the p.m. peak from downtown Portland to downtown Milwaukie would be reduced to 30 minutes, compared to 31 minutes for automobiles and 33 minutes for buses in the New Starts baseline alternative. Similarly, transit travel times to Portland State University (PSU) from downtown Portland would be 25 minutes, compared to 30 minutes for automobiles and 33 minutes for buses in the New Starts baseline. From downtown Milwaukie to the south Waterfront, transit travel times would be 21 minutes, compared to 29 minutes for automobiles and 35 minutes for buses in the New Starts baseline. From the Tacoma Street area just north of downtown Milwaukie, peak transit travel times would be reduced by eight minutes to 18 minutes to the South Waterfront and OMSI/Portland Central City (from 18 and 16 minutes), respectively. Over the proposed multimodal bridge, the three existing east/west trunk bus lines would save 3.3 minutes per peak period bus trip and approximately 12,000 daily bus riders would have reduced travel times as a result of faster and more reliable transit service via a new multimodal crossing over the Willamette River.

### Increasing Demand for Transit

Local officials estimate that by 2030 the region's population would increase to 2.3 million, a 36 percent increase. The region's jobs are estimated to increase by 59 percent, to 1.5 million. In the South Corridor, there will be 335,800 residents (63 percent increase) and 335,800 jobs (42 percent increase). Within the Portland Central City, employment is anticipated to increase by 44 percent (to 208,700 jobs) and households are forecast to increase by 141 percent (to 51,400). The greatest rate of increase in both employment and housing is expected to occur in the South Waterfront and Oregon Health & Science University area (59 percent and 222 percent increase, respectively), to a combined 41,000 jobs and 7,200 households.

## NEW STARTS BASELINE/TRANSPORTATION SYSTEM MANAGEMENT (TSM) ALTERNATIVE

**Description**: The New Starts baseline alternative includes two new bus routes that would serve the same travel markets as the proposed LRT extension project – i.e., primarily trips from the residential areas of the corridor to Portland Central City. One bus route would serve a park-n-ride lot south of downtown Milwaukie, OMSI and the Portland Community College (PCC) campus, and downtown Portland via the Hawthorne Bridge. The other bus route would serve a park-n-ride lot north of downtown Milwaukie, cross the Ross Island Bridge and serve the South Waterfront area, before continuing into downtown Portland. In addition, an existing trunk line between downtown Portland and Milwaukie would be extended to Oregon City, providing a one-seat ride between the three downtowns. Weekday peak and off peak combined headways for the two bus routes would be 2.5 and 7.5 minutes, respectively.

**Limitations of the New Starts Baseline/TSM Alternative**: Average weekday peak direction transit travel times during the p.m. peak from downtown Portland, the South Waterfront and OMSI/PCC to Milwaukie would decrease by two, eight and 12 minutes, respectively under the New Starts baseline alternative as compared to the No-Build alternative. However, a new river crossing is not assumed in the New Starts baseline alternative and buses must use existing river crossings, which do not provide easy access to some of the key markets in the corridor such as the South Waterfront and OMSI/PCC. In addition, in the southern end of the corridor in Milwaukie the New Starts baseline bus routes have difficulty accessing a key park-n-ride lot (Tacoma Station) via a major arterial (Southeast McLoughlin Boulevard). Thus, while the service levels of the New Starts baseline alternative bus routes are comparable to the proposed LRT project, the ridership and user benefits are lower due to longer travel times resulting from the difficulty accessing key markets on the existing roadway network.

## OVERALL BENEFITS

The LRT extension is expected to significantly improve bus and LRT travel times and reliability in an increasingly congested corridor that has little opportunity for radial roadway or bus improvements. Further, the project would provide important high-capacity transit connections between growing residential and employment centers that are underserved by transit. With a cost-effectiveness of $20.78, the project's costs are in scale with its estimated benefits. Compared to the New Starts baseline alternative, the project is anticipated to: reduce key corridor peak transit travel times by seven to 48 percent; increase weekday transit ridership by 10,200; increase peak transit mode split for the Portland Central City by 43 percent; improve bus speeds for approximately 12,000 riders per day on three east/west trunk bus lines; and serve an additional 8,000 corridor residents and 30,000 additional jobs via transit.

## PROJECT COST

The total capital cost for the Portland-Milwaukie LRT project is $1,471,738,000 (Year of Expenditure or YOE $), with a requested New Starts share of $735,869,000 (50 percent).

| FTA Standard Cost Category | Category Description | Estimated Cost YOE$ ($000) |
|---|---|---|
| 10 | Guideway and Track Elements | 281,672,000 |
| 20 | Stations, Stops, Terminals, Intermodal | 83,205,000 |
| 30 | Support Facilities: Yard, Shops, Administration | 22,111,000 |
| 40 | Sitework & Special Conditions | 111,370,000 |
| 50 | Systems | 100,401,000 |
| | **Subtotal Construction Costs (SCC 10 – 50 in YOE$)** | **598,759,000** |
| | | |
| 60 | ROW, Land, Existing Improvements | 182,496,000 |
| 70 | Vehicles | 109,304,000 |
| 80 | Professional Services | 173,075,000 |
| | **Total Direct Project Cost (SCC 10 – 80 in YOE$)** | **1,063,634,000** |
| | | |
| 90 | Unallocated Contingency | 150,962,000 |
| 100 | Finance Charges | 257,141,000 |
| | **Total Project Cost (YOE$)** | **1,471,738,000** |
| | | |
| | **Federal New Starts Share** | **735,869,000** |
| | **TriMet Share** | **735,869,000** |

## COST, SCOPE, AND SCHEDULE

In October 2008, FTA initiated an assessment of scope, schedule and costs for the Portland-Milwaukie LRT project. In addition, a pre-PE risk assessment workshop was conducted in December 2008 to help TriMet identify the uncertainties, including risk management deliverables, associated with the project. A risk mitigation framework was prepared by FTA's PMOC to identify issues related to the identified risks that should be addressed during PE. The review was completed in January 2009, and noted the following:

- Given the stage of conceptual engineering for this project, a complete geotechnical analysis has not been done on the 1.3-mile Willamette River Crossing alignments. In addition, the exact size and location of the bridge have not been finalized. While the bridge construction costs are consistent with other similar projects, uncertainty exists on the design parameters of the river crossing with regard to interface with U.S Coast Guard (USCG), Oregon Department of Environmental Quality and the National Oceanic Atmospheric Administration's (NOAA) Department of Fisheries, over the structure's size, design and construction parameters. In February 2009, local officials made a final recommendation for a Cable-Stayed option for the river crossing. This action helped to mitigate

some of the identified risks associated with the proposed river crossing. This would be the first cable-stayed bridge in downtown Portland. TriMet will refine the bridge's visual appearance during PE to ensure that the bridge "blends in" with other local bridges.

- TriMet has not provided FTA with an analysis that demonstrates that sufficient capacity exists for all three planned transit modes (bus, streetcars, LRT) that may operate across the planned bridge. The costs of the vehicle control system for all three modes across the bridge could be substantial, especially if it requires retrofitting TriMet's entire LRV, streetcar and bus fleets. In addition, the Oregon Pacific Railroad (OPRR) at-grade crossing with LRT and other interface issues with freight railroads where the proposed LRT alignment crosses or runs parallel to existing railroad facilities have not yet been addressed.

- TriMet is considering a design-build method for the river crossing and parking garages. A Construction Manager/General Contractor method is being considered for three separate LRT line segments. TriMet has not performed a cost comparison of design-build versus design-bid-build. TriMet is also considering an option to build and open the first project segment from Portland State University to the Willamette River Bridge as an early operating segment. If this option is chosen, TriMet would need to amend its contracting strategy since some project elements are included in other phases of construction, i.e., rail, signals, communications work, vehicles, etc.

Based on the PMOC review, below is a list of major actions that should be addressed by TriMet during PE:

- Hire railroad coordinator
- Hire Right-of-Way certification engineer
- Finalize and implement a Real Estate Acquisition and Relocation Policy and Procedures Manual
- Finalize and begin implementing a real estate data base with links to both schedule and cost control reporting software
- Develop and maintain a project budget with an adequate contingency management plan based on risk assessment and mitigation products
- Identify and delineate a plan to develop intergovernmental and other stakeholder agreements to resolve operating, construction and other related issues with active freight railroads within the LRT corridor
- Develop a contract packaging plan that addresses advanced utility work, contracts, and/or relocation agreements
- Develop a project permit schedule and monitor status throughout project development
- Determine existing site conditions (real estate, utility, and geotechnical)
- Secure construction management staff with relevant experience with large complex transit projects, including experience with freight railroads and river crossings
- Develop a master utility relocation plan
- Update the design criteria to incorporate the latest lessons learned from the Wilsonville-Beaverton commuter rail and the South Corridor-Phase I LRT projects
- Modify/augment design criteria to define the safety and security requirements in each design element
- Develop, in detail, the requirements for each level of design submittal
- Develop a fully integrated project schedule during PE and update it as required in the Portland-Milwaukie LRT Project Management Plan
- Finalize the LRT Fleet Management Plan

- Finalize the Bus Fleet Management Plan
- Finalize the Safety and Security Management Plan
- Finalize the System Safety Program Plan

In addition, based on the PMOC review below is a list of *project-specific* items that should be resolved early in the PE phase. If these issues are not addressed early, they may adversely impact the project's schedule and budget. These include:

- Willamette River Bridge – Size and Location
- Willamette River Bridge – Permitting Issues
- Joint Railroad Operations Associated with the at-grade crossing of the OPRR – Obtain Federal Railroad Administration Approval
- Railroad Issues – Movable Catenary Bridge
- Railroad Issues – Shared Grade Crossings with Freight Railroads (UPRR)
- Real Estate Acquisition – Oregon Museum of Science and Industry /East Waterfront Area
- Vehicle Procurement – Accurately forecast total fleet demand and Operating Spare Ratio (OSR)
- Vehicle Maintenance Facility – Better Definition of Required Improvements
- Operations/Transit Capacity – Simulate Operations to Determine Viability of the Proposed Operating System across the Proposed Multimodal River Crossing

It is the PMOC's opinion that, overall, the Portland-Milwaukie LRT project is in compliance with the FTA's requirements for a project requesting entry into PE. However, some of the factors unique to this project will require continued close monitoring as the project proceeds through PE and into Final Design.

## NATIONAL ENVIRONMENTAL POLICY ACT (NEPA)

TriMet originally included the Portland-Milwaukie LRT line in the South / North Corridor Draft Environmental Impact Statement (DEIS) that was completed in February 1998. The DEIS was subsequently updated as the South Corridor Supplemental DEIS in December 2002. Another Supplemental DEIS was prepared in May 2008.

TriMet will prepare a Final Environmental Impact Statement (FEIS) during PE for submission to FTA in February 2010. TriMet anticipates an environmental Record of Decision (ROD) in July 2010.

NOAA Fisheries has strict requirements to protect threatened and endangered species – a major issue with the construction of waterway facilities in the Pacific Northwest. Construction of river piers must avoid or minimize impacts to multiple species in the area. These issues can require a lengthy process to fully resolve and can have significant cost and schedule impacts.

A permit from the USCG is required prior to the actual construction of a bridge. The USCG will not issue a permit until the Final EIS is completed and a NEPA ROD has been issued.

## NEW STARTS RATING

Based on an evaluation of the project's New Starts criteria submittal, the project has received an overall project rating of *Medium-High*. The rating is based on a project justification rating of *Medium-High* and a local financial commitment rating of *Medium*. The project justification rating is based on a *Medium-High* rating for land use and a *Medium* rating for cost-effectiveness ($20.78).

The financial plan for the project assumes the following sources of capital funds:
Federal:
Section 5309 New Starts: $735.8 million (50.0 percent); and
Federal Highway Administration Flexible Funds (Congestion Mitigation Air Quality / Surface Transportation Policy): $72.5 million (4.9 percent).

Local:
Oregon Department of Transportation/TriMet Bonds: $280 million (19.0 percent);
Other Local Funds: $175.4 million (11.9 percent);
Oregon DOT/TriMet Debt Service: $170 million (11.6 percent); and
In Kind Contributions: $38 million (2.6 percent).

TriMet's financial plan relies heavily on local option taxes and some borrowing. In the current economic climate, the plan could become stressed. During PE, TriMet should continue progress on securing agreements with its local funding partners and develop a more robust plan for addressing cost overruns and funding shortfalls.

## TECHNICAL CAPACITY

In order to determine and assess technical capacity and capability, the PMOC performed a detailed review of TriMet's organization and the professional expertise assembled to develop the requirements necessary for progressing the Portland-Milwaukie LRT project from inception to revenue service, including the deliverables required by FTA's New Starts project planning and development process. The PMOC found that TriMet has the technical capacity and capability to implement the PE phase of project development.

## CONCLUSION

TriMet has a history of successfully delivering LRT projects in the area over the last 15 years. While there are many major action items identified, these items do not pose significant risks at this early stage in the development process. TriMet has demonstrated that it has the technical capability to address these issues as the phases progress and project definition increases.

The PE approval letter (attached) will advise TriMet of conditions for progressing through PE and of FTA's intent to further identify the minimal milestone and conditions that must be met in order for the project to maintain PE status. This includes development of a risk mitigation plan to address the issues raised during the pre-PE risk assessment, which will help TriMet in delivering the project on schedule and within budget.

FTA will task TriMet with solidifying the project's financial plan during PE and meeting other critical project development milestones that minimize project risks, provide sufficient information on the cost and merits of the project for use in subsequent New Starts evaluation, and ensure the delivery of a meritorious and financially sound New Starts investment.

## NEXT STEPS / TENTATIVE SCHEDULE

- PE Approval - March 2009
- Anticipated NEPA Environmental Determination - July 2010
- Initiate FTA Risk and Financial Capacity Assessments prior to Final Design Approval - Mid-2010
- Anticipated Final Design Approval - October 2010
- Anticipated Letter of No Prejudice (LONP) - July 2011
- Initiate Construction (via LONPs) - Fall 2011
- Anticipated FFGA - June 2012

If these milestones are achieved, the LRT is scheduled to begin service by October 2015.

## RECOMMENDATION

The New Starts Team (TRO-10, TPE and TPM) evaluated the Portland-Milwaukie LRT project according to the PE readiness criteria and concluded that all requirements relative to entering PE have been met. TRO-10 requests TPE's and TPM's concurrence in our approval to permit the project to enter PE. Once we receive your concurrence, we will formally advise TriMet of FTA's approval to proceed (approval letter attached) with conditions.

Attachments

- PE Approval Letter
- New Starts Project Profile
- 10-Day Congressional Notification
- PMOC's Project Scope, Schedule and Cost Review and Pre-PE Risk Assessment Report
- PMOC's PE Readiness Report

Concur: Susan Borinsky 3/27/09

Susan Borinsky,
Associate Administrator for Planning
and Environment

Date

Concur: Linda Gillet 3/27/09

Susan E. Schruth,
Associate Administrator for Program
Management

Date