Lake Oswego to Portland

TRANSIT AND TRAIL STUDY

Refinement study

December 2010

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Metro

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Lake Oswego to Portland Transit Project Refinement study

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INTRODUCTION AND BACKGROUND

This report documents the activities, analysis and conclusions from the Lake Oswego to Portland Transit Project Refinement Study. The purpose of the refinement study is to refine the streetcar design options in Johns Landing and potentially narrow the design and terminus options in Lake Oswego to be studied in the Draft Environmental Impact Statement.

The project refinement study was developed to follow the Lake Oswego to Portland Transit and Trail Alternatives Analysis and precede the Lake Oswego to Portland Transit Project Draft Environmental Impact Statement. The alternatives analysis, which examined transit and trail alignments, was completed between June 2005 and December 2007 (see *Lake Oswego to Portland Transit and Trail Alternatives Analysis evaluation summary public review draft*, July 12, 2007, for more information). The Lake Oswego to Portland Transit DEIS is scheduled to begin in June 2009. The Lake Oswego to Portland Transit DEIS is a Federal Transit Administration sponsored major transit capital investment planning and National Environmental Policy Act process.

The Lake Oswego to Portland corridor is environmentally and physically constrained corridor. Future roadway expansion is not anticipated and previous planning studies have concluded that a high capacity transit improvement is needed to provide additional capacity. This project is rooted in several previous planning activities. In 1988, a consortium of seven government agencies purchased the Willamette Shore Line right of way connecting Lake Oswego to Portland for the purpose of preserving the rail right of way for future rail transit service. The 2004 Regional Transportation Plan identified the need for a corridor refinement plan for a high capacity transit option for this corridor, which was the genesis of this alternatives analysis.

Additionally, existing and future traffic conditions in this corridor are projected to worsen as population and employment projections for Portland, Lake Oswego and areas south of Lake Oswego in Clackamas County continue to grow. The corridor already experiences long traffic queues, poor levels of service and significant capacity constraints at key locations. In addition, travel times in the corridor are unreliable due to congestion on Oregon Route 43.

Lake Oswego to Portland Transit and Trail Alternatives Analysis

Metro, TriMet, the cities of Portland and Lake Oswego, Multnomah and Clackamas counties and the Oregon Department of Transportation conducted a transit and trail alternatives analysis for the Lake Oswego to Portland corridor. This federal alternatives analysis has its roots in several prior government actions and planning efforts that reached some conclusion about future transportation solutions of the corridor. *The Lake Oswego to Portland Transit and Trail Alternatives Analysis background report* (Metro, 2005) summarizes the previous and ongoing studies and policies pertaining to the corridor. Based on previous studies and recent funding allocations, substantial roadway expansion and tolling have been ruled out. Previous studies in the corridor identify transit as the priority to move people through the corridor. With consideration of the public ownership of a railroad right of way within the corridor, transit alternatives are being studied to assess how current and future transportation needs might be met in the Lake Oswego to Portland corridor.

The purpose of the Lake Oswego to Portland Transit Alternatives Analysis was to develop a transit alternative that meets future travel demand, supports local and regional land use plans, and garners public acceptance and public support and supports the following goals:

- increase the mobility and accessibility with the geographically constrained OR 43 corridor
- minimize impacts such as traffic and parking impacts to the neighborhoods

- support and enhance the neighborhood character in an environmentally sensitive manner
- cost effectively increase corridor and system-wide transit ridership
- support transit oriented development in the Portland to Lake Oswego corridor where appropriate
- improve transit access to and connectivity among significant destinations and activity centers
- increase transportation choice in the corridor and access for persons with disabilities
- integrate effectively with other transportation modes
- anticipate future needs and impacts and will not preclude future expansion opportunities.

The alternatives analysis evaluated a wide range of alternatives and concluded that streetcar and enhanced bus had the most promise. Some alternatives that were studied but not carried forward include widening OR 43, reversible lanes on OR 43, river transit, streetcar on OR 43 south of the Sellwood Bridge and north of Terwilliger Boulevard, and bus rapid transit on Barbur Boulevard, Terwilliger Boulevard, Boone's Ferry Road or Taylors Ferry Road.

Steering committee recommendation

The Lake Oswego to Portland Transit and Trail Project Steering Committee, comprised of elected officials from the project partnering agencies, as well as the Oregon Department of Transportation Region 1 manager, TriMet general manager and Chair of the Citizen Advisory Committee, concluded that the following transit options be studied in the DEIS:

- No-build alternative
- Enhanced bus alternative
- Streetcar alternative
  - Johns Landing design options (Figure 1)
    - Macadam Avenue design option (Figure 2)
    - Willamette Shore Line design option (Figure 3)

Figure 1: Johns Landing refinement focus area and design options

- combinations of the above or new design options
- Lake Oswego terminus options
  - Safeway
  - Albertsons
- permanent Johns Landing terminus (near Nevada Street)
- temporary Johns Landing terminus (near Nevada Street)

Figure 2: Macadam Avenue alignment

Figure 3: Willamette Shore Line right of way alignment

In addition, the project steering committee recommended that Metro, with the assistance of the Project Management Group and project partners should undertake a refinement study to further explore the options for a Johns Landing alignment that would precede the start of the DEIS.

Trail option. The steering committee concluded that a trail in this corridor should be advanced for further study. However, additional study is needed to determine how to advance the trail. Because the trail option would follow a different process and would seek other funding sources, it was decided to separate the transit project from the trail project. The issues and options related to progressing a trail in this corridor are documented in the *Lake Oswego to Portland Trail Refinement Study*, August 2009.

JOHNS LANDING ALIGNMENT REFINEMENT

The Lake Oswego to Portland Transit Project Refinement Study developed and evaluated potential streetcar design option options through Johns Landing, beginning in January 2009. In addition, the refinement study also examined the possibility of narrowing of the streetcar terminus options in Lake Oswego. The purpose of the refinement phase was to:

- minimize residential and environmental impacts
- seek consensus with surrounding neighbors, property owners and project partners
- maximizes transit ridership
- provide an attractive transit alignment option for the Lake Oswego to Portland corridor
- promote Transit Oriented Development, where appropriate
- narrow the design options studied in the DEIS, if possible.

The refinement phase focused on two specific areas: Johns Landing alignment and the Lake Oswego terminus.

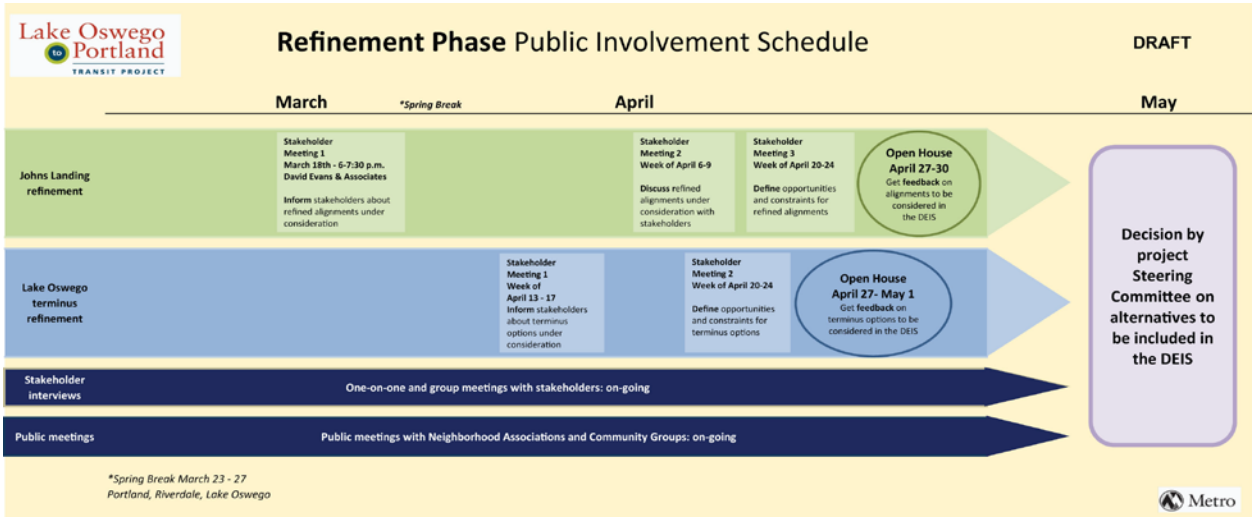
The Johns Landing refinement consisted of technical work aimed at identifying the opportunities and constraints with each of the options public outreach to facilitate public opinion on each of the options and an evaluation of each of the alternatives.

The purpose of the Lake Oswego terminus refinement was to refine or narrow the streetcar terminus options in Lake Oswego studied in the DEIS to one terminus option. As part of the alternatives analysis, two terminus options were developed in Lake Oswego: the Albertsons terminus and the Safeway terminus. Each terminus option included 400 park and ride spaces. The alternatives analysis considered design, cost, ridership environmental concerns, connections, potential redevelopment/economic development and public support.

No new analysis was completed as part of this process; instead, a comparison between the terminus options was developed based on the data and analysis gathered through the alternatives analysis and shared with stakeholders and the general public. This comparison will provide the basis for the decision-making process.

The refinement phase schedule is described in Figure 4.

Figure 4 Refinement Phase Schedule



As mentioned above, the recommendation by the project management group after the alternatives analysis was to bring forward the Macadam Avenue design option, the Willamette Shore Line design option and a combination of those two or new design options. Through a design workshop with the project partners, several design options were developed to minimize the impacts on the residential neighborhood while maximizing the economic development potential. Through this process, three hybrid design options combining the use of the Willamette Shore Line and Macadam Avenue were developed.

These hybrid design options proposed using various rights of way including the Willamette Shore Line, Southwest Landing Drive and Southwest Macadam Avenue. Two hybrid design options were developed that seem promising: a Macadam Avenue in-street running between Boundary and Carolina streets and an Macadam Avenue east side running between Boundary and Iowa streets. A third design option was developed during the public outreach and technical work that added a new northbound streetcar only/auto right turn lane on Macadam Avenue between Boundary and Carolina streets.

Other alternatives considered but not moved forward were center running in Macadam Avenue and additional transit only lanes on Macadam Avenue. The center running option was not recommended to move forward because of right of way impacts with such an alignment and the ability to provide left turn access as well as the loss of street trees. Adding additional transit only lanes would also require additional right of way on both sides of Macadam Avenue and would be financially unfeasible due to the property impacts along both sides of Macadam Avenue through Johns Landing. During the refinement study, a couplet using the Willamette Shore Line and Macadam Avenue east side running alignment was developed and discarded because the impacts were perceived by the public as the worst of all the proposed design options.

The project team produced conceptual designs for the hybrid streetcar design options developed to minimize the impacts within the Johns Landing segment of the corridor. In addition to the conceptual alignment designs, the project team looked at the design options as they relate to potential traffic impacts, economic development and financial feasibility. The purpose of this work was to develop the hybrid design options to the same level as the Willamette Shore Line and full Macadam Avenue design options developed during the alternatives analysis, so that a fair comparison could be made.

Johns Landing design option refinement evaluation criteria

As part of the refinement study, the project team developed evaluation criteria to assess the benefits of each of the hybrid design options developed. The evaluation criteria was developed to provide the framework for the decision-making process in narrowing the alternatives to be considered in the DEIS.

1. **Optimize the regional transit system:**
   Goal 1A. Streetcar operations, referring to the quality of the streetcar operations and reliability. Design concepts with better ability to expand service (i.e., increased service frequency), that ensure more reliable service and that provide better transit travel times receive a higher ranking.

   Goal 1B. Streetcar performance, referring to how well the streetcar would perform. Design concepts with higher ridership and lower operating cost would receive a higher ranking.

2. **Be fiscally responsive and maximize regional resources:**
   Goal 2A. Financial feasibility, referring to an evaluation of the ability to minimize capital cost and provide local match. Order-of-magnitude capital cost refers to a rough estimate of capital

cost based on conceptual designs that is intended to be used to compare among the alternatives and to identify those that are likely to have a comparatively higher cost than others. Design concepts likely to provide more local funding opportunities and have a lower capital cost receive a higher ranking.

3. **Maximize the economic development potential:**
   Goal 3A. Maximize the economic development potential, referring to a quantitative evaluation of the potential for a design concept to support residential and commercial development and redevelopment. This will be evaluated based on the available floor area ratio (FAR) along the proposed design options. Design concepts that support more redevelopment receive a higher ranking.

   Goal 3B. Maximize the accessibility to promote development, referring to a qualitative assessment of the ease of access to proposed streetcar stop locations for pedestrians and bicyclists, and the ability to provide good access to major commercial, residential and employment nodes. Accessibility to the Willamette Riverfront should also be considered. Design concepts with better accessibility receive a higher ranking.

4. **Be sensitive to the built and social environments:**
   Goal 4A. Traffic impacts, referring to an assessment by traffic engineers as to the type and magnitude of traffic impacts that would likely be associated with the design concepts. These could include traffic signal modifications to accommodate streetcar access, work zone/construction staging impacts, safety for all modes of travel and impacts from in-street streetcar design and operations. Design concepts with fewer potential traffic issues receive a higher ranking.

   Goal 4B. Sustain existing neighborhoods, referring to an assessment of the potential for right of way, parking, rail crossings or other impacts (noise, visual, etc.) to established residential and commercial neighborhoods. It also includes an assessment of the amount and type of property acquisition necessary to support an option. Opportunities to avoid conflicts with the proposed Lake Oswego to Portland pedestrian/bike trail should also be considered. Design concepts that would have fewer potential impacts and less complex right of way issues receive a higher ranking.

5. **Be sensitive to the natural environments:**
   Goal 5A. Impacts to the natural environment, referring to an assessment of the impacts to streams, wetlands, waterways, parklands, recreational areas, wildlife and waterfowl refuges, public and private historical sites, and lands in or near the 100-year floodplain or needed to protect water quality or flood management. Design concepts that had fewer potential impacts to natural environment.

Alternatives developed and considered

As previously mentioned, there were three hybrid design options studied during the refinement phase:

1. Macadam Avenue in-street (Boundary Street to Carolina Street),
2. Macadam Avenue east side exclusive (Boundary Street to Iowa Street)
3. Macadam Avenue with new northbound lane (Boundary Street to Carolina Street).

Hybrid 1: Macadam Avenue in-street (Boundary Street to Carolina Street)

With this option, shown in Figure 5, the streetcar would continue south from South Waterfront until a transition to Landing Drive. Streetcar would operate in Landing Drive in a lane shared with autos. From Landing Drive, the streetcar would transition to Macadam Avenue via Boundary Street. The streetcar would operate in a shared lane in Macadam Avenue between Boundary Street and Carolina Street. The streetcar would transition from Macadam Avenue to the Willamette Shore Line at Carolina Street.

As the hybrid 1 Macadam in-street option would operate in the outside lanes on Macadam Avenue in mixed traffic, the streetcar would be subject to the same delays as automobile traffic on Macadam Avenue. The streetcar would enter and exit Macadam Avenue at the northern end at a realigned Boundary Street. Future growth in this area is projected to result in long queues that could impact the streetcar operations at this intersection.

A new traffic signal would be needed at the intersection of Carolina Street and Macadam Avenue to allow for the streetcar to enter and exit Macadam Avenue. In the southbound direction, a streetcar pullout would be constructed to allow for streetcar to pull out of general traffic and wait for a streetcar only signal phase to turn left from Macadam Avenue to Carolina Street.

This option would require additional right of way to accommodate the transition to and from the Willamette Shore Line to Landing Drive, conversion of Landing Drive from a private to a public street, a realignment of Boundary Street and the southbound streetcar pullout on Macadam Avenue.

Figure 5: Hybrid 1: Macadam Avenue in-street

Opportunities

- Offers the least impact to the residents in Johns Landing
- Allows for more redevelopment opportunities in Johns Landing
- Provides a visual connection to the neighborhood west of Macadam Avenue
- Allows for the potential for the trail to be constructed in the Willamette Shore Line right of way from approximately Julia Street to Carolina Street

Constraints

- Raises Oregon Department of Transportation concerns about negative traffic impacts to operations on Macadam Avenue
- Reduces streetcar reliability and performance

- Creates potential right of way impacts in constructing the southbound streetcar pullout on Macadam Avenue

Hybrid 2: Macadam Avenue east side exclusive (Boundary Street to Iowa Street)

With this option, shown in Figure 6, the streetcar would continue south from South Waterfront until a transition from the Willamette Shore Line to Landing Drive. Streetcar would operate in Landing Drive with mixed traffic to Boundary Street. From Boundary Street to Iowa Street, the streetcar would operate adjacent to Macadam Avenue on the east side. The streetcar would transition from the Macadam Avenue east side alignment next to the Willamette Shore Line at Iowa Street.

The hybrid 2 Macadam Avenue east side exclusive running option would operate adjacent to Macadam Avenue in an exclusive streetcar right of way between Boundary and Iowa streets. This design option would be similar to hybrid 1 north of Boundary Street. At Boundary Street, the streetcar would cross Boundary Street before turning towards Macadam Avenue to operate on the east side of the street. For auto traffic, Macadam Avenue would remain the same as it is today. The streetcar would then turn at or near Iowa Street to return to the Willamette Shore Line right of way.

The design assumed a double track section adjacent to Macadam Avenue; however, construction of the double track would require closing a driveway and the intersection of Pendleton Street and Macadam Avenue. If the alignment adjacent Macadam Avenue was constructed as a single track area, there would be enough space to allow for the driveway and intersection to remain open with gated crossings. This design option with both single and double track would impact the vegetation and parking spaces located between the condominiums and Macadam Avenue.

The alignment would transition to the Willamette Shore Line at or near Iowa Street and would require acquisition of a building at this location. Additional right of way impacts would include the transition to and from the Willamette Shore Line to Landing Drive, conversion of Landing Drive from a public to private street and landscaping and parking at the condominiums located at Pendleton Street.

Figure 6: Hybrid 2: Macadam Avenue east side exclusive

Opportunities

- Provides reliability for streetcar operations
- Provides moderate to high redevelopment opportunities
- Potentially allows for the trail to be constructed in the Willamette Shore Line right of way from approximately Julia Street to Carolina Street (depending on the legal status of right of way)

Constraints

- Impacts large number of residential parking spaces
- Raises resident concern about loss of parking and vegetation
- Calculates as the most expensive of the hybrid design options because of right of way costs
- Requires closure of or gated crossings at Pendleton Street and driveway

Hybrid 3: Macadam Avenue with new northbound lane (Boundary Street to Carolina Street)

With this option, shown in Figure 7, the streetcar would continue south from South Waterfront until a transition to Landing Drive. Streetcar would operate in Landing Drive with traffic. From Landing Drive, the streetcar would transition to Macadam Avenue via Boundary Street. The streetcar would operate in mixed traffic in the southbound direction on Macadam Avenue between Boundary and Carolina streets. In the northbound direction, a new northbound lane would be added for streetcar and right turn only operations for automobiles. The streetcar would transition from Macadam Avenue to the Willamette Shore Line at Carolina Street.

The hybrid 3 Macadam Avenue with a new northbound lane design option would similar to the hybrid 1 option, operating in the outside lane on Macadam Avenue in mixed traffic in the southbound direction and operating in the northbound direction in a new streetcar/right turn only automobile lane on Macadam Avenue. This option would also be subject to the same delays as automobile traffic on Macadam Avenue but would have slightly more reliability in the northbound direction. The streetcar would enter and exit Macadam Avenue at the northern end at a realigned Boundary Street. Future growth in this area is projected to result in long anticipated queues that could impact the streetcar operations at this intersection.

The northbound streetcar/right turn only vehicle lane would impact the vegetation located between the condominium parking and Macadam Avenue. The additional lane would have a small impact on the condominium parking; however, restriping the

Figure 7: Hybrid 3: Macadam Avenue with new northbound lane

parking lanes would allow for the current number of parking spaces to be maintained.

A new traffic signal would be needed at the intersection of Carolina Street and Macadam Avenue to allow for the streetcar to enter and exit Macadam Avenue. In the southbound direction, a streetcar pullout would be constructed to allow for streetcar to pull out of general traffic and wait for a streetcar only signal phase to turn left from Macadam Avenue to Carolina Street.

This option would require additional right of way to construct the transition to and from the Willamette Shore Line to Landing Drive, a conversion of Landing Drive from a public to private street, a realigned Boundary Street, a southbound streetcar pullout on Macadam Avenue and the new northbound lane.

Opportunities

- Minimizes impacts to the residents in Johns Landing
- Provides some reliability for streetcar operations in the northbound direction
- Allows for more redevelopment opportunities in Johns Landing
- Provides a visual connection to the neighborhood west of Southwest Macadam Avenue
- Allows for the trail to be constructed in the Willamette Shore Line right of way from approximately Julia Street to Carolina Street

Constraints

- Raises Oregon Department of Transportation concern about negative traffic impacts to operations on Macadam Avenue
- Reduces streetcar reliability and performance
- Residents concerned about loss of parking and vegetation

Johns Landing design option evaluation

An evaluation matrix was developed to compare each of the Johns Landing design options based on the evaluation criteria created. The evaluation matrix is presented in Table 1.

Table 1: Johns Landing evaluation matrix

	Hybrid 1: Macadam In-Street (Boundary to Carolina)	Hybrid 2: East Side Exclusive (Boundary to Iowa)	Hybrid 3: Macadam with New North Bound Lane (Boundary to Carolina)	Willamette Shore Line	Full Macadam In-Street
1. OPTIMIZE THE REGIONAL TRANSIT SYSTEM					
GOAL 1A. IMPROVE TRANSIT OPERATIONS					
Minimize travel time (minutes)	8.5 - 9.5	7.5 - 7.9	8.5 - 9.5	5.2 - 5.9	7.7 - 10.7
Maximize reliability of service	Less reliability, in mixed traffic for a portion of alignment	Most amount of exclusive transit guideway of the hybrid options	Provides some reliability in the NB direction	Most reliable transit service/ exclusive guideway	Least reliable, in mixed traffic.
Maximize ability to expand service	Good; double track operations allow for expansion	Less ability to expand service if single track at Pendleton; good if double tracked adjacent to Macadam	Good; double track operations allow for expansion	Less ability to expand service if single track; good if double tracked	Good; double track operations allow for expansion

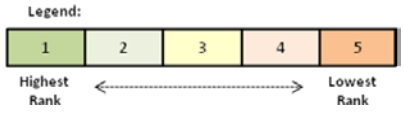
	Hybrid 1: Macadam In-Street (Boundary to Carolina)	Hybrid 2: East Side Exclusive (Boundary to Iowa)	Hybrid 3: Macadam with New North Bound Lane (Boundary to Carolina)	Willamette Shore Line	Full Macadam In-Street
GOAL 1B. IMPROVE TRANSIT PERFORMANCE					
Maximize ridership	10,300 - 9,900	10,500 - 10,400	10,300 - 9,900	11,100 - 10,900	10,100 - 9,400
Estimated operating costs (millions $)	$2.28 - $2.33 M	$2.27 - $2.28 M	$2.28 - $2.33 M	$2.21 - $2.22 M	$2.31 - $2.38 M
Cost/ride	$0.64 - $0.67	$0.63 - $0.64	$0.64 - $0.67	$0.58 - $0.59	$0.67 - $0.74
2. THE PROJECT SHOULD BE FISCALLY RESPONSIVE AND MAXIMIZE REGIONAL RESOURCES					
GOAL 2A. FISCALLY RESPONSIVE					
Minimize capital cost (millions $)	$36.2 M	$41.3 M	$39.4 M	$28.8 M single track $21.7 M double track	$34.1 M
Maximize local match potential	$20,147,519	$20,147,519	$20,147,519	$29,003,666	$3,562,679
3. MAXIMIZE THE ECONOMIC DEVELOPMENT POTENTIAL					
GOAL 3A. MAXIMIZE THE ECONOMIC DEVELOPMENT POTENTIAL					
Maximize development potential	Add'l 1,827,000 sf development 740 housing units 2,170 jobs	Add'l 1,744,000 sf development 710 housing units 2,070 jobs	Add'l 1,827,000 sf development 740 housing units 2,170 jobs	Add'l 1,563,00 sf development 620 housing units 1,890 jobs	Add'l 1,957,00 sf development 840 housing units 2,230 jobs
GOAL 3B. MAXIMIZE THE ACCESSIBILITY TO PROMOTE REDEVELOPMENT					
Optimize bicycle and pedestrian access to stops and the Willamette Riverfront	Greater proximity and visibility to both sides of Macadam from Boundary to Carolina; no/minimal potnetial impact to access to riverfront	Good proximity and visibility from Macadam; increased crossing distance to and from west side of Macadam for pedestrians; no/minimal potential impact to access to riverfront	Greater proximity and visibility to both sides of Macadam from Boundary to Carolina; no/minimal impact to access to riverfront	Less visibility and greater distance from existing bicycle and pedestrian network; controlled access to riverfront	Greater proximity and visibility to both sides of Macadam; no/minimal impact to access to riverfront
Maximize access to commercial, residential & employment nodes	Good proximity to commercial nodes and residences on both sides of Macadam	Good proximity to commercial nodes and residences on both sides of Macadam	Good proximity to commercial nodes and residences on both sides of Macadam	Furthest from commercial nodes and residences on both sides of Macadam	Greater proximity to commercial nodes and residences on both sides of Macadam

	Hybrid 1: Macadam In-Street (Boundary to Carolina)	Hybrid 2: East Side Exclusive (Boundary to Iowa)	Hybrid 3: Macadam with New North Bound Lane (Boundary to Carolina)	Willamette Shore Line	Full Macadam In-Street
4. BE SENSITIVE TO THE BUILT AND SOCIAL ENVIRONMENT.					
GOAL 4A. MINIMIZE TRAFFIC IMPACTS					
Maintain traffic progression	Potential change in green bandwidth on Macadam from Boundary to Carolina	No change to traffic progression on Macadam	Potential change in green bandwidth on Macadam from Boundary to Carolina	No change to traffic progression on Macadam	Potential change in green bandwidth on Macadam from Bancroft/Hamilton to Nevada
Minimize auto travel time	Some potential travel time impacts on Macadam from Boundary to Carolina	No impact on auto travel time on Macadam	Some potential travel time impacts on Macadam from Boundary to Carolina; potential improvement in NB direction	No impact on auto travel time on Macadam	Some potential travel time impacts on Macadam from Bancroft/Hamilton to Nevada - concerns with South Portal/ congestion
Maintain acceptable intersection LOS	Maintains acceptable intersection LOS	No impact on Macadam LOS	Maintains acceptable intersection LOS	No impact on Macadam LOS	Maintains acceptable intersection LOS
Minimize traffic signal modifications required	Traffic signal modifications at Boundary and new signal at Carolina	No traffic signal modifications required	Traffic signal modifications at Boundary and new signal at Carolina	No traffic signal modifications required	Traffic signal modifications at Bancroft/Hamilton and Nevada
Minimize work aone/construction staging impacts	Potential construction impacts between Boundary and Carolina	Minimal potential construction impacts on existing traffic operations	Potential construction impacts between Boundary and Carolina	No construction impacts on existing traffic operations	Greatest potential construction impacts to Macadam and traffic operations
Promote safe operations for bicycles and motorcycles	Streetcar track in roadway from Boundary to Carolina	Exclusive transit right of way reduces potential track conflicts with bicycles and motorcycles	streetcar track in roadway between Boundary and Carolina; more potential conflicts with SB traffic	Exclusive transit right of way reduces potential track conflicts with bicycles and motorcycles	streetcar track in roadway from Hamilton to Nevada
GOAL 4B. SUSTAIN EXISTING NEIGHBORHOODS					
Compatibility with existing development	Minimizes impacts to existing residences and supports development on Macadam	Potential impacts to existing residences	Minimizes impacts to existing residences and supports development on Macadam	Greatest potential impacts and proximity issues to existing residences	Minimizes impacts to residences, commercial/office and supports development on Macadam
Minimize ROW impacts	Potential right of way impacts - some right of way at transitions	Potential impacts to the parking/vegetation at the residetns	Potential impacts to the parking/vegetation at the residents	Potential right of way impacts with single track only at stop locations; potential right of way impacts if double track only at stops	Potential right of way impacts at transitions

	Hybrid 1: Macadam In-Street (Boundary to Carolina)	Hybrid 2: East Side Exclusive (Boundary to Iowa)	Hybrid 3: Macadam with New North Bound Lane (Boundary to Carolina)	Willamette Shore Line	Full Macadam In-Street
Minimize off-street parking impacts	Potential parking impacts at Carolina	60 potential parking spaces lost; loss of vegetation	Reconfiguration of parking sizes to maintain parking spaces; loss of vegetation	Potential impacts to parking - condo parking located across WSL right of way - may have potential impact	No parking impacts
Minimize noise impacts	Minimal potential noise impacts to residences	Potential noise impacts due to and gates proximity and loss of vegetation/barrier	Minimal potential noise impacts to residences adjacent to Macadam	Most potential noise impacts due to proximity to condos and gates with single track option (no gates with double track option)	Minimal potential noise impacts
Minimize visual impacts	Minimal potential visual impacts to residences	Potential visual impacts to residences adjacent to Macadam	Minimal potential visual impacts to residences adjacent to Macadam	Most potential visual impacts to development adjacent to WSL - condos were designed to face the water	No/minimal potential visual impacts
Minimize bicycle & pedestrian conflicts	Minimal potential change to bicycle and pedestrian environment	Potential increased bicycle and pedestrian crossing distance on Macadam and separated guideway	Less potential change to bicycle and pedestrian environment; increased crossing distance on Macadam	Most potential conflict; would require seperated guideway and separated crossings on the WSL	Minimal potential change to bicycle and pedestrian environment
Minimize impacts to Lake Oswego-to Portland Trail	Greater opportunity to utilize WSL for trail	Greater opportunity to utilize WSL for trail	Greater opportunity to utilize WSL for trail	If double tracked; would require using existing greenway, street connections, and additional right of way for trail	Greatest opportunity to utilize WSL for trail; however, ownership issues to be resolved
5. BE SENSITIVE TO THE NATURAL ENVIRONMENT					
GOAL 5A. MINIMIZES IMPACTS TO THE NATURAL ENVIRONMENT					
Minimize impacts to streams, wetlands and waterways	Alignment is moved away from the Willamette River between SW Julia and SW Carolina Sts.	Alignment is moved away from the Willamette River between SW Julia and SW Iowa Sts.	Alignment is moved away from the Willamette River between SW Julia and SW Carolina Sts.	Close proximity to the Willamette River.	Alignment is moved away from the Willamette River between South Waterfront and SW Nevada St.

	Hybrid 1: Macadam In-Street (Boundary to Carolina)	Hybrid 2: East Side Exclusive (Boundary to Iowa)	Hybrid 3: Macadam with New North Bound Lane (Boundary to Carolina)	Willamette Shore Line	Full Macadam In-Street
Minimize construction in or proximity to the FEMA 100-year floodplain	Similar to the WSL between South Waterfront and Julia St and from Carolina St south. Bypasses potential impacts to floodplain between SW Julia and SW Carolina Sts.	Similar to the WSL between South Waterfront and Julia St and from Iowa St south. Bypasses potential impacts to floodplain between SW Julia and SW Iowa Sts.	Similar to the WSL between South Waterfront and Julia St and from Carolina St south. Bypasses potential impacts to floodplain between SW Julia and SW Carolina Sts.	Greatest potential floodplain concerns due to proximity to the Willamette River and the FEMA 100-year floodplain	Least amount of potenail concerns regarding Willamette River and FEMA 100-year floodplain between South Waterfront and Nevada. Potential concerns south.
Mimize impacts to Metro Title 3 lands (Water Quality, Flood Management and Fish and Wildlife Conservation)	Similar to the WSL between South Waterfront and Julia St and from Carolina St south. Bypasses small segments of Title 3 lands between SW Julia and SW Carolina Sts.	Similar to the WSL between South Waterfront and Julia St and from Carolina St south. Bypasses small segments of Title 3 lands between SW Julia and SW Iowa Sts.	Similar to the WSL between South Waterfront and Julia St and from Carolina St south. Bypasses small segments of Title 3 lands between SW Julia and SW Carolina Sts.	WSL alignment through some segments of Title 3 lands including a large segment in Willamette Park.	Alignment is outside Title 3 lands from South Waterfront to SW Nevada.
Minimize impacts to parklands, recreational areas and other Section 4(f)	Utilizes right of way in/adjacent to Willamette Park and Butterfly Park	Utilizes right of way in/adjacent to Willamette Park and Butterfly Park	Utilizes right of way in/adjacent to Willamette Park and Butterfly Park	Utilizes right of way in/adjacent to Willamette Park and Butterfly Park	Minimizes the use of right of way in/adjacent to Willamette Park. Utilizes the right of way in Butterfly Park.

This evaluation matrix is based on analysis completed during the Alternatives Analysis process conducted summer 2005 through December 2007 and some addition refinement work done in 2009. Alternatives selected to advance into the Draft Environmental Impact Statement will be analyzed further and in greater detail.



1. Optimize the regional transit system:

Goal 1A. Improve transit operations: Minimized travel time, maximized reliability of service and maximized ability to expand service.

- The Willamette Shore Line design option scored the best on all measures.
- The Willamette Shore Line design option had the best travel time, and full Macadam Avenue design option had the worst travel time (the hybrids fall somewhere in the middle).
- The travel time difference between Willamette Shore Line design option and hybrid design options 1 and 3 is approximately 3 to 3.5 minutes.

Goal 1B. Improve transit performance: Maximized estimated ridership, minimized estimated operating costs and minimized cost per ride.

- The Willamette Shore Line design option scored the best on all measures.
- The Willamette Shore Line design option had the best travel time, and full Macadam Avenue design option had the worst on all measures (the hybrids fall somewhere in the middle).
- The estimated ridership difference between Willamette Shore Line design option and hybrid design options 1 and 3 is approximately 800 to 1,000 daily riders.

2. Be fiscally responsive and maximize regional resources:

Goal 2A. Fiscally responsive. Minimized capital costs and maximized local match potential.

- The Willamette Shore Line design option scored the best on all measure.
- The Macadam Avenue east side exclusive design option (hybrid 2) had the highest capital costs, and the full Macadam Avenue design option had the lowest local match potential.
- The local match potentials for the hybrid options had a difference of $8 to 9 million compared to the Willamette Shore Line design option.

3. Maximize the economic development potential:

Goal 3B. Maximize the economic development potential. Maximized the development potential to support residential and commercial development and redevelopment.

- The full Macadam Avenue design option scored the best on all measures (because closest to commercial core) and the Willamette Shore Line design option performed the worst.
- Differences (between the full Macadam Avenue and Willamette Shore Line design options) ranged from 2,230 to 1,890 potential jobs and 840 to 620 housing units. Hybrids fell in the middle of the range (2,170 to 2,070 potential jobs and 710 to 740 housing units).

Goal 3B. Maximize the accessibility to promote development. Optimized bicycle and pedestrian access to stations and the Willamette Riverfront, and maximized access to commercial, residential and employment nodes.

- The full Macadam Avenue design option scored the best on all measures (because closest to commercial core) and the Willamette Shore Line design option performed the worst.
- Macadam Avenue design options scored better because of the proximity to commercial nodes and access to residential on both sides of Macadam Avenue.

4. Be sensitive to the built and social environments:

Goal 4A. Minimize traffic impacts: Maintained traffic progression, minimized auto travel time, maintained acceptable levels of service, minimized traffic signal modifications, minimized construction impacts, and provision of safe operations for bicycles and motorcycles.

- The Willamette Shore Line and Macadam Avenue east side exclusive design options scored the best on all measures (because they are separated from Macadam Avenue).
- The hybrid design options would still maintains level of service similar to the projected no-build alternative.
- Projected growth in the corridor could impact streetcar operations at Boundary Street.
- The full Macadam Avenue design option would be in mixed traffic the most, therefore could have the most impact on travel time or streetcar operations.

Goal 4B. Sustain existing neighborhoods: Compatibility with existing development, minimized right of way impacts, minimized off street parking impacts, minimized noise impacts, minimized visual impacts, minimized bicycle and pedestrian conflicts, and minimized impacts to the Lake Oswego to Portland trail.

- The full Macadam Avenue design option scored the best on all measures.
- Hybrid 1 scored high because it avoids the impacts to the residents located adjacent to Macadam Avenue and Willamette Shore Line.
- Hybrid 2 did not score as well because it would impact the vegetation between Macadam Avenue and the condominiums and impact condominium parking.
- Hybrid 3 would also impact the vegetation between Macadam Avenue and the condominiums.
- The Willamette Shore Line design option, because of the close proximity to the residents, did not score high on the potential minimize noise and visual impacts.

5. Be sensitive to the natural environments:

Goal 5A. Impacts to the natural environment: Minimized impacts to streams, wetlands and waterways, minimized construction in or proximity to the FEMA 100-year floodplain, minimized impacts to Metro Title 3 lands (water quality, flood management and fish and wildlife conservation), and minimized impacts to parklands, recreational areas and other Section 4(f).

- The full Macadam Avenue design option scored the best on all measures.
- The hybrid design options scored moderately in all measures due to the movement away from the Willamette River.
- The Willamette Shore Line design option scored moderately in its impact to the park areas and did not score as well in the other three measures do to its proximity to the Willamette River.

LAKE OSWEGO TERMINUS REFINEMENT

As part of the refinement phase, the project team evaluated narrowing the terminus options studied in the DEIS. The Lake Oswego refinement phase re-evaluated the terminus options based on the information, data and analysis conducted during the alternatives analysis.

Lake Oswego terminus refinement evaluation criteria

1. **Optimize the regional transit system:**
   Goal 1A. Streetcar operations, referring to the quality of the streetcar operations and reliability. Design concepts with better ability to expand service (i.e., increased service frequency), that ensure more reliable service and that provide better transit travel times receive a higher ranking.

   Goal 1B. Streetcar performance, referring to how well the streetcar would perform in terms of ridership. Design concepts with higher ridership would receive a higher ranking.

2. **Be fiscally responsive and maximize regional resources:**
   Goal 2A. Financial feasibility, referring to an evaluation of the ability to minimize capital cost and provide local match. Order-of-magnitude capital cost refers to a rough estimate of capital cost based on conceptual designs that is intended to be used to compare among the alternatives and to identify those that are likely to have a comparatively higher cost than others. Design concepts likely to provide more local funding opportunities and have a lower capital cost receive a higher ranking.

3. **Maximize the economic development potential:**
   Goal 3A. Maximize the economic development potential, refers to a quantitative evaluation of the potential for a design concept to support residential and commercial development and redevelopment. This will be evaluated based on the available floor area ratio (FAR) along the proposed design options. Design concepts that support more redevelopment receive a higher ranking.

   Goal 3B. Maximize the accessibility to promote development, referring to a qualitative assessment of the ability to provide good access to major commercial, residential and employment nodes, to expand the transit system in the future, and to support local and regional plans. Design concepts with better accessibility, better potential for expansion and support local and regional plans receive a higher ranking.

4. **Be sensitive to the built and social environments:**
   Goal 4A. Traffic impacts, referring to an assessment by traffic engineers as to the type and magnitude of traffic impacts that would likely be associated with the design concepts. These could include traffic signal modifications to accommodate streetcar access, work zone/construction staging impacts, safety for all modes of travel and impacts from in-street streetcar design and operations. Design concepts with fewer potential traffic issues receive a higher ranking.

   Goal 4B. Sustain existing neighborhoods, referring to an assessment of the potential for right of way, parking, rail crossings or other impacts (noise, visual, etc.) to established residential and commercial neighborhoods. It also includes an assessment of the amount and type of property acquisition necessary to support an option. Opportunities to avoid conflicts with the proposed Lake Oswego to Portland pedestrian/bike trail should also be considered. Design concepts that

would have fewer potential impacts and less complex right of way issues receive a higher ranking.

5. **Be sensitive to the natural environments:**
   Goal 5A. Impacts to the natural environment, referring to an assessment of the impacts to streams, wetlands, waterways, parklands, recreational areas, wildlife and waterfowl refuges, public and private historical sites, and lands in or near the 100-year floodplain or needed to protect water quality or flood management. Design concepts that had fewer potential impacts to natural environment.

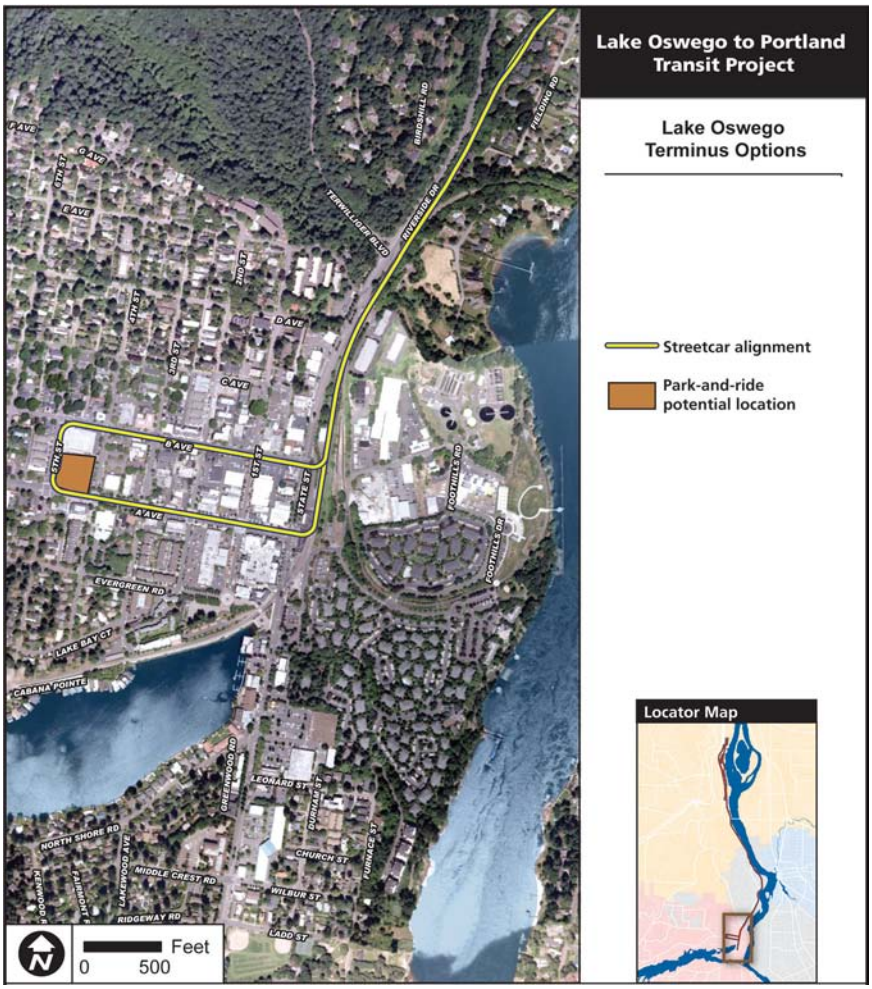
Alternatives considered

During the alternatives analysis, three terminus options were evaluated the Safeway, Albertsons and current trolley terminus. Through the decision-making process, the project steering committee recommended that the Safeway and Albertsons terminus for further study.

Safeway terminus option

Under this option, shown in Figure 8, the streetcar would enter Lake Oswego on the Willamette Shore Line. In Lake Oswego, the streetcar would continue adjacent to State Street on an elevated structure to cross State Street at grade. Streetcar would then operate on A and B avenues, with a park and ride facility at Safeway and at or near the existing trolley barn in the Foothills District.

Figure 8: Safeway terminus option



Opportunities

- Allows for more transfer opportunities to the different bus lines in Lake Oswego
- Circulates through the main commercial core of the town center
- Allows for streetcar extension westward

Constraints

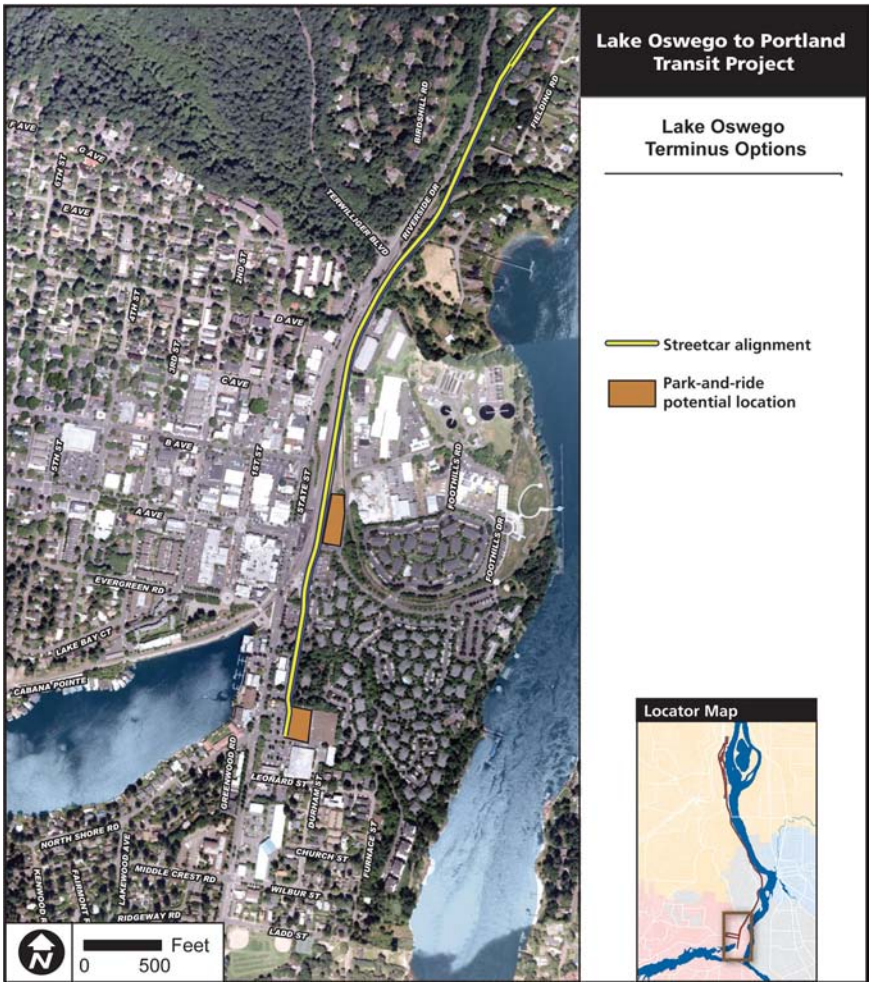
- Limits the ability for future southward extensions of the streetcar
- Requires challenging trackwork to cross State Street

- Challenged by proximity to freight railroad tracks

Albertsons terminus option

Under this option, shown in Figure 9, the streetcar would enter Lake Oswego on the Willamette Shore Line right of way. The streetcar would cross under the Portland and Western Railroad freight tracks to be located on the east side of the freight railroad to avoid at grade railroad crossing conflicts. The streetcar would continue south to a terminus at Albertsons with a park and ride facility at Albertsons and at or near the existing trolley barn in the Foothills District.

Figure 9: Albertsons terminus option



Opportunities

- Provides the best opportunity for extending the streetcar further south in the future
- Provides for redevelopment opportunities at the current Albertsons site
- Offers the consistency with Downtown Transit Alternatives Advisory Committee (DTAAC)[1] recommendations

Constraints

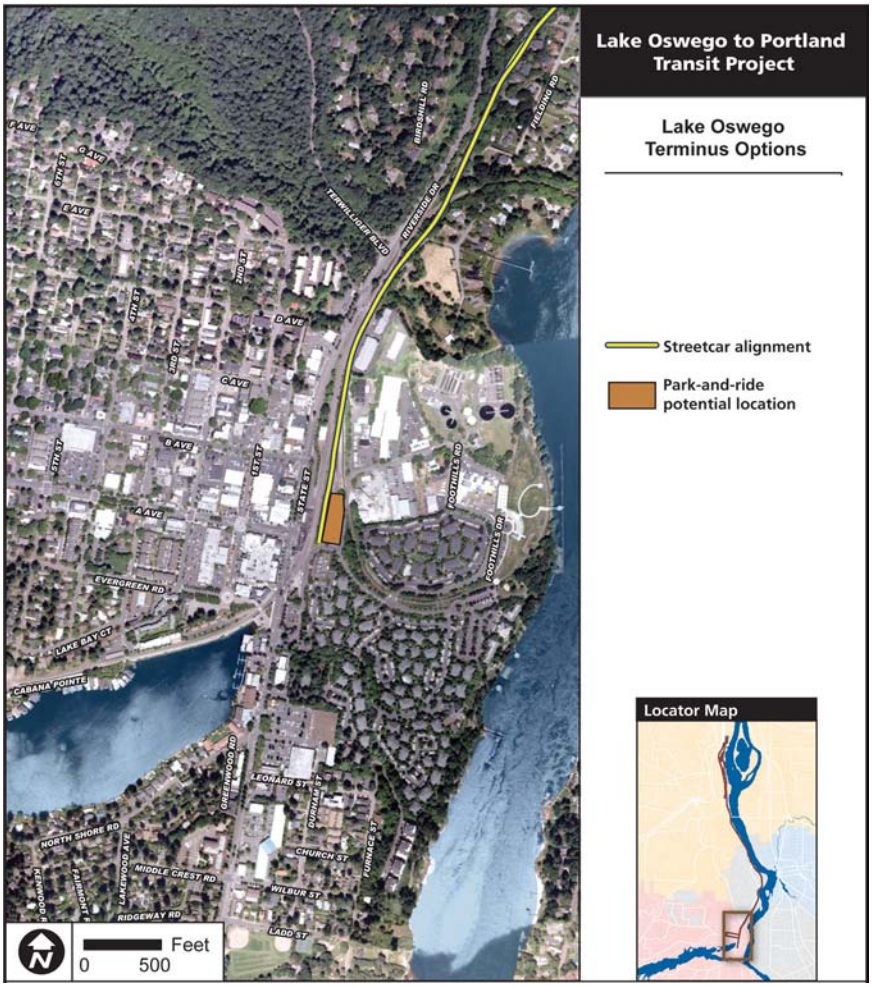
- Challenged by streetcar proximity to Foothills and State Street
- Requires coordination with Portland and Western Railroad for crossing under the freight tracks

[1] DTAAC was a committee commissioned by the City of Lake Oswego to advise the City on stop and terminus locations in Lake Oswego for any potential transit alternatives being developed as part of the Lake Oswego to Portland Transit and Trail Alternatives Analysis. See *City of Lake Oswego Downtown Transit Alternatives Advisory Committee (DTAAC)Summary of Committee Discussions/Phase I Findings and Recommendations for Consideration by the City Council*, April 11, 2006

Trolley terminus option

Under this option, shown in Figure 10, the streetcar would enter Lake Oswego on the Willamette Shore Line right of way. The streetcar could either stay on the existing Willamette Shore Line or cross under the Portland and Western Railroad freight tracks to be located on the east side of the freight railroad. The streetcar would terminate at or near the existing trolley barn in the Foothills District, where a park and ride facility would be located.

Figure 10: Trolley terminus option



Opportunities

- Offers potential for future extension of the streetcar line to the south
- Potentially makes use of the existing trolley barn as a storage and maintenance facility

Constraints

- Conflicts with spacing standards between the freight and trolley tracks or requires crossing under the freight tracks, which would require coordination with Portland and Western Railroad
- Creates potential traffic impact with locating all the park and ride in one location

Lake Oswego terminus evaluation

The terminus options were evaluated using similar criteria to Johns Landing evaluation criteria, with some additional criteria added and some changes in measures. There was no additional refinement work done on the terminus options, the measures under each criteria where a little different than those evaluated in the Johns Landing refinement phase. Additional criteria were added by the steering committee, intended to allow a comparison of the different terminus options to the proposed regional plan and vision for this corridor. The evaluation matrix is presented in Table 2.

Table 2: Lake Oswego terminus evaluation matrix

	Safeway Terminus	Albertsons Terminus	Trolley Terminus
1. OPTIMIZE THE REGIONAL TRANSIT SYSTEM			
GOAL 1A. IMPROVE TRANSIT OPERATIONS			
Minimize Travel Time (minutes)	23	21.6	20.7
Maximize Reliability of Service	Less reliability - dependent on congestion on State St and A/B Aves	Provides reliability with exclusive guideway/low volume streets	Provides reliability with exclusive guideway
Maximize Ability to Expand Service	Good if double track operations	Good if double track operations	Good if double track operations
GOAL 1B. IMPROVE TRANSIT PERFORMANCE			
Estimated Ridership	10,957	10,865	10,642
2. THE PROJECT SHOULD BE FISCALLY RESPONSIVE AND MAXIMIZE REGIONAL RESOURCES			
GOAL 2A. FISCALLY RESPONSIVE			
Minimize Capital Cost (millions $)	$42.6	$36.4	$30.8
Maximize Local Match Potential	Because the cost is highest, there would be a need for more local match.	Because the right of way is owned by UP, all alternatives would have to aquire the appropriate resources.	Because the cost is the lowest, there would be lesser local match required.
3. MAXIMIZE THE ECONOMIC DEVELOPMENT POTENTIAL			
GOAL 3A. MAXIMIZE THE ECONOMIC DEVELOPMENT POTENTIAL			
Maximize Development Potential	Add'l 1,080,000 sf development 630 housing units 900 jobs	Add'l 904,000 sf development 600 housing units 600 jobs	Add'l 667,000 sf development 450 housing units 440 jobs
GOAL 3B. MAXIMIZE THE ACCESSIBILITY TO PROMOTE REDEVELOPMENT			
Maximize Access to Commercial, Residential & Employment Nodes	Good connectivity to commercial activity in existing Town Center	Best connectivity to proposed Foothills District and South	Good connectivity to Foothills District
Maximize the Potential Future Expansion	Would allow for future expansion to the west; may be redundant to the proposed Clackamas/Washington Square HCT project	Would allow for future expansion to the south	Would not preclude future expansion
Supports Local and Regional Plans	Would not fit with the proposed foothills development but could support the existing Town Center	Would support the proposed Foothills development and the existing Town Center via a potential pedestrian connection at State St/B Ave	Would support the existing Town Center via a potential pedestrian connection at State St/B Ave; however would require a large park and ride in Foothills
4. BE SENSITIVE TO THE BUILT AND SOCIAL ENVIRONMENT.			
GOAL 4A. MINIMIZE TRAFFIC IMPACTS			
Maintain Traffic Progression	Potential change in the intersection operations at State St and A/B Avenues	No change to traffic progression on State St or A/B Avenues	No change to traffic progression on State St or A/B Avenues
Minimize Auto Travel Time	Potential travel time impacts through Town Center because of changes in intersection operations	No impact on auto travel time on State St or A/B Aves	No impact on auto travel time on State St or A/B Aves

	Safeway Terminus	Albertsons Terminus	Trolley Terminus
Maintain Acceptable Intersection LOS	Potential impact to operations at State St/A Ave due to special streetcar phase	Potential impact to LOS at State St and Albertsons and Foothills - park and ride split between these 2 locations	Potential impct to LOS as State St/Foothills - all park and ride would be accessed via State/Foothills
Traffic Signal Modifications Required	Traffic signal modifications at State/A and State/B	No traffic signal modifications required	Minimal potential traffic signal modifications required (only if additional green time is needed to serve park & riders)
Work Zone/Construction Staging Impacts	Potential construction impacts on State and A/B Aves	Minimal potential construction impacts on existing traffic operations, longer line, more construction required than Trolley	Potential construction impacts
Safe Operations for Bicycles and Motorcycles	Streetcar track in roadway on A Avenue and B Avenue	Exclusive transit right of way reduces potential track conflicts with bicycles and motorcycles. Streetcar track in new shared roadway between Foothills Rd and Albertsons	Exclusive transit right of way reduces potential track conflicts
GOAL 4B. SUSTAIN EXISTING NEIGHBORHOODS			
Compatibility with Existing Development	Would not fit with the proposed foothills development but could support the existing Town Center	Would support the proposed Foothills development and the existing Town Center via a potential pedestrian connection at State St/B Ave	Would support the existing Town Center via a potential pedestrian connection at State St/B Ave; however would require a large park and ride in Foothills
Minimize ROW Impacts	Would have property impacts to businesses between the WSL and State St	Would have the most right of way acquisitions	Would utilize the existing right of way (unless configured to fit within the Foothills District
Minimize Off-Street Parking Impacts	Coordination with Safeway redevelopment/parking facility (smaller site)	Coordination with Albertsons redevelopment/parking facility (some neighborhood concerns)	No anticpated off-street parking impacts
Minimize Noise Impacts	Potential noise impacts with residential development in Town Center	Potential noise impact with residential area adjacent to the Albertsons site	No anticipated noise impacts
Minimize Visual Impacts	Potential visual impacts with elevated structure from Foothills area to State St	No anticipated visual impacts	No anticipated visual impacts
Minimize Bicycle & Pedestrian Conflicts	Potential Impacts to proposed Willamette Steps idea as part of the Foothills development plans	No anticipated bicycle & pedestrian conflicts. Could provide a new connection from Foothills to the Albertsons site.	No anticipated bicycle & pedestrian conflicts

	Safeway Terminus	Albertsons Terminus	Trolley Terminus
Maximize Public Support	Would have the least public support	Would have the most public support and most consistent with the DTAAC recommendations	Would not have strong public support
5. BE SENSITIVE TO THE NATURAL ENVIRONMENT			
GOAL 5A. MINIMIZES IMPACTS TO THE NATURAL ENVIRONMENT			
Minimizes impacts to streams, wetlands and waterways	Would cross Tryon Creek	Would cross Tyron Creek	Would cross Tryon Creek
Minimize construction in or proximity to the FEMA 100-year floodplain	Potential floodplain concerns	Potential floodplain concerns	Potential floodplain concerns
Mimize impacts to Metro Title 3 lands (Water Quality, Flood Management and Fish and Wildlife Conservation)	Potential Title 3 land proximity concerns	Potential Title 3 land proximity concerns	Potential Title 3 land proximity concerns
Minimizes impacts to parklands, recreational areas and other Section 4(f)	Potential Tryon Creek State Park impacts	Potential Tryon Creek State Park impacts	Potential Tryon Creek State Park impacts

This evaluation matrix is based on analysis completed during the Alternatives Analysis process conducted summer 2005 through December 2007. Alternatives selected to advance into the Draft Environmental Impact Statement will be analyzed further and in greater detail

1. Optimize the regional transit system:

Goal 1A. Streetcar operations. Minimize travel time, maximized reliability of service and maximized ability to expand service.

- All options would provide good streetcar operations to the town center.
- The Safeway option would provide the least reliability to the park and ride at terminus because of the congestion at State Street and A and B avenues.

Goal 1B. Streetcar performance. Maximize estimated ridership.

- Ridership was similar with all terminus options ranging from 10,642 to 10,957, with the Safeway option having the most ridership and the trolley terminus option having the least ridership.

2. Be fiscally responsive and maximize regional resources:

Financial feasibility. Minimize capital costs and maximized local match potential.

- The Safeway terminus would be the most expensive to construct and would have the most constraints and challenges (including complex track work and freight railroad proximity issues).
- Because the additional right of way is owned by Union Pacific Railroad, all options would require the appropriate resources and negotiations.

3. Maximize the economic development potential:

Goal 3A. Maximize the economic development potential. Maximize the development potential to support residential and commercial development and redevelopment.

- The Safeway terminus option had the most economic development potential; however, the City of Lake Oswego plans to develop the Foothills District, which is not included in this analysis.
- Differences (between the Safeway and Albertsons options) ranged from 900 to 600 potential jobs and 630 to 600 housing units. The Trolley terminus option would only generate about 440 potential jobs and 450 housing units.

Goal 3B. Maximize the accessibility to promote redevelopment. Maximize access to commercial, residential and employment nodes, maximize the potential for future expansion and supports local and regional plans.

- The Safeway terminus option would provide the best access to the existing commercial development in the town center.
- The Albertsons terminus option would provide the most access to the Foothills District.
- The Trolley terminus option would provide good access to Foothills but would use land for a park and ride facility, that could be otherwise developed.
- The trolley terminus option ranks highest in potential for expansion, since it does not commit future expansion to either westbound or southbound.
- Only the Albertsons terminus would support planned development in the Foothills District.

4. Be sensitive to the build and social environment:

Goal 4A. Minimize traffic impacts Maintained traffic progression, minimized auto travel time, maintained acceptable levels of service, minimized traffic signal modifications, minimized construction impacts and provision of safe operations for bicycles and motorcycles.

- The Safeway terminus would have the most traffic operations issues (because of the interaction with the State Street and A Avenue and park and ride facilities at both Foothills and Safeway).
- The trolley terminus option would have traffic concerns since all park and ride capacity would be located in Foothills.
- The Albertsons terminus option would have park and ride access at Foothills and Albertsons.

Goal 4B. Sustain existing neighborhoods. Compatible with existing development, minimize right of way impacts, minimize off street parking impacts, minimize noise impacts, minimize visual impacts, minimize bicycle and pedestrian conflicts and minimize impacts to the Lake Oswego to Portland trail.

- The Albertsons terminus option is the most consistent with the Downtown Transit Alternatives Advisory Committee (DTAAC) recommendations.
- The Albertsons terminus option best fits within the Foothills District Plan.
- The Albertsons terminus option would require the most additional right of way acquisitions.

5. Be sensitive to the natural environment:

Goal 5A. Minimize impacts to the natural environment. Minimized impacts to streams, wetlands and waterways, minimized construction in or proximity to the FEMA 100-year floodplain, minimized impacts to Metro Title 3 lands (water quality, flood management and fish and wildlife conservation), and minimized impacts to parklands, recreational areas and other Section 4(f).

- All three terminus options scored moderately and equally across all measures.

PUBLIC INVOLVEMENT

Through the refinement phase, there were several methods for public outreach, including individual property owner meetings, stakeholder interviews, stakeholder meetings and open houses, in addition to responding to project requests and inquiries from via phone or email.

Property owner meetings

Individual property owner meetings were conducted to engage and inform Johns Landing property owners of the project and any potential impacts. Specifically, the project team met with:

- Shorenstein properties, property manager of an office building adjacent to Southwest Macadam Avenue at Boundary Street
- John Condon, whose family owns five acres of waterfront property between Macadam Avenue and the Willamette River (commercial property along Macadam Avenue as well as land leased to five condominium association in the area)
- Patty and Phil Abraham, trustees for the trust that owns the five acres of waterfront property between Macadam Avenue and the Willamette River.

The property owners did not express strong concerns about the project or the streetcar design options being envisioned from the Willamette Shore Line right of way onto SW Macadam Avenue and back to the right of way. Some preferences were expressed for design option concepts based on potential for commercial building or residential parking impacts or development and redevelopment opportunities.

Stakeholder interviews

A variety of individual stakeholder interviews were conducted. The stakeholders included neighborhood groups, interest group representatives and property owners in Johns Landing and Lake Oswego.

The following is a summary of themes from the interviews organized according to overall project impressions, Johns Landing design options and Lake Oswego terminus options. For more information and detail about the stakeholder interview, see *Lake Oswego to Portland Transit Project stakeholder interview summary*, May 22, 2009.

Overall project impressions

Most stakeholders interviewed stated their support for the streetcar concept and noted that it would spur redevelopment in Johns Landing and downtown Lake Oswego and effectively serve commuters. One stakeholder noted that it was important that streetcar effectively serve Johns Landing, not just pass through it. One stakeholder said that there was both strong support and strong opposition to the streetcar option in the Riverdale area.

Several stakeholders noted that the streetcar should be designed to provide regional, fast service (as opposed to service similar to the central city streetcar). Stakeholders in Johns Landing tended to support the idea of a temporary terminus north of the Sellwood Bridge; stakeholders in Lake Oswego were concerned about this possibility.

Some stakeholders raised specific concerns about the design option and terminus options that are under consideration. Johns Landing stakeholders consistently noted their neighbors' support for

streetcar if it is located on or adjacent to Macadam Avenue. One stakeholder noted that successful redevelopment in Foothills and a successful streetcar project were interdependent.

One stakeholder noted that he preferred the enhanced bus options and felt that bus options had not been given adequate consideration during the alternatives analysis process. Another stakeholder noted that the enhanced bus option would not provide the same redevelopment benefits as streetcar in Johns Landing on Lake Oswego.

Johns Landing design option options

Generally, the Johns Landing stakeholders preferred an alignment on Macadam Avenue and were concerned about the Macadam Avenue east side exclusive and Willamette Shore Line right of way options. These stakeholders noted that noise impacts to condo owners and the safety issues associated with crossing the tracks to reach the waterfront trail were potential drawbacks to the Willamette Shore Line right of way. One stakeholder was concerned about impacts to the condominium parking lots.

Several stakeholders noted that an alignment on or adjacent to Macadam Avenue would better serve business and residents west of Macadam Avenue and provide more accessible locations for stations. Other stakeholders were concerned about the traffic impacts and slower travel times associated with streetcar routes on Macadam Avenue.

Lake Oswego terminus options

The Lake Oswego stakeholders agreed that streetcar service is an important part of the overall redevelopment strategy for Foothills and downtown Lake Oswego.

Several stakeholders preferred the Albertsons terminus option, because it would allow for an eventual extension of streetcar south to West Linn, and because a park and ride at Albertsons would intercept traffic from the south before it reached downtown Lake Oswego. The Old Town Neighborhood Association was concerned about the Albertsons terminus for the following reasons:

- traffic impacts at State Street and Leonard Street
- loss of neighborhood-oriented retail that is currently on the site
- barriers to pedestrian access to downtown Lake Oswego.

Several stakeholders said that a Foothills park and ride could be integrated with redevelopment plans and that the grade of the site could be used to minimize the visual impact of a park and ride structure. The Foothills stakeholders were concerned about a park and ride in Foothills, because it would impact traffic at the area's only access and it would restrict redevelopment potential. Stakeholders agreed that that Safeway terminus was less desirable because it would not serve traffic from the south as effectively.

Stakeholder meetings

Several stakeholder meetings were held in Johns Landing and Lake Oswego.

Johns Landing design options

Johns Landing stakeholders provided informed, ongoing input on the development of the hybrid design options. Participants included about 20 residential, community and business interests that agreed to participate throughout the refinement process.

Specifically, the group was asked to:

- provide input on the benefits and drawbacks of each of the hybrid design options
- raise questions and ideas about possible hybrid design options early in the process
- seek to reach consensus about the benefits and drawbacks of each hybrid design options as much as possible and to recognize divergent viewpoints where consensus cannot be reached
- provide input about the full range of options to be carried into the National Environmental Policy Act process.

Their input and advice informed:

- the development and refinement of hybrid options by technical and design staff
- the recommendations from the project management group
- the decisions by the project steering committee.

Three meetings were held in the Johns Landing area to review the hybrid options. In general stakeholders have a strong interest in minimizing impacts on the condominiums between Macadam Avenue and the Willamette Shore Line right of way or the river. They support options that provide closer access to residents and business on the west side of Macadam Avenue and those that have the greatest potential for economic development or redevelopment. Traffic or intersection impacts or changes, bike and pedestrian access through condominium areas and stop locations are also of interest to stakeholders.

Hybrid options on Macadam Avenue that do not require additional right of way are most favored. The east side exclusive hybrid has the greatest potential for impacts on the landscaping and parking for condominiums, a significant concern to residents. There is some acknowledgement of travel time impacts of operating streetcar in mixed traffic and understanding of cost differences between options. In response to stakeholder discussions, the project team has adjusted designs, for instance, considering single track to allow access at Pendleton Street to remain open as it is today.

A fourth meeting with stakeholders provided an opportunity to share project updates, review and provide input on options still under consideration and discuss stop locations. Specific discussion included:

- reports from two open houses held regarding refinements options and the most recent project Steering Committee meeting
- discussion and input on an updated matrix comparing the alignment options through Johns Landing still under consideration
- discussion of description and maps illustrating proposed stop locations for the alignment options.

Lake Oswego

The Lake Oswego stakeholders included about 20 residents, business representatives, property owners and other community members who provided advice and guidance to the project team on issues related to the location of a downtown Lake Oswego streetcar or enhanced bus terminus during the refinement phase of the project.

The group met twice during the refinement phase and was charged with:

- reviewing the potential terminus options and the evaluation of the options, both from a technical and community point of view
- providing ongoing input to project technical staff about information needs and community viewpoints

- providing input to the project PMG and Steering Committee about community issues, concerns and preferences related to the terminus choices.

Stakeholders have a strong interest in minimizing traffic impacts in downtown Lake Oswego and in the location and design of park and ride facilities. In addition, they support options that encourage economic development and redevelopment and provide good bike and pedestrian access across State Street and in downtown Lake Oswego generally. Bus connections in Lake Oswego and for riders from West Linn and stop locations are also of interest to stakeholders.

A terminus at Albertsons with shared park and ride in the Foothills area is most favored due to concerns about the impact of a 400-space park and ride on a single site in a small downtown and in an existing neighborhood. The Safeway terminus received the least support. The stakeholders most affected by an Albertsons terminus have advocated for locating the terminus in Foothills, which places it closer to potential users coming from the west side of Lake Oswego and right in the heart of downtown. There is some understanding that design of the park and ride can have a dramatic impact on how it fits in downtown and some acknowledgement of cost differences between a single versus multiple park and ride facilities. The project team has provided significant background information and will consider ways to adjust the scope of the DEIS analysis to address discussion and issues raised.

Open houses

There were two open houses held during the refinement phase: one in Johns Landing and one in Lake Oswego. Both meetings will be structured as drop-in open houses without formal presentations.

The goal for both meetings was to share information about the alternatives to be studied in the DEIS, the project timeline, opportunities for involvement and the status of the trail. The open houses also provided an opportunity to gather input on narrowing decisions depending on direction from the PMG.

The open houses provided an opportunity the public to comment on:

- the hybrid option developed through the community meeting process
- the range of options that should be studied in the DEIS
- which terminus option ought to be studied in the DEIS
- the pros and cons of each terminus option.

During the open houses, 154 comments were received as well as two e-mails and one letter. A detailed summary of the open house comments is provided in *Lake Oswego to Portland Transit Project Environmental Analysis open house questionnaire responses summary draft,* May 27, 2009.

Tables 3 and 4 summarize the results and comments from the open houses. The opinions on the Willamette Shore Line alignment were the most disparate, with the greatest number of people suggesting definitely consider and the greatest number of people saying to definitely not consider.

The alignment that was the most favored is the full Macadam Avenue in-street, followed by hybrid 1 (Macadam Avenue in-street between Boundary and Carolina streets). The next most disfavored alignment was hybrid 2 (Macadam Avenue east side exclusive between Boundary and Iowa streets).

Table 3: Open house responses to Johns Landing design option options

Of the potential alignments in Johns Landing, which do you think should be studied further?

	Definitely consider	Maybe consider	Neutral	Maybe not consider	Definitely not consider	*no answer*
Willamette Shore Line	**59**	4	9	8	**53**	21
Full Macadam Avenue in-street	**53**	13	10	8	38	33
Hybrid 1: Macadam Avenue in-street (Boundary to Carolina)	**31**	24	**28**	11	24	36
Hybrid 2 Macadam Avenue east side exclusive (Boundary to Iowa)	15	23	23	14	**45**	34
Hybrid 3: Macadam Avenue with new northbound lane (Boundary to Carolina)	22	**26**	**26**	19	23	37

Respondents were asked to share anything that they particularly like or do not like about each potential Johns Landing design option. This section provided a wide range of comments that mostly focused on the use of the Willamette Shore Line or Macadam Avenue.

Table 4: Open house responses to Lake Oswego terminus options

Of the terminus options presented, which do you think should be studied further?

	Definitely consider	Maybe consider	Neutral	Maybe not consider	Definitely not consider	*no answer*
Safeway terminus	**23**	21	**26**	13	**24**	47
Foothills terminus	**28**	12	**30**	**27**	22	55
Albertsons terminus	**50**	20	23	3	9	49

Respondents were asked to share anything that they particularly like or do not like about each terminus option. This section provided a wide range of comments.

Trail

Respondents were asked to share any other ideas, concerns or questions about the project. Forty-six comments had to do with a trail through the corridor, 33 of which stated that a bike/pedestrian trail should be a priority in the corridor.

E-mails and letter

One e-mail addressed the conditions for bike commuters in the corridor and concerns that a trail that follows the existing trolley alignment would not feel safe and secure – especially in the early-dark winter months, requesting instead a safe bike lane along OR 43.

One e-mail requested further exploration of adding a bike/pedestrian river crossing using the Portland and Western Railroad bridge, especially in light of the scheduled 2-year closure of the Oregon City Arch Bridge.

One letter proposed jet boat river transit, using the same or similar crafts as the Willamette Jetboat Excursions that travel between Lake Oswego and Portland in 12 minutes, "make little noise, rile no citizens and give exhilarating rides."

RECOMMENDATION

The decision-making process was consistent with the process developed for the alternatives analysis. Technical information was reviewed by the project management group and the public. In addition, the project steering committee was reconvened as part of this process. Information regarding the comparison of the Johns Landing design options and Lake Oswego terminus options, was used to determine the options further considered in the DEIS.

Project management group

On Wednesday, May 27, 2009, the Lake Oswego to Portland Transit Project Management Group developed a recommendation regarding the range of transit alternatives and terminus options to be considered in the Draft Environmental Impact Statement. The project management group recommendation is as follows:

A. Effective June 1, advance the following Johns Landing alternatives/design options into the DEIS process on a provisional basis:
   - no-build alternative
   - enhanced bus alternative
   - Johns Landing design options:
     - hybrid 1 Macadam Avenue in-street
     - hybrid 3 Macadam Avenue with new northbound lane
     - Willamette Shore Line

B. During the month of June, work with the Oregon Department of Transportation , Metro, TriMet and other partner agencies, stakeholders and the Federal Transit Administration to determine which options to carry through to the completion of the Draft Environmental Impact Statement. The focus of this effort will be on determining whether the following options are kept on Table 5:

Table 5: Project management group recommendation for further refinement analysis

Option	Decision point
Enhanced bus alternative	Federal Transit Administration feedback based on previous analysis of effectiveness of the bus option
Willamette Shore Line design option	Results of further review of traffic analyses, other factors and follow-un discussions Outcomes of Johns Landing stakeholder meeting number four and additional follow-up with key stakeholders Assessment of National Environmental Policy Act risk of removal based on the project Purpose and Need Statement Federal Transit Administration feedback based on previous analysis and additional work outlined above Direction from the project steering committee at July meeting

C. In regards to the Lake Oswego terminus options, assume the Albertsons terminus option as the basis for the Draft Environmental Impact Statement, subject to:
   - resolution of justification for, size and location of any park and ride facilities to be developed adjacent to the Albertsons terminus or elsewhere in Lake Oswego
   - addressing neighborhood impacts, including parking, traffic, noise, redevelopment and bike and pedestrian access.

Steering committee

On June 1, 2009, the Lake Oswego to Portland Transit Project Steering Committee adopted the project management group's recommendations with a minor change and provisionally recommended that the full Willamette Shore Line design option be included in the Draft Environmental Impact Statement. The steering committee removed the word "any" from the project management group's recommendation on the Lake Oswego terminus option. The change indicated the need and desire to study a park and ride at the terminus in Lake Oswego. The change in the recommendation is presented below.

C. In regards to the Lake Oswego terminus options, assume the Albertsons terminus option as the basis for the Draft Environmental Impact Statement, subject to:
   - resolution of justification for, size and location of park and ride facilities to be developed adjacent to the Albertsons terminus or elsewhere in Lake Oswego
   - addressing neighborhood impacts, including parking, traffic, noise, redevelopment and bike and pedestrian access.

At the next steering committee meeting, planned for early July, consideration will be given to eliminating the Willamette Shore Line design option from Heron Point to Carolina Street from the Draft Environmental Impact Statement. The project team will prepare a special evaluation report on the Willamette Shore Line design option during the month of June. The evaluation report would review the key factors identified in the Purpose and Need Statement.

Alternatives dropped from further study

The project management group and steering committee recommendations include dropping the Macadam Avenue east side exclusive and the full Macadam Avenue design options from further consideration.

Hybrid 2: East Side Exclusive (Boundary Street to Iowa Street) alignment option

The East Side Exclusive alignment option has similar alignment, impacts and benefits as the Willamette Shore Line option. The East Side Exclusive alignment is near the Willamette Shore Line, diverging by a few hundred feet for approximately one half mile. It also operates in exclusive right of way through the condominium complex similar to the Willamette Shore Line alignment. The two options also perform similarly in terms of project goals, objectives and evaluation criteria. In almost all areas where they perform differently, this option performs worse than the Willamette Shore Line:

1. Optimize the regional transit system.

- Similar to the Willamette Shore Line alignment, this option would provide transit reliability in an exclusive guideway.

- While this option would have better travel time than the hybrid options, it would have slightly higher travel times than the Willamette Shore Line due to out of direction travel.

2. Be fiscally responsive and maximize regional resources.

- This option was the most expensive of all the design options. This option would be approximately $2 to $20 million more expensive than other alignment options; and almost double the cost of the Willamette Shore Line alignment.
- This option has less local match potential than the Willamette Shore Line.

3. Maximize the economic development potential within the Lake Oswego to Portland corridor.

- Because the East Side Exclusive alignment option is located closer to Macadam than the Willamette Shore Line alignment, it performs slightly better on development potential and accessibility. However, it does not perform as well as the other hybrids.

4. Be sensitive to the built and social environments.

- Like the Willamette Shore Line option, this option has significant neighborhood impacts. In fact, it included the most property impacts to the nearby condominiums due to the loss of 60 parking spaces and removal of landscaping between the condominiums and SW Macadam Avenue.
- Like the Willamette Shore Line alignment, this option, because it operates in a separate right of way parallel to Macadam, would have minimal impacts to traffic on Macadam or other nearby streets.
- This option would require the most right-of-way acquisition, since it would not use publicly owned right-of-way for approximately three quarters of a mile.

5. Be sensitive to the natural environment.

- All of the options have very limited impacts on the natural environment. This option was only slightly better than the Willamette Shore Line alignment option and would have similar environmental issues as the Hybrid #1 and Hybrid #3 alignment options. The Willamette Shore Line option ranked slightly lower than the others only due its proximity to the Willamette River.

The evaluation determined that this option would have similar, but worse, impacts and benefits as the Willamette Shore Line alignment option. Compared to the Willamette Shore Line alignment option, it would have more right-of-way acquisition, more parking and landscaping impacts, higher costs, slower travel times, and less local match potential. It would have only slight advantages in the area of economic development over the Willamette Shore Line alignment, but was worse than the other hybrid options. Because this alignment is similar to the Willamette Shore Line option (which is being studied), in alignment, impacts, and benefits, and does not offer any significant advantage over other options being studied, it therefore does not need to be included in the range of alternatives studied in the DEIS.

Full Macadam In-Street alignment option

The Full Macadam In-Street alignment option would offer slightly greater economic development opportunities than other options. However, it is not financially feasible and has high operating

costs, slower travel time and impacts to traffic. The Full Macadam In-Street alignment option should be eliminated from further consideration because it does not meet the purpose statements: optimize the regional transit system, be fiscally responsive, maximize regional resources and minimize impacts to the built and social environments:

1. Optimize the regional transit system.

- This option would have the slowest travel times and the worst reliability due to congestion on Macadam Avenue.
- This option would also have the highest operating costs. It would, therefore, would have the worst streetcar performance/operations of all the design options.

2. Be fiscally responsive and maximize regional resources.

- This option would have the worst local match potential due to the amount of the Willamette Shore Line that would not be utilized. The Willamette Shore Line and Hybrid options would contribute approximately $29 to $20 million in local match, while the full Macadam option would only contribute $3 to $4 million. The estimated in-kind right of way contribution or other state and regional funds needed (funding gap) would be in the order of $38 million with the Full Macadam option compared to $22 million with the Willamette Shore Line option. This would nearly double the cash required from local jurisdictions.
- The lack of local match potential would make this option financially infeasible.

3. Maximize the economic development potential

- The full Macadam alignment option would have slightly more economic development potential than other alignment options because of the extent of streetcar operations in Macadam Avenue. However, Hybrid #1 and Hybrid #3 would have similar economic development potential without the negative impacts of operating in the most congested portions of the roadway.

4. Be sensitive to the built and social environments.

- The Oregon Department of Transportation (ODOT) has jurisdiction over Macadam and has indicated that streetcar in Macadam Avenue for this length would be too much of an impact to their operations.
- This option would have most traffic concerns because the streetcar would be operating in mixed traffic within the most congested areas of the corridor. The option would enter and exit Macadam from at the most congested intersections, Macadam Avenue/Bancroft Street to the north and at Macadam Avenue/Taylors Ferry to the south.

5. Be sensitive to the natural environment.

- This option ranked the highest because it was the furthest away from the Willamette River. However, all the alignment options would have the same environmental concerns south of Carolina Street.

The full Macadam alignment option would have the worst transit operations, ridership and reliability because of the long distance it operates in congested conditions. It offers the lowest local match potential, due to the long distance that it operates off of the Willamette Shore Line, making it

not fiscally responsive. While it performs well in terms of economic development and property impacts, it has the worst traffic impacts of all options and is not acceptable to ODOT. Hybrid #1 and Hybrid #3 would have similar benefits as the full Macadam option while maximizing the streetcar operations and performance, minimizing traffic impacts and being fiscally responsive. The Full Macadam option does not meet the project purpose in the areas of transit operations and performance, minimizing (traffic) impacts to the built environment and being fiscally responsive. It therefore should be dropped from consideration.

Safeway terminus option

Since the time when the terminus options were developed, the Union Pacific Railroad has changed their policy regarding distance/offset from the freight rail tracks. The current UPRR policy requires a 50 foot offset from centerline to centerline for transit improvements in rail right of way. It would be extremely challenging to accommodate the policy requirements set forth by UPRR. To meet this requirement, this option would relocate approximately 1500' of UPRR tracks to the east, modify an existing berm, reconstruct the existing railroad trestle, modify Tryon Creek crossing and modify an existing gated crossing. Relocating the freight track also disrupts freight operations, and requires time consuming and complicated negotiations and approval process with UPRR.

Other options looked at the possibility of placing the streetcar tracks east of the UPRR where space is available, crossing the UPRR track twice, once under at the north of the berm and once over at A Avenue and B Avenue. This approach was technically not feasible due to the grade challenges and the limited space to clear the vertical requirements of the UPRR.

This option was not recommended to move forward for further study because of the significant engineering challenges with transitioning the streetcar from the Foothills District to cross State Street to enter the downtown area. This option is not recommended to move forward for the following reasons:

1. Optimize the regional transit system.

- With this option, any future streetcar extensions would be more supportive to future expansions to the west. Since the High Capacity Transit Plan (Metro, 2009), has identified a high capacity transit alignment that connects the Clackamas Regional Center and the Washington Square Regional Center through Lake Oswego, an extension of the streetcar to the west would a duplication of high quality transit and would likely not be a regional priority.
- Longest travel time due to travel in downtown core.
- Less Reliability due to travel in downtown core in streets.

2. Be fiscally responsive and maximize regional resources.

- This option would be more expensive and would have significant engineering challenges associated with proximity and use of Union Pacific (UP) Railroad property. It was determined that this option, without relocating the UPRR tracks, would be approximately $6 million more than the Albertsons terminus option. Additional needed improvements, such as relocating the UPRR tracks would significantly increase the project cost above the $6 million dollar difference between the Safeway and Albertsons terminus options. A similar project in the regions (Portland to Milwaukie LRT Project), has required long and complicated negotiation process and it is expected to result in an expensive transit solution. Since it is unknown how the railroad would respond to this option, this adds high risk to the project design as well as significant project cost.

3. Maximize the economic development potential.

- While this option would circulate through the main commercial core of the Town Center, it would the bypass a significant section of the Foothills District, which is the prime redevelopment land adjacent to downtown. The Foothills redevelopment area is also considered to be an extension of the downtown core.
- The introduction of a new streetcar structure that would provide a barrier between State Street/ Highway 43, that would make redevelopment of this area difficult.
- The main focus for the redevelopment in the Lake Oswego is the Foothills District. The Safeway option would bypass this district and would not support the City's proposed future development plans.

4. Be sensitive to the built and social environments.

- As mentioned above, to address the engineering challenges, this option would require relocating the UPRR tracks. This would option would disrupt existing freight traffic on this line and could potential require additional right way adjacent to the railroad right of way.
- This option would have significant traffic impacts. This option would bring park and ride traffic into the downtown core and would impact circulation within this area.
- This option would cross State Street at-grade at a signalized intersection. The at-grade intersection would complicate an already congested intersection on State Street. This intersection currently operates at poor level of service and will continue to deteriorate. This option would require additional study to determine the feasibility of adding a fourth leg to the intersection and the impacts of crossing State Street at this location at-grade. Additionally, this would require coordination with ODOT and to further evaluate their concerns with crossing the highway at this location.
- Streetcar would be impacted by existing and future growth in traffic on A and B avenues. This is an already built environment; there is limited opportunity to add lanes or expand A and B avenues.
- The alignment in Foothills is located in parallel to the Union Pacific Railroad and Highway 43/State Street. This right-of-way is narrow and there is a significant grade change between the Willamette Shore Line and State Street.
- This alignment may not be feasible, due to the proximity to the railroad. The Union Pacific is currently requiring a 50 foot offset from railroad operations. Additional right of way would be required in a densely built downtown area, which could include acquisition of all commercial land uses adjacent to State Street/Highway 43 to east. The only other alternative would be to obtain permission of Union Pacific, which would extremely difficult to obtain and would involve considerable safety improvements at minimum if it were to be forthcoming at all.

5. Be sensitive to the natural environment.

- All options are similar in comparison on the potential impacts to the natural environment, since the options follow a similar alignment through Lake Oswego.
- All options would need to cross Tryon Creek, including potential concerns regarding the Floodplain and Title 3 lands.
- All options would have potential hazardous materials concerns through the industrial lands in the Foothills District.
- Other potential concerns relate to the built environment such as crossing the freight rail tracks and potential traffic concerns.

The Safeway terminus option does not meet the project purpose in the areas of transit operations and performance, minimizing impacts to the built and social environment and being fiscally responsive. Additionally, the Albertsons terminus was favored and garnered the most public support through the public outreach during this refinement phase of the project. Because it does not meet the project Purpose and Need, this option should be eliminated from consideration as a project terminus.

Trolley terminus option

As previously mentioned, this option was eliminated from further study during the initial alternatives analysis phase. However, the project Steering Committee did recognize it could be necessary to construct a project that would utilize the Trolley terminus as a temporary interim terminus while joint development plans are finalized. This option is not recommended to move forward as a separate option for the following reasons:

1. Optimize the regional transit system.

- This option is would follow the same alignment as the Albertsons terminus options with the exception that it would terminate short in Foothills instead of continuing south.
- This option would have the lowest streetcar ridership.

2. Be fiscally responsive and maximize regional resources.

3. Maximize the economic development potential.

- This option would have the least economic development potential of the options.
- This option is not supportive of downtown plans. The large park and ride would further separate the current downtown core from the Foothills and waterfront areas.

4. Be sensitive to the built and social environments.

- All the options had 400 park and ride spaces, with this option all the park and ride spaces would be located in one location, causing all traffic to enter and exit at one location. There would be concern about all the traffic that would be added at one time to the Foothills Road and State Street intersection. This intersection is in a congested corridor and is the only access point into and out of the foothills area. It is expected to operate at capacity in the future.
- The added traffic congestions would act as a barrier between downtown and Foothills. This would make access between the two districts difficult or unattractive.
- By locating a larger 400 space park and ride in the Foothills area, the project would be limiting the available land planned for redevelopment. The Foothills plan is to transform the area that is currently industrial uses to mixed uses. A large park and ride would occupy valuable land planned for redevelopment in this area.

5. Be sensitive to the natural environment.

- All options are similar in comparison on the potential impacts to the natural environment.

The Trolley terminus does not meet the purpose and need to optimize the transit system, maximize economic development opportunities and be sensitive to the build and social environments.

NEXT STEPS/DEIS

The next step in this process is to develop the concept designs for the transit alternatives to advance for further consideration and begin the project Draft Environmental Impact Statement. Project partners have entered into an agreement to begin the Draft Environmental Impact Statement in June 2009.

As work continues, project updates, public involvement opportunities and results will be posted to the project web site at www.oregonmetro.gov/lakeoswego.