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Metro | *Memo*

Date: May 5, 2014
To: Southwest Corridor Plan (SWCP) Steering Committee
From: Malu Wilkinson, Metro Southwest Corridor Project Manager
Matt Bihn, Principal Transportation Planner
Subject: Draft recommendation for Southwest Corridor HCT design options to study further

This memo provides an overview of the draft recommendation developed for your review and discussion as well as for public comment prior to upcoming Steering Committee decisions in June to define high capacity transit (HCT) design options, complementary multimodal projects, and potential station areas to study further in a Draft Environmental Impact Statement (DEIS).

Background

The Southwest Corridor Plan is a comprehensive effort focused on supporting community-based development and placemaking that targets, coordinates and leverages public investments to make efficient use of public and private resources.

In July 2013, the Southwest Corridor Plan Steering Committee narrowed the options for a potential high capacity transit investment to serve the corridor land use vision by recommending: 1) continued study of both Bus Rapid Transit (BRT) and light rail transit (LRT); 2) designs for at least 50 percent of bus rapid transit in a dedicated transitway; and 3) the route of a potential high capacity transit investment would be from Portland central business district to Tualatin via downtown Tigard.

The Steering Committee also approved a Shared Investment Strategy for the Southwest corridor. The strategy calls for 1) investments in both local service and high capacity transit, 2) investments in roadways and active transportation that connect people to high capacity transit and support local land use visions, 3) investments in parks, trails and nature, 4) consideration of new regulations, policies and incentives to promote private investment consistent with community visions, and 5) development of a collaborative funding strategy for the Southwest Corridor Plan. This Shared Investment Strategy was endorsed by each of the twelve project partners in fall 2013.

During the past year project partner staff have focused on developing: 1) potential transit design options consistent with the direction given by the Steering Committee, 2) potential station areas along these options, and 3) complementary walking, biking and roadway improvement projects, also known as "multimodal projects," related to the transit options and station areas.

Project partner staff, TriMet designers and members of the public defined close to 60 HCT design options that are consistent with the July 2013 Steering Committee recommendation. The refinement phase has been designed to identify the most promising options for further study in a draft environmental impact statement (DEIS). Staff from the cities of Portland, Tigard, Tualatin, Washington County and the Oregon Department of Transportation (ODOT) met with the TriMet design team to develop the HCT design options.

HCT design options removed in April

In April 2014 the Steering Committee unanimously removed 14 HCT design options based on initial design work and public comment. While the design serves as the foundation for additional analysis such as modeling and impacts analysis, the initial design process itself identified some options to be clearly less viable than competing alternative options. These design options are described in the April 7, 2014 Steering Committee meeting record and materials.

Draft staff recommendation for HCT design options & multimodal projects

Project partner staff have developed a recommendation for discussion includes 15 design options for BRT and 13 options for LRT (across nine geographic segments) for further study in a DEIS with complementary multimodal projects and station areas. Six BRT and six LRT design options are highlighted where there isn't a consensus recommendation among project partners as to whether or not they merit further study. Each of the HCT design options has been assessed as to the positive and negative impacts in the following areas:

- **capital cost magnitudes** – relative cost of construction including design elements such as tunnels, structure, length, and built environment;
- **impacts to the natural environment –** impacts to natural resources including trees, parks, watersheds, including considerations of potential opportunities for improvements;
- **development/redevelopment potential –** potential to support the Southwest corridor land use vision;
- **property impacts** - effects on buildings and private property;
- **traffic/bike/pedestrian performance** – effects on roadway operations, bikeways, and sidewalks;
- **transit performance** – assessment of ridership potential and operating costs based on design characteristics such as distance and speed, and household and employment access.

This information is presented for Steering Committee and public discussion in the form of summary maps (***Attachment 1***) and additional technical appendices (anticipated May 12, 2014).

Leveraging investment in potential station areas

The foundation of the Southwest Corridor Plan is the land use vision as defined by each community for their downtowns, main streets and employment areas. The HCT design options were delineated in a way that best supports that land use vision while meeting transportation goals. Project partner staff worked with the TriMet design team to identify the most promising potential station areas –30 locations due to the large number of HCT design options.

Metro completed a preliminary station area analysis that provides project partners with an assessment of the opportunities and constraints of each location. This includes some of the most promising tools, policies and incentives to consider putting in place to make the most out of a major transit investment and therefore support achieving the local land use vision. Since this analysis had to be completed prior to a recommendation on HCT design options it includes each of the 30 odd potential locations. Many of the tools and policies would help support development consistent with the local vision regardless of a transit investment, and could be considered by each city for implementation.

This information is presented for Steering Committee and public discussion in summary form (***Attachment 2***) and with a technical appendix (anticipated May 12, 2014).

Public input informing the draft recommendation

In March and April 2014 the Southwest Corridor Plan partner staff offered several opportunities for the public to provide input on the HCT design options, station locations and multimodal projects.

Opportunities included: one (1) Transit Fair, three (3) corridor design workshops on HCT options, one (1) community planning forum and one (1) online questionnaire on station locations and multimodal projects. A memorandum summarizing public input on the removal of proposed HCT design options was submitted to the Steering Committee on March 31, 2014. A more complete report of the public input on HCT design options obtained in March will be submitted to the Steering Committee on May 12, 2014.

Public input obtained this spring regarding the station locations and multimodal projects is summarized in a public involvement report (***Attachment 3***). The report includes information on the most popular station locations and multimodal projects identified by the public, a summary of the public comments on those topics, and the reasons why the public preferred those station locations and projects. The information on public input collected in March and April is for Steering Committee consideration to inform a final recommendation on HCT design options, complementary multimodal projects and potential station areas to study in a DEIS.

Next Steps

Project partner staff will be working with their citizens, advisory groups, councils and commissions to discuss the most promising package to forward for further study in a DEIS to support the Southwest Corridor land use vision over the next month.

The Steering Committee is anticipated to make a recommendation on what package of HCT design options, complementary multimodal projects and station areas to move forward for further study in a DEIS on June 9, 2014. The public will have several opportunities to discuss and provide input on the draft recommendation. Staff will collect and analyze public input, and submit another report to help inform the Steering Committee decision. The SWCP-sponsored public input opportunities are:

- Online survey, available May 6-23, 2014
- Community Planning Forum on May 23, 2014, in Tigard
- Business Summit on May 21, 2014, in Tigard
- ID Southwest meeting on May 20, 2014 in Portland
- Local discussions held by partner cities and counties

Detailed information about these public input opportunities is available on the Southwest Corridor Plan web site: http://www.swcorridorplan.org.

GREAT PLACES
SW Corridor Plan

Project team leaders recommendation on high capacity transit design options, multimodal projects, and potential station locations to study in a draft environmental impact statement

Discussion draft – May 6, 2014

PROJECT PARTNERS

Cities of Beaverton, Durham, King City, Lake Oswego, Portland, Sherwood, Tigard and Tualatin, Multnomah and Washington counties, Oregon Department of Transportation, TriMet and Metro

SOUTHWEST CORRIDOR REFINEMENT PHASE

Draft Recommendation of HCT Design Options for Further Study

DISCUSSION DRAFT 5/6/14

Downtown Portland
OHSU
South Waterfront
Willamette River
Hillsdale
Multnomah Village
Burlingame
Barbur Transit Center
PCC Sylvania
Tigard Triangle
Tigard Transit Center
Bridgeport Village
Downtown Tualatin
Oswego Lake
WASHINGTON CO.
MULTNOMAH CO.
CLACKAMAS CO.

RECOMMENDED FOR FURTHER STUDY IN DEIS

- Bus Rapid Transit (BRT) Design Options
- Light Rail (LRT) Design Options
- Design Options for BRT or LRT

REQUIRE FURTHER DISCUSSION BEFORE RECOMMENDATION

- Bus Rapid Transit (BRT) Design Options
- Light Rail (LRT) Design Options
- Design Options for BRT or LRT
- Tunnel Design Options
- Recommended Multimodal Projects
- Light Rail (Existing or Under Construction)
- WES Commuter Rail
- Streetcar (Existing or Under Construction)
- Aerial Tram
- County Boundary
- Urban Growth Boundary

LAND USE VISION

- Retail / Commercial
- Employment / Industrial
- Mixed Use
- Higher Intensity Residential

0 ½ 1 mile

NOTE: The corridor alignment options are in draft form. As the Southwest Corridor Plan continues to study and refine these options, they are very likely to change.

Recommendation Summary

The PTL assessed nearly 60 HCT design options in nine separate geographic segments throughout the corridor for consideration for further study in the Draft Environmental Impact Statement (DEIS). Through preliminary design, options were analyzed based on the following categories:

- **capital cost magnitudes** – relative cost of construction including design elements such as tunnels, structure, length, and built environment;
- **impacts to the natural environment** – impacts to natural resources including trees, parks, watersheds, including considerations of potential opportunities for improvements;
- **development/redevelopment potential** – potential to support the Southwest Corridor land use vision;
- **property impacts** - effects on buildings and private property;
- **traffic/bike/pedestrian performance** – effects on roadway operations, bikeways, and sidewalks;
- **transit performance** – assessment of ridership potential and operating costs based on design characteristics such as distance and speed, and household and employment access.

The PTL considered the technical assessment findings along with public comments and discussions during design meetings conducted with partner jurisdictions. The resulting PTL draft recommendation proposes advancement to the DEIS of 15 design options for BRT and 13 options for LRT across the nine geographic segments. It also identifies an additional six options for BRT and six options for LRT that did not receive a consensus decision among the PTL and require further discussion. For some of these options, additional information in the next few weeks may result in a change in recommendation status; for others, the Steering Committee may be asked to make a final decision without a PTL recommendation. The table below lists the HCT design options recommended for further study and those identified as requiring more discussion.

Multimodal projects included in the recommendation were chosen based on their support for the recommended HCT options or for the SW Corridor land use vision. For some projects, only portions of the originally proposed are recommended for continued study in the DEIS.

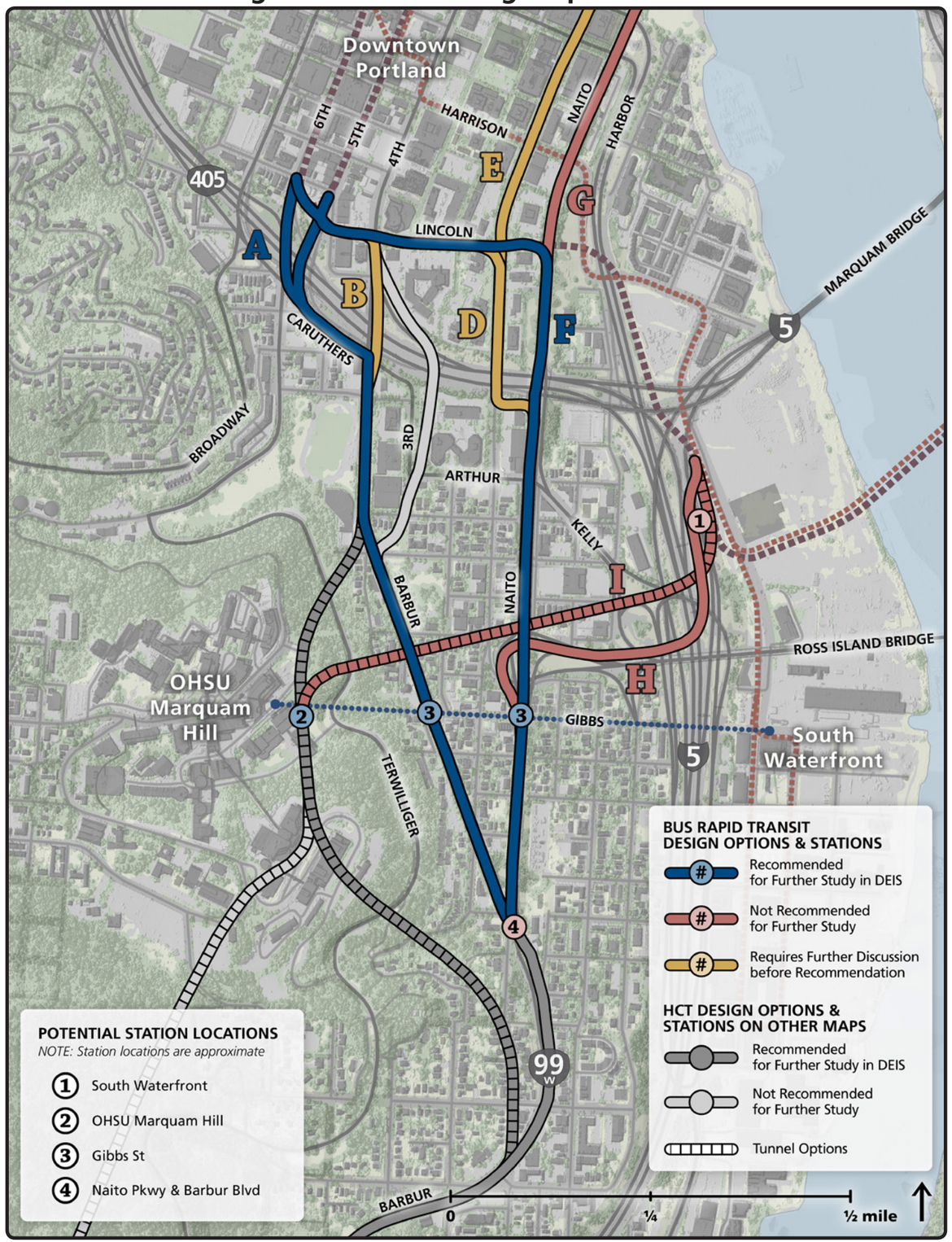
Stations identified the design process were analyzed to help inform which station areas would best serve and activate the key places along the corridor. The analysis also helped to recommend policies and investments needed to activate the desired local land uses in each station area location.

The HCT options, multimodal projects, and stations recommended for further study or for more discussion are shown on the map on the reverse side of this page.

HCT Options Recommended for DEIS or Requiring Further Discussion	BRT - Recommended	BRT - Further discussion required	LRT - Recommended	LRT - Further discussion required
Option				
1. Tie-In to Existing Transit				
Barbur via Fifth/Sixth Ave Couplet (with OHSU elevator)	■			
Barbur via Fourth Ave (with OHSU elevator)		■	■	
Naito to Transit Mall (with OHSU elevator)	■		■	
Naito to Transit Mall via First Ave (with OHSU elevator)		■		■
Naito to First Ave - extended downtown (with OHSU elevator)		■		
2. South Portland to Barbur Transit Center				
Barbur Boulevard	■		■	
Barbur - Hillsdale Loop using Capitol Hwy & Bertha	■			■
Short Tunnel - exit at Hamilton			■	
Adjacent to I-5		■		■
3. PCC Area				
PCC Campus via Capitol Hwy (uses either I-5 crossing)	■			
Barbur - Crossroads to Tigard (with improved PCC walk via SW 53rd, uses new bridge I-5 crossing)	■		■	
Short Tunnel via Barbur (uses new bridge I-5 crossing)				■
New Bridge (option for campus BRT routes)	■		■	
4. Tigard Triangle				
68th/69th Couplet	■		■	
5. OR-217 Crossing				
Clinton to Tigard Transit Center	■		■	
Beveland South	■		■	
Beveland North		■		■
6. Downtown Tigard				
Commercial Street to Tigard Transit Center (no loop)	■		■	
Commercial Street with Downtown Loop via Hall		■		■
7. Tigard to Durham				
WES Alignment to Parallel I-5 via Tech Center Drive	■		■	
WES Alignment to Parallel I-5 vi PWNR Freight Rail ROW	■		■	
8. Bridgeport Village				
Lower Boones Ferry (from Durham Rd, 72nd or parallel to I-5)	■		■	
9. Tualatin				
Parallel to Boones Ferry (north side of downtown)	■		■	

1. Tie-In to Existing Transit

1. Tie-In to Existing Transit: BRT Design Options



Design Options

The design options recommended for further study would have two distinctly different goals: Barbur via a 5th/6th Avenue couplet would provide the fastest connection to the transit mall, while the Naito option would support redevelopment of the South Portland neighborhood. All Barbur and Naito options would include an elevator serving Marquam Hill/OHSU from the vicinity of SW Barbur and SW Gibbs Street. Naito options would be incompatible with OHSU tunnel options.

Recommended for further study because:

A. Barbur via 5th/6th Avenue Couplet would:
- Provide the fastest connection to CBD and transit mall;
- Provide the least expensive BRT connection.

F. Naito to Transit Mall would:
- Have potential to include a redesign of the Ross Island Bridgehead, including a redesign of Naito to change its character from a 1940's-era expressway to neighborhood-scale boulevard;
- Cost $34/$54M more than Barbur via 5th/6th, excluding Ross Island Bridgehead project.

Further discussion required because:

B. Barbur via 4th Avenue would:
- Be similar to 5th/6th couplet option, but with less direct connection to transit mall.

D. Naito to Transit Mall via SW 1st Avenue would:
- Include a redesign of Naito;
- Have potential to include a redesign of the Ross Island Bridgehead;
- Avoid some traffic by leaving Naito (but not with Ross Island Bridgehead project).

E. Naito to SW 1st Ave - extended downtown would:
- Avoid SW Lincoln Street and portions of the transit mall;
- Support the City of Portland's Central City Plan;
- Affect traffic operations on SW 1st Avenue, which is currently one-way southbound;
- Likely require BRT to operate in mixed traffic, resulting in slower travel times and less reliable service.

Not recommended because:

G. Naito Parkway - extended downtown would:
- Likely require BRT to operate in mixed traffic, resulting in slower travel times and less reliable service;
- Provide fewer and less convenient transfer opportunities compared to options on the transit mall.

H. South Waterfront - bridge/tunnel to Naito and

I. South Waterfront - tunnel to OHSU would:
- Provide an indirect connection between the transit mall and the corridor;
- Require significant structure (bridges and/or tunnels) at high costs relative to other options;
- Cause significant construction impacts near OHSU's Collaborative Life Sciences Building, streetcar, and Portland-Milwaukie LRT.

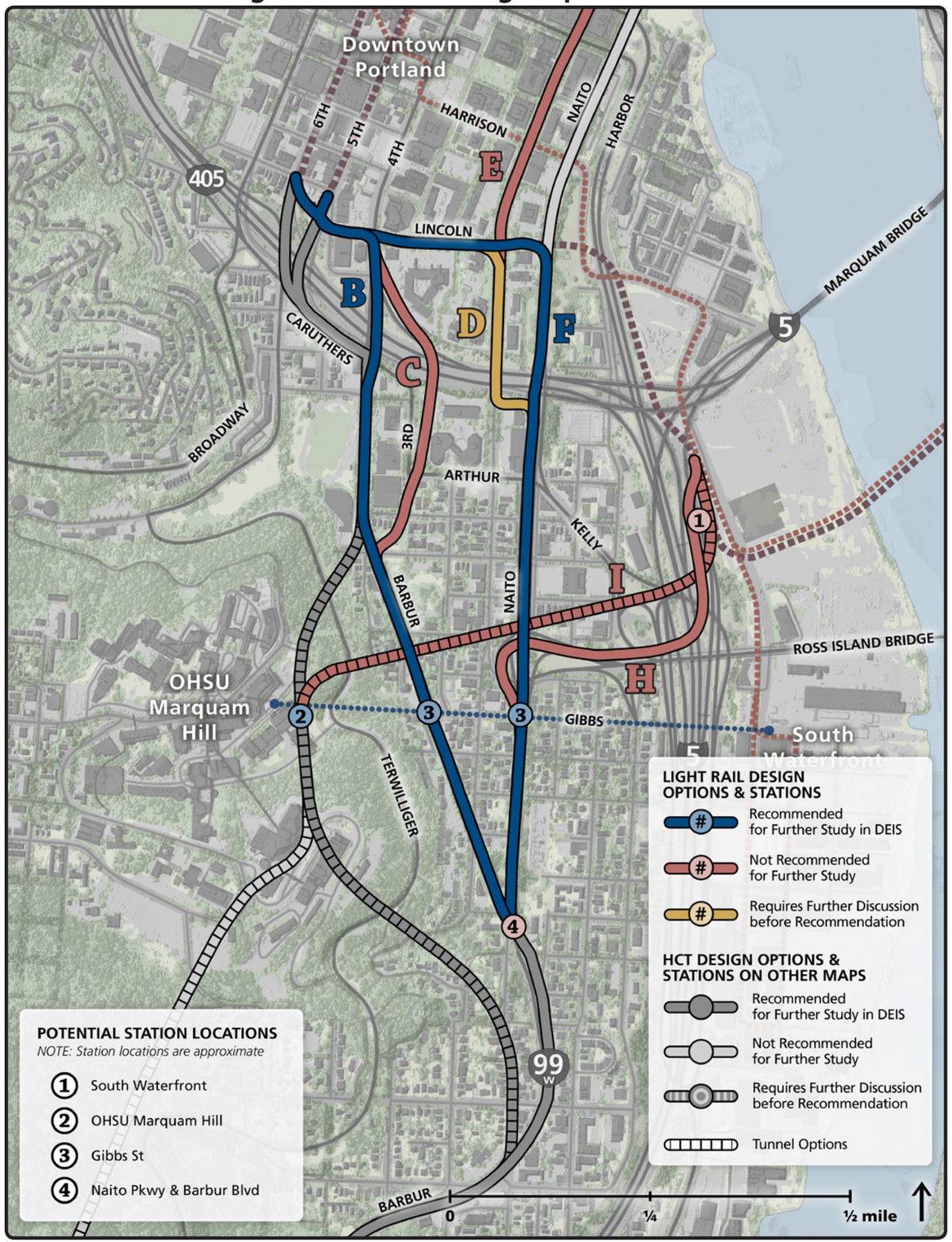
ID	Option	CAP	TRA	ACC	ENV	DEV	PRP	TRF
1. Tie-In to Existing Transit								
A	Barbur via Fifth/Sixth Ave Couplet (with OHSU elevator)	●	●	◑	◕	◑	◕	◑
B	Barbur via Fourth Ave (with OHSU elevator)	◕	◕	◑	◕	◑	◕	◑
D	Naito via First Ave (with OHSU elevator)	◑	◔	◕	●	◕	◕	◕
F	Naito (with OHSU elevator)	◑	◑	◕	●	◕	◑	●
E	Naito to First Ave - extended downtown (with OHSU elevator)	◔	◕	○	●	◑	●	◕
G	Naito Parkway - extended downtown (with OHSU elevator)	◔	◑	◔	●	◑	◔	◕
H	South Waterfront - bridge/tunnel to Naito	○	○	◔	●	◕	●	◔
I	South Waterfront - tunnel to OHSU	○	○	◕	●	◕	●	◕

CAP = Capital Costs / TRA = Travel Time / ACC = Accessibility to Transit / ENV = Environmental Impacts
DEV = Development/Redevelopment Potential / PRP = Property Impacts / TRF = Traffic Impacts

Best ● ◕ ◑ ◔ ○ Worst

Proposed for Further Study in DEIS | Not Proposed for Further Study in DEIS | Requires Further Discussion before Recommendation

1. Tie-In to Existing Transit: LRT Design Options



Design Options

The design options recommended for further study would have two distinctly different goals: Barbur via SW 4th Avenue would provide the fastest connection to the transit mall, while the Naito option would support redevelopment of the South Portland neighborhood. All Barbur and Naito options would include an elevator serving Marquam Hill/OHSU from the vicinity of SW Barbur and SW Gibbs Street. Naito options would be incompatible with OHSU tunnel options.

Recommended for further study because:

B. Barbur via 4th Avenue would:

- Provide the fastest connection to the CBD and transit mall at the peak load point of the line (the highest ridership location);
- Provide the least expensive LRT connection;
- Avoid Ross Island Bridgehead traffic.

F. Naito to Transit Mall would:

- Include a redesign of Naito to change its character to neighborhood-scale boulevard including streetscape improvements, pedestrian/bike facilities, and additional intersections/crossing opportunities;
- Have potential to include a redesign of the Ross Island Bridgehead to change traffic patterns and convert land for redevelopment.

Further discussion required because:

D. Naito to Transit mall via SW 1st Avenue would:

- Include a redesign of Naito;
- Have potential to include a redesign of the Ross Island Bridgehead;
- Avoid traffic on Naito north of Sheridan (but not with Ross Island Bridgehead project, which would increase traffic on SW 1st Avenue).

Not recommended because:

C. Barbur via 4th Ave/Second Ave would:

- Require significant structure and tunneling at a high cost without advantages over other options.

E. Naito to SW 1st Avenue - extended downtown would:

- Affect traffic operations on SW 1st Avenue, which is currently one-way southbound;
- Cause conflicts with auto traffic in the CBD, especially at the Hawthorne Bridgehead where either LRT or outbound traffic would lose signal priority.

H. South Waterfront - bridge/tunnel to Naito and
I. South Waterfront - tunnel to OHSU would:

- Provide an indirect connection between the transit mall and the corridor;
- Require significant structure (bridges and/or tunnels) that would be very expensive;
- Cause significant construction impacts near OHSU's Collaborative Life Sciences Building and planned Schnitzer campus, streetcar, and Portland-Milwaukie LRT.

ID	Option	CAP	TRA	ACC	ENV	DEV	PRP	TRF
1. Tie-In to Existing Transit								
B	Barbur via Fourth Ave (with OHSU elevator)	●	●	◑	◕	◑	◕	◑
C	Barbur via Fourth Ave/Second Ave (with OHSU elevator)	◑	◑	○	◕	◔	◔	◕
D	Naito via First Ave (with OHSU elevator)	◑	◔	◕	●	◕	◕	◕
E	Naito via First Ave - extended downtown (with OHSU elevator, no connection to transit mall)	◔	◑	◔	●	◑	◔	◕
F	Naito (to transit mall, with OHSU elevator)	◕	◑	◕	●	◕	◕	●
H	South Waterfront - bridge/tunnel to Naito	○	○	◔	●	●	●	◔
I	South Waterfront - tunnel to OHSU	○	○	◕	●	◕	●	◕

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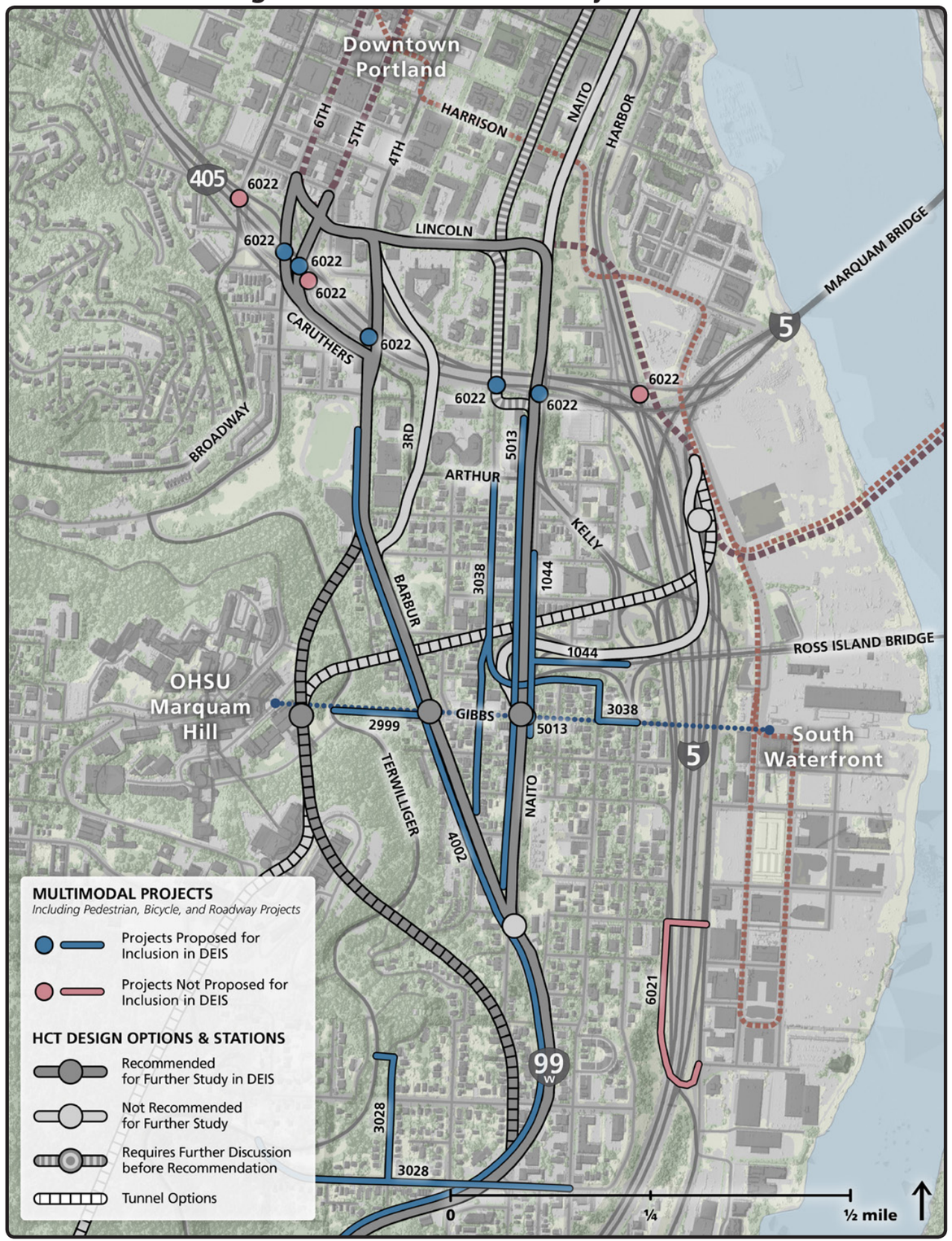
Best ● ◕ ◑ ◔ ○ Worst

Proposed for Further Study in DEIS | Not Proposed for Further Study in DEIS | Requires Further Discussion before Recommendation

1. Tie-In to Existing Transit: Multimodal Projects



Multimodal Projects

Multimodal projects recommended to advance include pedestrian and bicycle projects intended to improve access to potential station areas south of downtown. They also include modifications to the Ross Island Bridgehead if Naito is the selected alignment in order to provide people the ability to safely access stations and walk and bike along the corridor without having to contend with high-speed vehicle traffic and expressway ramps. If Naito is not the selected alignment, the recommendation includes one or more pedestrian crossings of Naito to reduce the barrier effect within the neighborhood. One project was outside the immediate walkshed of any potential station area and was not recommended.

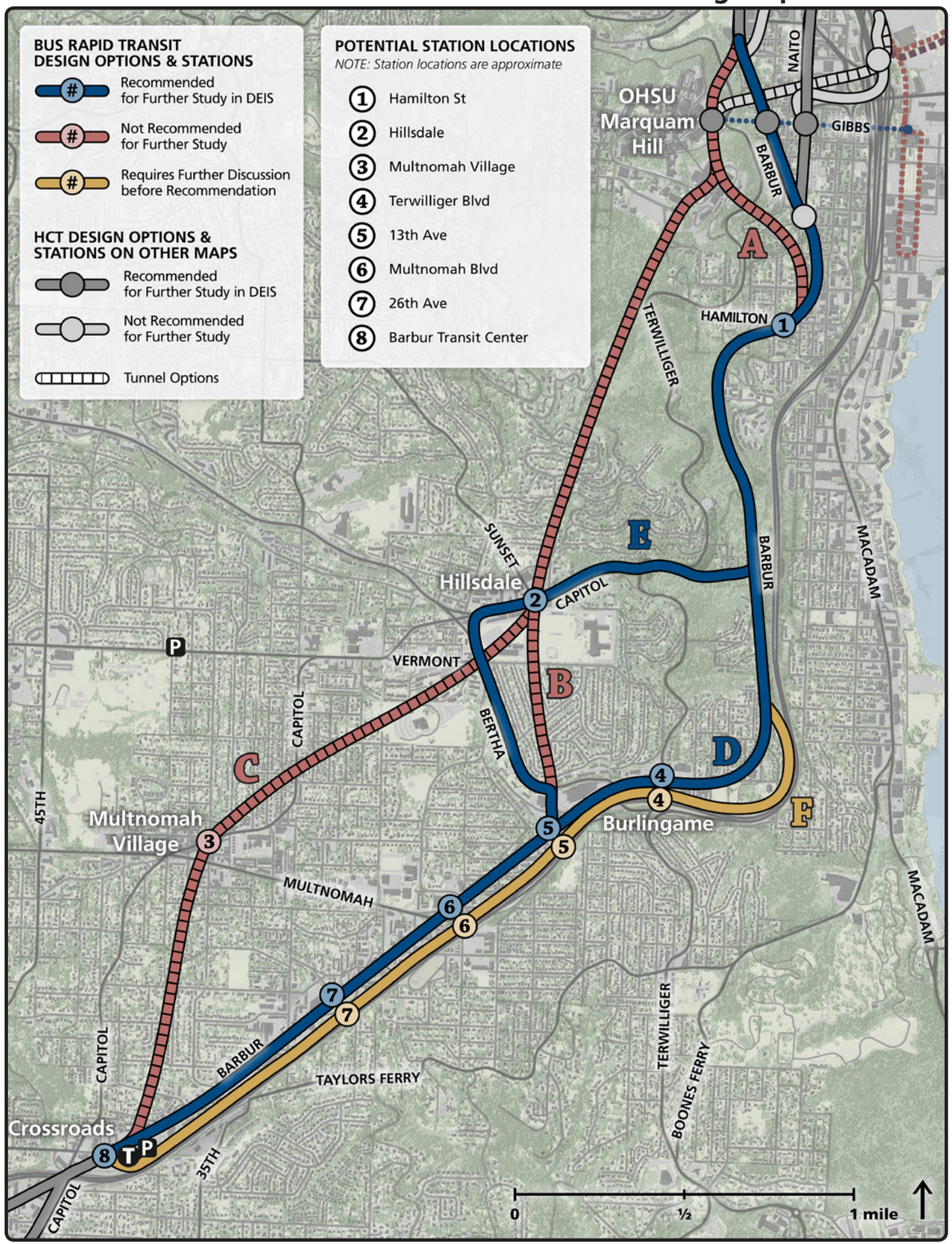
#### City/Ownership	**Project Title** Project Description	Cost Primary Mode	Draft DEIS Recommendation
1044 Portland ODOT	**South Portland Circulation and Connectivity (Ross Island Bridge ramp connections)** Adds a new ramp connection between I-405 and the Ross Island Bridge from Kelly Avenue. Restore at-grade intersections along Naito Parkway, with new signalized intersections at Ross Island Bridge access and at Hooker Street. Removes several existing roadways and ramp connections.	$$$$ Auto/ Freight	With Naito alignment: Include
2999 Portland	**Pedestrian connection from Barbur to Terwilliger at Gibbs** Construct a new pedestrian walkway under the tram within the Gibbs right-of-way through the Terwilliger Parkway. The steep grade and forested area will require lighting and stairs.	$ Pedestrian	With Barbur/Naito station near Gibbs: Include
3028 Portland	**Inner Hamilton bikeway -from SW Terwilliger Blvd to SW Corbett Ave** Enhanced shared roadway. Includes connection to Terwilliger on SW Hamilton Terrace	¢ Bicycle	With Barbur/Hamilton station: Include
3038 Portland	**Lower SW 1st bikeway -from SW Barbur Blvd to SW Arthur St** Multiple bicycle facility types: separated in-roadway (Corbett: Gibbs - Grover); bicycle boulevard (all other segments). Includes connection to SW Kelly Ave on SW Grover St and SW Corbett Ave	¢ Bicycle	With Barbur/Naito station near Gibbs: Include
4002 Portland ODOT	**Barbur Blvd, SW (3rd - Terwilliger): Multimodal Improvements** Construct Improvements for transit, bikes and pedestrians. Transit improvements include preferential signals, pullouts, shelters, left turn lanes, sidewalks, and crossing improvements.	$$ Multimodal	With Barbur alignment: Include
5013 Portland ODOT	**Naito/South Portland Improvements (left turn pockets with bike/ped and remove tunnel, ramps and viaduct)** Reconstruct Naito Pkwy as two-lane road w/bike lanes, sidewalks, left turn pockets, & on-street parking. Remove grade separation along Naito at Barbur Blvd. (tunnel), the Ross Island Bridge, Arthur/Kelly (viaduct), and the Grover pedestrian bridge.	$$$$ Multimodal	With Barbur station: Include signalized pedestrian crossing(s) of Naito near station (1%) With Naito alignment: Include
6022 Portland ODOT	**I-405 Bike/Ped Crossing Improvements** Improve opportunities for bicycles and pedestrians to cross over/under I-405 on Harbor Drive, Naito Parkway, 1st, 4th, 5th, 6th and Broadway	$ Bike/Ped	All options: Consider opportunity to address with HCT crossing of I-405

Include in DEIS | **Include Partially** | **Do Not Include**

Cost: ¢ = up to $500,000 **$** = up to $5M **$$** = up to $10M **$$$** = up to $20 M **$$$$** = more than $20M

2. South Portland to Barbur Transit Center

2. South Portland to Barbur Transit Center: BRT Design Options



Design Options

Options in this section prioritize either development potential and accessibility (Barbur, Hillsdale Loop options) or physical separation of HCT from traffic (Adjacent to I-5 option, tunnel options).

Recommended for further study because:

D. Barbur Boulevard would:

- Support the City of Portland's Barbur Concept Plan, which identifies HCT as a necessary component of the vision for Barbur Boulevard;
- Include the addition or improvement of sidewalks, bike facilities, storm water features, and other streetscaping;
- Include replacement of the Newbury and Vermont viaducts, complete with sidewalks and bike lanes.
- Cost significantly less than the tunnel options and an estimated $44M/$70M (2014$/2023$ with finance costs) less than the Hillsdale loop option.

E. Barbur – Hillsdale loop using Capitol Hwy & Bertha would:

- Provide HCT service to Hillsdale without a tunnel and without bypassing significant numbers of households or employment where the alignment would deviate from SW Barbur Boulevard;
- Potentially include addition of new pedestrian/bicycle structure parallel to the Newbury and Vermont viaducts (not a complete replacement) despite the alignment bypassing them.

Further discussion required because:

F. Adjacent to I-5 would:

- Avoid key intersections and business accesses along SW Barbur Boulevard;
- Require significant structure on steep slopes to avoid Barbur Boulevard and ramps;
- Cost significantly more than the Barbur option;
- Provide more limited support for the Barbur Concept Plan;
- Result in more difficult pedestrian connections to stations;
- Not include pedestrian and bike improvements to Barbur Boulevard or along the BRT alignment.

Not recommended because:

A. Short Tunnel – exit at Hamilton would:

- Be very expensive and compromise the lower cost advantage of the BRT mode over LRT;
- Result in severe construction impacts.

B. Medium Tunnel – exit at Bertha would:

- Be very expensive;
- Result in severe construction impacts.

C. Long Tunnel – exit at Barbur Transit Center would:

- Be very expensive;
- Result in severe construction impacts;
- Not support the Barbur Concept Plan as HCT would bypass the historic section of the boulevard.

ID	Option	CAP	TRA	ACC	ENV	DEV	PRP	TRF
2. South Portland to Barbur Transit Center								
A	Short Tunnel - exit at Hamilton	○	◑	◑	◑	◑	◑	◕
B	Medium Tunnel - exit at Bertha	○	●	○	◕	◑	◑	◕
C	Long Tunnel - exit at Barbur Transit Center	○	●	○	◕	○	◔	◕
D	Barbur - South Portland to Crossroads	●	◑	◕	◑	◕	◑	◔
E	Barbur - Hillsdale loop using Capitol Hwy & Bertha	◕	○	●	◔	●	◕	◔
F	Adjacent to I-5	◑	◑	◑	○	◕	◔	◕

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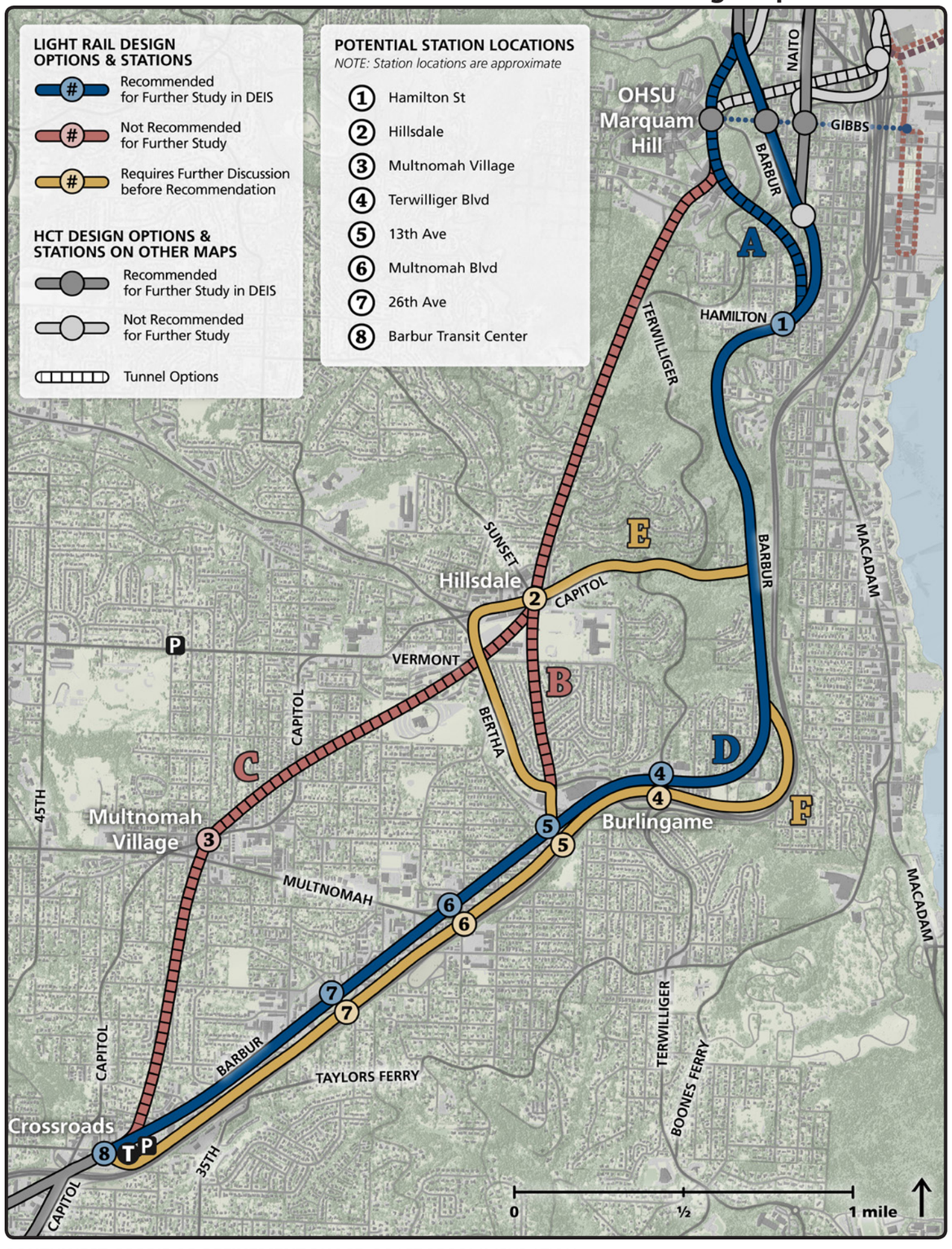
Best ● ◕ ◑ ◔ ○ Worst

Proposed for Further Study in DEIS

Not Proposed for Further Study in DEIS

Requires Further Discussion before Recommendation

2. South Portland to Barbur Transit Center: LRT Design Options



Design Options

Options in this section prioritize either development potential and accessibility (Barbur, Hillsdale Loop options) or physical separation of HCT from traffic (Adjacent to I-5 option, tunnel options).

Recommended for further study because:

D. Barbur Boulevard would:

- Support the City of Portland's Barbur Concept Plan, which identifies HCT as a necessary component of the vision for Barbur Boulevard;
- Include the addition or improvement of sidewalks, bike facilities, storm water features, and other streetscaping;
- Include replacement of the Newbury and Vermont viaducts, complete with sidewalks and bike lanes.
- Cost an estimated $918/$1,461M (2014$/2023$ with finance costs) less than the short tunnel option;
- Result in fewer construction impacts to the neighborhood, compared to tunnel options that would include significant impacts at both portals—near Duniway Park to the north and near Hamilton Street to the south.

A. Short Tunnel – exit at Hamilton would:

- Serve Marquam Hill/OHSU with a deep station similar to the MAX station at the Oregon Zoo;
- Avoid traffic congestion in the northern section of SW Barbur Boulevard, although it would also not serve the Lair Hill neighborhood, in contrast to surface options that would include an elevator between Marquam Hill/OHSU and SW Barbur Boulevard in the vicinity of Gibbs Street;
- Result in reliable travel times.

Further discussion required because:

E. Barbur – Hillsdale loop using Capitol Hwy & Bertha would:

- Provide HCT service to Hillsdale without bypassing significant numbers of households or employment where the alignment would deviate from SW Barbur Boulevard;
- Potentially include the addition of a new pedestrian/bicycle structure parallel to the Newbury and Vermont viaducts despite the alignment bypassing them;
- Require a cut-and cover tunnel to avoid the commercial section of Hillsdale, resulting in higher costs.

F. Adjacent to I-5 would:

- Avoid key intersections and business accesses along SW Barbur Boulevard;
- Require significant structure on steep slopes to avoid Barbur Boulevard and ramps;
- Cost an estimated $87/$138M (2014$/2023$ with finance costs) more than Barbur option;
- Provide more limited support for the Barbur Concept Plan;
- Result in more difficult pedestrian connections to stations;
- Not include pedestrian and bike improvements to Barbur Boulevard or along the LRT alignment.

Not recommended because:

B. Medium Tunnel – exit at Bertha would:

- Be very expensive;
- Result in severe construction impacts.

C. Long Tunnel – exit at Barbur Transit Center would:

- Be very expensive;
- Result in severe construction impacts;
- Not support the Barbur Concept Plan as HCT would bypass the historic section of the boulevard.

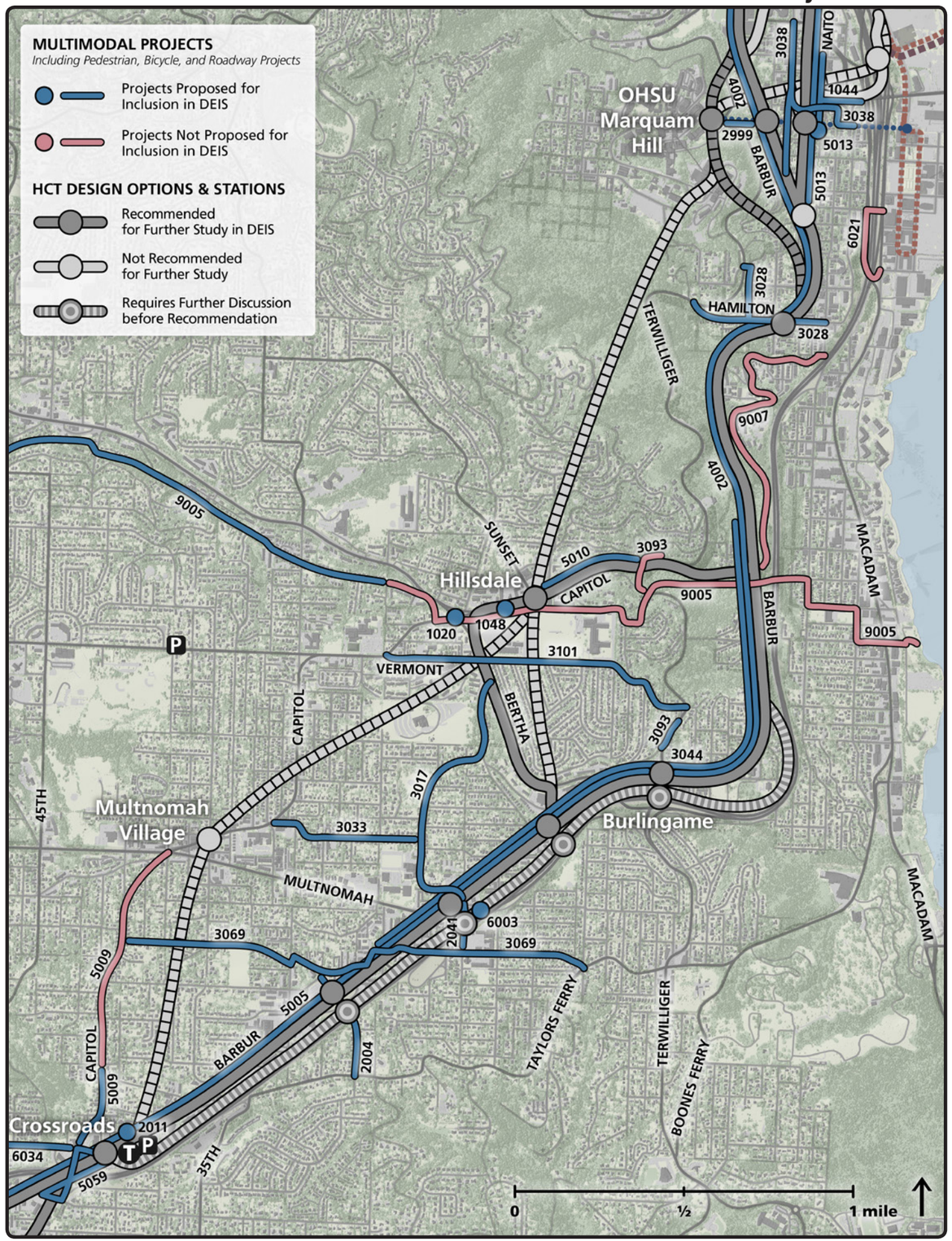
ID	Option	CAP	TRA	ACC	ENV	DEV	PRP	TRF
2. South Portland to Barbur Transit Center								
A	Short Tunnel - exit at Hamilton	○	◑	◑	◑	◑	◑	◕
B	Medium Tunnel - exit at Bertha	○	●	○	◕	◑	◑	◕
C	Long Tunnel - exit at Barbur Transit Center	○	●	○	◕	○	◔	◕
D	Barbur - South Portland to Crossroads	●	◑	◕	◑	◕	◑	◔
E	Barbur - Hillsdale loop using Capitol Hwy & Bertha (tunnel)	◔	◔	●	◔	●	◔	◔
F	Adjacent to I-5	◑	◑	◑	○	◑	◔	◕

CAP = Capital Costs / TRA = Travel Time / ACC = Accessibility to Transit / ENV = Environmental Impacts
DEV = Development/Redevelopment Potential / PRP = Property Impacts / TRF = Traffic Impacts

Best ● ◕ ◑ ◔ ○ Worst

Proposed for Further Study in DEIS | Not Proposed for Further Study in DEIS | Requires Further Discussion before Recommendation

2. South Portland to Barbur Transit Center: Multimodal Projects



Multimodal Projects

Multimodal projects recommended to advance include pedestrian and bicycle projects intended to improve access to potential station areas along the alignment options. This section of the corridor is especially lacking in pedestrian and bicycle facilities and requires extra attention to get people to stations without driving. Several projects were outside the immediate walkshed of any potential station area and were not recommended.

#### City/Ownership	**Project Title** Project Description	Cost Primary Mode	Draft DEIS Recommendation
1020 Portland	**Beaverton Hillsdale / Bertha / Capitol Hwy. Intersection Improvements** Redesign intersection to improve safety.	$ Auto/ Freight	With surface Hillsdale/Capitol alignment: Include
1044 Portland ODOT	**South Portland Circulation and Connectivity (Ross Island Bridge ramp connections)** Adds a new ramp connection between I-405 and the Ross Island Bridge from Kelly Avenue. Restore at-grade intersections along Naito Parkway, with new signalized intersections at Ross Island Bridge access and at Hooker Street. Removes several existing roadways and ramp connections.	$$$$ Auto/ Freight	With Naito alignment: Include
1048 Portland	**Traffic Calming** Calm traffic in the Burlingame and Hillsdale retail districts	¢ Auto/ Freight	With Hillsdale station: Include station access and safety treatments in Hillsdale TC (50%)
2004 Portland	**26th Ave, SW (Spring Garden - Taylors Ferry): Pedestrian Improvements** Construct a walkway for pedestrian travel and access to transit and install street lighting	¢ Pedestrian	With Barbur/26th station: Include
2011 Portland ODOT	**Connections to Transit/Transit Improvements: Barbur & Taylors Ferry** New steps/ramp connecting SW Taylors Ferry frontage road to Barbur across from transit center at existing signalized crossing	¢ Pedestrian	All options: Include. Note: may be funded through ODOT.
2041 Portland	**SW 19th Ave sidewalks: Barbur - Spring Garden** Construct new sidewalks where none exist (DA)	¢ Pedestrian	With Barbur/Multnomah station: Include
3017A Portland	**Capitol Hill Rd bikeway -from SW Barbur Blvd to SW Bertha Blvd** Multiple bicycle facility types: bicycle boulevard or enhanced shared roadway (Barbur - Troy; 21st - Custer); bicycle boulevard or advisory bike lane (Troy - 21st); enhanced shared roadway (Custer - Bertha)	¢ Bicycle	With Barbur/Multnomah station: Include
3017B Portland	**Capitol Hill Rd sidewalks -from SW Barbur Blvd to SW Bertha Blvd** Install sidewalk on Capitol Hill Road from Barbur to Bertha	$ Pedestrian	With Barbur/Multnomah station: Include from Barbur to existing sidewalk at Custer Park (35%)
3028 Portland	**Inner Hamilton bikeway -from SW Terwilliger Blvd to SW Corbett Ave** Enhanced shared roadway. Includes connection to Terwilliger on SW Hamilton Terrace	¢ Bicycle	With Barbur/Hamilton station: Include
3033A Portland	**Inner Troy bikeway -from SW Capitol Hwy to SW Capitol Hill Rd** Bike boulevard from SW Capitol Hwy to SW Capitol Hill Rd	¢ Bicycle	With Barbur/Multnomah station: Include

Multimodal Projects Continued on Next Page

Include in DEIS **Include Partially** **Do Not Include**

Cost: **¢** = up to $500,000 **$** = up to $5M **$$** = up to $10M **$$$** = up to $20 M **$$$$** = more than $20M

2. South Portland to Barbur Transit Center: Multimodal Projects

DISCUSSION DRAFT 5/6/14

#### City/Ownership	**Project Title** Project Description	Cost Primary Mode	Draft DEIS Recommendation
3033B Portland	**Inner Troy sidewalks - from SW Capitol Hwy to SW Capitol Hill Rd** Install sidewalk from SW Capitol Hwy to SW Capitol Hill Rd	$ Pedestrian	Do not include
3093B Portland	**Terwilliger sidewalk (Capitol to Terwilliger Pl)** Provide sidewalk from SW Capitol Hwy south to SW Terwilliger Place	¢ Pedestrian	Do not include
3069B Portland	**Spring Garden/Dolph Ct, SW (Capitol Hwy - Barbur): Sidewalks** Install sidewalk along Dolph Ct from Capitol Hwy to 26th Way and along Spring Garden from 26th Way to Barbur	$ Pedestrian	With Barbur/26th or Barbur/ Multnomah station: Include from 27th Ave to intersection of 26th Way/Dolph Ct. (15%)
3093A Portland	**Terwilliger bikeway gaps** Separated bicycle route in-roadway. Eliminate key gaps in the Terwilliger Blvd bikeway.	¢ Bicycle	With Terwilliger station: Include lower section (near Barbur) (50%)
3101 Portland	**Vermont-Chestnut bikeway -from SW Capitol Hwy to SW Terwilliger Blvd** Bicycle boulevard	¢ Bicycle	With Terwilliger station: Include
4002 Portland ODOT	**Barbur Blvd, SW (3rd - Terwilliger): Multimodal Improvements** Construct Improvements for transit, bikes and pedestrians. Transit improvements include preferential signals, pullouts, shelters, left turn lanes, sidewalks, and crossing improvements.	$$ Multimodal	With Barbur alignment: Include
5005 Portland ODOT	**Barbur Blvd, SW (Terwilliger - City Limits): Multimodal Improvements** Complete boulevard design improvements including sidewalks and street trees, safe pedestrian crossings, enhance transit access and stop locations, and bike lanes (Terwilliger - SW 64th or Portland City Limits).	$$$$ Multimodal	Barbur stations including Tunnel and I-5 options: Include within 1/2 mile of stations (20%)
			With Barbur alignment: Include
5009 Portland	**Capitol Hwy Improvements (replace roadway and add sidewalks)** Improve SW Capitol Highway from SW Multnomah Boulevard to SW Taylors Ferry Road per the Capitol Highway Plan. Replace Existing Roadway and add sidewalks, bike lanes and green stormwater features.	$$$ Multimodal	All options: Include one side from Taylors Ferry to Alice Street (15%)
5010 Portland	**Capitol Hwy, SW (Terwilliger - Sunset): Multimodal Improvements** Construct sidewalks, crossing improvements for access to transit and bike improvements, and install left turn lane at the Capitol/Burlingame intersection	$ Multimodal	With surface Hillsdale/Capitol alignment: Include
5013 Portland ODOT	**Naito/South Portland Improvements (left turn pockets with bike/ ped and remove tunnel, ramps and viaduct)** Reconstruct Naito Pkwy as two-lane road w/bike lanes, sidewalks, left turn pockets, & on-street parking. Remove grade separation along Naito at Barbur Blvd. (tunnel), the Ross Island Bridge, Arthur/Kelly (viaduct), and the Grover pedestrian bridge.	$$$$ Multimodal	With Barbur station: Include signalized pedestrian crossing(s) of Naito near station (1%)
			With Naito alignment: Include
5059 Portland ODOT	**SW Portland/ Crossroads Multimodal Project (roadway realignments and modifications to Barbur Blvd., Capitol Hwy., and the I-5 southbound on-ramp)** Implement Barbur Concept Plan walk audit recommendations in the SW Portland TC, including modifications to Barbur Blvd., Capitol Hwy., and the I-5 southbound on-ramp to support safer and more efficient operation for all modes. Project specifics include intersection types and roadway realignments to be refined.	$$$$ Multimodal	All options: Include multimodal investment at the Barbur/Capitol/Huber/Taylors Ferry intersections at this location. Includes improved pedestrian crossings. (5%)
6003 Portland	**Multnomah viaduct bicycle and pedestrian facilities** Construct new bicycle and pedestrian facilities on Barbur at/parallel to Multnomah Blvd. viaduct	$ Bike/Ped	With Barbur alignment: Include
6021 Portland	**Hood Avenue Pedestrian Improvements (Lane to Macadam)** Install sidewalk with barrier along east side and pedestrian crossing at Lane Street	$ Bike/Ped	Do not include
6034 Portland	**Taylors Ferry, SW (Capitol Hwy - City Limits): Bicycle & Pedestrian Improvements** SW Taylors Ferry Rd: Provide bicycle lanes, including shoulder widening and drainage, and construct sidewalks for access to transit	$ Bike/Ped	All options: Include Capitol to 49th (40%)
9005 Portland	**Red Electric Trail: Fanno Creek Trail to Willamette Park** Provide east-west route for pedestrians and cyclists in SW Portland that connects and extends the existing Fanno Creek Greenway Trail to Willamette Park. Listed as a Regional Bicycle Parkway and Regional Pedestrian Parkway in the Regional Active Transportation Plan (5/9/13).	$$$ Multi-Use Trail	With Hillsdale station: Include Hillsdale to Shattuck (10%)
9007 Portland	**Slavin Road to Red Electric Trail: Barbur to Corbett** Build Multi use trail on Slavin Road from Barbur to Corbett. The Red Electric Trail is listed as a Regional Bicycle Parkway and Regional Pedestrian Parkway in the Regional Active Transportation Plan (5/9/13).	$ Multi-Use Trail	Do not include

Include in DEIS **Include Partially** **Do Not Include**

Cost: **¢** = up to $500,000 **$** = up to $5M **$$** = up to $10M **$$$** = up to $20 M **$$$$** = more than $20M

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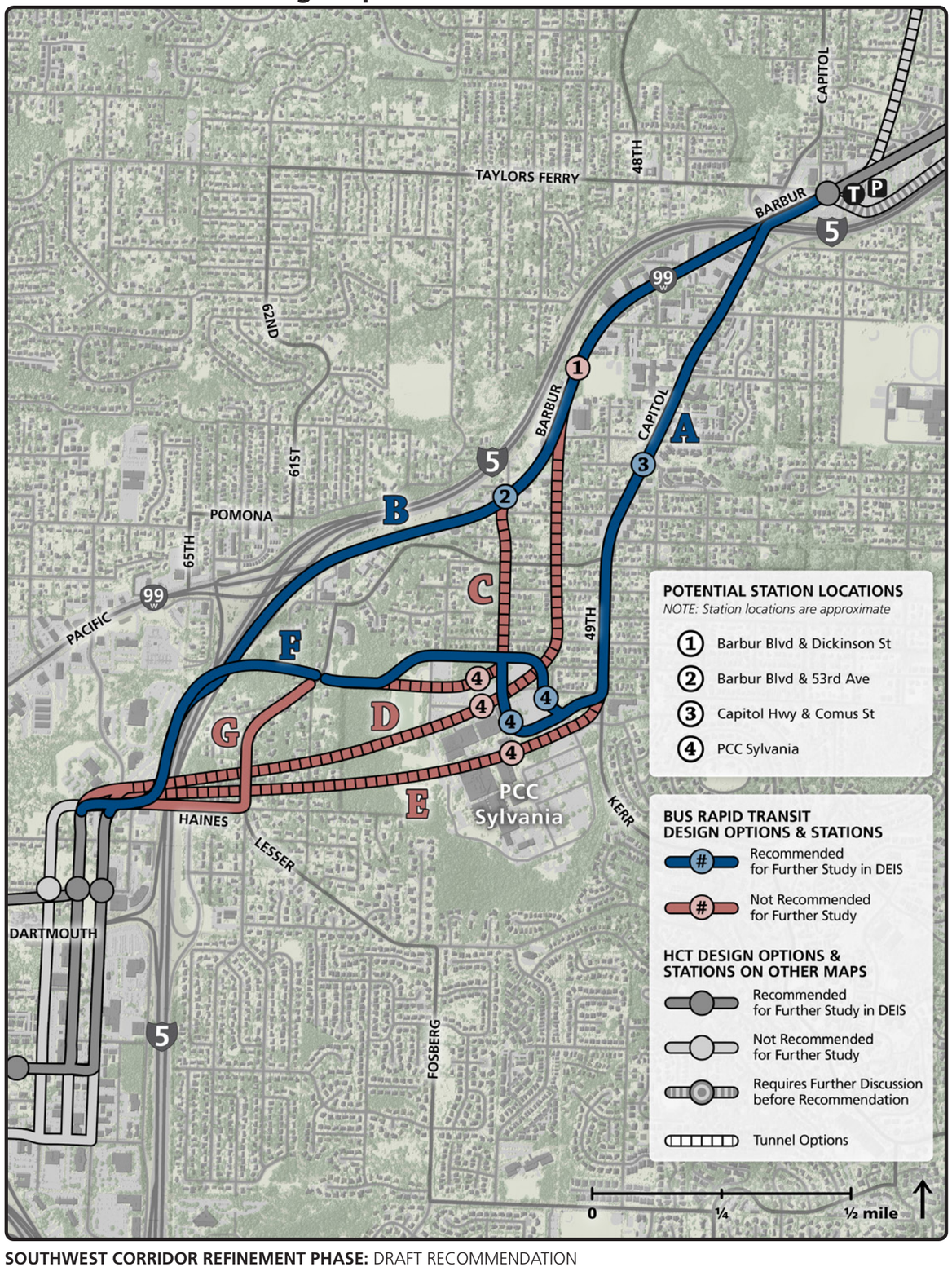
3. PCC Area

3. PCC Area: BRT Design Options



Design Options

Options in this section are differentiated by how they serve the PCC-Sylvania campus. BRT could serve the campus directly by a surface option via Capitol Highway or by tunnel; the surface option via Barbur would require a longer walk to campus, but would result in a much faster alignment compared to Capitol Highway options, and a much less expensive alignment compared to tunnel options.

Recommended for further study because:

B. Barbur – Crossroads to Tigard (with improved PCC walk via SW 53rd Avenue) would:

- Prioritize travel time, saving approximately four minutes over BRT routes to the PCC campus;
- Feature an improved walk connection to the PCC campus from SW 53rd Avenue, with a raised station, and paving and sidewalks on SW 53rd Avenue. The walk would be slightly less than 1/3 mile uphill to the edge of the PCC property, and nearly ½ mile to PCC buildings;
- Support a new park and ride lot on vacant property north of SW Barbur Boulevard at SW 55th Avenue.

A. PCC Campus (Front Door or Circumferential around north end) would:

- Prioritize accessibility and development potential, serving the PCC-Sylvania campus directly;
- Include an additional station on SW Capitol Highway.

F. New bridge over I-5 (crossing option for campus routes) would:

- Provide the fastest travel time;
- Minimize disruptions to residential neighborhoods near PCC.

Not recommended because:

C. Short Tunnel via Barbur,

D. Tunnel via Barbur, and

E. Tunnel via Capitol Hwy would:

- Be expensive and compromise the lower cost advantage of the BRT mode over LRT;
- Result in severe construction impacts.

G. Lower Haines Road (crossing option for campus routes) would:

- Impact properties by widening at least one side of Lesser Road to provide adequate space for BRT, bike lanes and sidewalks;
- Require sharp turning movements and operation on steep grades that would slow the BRT.

ID	Option	CAP	TRA	ACC	ENV	DEV	PRP	TRF
3a. PCC Area								
A	PCC Campus via Capitol Hwy (uses either I-5 crossing)	◕	○	◕	◕	◕	◔	◑
B	Barbur - Crossroads to Tigard (with improved PCC walk via SW 53rd, uses new bridge I-5 crossing)	●	●	◑	●	◑	●	◑
C	Short Tunnel via Barbur (uses new bridge I-5 crossing)	◔	◕	◑	○	◕	◔	◑
D	Tunnel via Barbur (tunnels under I-5)	○	◕	◑	◕	◑	◔	◑
E	Tunnel via Capitol Hwy (tunnels under I-5)	○	◕	◕	◕	◑	◑	◑
3b. PCC Area - I-5 Crossing Options for Campus Routes								
F	New Bridge over I-5	◔	◑	◕	◔	◕	◕	◕
G	Lower Haines Road	●	○	◕	◑	◕	◑	◑

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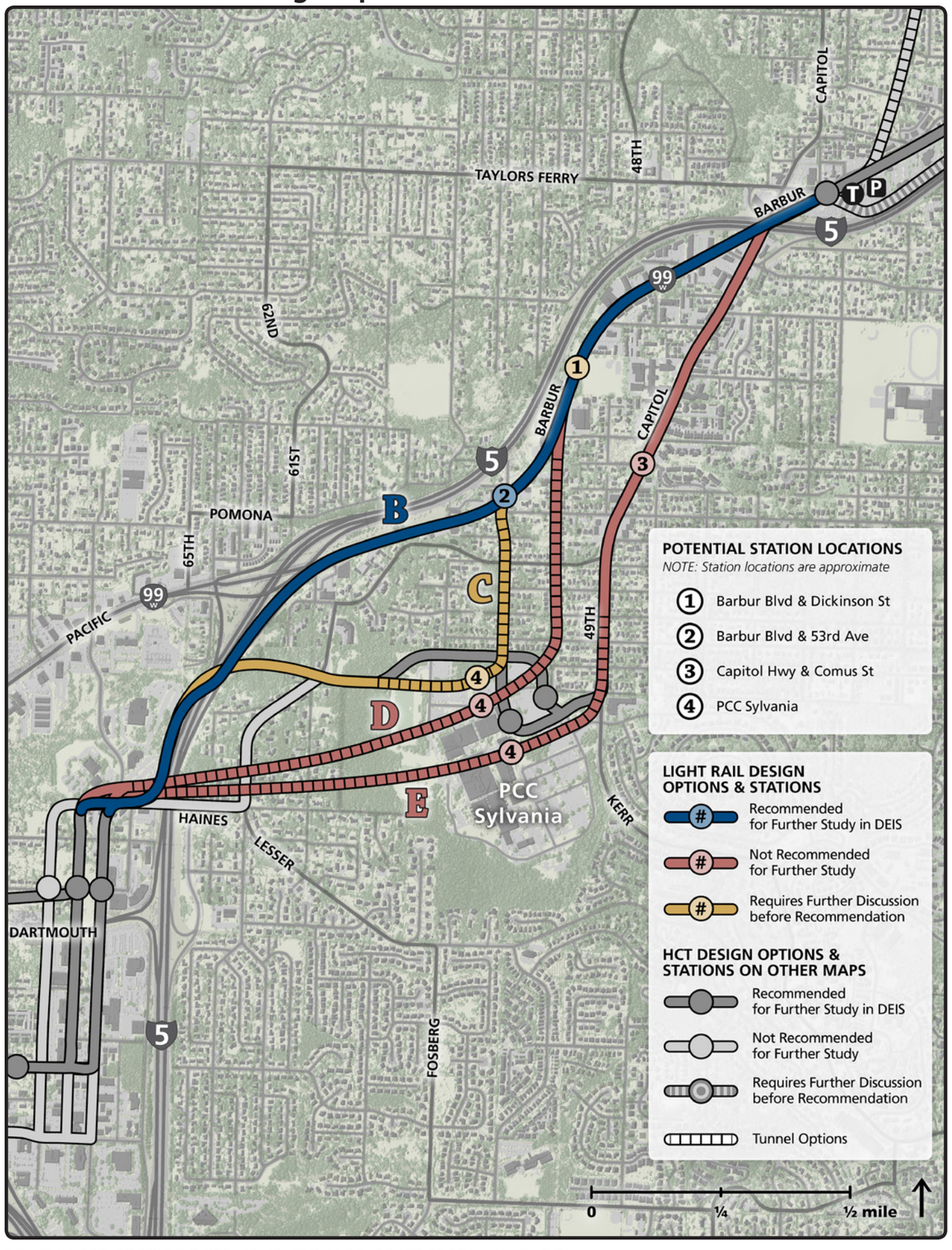
Best ● ◕ ◑ ◔ ○ Worst

Proposed for Further Study in DEIS

Not Proposed for Further Study in DEIS

3. PCC Area: LRT Design Options



Design Options

Options in this section are differentiated by how they serve the PCC-Sylvania campus. Because of the steep topography, LRT could only provide direct service to the campus by tunnel. The surface option via Barbur would require a longer walk to campus, but would be much less expensive and disruptive to the neighborhood to construct and would provide a more direct route for riders not accessing PCC.

Recommended for further study because:

B. Barbur – Crossroads to Tigard (with improved PCC walk via SW 53rd Avenue) would:

- Be the least expensive option;
- Feature an improved walk connection to the PCC campus from SW 53rd Avenue, potentially with a raised station, and paving and sidewalks on SW 53rd Avenue. The walk would be slightly less than 1/3 mile uphill to the edge of the PCC property, and nearly ½ mile to PCC buildings;
- Support a new park and ride lot on vacant property north of SW Barbur Boulevard at SW 55th Avenue;
- Include a new transit crossing over I-5 to the Tigard Triangle.

Further discussion required because:

C. Short Tunnel via Barbur would:

- Serve PCC-Sylvania campus directly;
- Result in significant construction impacts to the neighborhood;
- Cost an estimated $320/$509M (2014$/2023$ with finance costs) more than the Barbur option;
- Likely be contingent on plans for future redevelopment of the campus area.

Not recommended because:

D. Tunnel via Barbur and

E. Tunnel via Capitol Hwy would:

- Be very expensive compared to the shorter tunnel option without providing significantly more benefit.

ID	Option	CAP	TRA	ACC	ENV	DEV	PRP	TRF
3. PCC Area								
B	Barbur - Crossroads to Tigard (with improved PCC walk via SW 53rd, uses new bridge I-5 crossing)	●	◕	◕	●	◕	●	◑
C	Short Tunnel via Barbur (uses new bridge I-5 crossing)	◔	◔	◕	◑	●	◔	◑
D	Tunnel via Barbur (tunnels under I-5)	○	◔	◕	◕	◑	◔	◑
E	Tunnel via Capitol Hwy (tunnels under I-5)	○	◔	●	◕	◕	◑	◑

CAP = Capital Costs / TRA = Travel Time / ACC = Accessibility to Transit / ENV = Environmental Impacts
DEV = Development/Redevelopment Potential / PRP = Property Impacts / TRF = Traffic Impacts

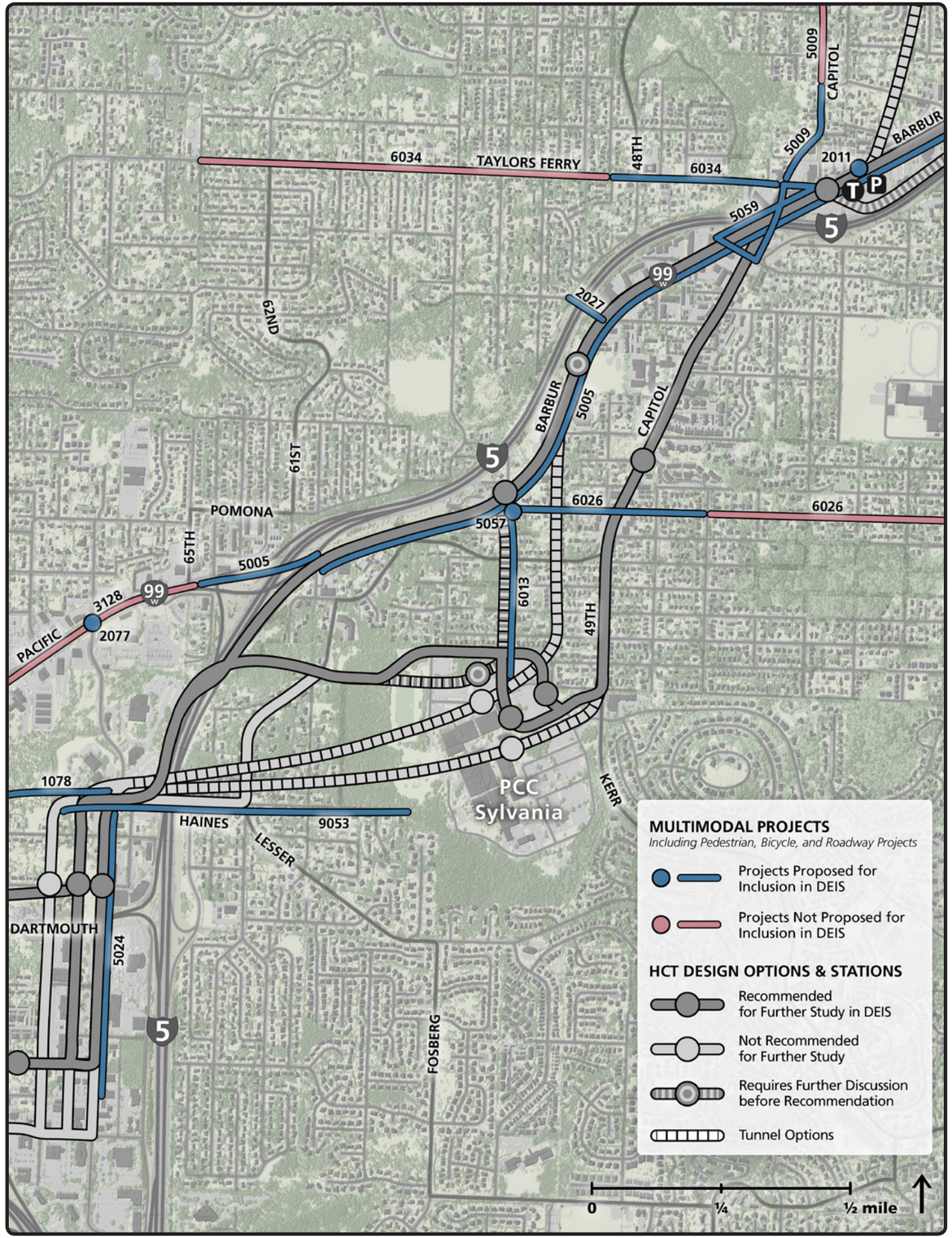
Best ● ◕ ◑ ◔ ○ Worst

Proposed for Further Study in DEIS

Not Proposed for Further Study in DEIS

Requires Further Discussion before Recommendation

3. PCC Area: Multimodal Projects



Multimodal Projects

Multimodal projects recommended to advance include pedestrian and bicycle projects intended to improve access to potential station areas near PCC. If the alignment follows Barbur near I-5, a pedestrian connection over I-5 is recommended to improve station access for neighborhoods north of I-5.

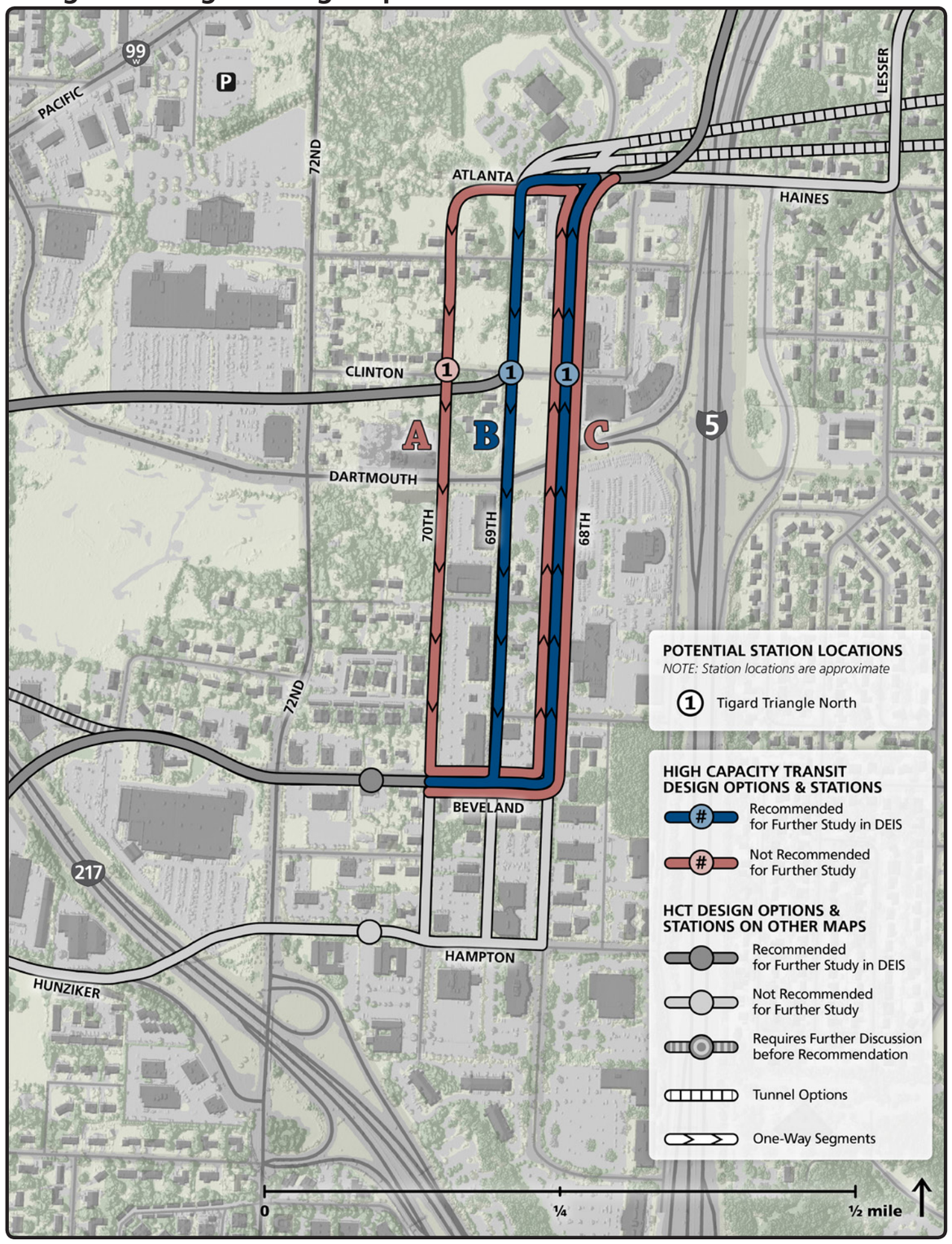
#### City/Ownership	**Project Title** Project Description	Cost Primary Mode	Draft DEIS Recommendation
1078 Tigard	**Atlanta Street Extension (new roadway)** Extend Atlanta Street west to Dartmouth Street	$$ Auto/ Freight	With North Triangle station: Include.
2011 Portland ODOT	**Connections to Transit/Transit Improvements: Barbur & Taylors Ferry** New steps/ramp connecting SW Taylors Ferry frontage road to Barbur across from transit center at existing signalized crossing	¢ Pedestrian	All options: Include. Note: may be funded through ODOT.
2027 Portland ODOT	**Pedestrian Overpass near Markham School** Construct pedestrian path and bridge over Barbur Blvd. and I-5 to connect SW Alfred and SW 52nd to the rear of Markham School.	$$ Pedestrian	With Barbur/53rd station: Include adjacent to station-area if station is on Barbur
2077 Tigard ODOT	**Tigard Transit Center crossing improvements.** Shorten crossing distances, make crosswalks more visible, and provide more time for pedestrians to cross at the intersections of 99W and SW Greenburg Rd., 99W & SW Hall Blvd., and 99W & SW Dartmouth St.	$ Pedestrian	All options: Include crosswalk visibility and timing elements at Greenburg, Hall, Dartmouth, 72nd, and 68th.
3128 Tigard ODOT	**Pacific Hwy-99W Bike Lanes in Tigard** Fill in gaps in bike lanes along Pacific Hwy-99W within the Tigard city limits. Listed as a Regional Bicycle Parkway in the Regional Active Transportation Plan (5/9/13).	$ Bicycle	Do not include
5005 Portland ODOT	**Barbur Blvd, SW (Terwilliger - City Limits): Multimodal Improvements** Complete boulevard design improvements including sidewalks and street trees, safe pedestrian crossings, enhance transit access and stop locations, and bike lanes (Terwilliger - SW 64th or Portland City Limits).	$$$$ Multimodal	Barbur stations including Tunnel and I-5 options: Include within 1/2 mile of stations (20%) With Barbur alignment: Include
5009 Portland	**Capitol Hwy Improvements (replace roadway and add sidewalks)** Improve SW Capitol Highway from SW Multnomah Boulevard to SW Taylors Ferry Road per the Capitol Highway Plan. Replace Existing Roadway and add sidewalks, bike lanes and green stormwater features.	$$$ Multimodal	All options: Include one side from Taylors Ferry to Alice Street (15%)
5024 Tigard	**68th Avenue (widen to 3 lanes)** Widen to 3 lanes, or for transit, including sidewalks and bike lanes between Atlanta Street and south end	$$$ Multimodal	With Triangle North station: Include sidewalk on one side from Atlanta to south of Baylor (2%) With 68th alignment: Include
5057 Portland	**SW 53rd and Pomona (improves safety of ped/bike users)** Reconfigure and improve intersection to manage traffic turning speeds, and improve safety of ped/bike users between Barbur and Pomona.	¢ Multimodal	With Barbur/53rd station: Include if station is on Barbur
5059 Portland ODOT	**SW Portland/ Crossroads Multimodal Project (roadway realignments and modifications to Barbur Blvd., Capitol Hwy., and the I-5 southbound on-ramp)** Implement Barbur Concept Plan walk audit recommendations in the SW Portland TC, including modifications to Barbur Blvd., Capitol Hwy., and the I-5 southbound on-ramp to support safer and more efficient operation for all modes. Project specifics include intersection types and roadway realignments to be refined.	$$$$ Multimodal	All options: Include multimodal investment at the Barbur/Capitol/ Huber/Taylors Ferry intersections at this location. Includes improved pedestrian crossings. (5%)
6013 Portland	**Barbur/PCC ped/bike Connection** Neighborhood greenway connection between Barbur and PCC via SW 53rd	¢ Bike/Ped	With Barbur/53rd station: Include if station is on Barbur
6026 Portland	**Pomona St: Bicycle and Ped improvements (35th to Barbur)** Provide bike lanes and sidewalks	$ Bike/Ped	With Barbur/53rd station: Include from 53rd to 45th (50%)
6034 Portland	**Taylors Ferry, SW (Capitol Hwy - City Limits): Bicycle & Pedestrian Improvements** SW Taylors Ferry Rd: Provide bicycle lanes, including shoulder widening and drainage, and construct sidewalks for access to transit	$ Bike/Ped	All options: Include Capitol to 49th (40%)
9053 Portland Tigard	**Ped/Bike Connection between Tigard Triangle and PCC-Sylvania** Provide pedestrian/bicycle connection between the Tigard Triangle area and PCC-Sylvania	$ Multi-Use Trail	All options: Consider opportunity to add ped/bike facilities to HCT connection

Include in DEIS | **Include Partially** | **Do Not Include**

Cost: **¢** = up to $500,000 **$** = up to $5M **$$** = up to $10M **$$$** = up to $20 M **$$$$** = more than $20M

4. Tigard Triangle

4. Tigard Triangle: Design Options for BRT and LRT



Design Options

The options in this section would perform fairly similarly and are differentiated mainly by their locations and footprints within the Tigard Triangle, including couplet options and choices of using SW 68th, SW 69th, and SW 70th Avenues to connect the northern and southern areas of the Triangle. These options do not apply to the Clinton to Tigard Transit Center option in the following section (OR-217 Crossing), an option which would operate only in the northern section of the Triangle.

Recommended for further study because:

B. 68th/69th Couplet would:

- Result in more efficient transit and auto travel compared to the two-way option;
- Require less right-of-way, resulting in fewer property impacts compared to other options;
- Best support Tigard's High Capacity Transit Land Use Plan.

Not recommended because:

C. 68th Two-Way would:

- Require more right-of-way compared to couplet options.

A. 68th/70th Couplet would:

- Require significantly more structure and property acquisition compared to the 68th/69th couplet due to the narrow width and steep slopes on SW 70th Avenue.

ID	Option	CAP	TRA	ACC	ENV	DEV	PRP	TRF
4. Tigard Triangle								
A	68th/70th Couplet	◑	◑	◕	◑	◑	◔	◑
B	68th/69th couplet	●	◑	◕	◕	◑	◕	◑
C	68th Two-Way	◕	◑	◑	●	◑	◔	◔

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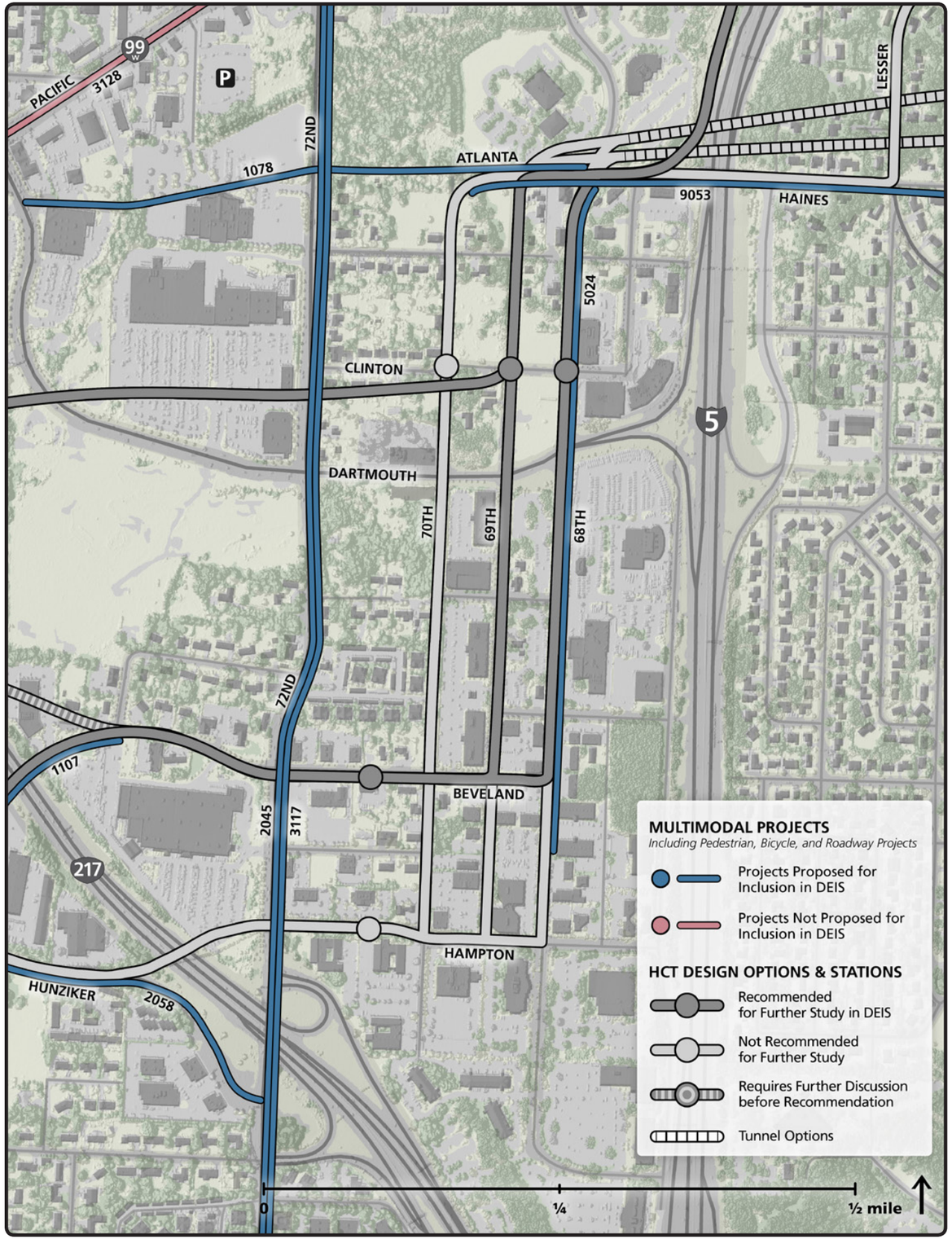
Best ● ◕ ◑ ◔ ○ Worst

Proposed for Further Study in DEIS

Not Proposed for Further Study in DEIS

4. Tigard Triangle: Multimodal Projects



Multimodal Projects

Multimodal projects recommended to advance in the Tigard Triangle include a new street connection, pedestrian and bicycle projects to improve access to potential station areas, and improving existing streets for transit. Filling gaps in the Pacific Highway bike lanes (the downtown viaduct in particular) were outside the immediate station area and were not recommended.

#### City/Ownership	**Project Title** Project Description	Cost Primary Mode	Draft DEIS Recommendation
1078 Tigard	**Atlanta Street Extension (new roadway)** Extend Atlanta Street west to Dartmouth Street	$$ Auto/ Freight	With North Triangle station: Include.
1107 Tigard Washington Co.	**Hwy. 217 Over-crossing - Beveland/Hampton Connection** Build new connection between Hunziker Road and 72nd Avenue at Hampton or Beveland, requires over-crossing over Hwy 217, revises existing intersection.	$$$$ Auto/ Freight	With Beveland or Hampton alignment: Include
2045 Tigard	**72nd Avenue sidewalks: 99W to Bonita** Complete gaps in sidewalk on both sides of street from Highway 99W to Bonita Road	$ Pedestrian	With Triangle North station: Include one side from 99W-Dartmouth (25%)
			With Triangle South station: Include one side Dartmouth-Hunziker (25%)
			With 72nd/Tech Center Drive station: Include west side Tech Center Dr-south of Landmark Ln (20%)
			With WES/Bonita station: Include east side Bonita-Landmark Ln (10%)
2058 Tigard	**Hunziker Street Sidewalks: 72nd to Hall** Install sidewalk on both sides of the street from 72nd Avenue to Hall Boulevard	$ Pedestrian	With Hunziker/Beveland station: Include one side from Beveland overcrossing to 72nd (50%)
3117 Tigard Tualatin	**72nd Avenue bikeway: 99W to city limits** Install bike facilities on both sides of the street from Highway 99W to South City Limits	$ Bicycle	All options: Include if done through re-striping (conversion from 3-lane to 2-lane with bike lanes)
3128 Tigard ODOT	**Pacific Hwy-99W Bike Lanes in Tigard** Fill in gaps in bike lanes along Pacific Hwy-99W within the Tigard city limits. Listed as a Regional Bicycle Parkway in the Regional Active Transportation Plan (5/9/13).	$ Bicycle	Do not include
5024 Tigard	**68th Avenue (widen to 3 lanes)** Widen to 3 lanes, or for transit, including sidewalks and bike lanes between Atlanta Street and south end	$$$ Multimodal	With Triangle North station: Include sidewalk on one side from Atlanta to south of Baylor (2%)
			With 68th alignment: Include
9053 Portland Tigard	**Ped/Bike Connection between Tigard Triangle and PCC-Sylvania** Provide pedestrian/bicycle connection between the Tigard Triangle area and PCC-Sylvania	$ Multi-Use Trail	All options: Consider opportunity to add ped/bike facilities to HCT connection

Include in DEIS **Include Partially** **Do Not Include**

Cost: ¢ = up to $500,000 **$** = up to $5M **$$** = up to $10M **$$$** = up to $20 M **$$$$** = more than $20M

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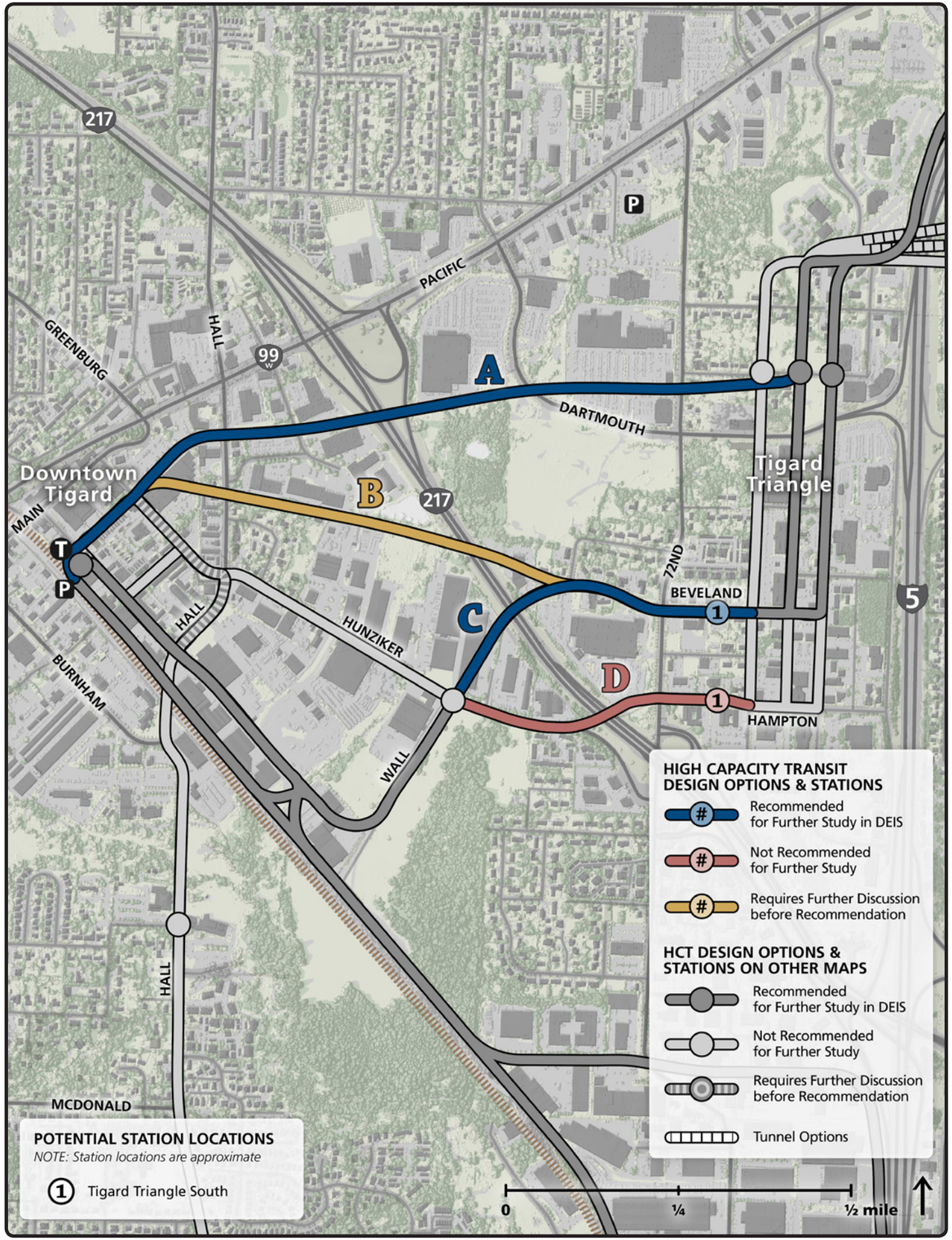
5. OR-217 Crossing

5. OR-217 Crossing: Design Options for BRT and LRT



Design Options

The proposed connections between the Tigard Triangle and downtown Tigard provide a choice between speed and development opportunities. Clinton to Tigard Transit Center would be significantly faster than the other options and would result in a smaller footprint in downtown Tigard, but would serve only the northern portion of the Tigard Triangle and require a comparatively long structure. Other options would continue through the southern Triangle, an area with, commuter students, and redevelopment opportunities. Each crossing option could include a multimodal (auto/ped/bike) bridge at a higher cost; a new auto connection would be preferred in the southern portion of the Triangle to the northern portion. Wetlands impacts could be a concern for the Clinton to Tigard Transit Center and for the Beveland North options.

Recommended for further study because:

A. Clinton to Tigard Transit Center would:

- Prioritize travel time, with a shorter alignment and higher speeds compared to other options;
- Avoid congested intersections at the southern end of the Triangle;
- Avoid impacts to existing industrial properties that would be affected by other options.

C. Beveland South would:

- Prioritize development with a second station in the Tigard Triangle, supporting the Tigard High Capacity Transit Land Use Plan and providing greater accessibility throughout the Triangle;
- Include a potential station, park & ride lot, and redevelopment opportunities near SW Hunziker;
- Include a multimodal facility that would provide an alternative to the existing Hunziker Street bridge and could alleviate some auto congestion around the SW 72nd Avenue interchange.

Further discussion required because:

B. Beveland North would:

- Provide a second station in the Tigard Triangle;
- Provide a more direct connection to the Tigard Transit Center compared to the Beveland South option.

Not recommended because:

D. Hampton would:

- Impact traffic at the OR-217 interchanges at SW Hunziker road and SW 72nd Avenue;
- Be the least direct, slowest option without providing access to additional riders.

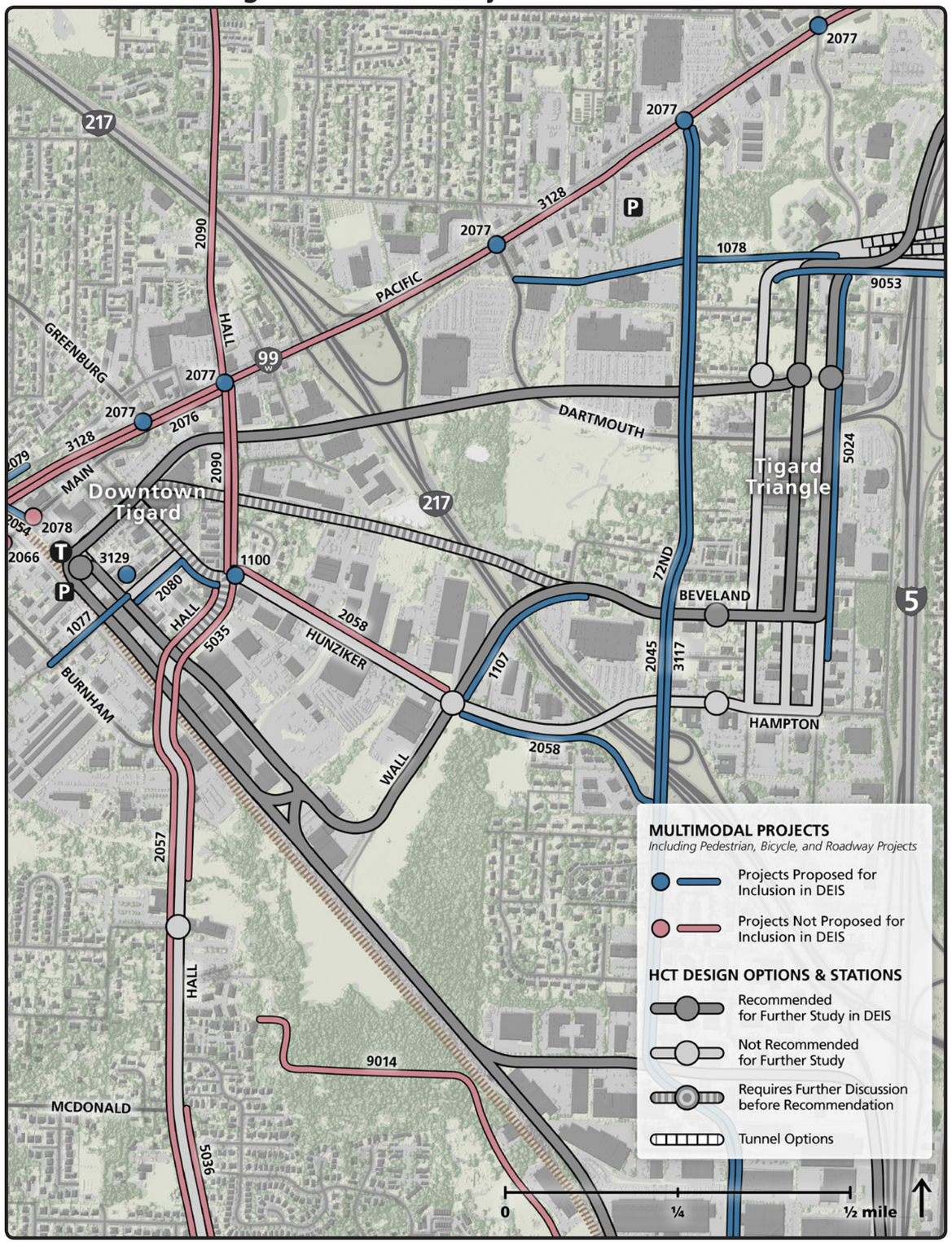
ID	Option	CAP	TRA	ACC	ENV	DEV	PRP	TRF
5. OR-217 Crossing								
A	Clinton to Tigard Transit Center	◑	●	○	◔	◔	◕	◑
B	Beveland North	●	◑	◔	○	◑	◑	◕
C	Beveland South	◑	◔	●	◑	◕	◑	●
D	Hampton	◔	○	◕	○	●	◑	◔

CAP = Capital Costs / TRA = Travel Time / ACC = Accessibility to Transit / ENV = Environmental Impacts
DEV = Development/Redevelopment Potential / PRP = Property Impacts / TRF = Traffic Impacts

Best ● ◕ ◑ ◔ ○ Worst

Proposed for Further Study in DEIS | Not Proposed for Further Study in DEIS | Requires Further Discussion before Recommendation

5. OR-217 Crossing: Multimodal Projects



Multimodal Projects

Multimodal projects recommended to advance include a new multimodal street connection over OR 217 and sidewalk projects to improve access to potential station areas.

#### City/Ownership	**Project Title** Project Description	Cost Primary Mode	Draft DEIS Recommendation
1107 Tigard Wash. Co.	**Hwy. 217 Over-crossing - Beveland/Hampton Connection** Build new connection between Hunziker Road and 72nd Avenue at Hampton or Beveland, requires over-crossing over Hwy 217, revises existing intersection.	$$$$ Auto/ Freight	With Beveland or Hampton alignment: Include
2045 Tigard	**72nd Avenue sidewalks: 99W to Bonita** Complete gaps in sidewalk on both sides of street from Highway 99W to Bonita Road	$ Pedestrian	With Triangle North station: Include one side from 99W-Dartmouth (25%)
			With Triangle South station: Include one side Dartmouth-Hunziker (25%)
			With 72nd/Tech Center Drive station: Include west side Tech Center Dr-south of Landmark Ln (20%)
			With WES/Bonita station: Include east side Bonita-Landmark Ln (10%)
2054 Tigard	**Commercial Street sidewalks: Main to Lincoln** Install sidewalks on both sides of the street from Main Street to Lincoln Street	¢ Pedestrian	All options: Include on one side of street. Note: may be funded through STIP
2057 Tigard	**Hall Boulevard sidewalks: Hunziker to city limits** Complete gaps in sidewalk on alternating sides of street from Hunziker Street to the South City Limits	$ Pedestrian	Do not include
2058 Tigard	**Hunziker Street Sidewalks: 72nd to Hall** Install sidewalk on both sides of the street from 72nd Avenue to Hall Boulevard	$ Pedestrian	With Hunziker/Beveland station: Include one side from Beveland overcrossing to 72nd (50%)
2066 Tigard ODOT	**Tigard Town Center (Downtown) Pedestrian Improvements** Improve sidewalks, lighting, crossings, bus shelters and benches throughout the downtown including: Highway 99W, Hall Blvd, Main Street, Hunziker, Walnut and neighborhood streets.	$ Pedestrian	Do not include. Vaguely defined; specific transit priorities addressed in other projects.
2077 Tigard ODOT	**Tigard Transit Center crossing improvements.** Shorten crossing distances, make crosswalks more visible, and provide more time for pedestrians to cross at the intersections of 99W and SW Greenburg Rd., 99W & SW Hall Blvd., and 99W & SW Dartmouth St.	$ Pedestrian	All options: Include crosswalk visibility and timing elements at Greenburg, Hall, Dartmouth, 72nd, and 68th.
2079 Tigard	**Tigard Transit Center pedestrian path** Formalize the informal path running from Center Street to SW Commercial St. to SW Hall Blvd., by paving it, making it ADA accessible, providing lighting, and wayfinding signage.	¢ Pedestrian	All options: Include. Note: may be funded through STIP
2080 Tigard	**Tigard Transit Center sidewalk infill** Build sidewalks, where there are none, along SW Scoffins St. & SW Ash St. These streets are near the Tigard Transit Center and provide access to it. Ensure there is a landscaped buffer between pedestrians and motor vehicles.	¢ Pedestrian	All options: Include

Multimodal Projects Continued on Next Page

Include in DEIS **Include Partially** **Do Not Include**

Cost: ¢ = up to $500,000 **$** = up to $5M **$$** = up to $10M **$$$** = up to $20 M **$$$$** = more than $20M

5. OR-217 Crossing: Multimodal Projects

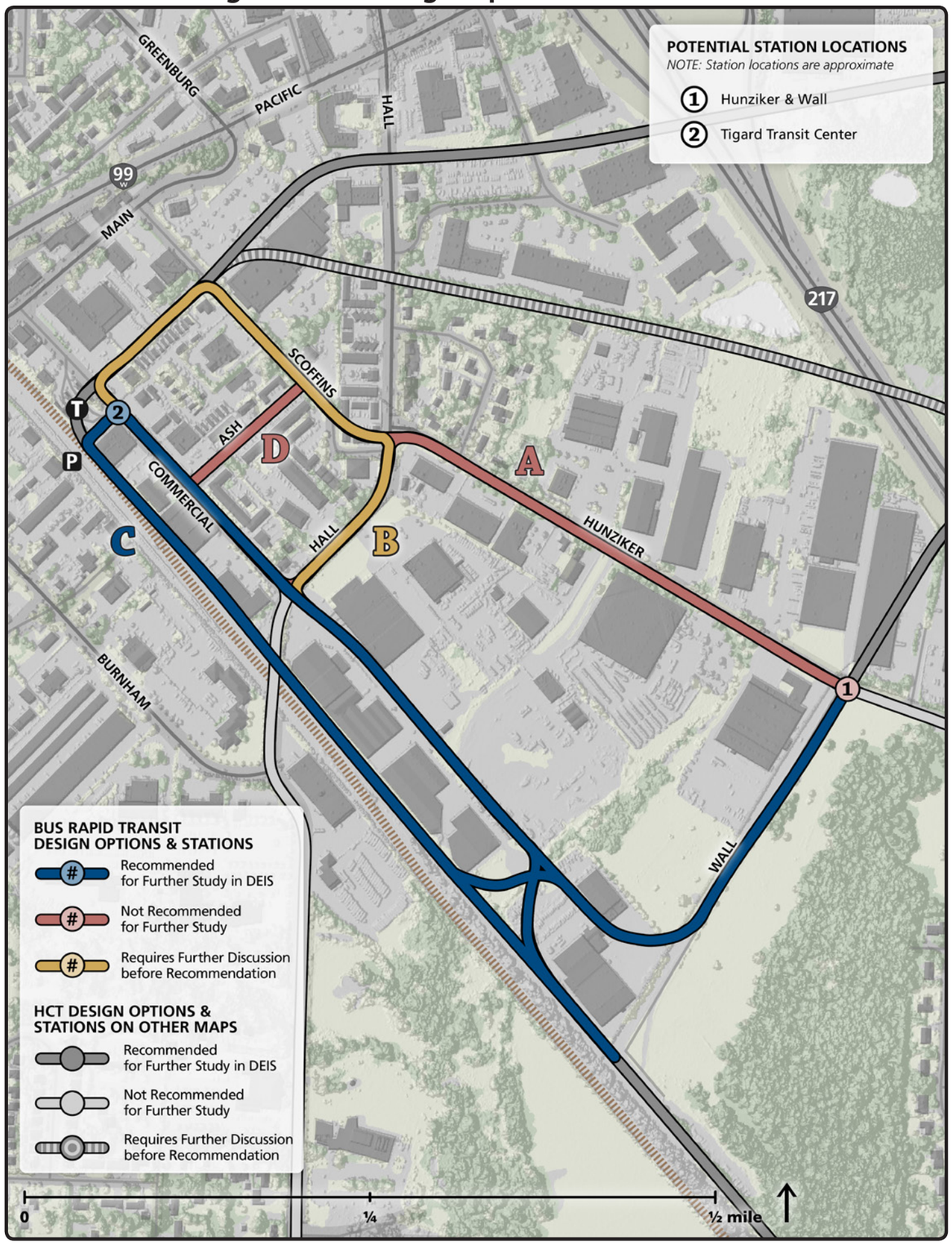
2090 Tigard	**Hall Blvd sidewalks: Locust to Hunziker** Locust St to Hunziker St - pedestrian infill	$ Pedestrian	Do not include
3117 Tigard Tualatin	**72nd Avenue bikeway: 99W to city limits** Install bike facilities on both sides of the street from Highway 99W to South City Limits	$ Bicycle	All options: Include if done through re-striping (conversion from 3-lane to 2-lane with bike lanes)
3128 Tigard ODOT	**Pacific Hwy-99W Bike Lanes in Tigard** Fill in gaps in bike lanes along Pacific Hwy-99W within the Tigard city limits. Listed as a Regional Bicycle Parkway in the Regional Active Transportation Plan (5/9/13).	$ Bicycle	Do not include
3129 Tigard	**Tigard Transit Center Bicycle Hub** Provide bicycle hub at Tigard Transit Center	¢ Bicycle	All options: Include as bike 'n ride
5024 Tigard	**68th Avenue (widen to 3 lanes)** Widen to 3 lanes, or for transit, including sidewalks and bike lanes between Atlanta Street and south end	$$$ Multimodal	With Triangle North station: Include sidewalk on one side from Atlanta to south of Baylor (2%) With 68th alignment: Include
5035 Tigard Wash. Co. ODOT	**Hall Boulevard Widening, Highway 99W to Fanno Creek** Widen to 3 lanes, or for transit, plus on-street parking (or potential 5 lanes); build sidewalks and bike lanes; safety improvements	$ Multimodal	Do not include
5036 Tigard Wash. Co.	**Hall Boulevard Widening, McDonald Street to Fanno Creek including creek bridge** Widen to 3 lanes or for transit; preserve ROW for 5 lanes; build sidewalks and bike lanes; safety improvements	$$$ Multimodal	Do not include
9014 Tigard	**Fanno Creek Trail - Tualatin River to Tigard St** Complete gaps along the Fanno Creek multiuse path from the Tualatin River to Tigard Library and from Pacific Hwy-99W to Tigard Street. Listed as a Regional Bicycle Parkway and Regional Pedestrian Parkway in the Regional Active Transportation Plan (5/9/13).	$ Multi-Use Trail	With WES/Bonita station: Include from Bonita to Ashford (20%) With Durham/79th station: Include Bonita to Durham Park (40%) With Bridgeport West station: Include Bonita to Ashford (20%)
9053 Portland Tigard	**Ped/Bike Connection between Tigard Triangle and PCC-Sylvania** Provide pedestrian/bicycle connection between the Tigard Triangle area and PCC-Sylvania	$ Multi-Use Trail	All options: Consider opportunity to add ped/bike facilities to HCT connection

Include in DEIS **Include Partially** **Do Not Include**

Cost: **¢** = up to $500,000 **$** = up to $5M **$$** = up to $10M **$$$** = up to $20 M **$$$$** = more than $20M

6. Downtown Tigard

6. Downtown Tigard: BRT Design Options



Design Options

The following options in downtown Tigard correspond with the Beveland South or Hampton OR-217 Crossing options. The northern crossing options, Beveland North and Clinton to Tigard Transit Center, would connect to the WES alignment or to Hall Boulevard via a new street between Main Street and Ash Avenue. The main difference between the downtown Tigard options connecting to southern crossings is the footprint required to access the Tigard Transit Center in downtown Tigard.

Recommended for further study because:

C. Commercial Street to Tigard TC (no downtown loop) would:

- Result in the fastest travel time among the three options;
- Have the smallest footprint in downtown Tigard.

Further discussion required because:

B. Commercial Street with Downtown Loop via Hall would:

- Avoid the sharp curve included with the non-loop option that could be challenging for BRT;
- Result in a longer, slower alignment.

Not recommended because:

D. Downtown Loop via Ash Street instead of Loop via Hall would:

- Result in more property impacts to downtown Tigard compared to alternative loop.

A. Hunziker would:

- Require BRT operation in mixed traffic in order to avoid eliminating access to industrial business by left-turning trucks resulting in slower, less reliable service.

ID	Option	CAP	TRA	ACC	ENV	DEV	PRP	TRF
6. Downtown Tigard								
A	Hunziker (with downtown loop)	●	○	◑	◕	◑	◑	◑
B	Commercial St with Downtown Loop via Hall	◔	◔	◑	◔	◑	◔	●
C	Commercial St to Tigard TC (no downtown loop)	◑	◕	◑	◔	◑	◑	●
D	Downtown Loop via Ash St instead of Loop via Hall	◔	◔	◑	◕	◑	◔	●

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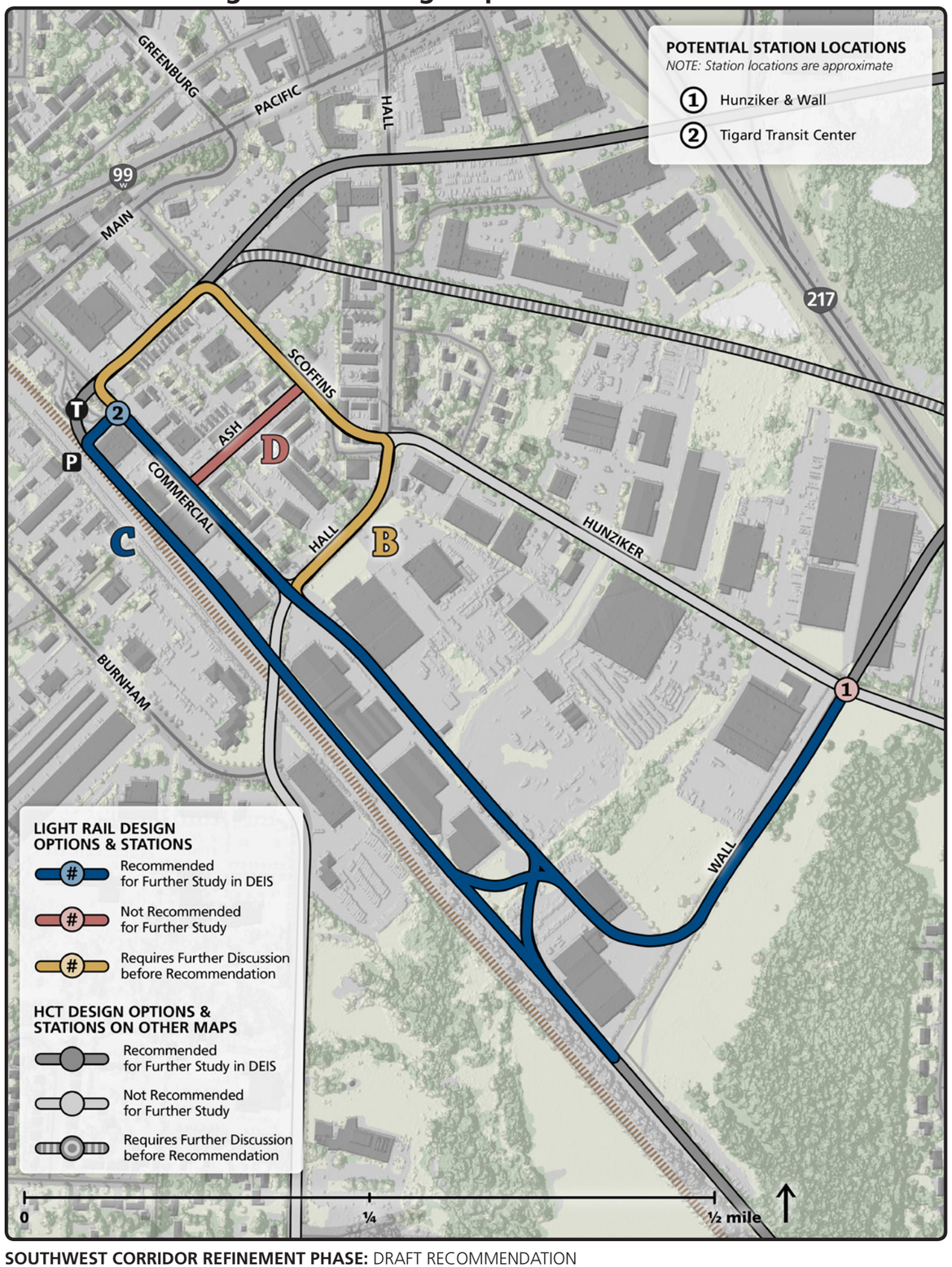
DEV = Development/Redevelopment Potential / PRP = Property Impacts / TRF = Traffic Impacts

Best ● ◕ ◑ ◔ ○ Worst

Proposed for Further Study in DEIS | Not Proposed for Further Study in DEIS | Requires Further Discussion before Recommendation

6. Downtown Tigard: LRT Design Options



Design Options

The following options in downtown Tigard correspond with the Beveland South or Hampton OR-217 Crossing options. The northern crossing options, Beveland North and Clinton to Tigard Transit Center, would connect to the WES alignment or to Hall Boulevard via a new street between Main Street and Ash Avenue. The main difference between the downtown Tigard options connecting to southern crossings is the footprint required to access the Tigard Transit Center in downtown Tigard.

Recommended for further study because:

C. Commercial Street to Tigard TC (no downtown loop) would:

- Result in the fastest travel time among the three options;
- Have the smallest footprint in downtown Tigard.

Further discussion required because:

B. Commercial Street with Downtown Loop via Hall would:

- Avoid the sharp curve included with the non-loop option that could be challenging for LRT and could create noise impacts;
- Result in a longer, slower alignment.

Not recommended because:

D. Downtown Loop via Ash Street instead of Loop via Hall would:

- Result in more property impacts to downtown Tigard compared to alternative loop.

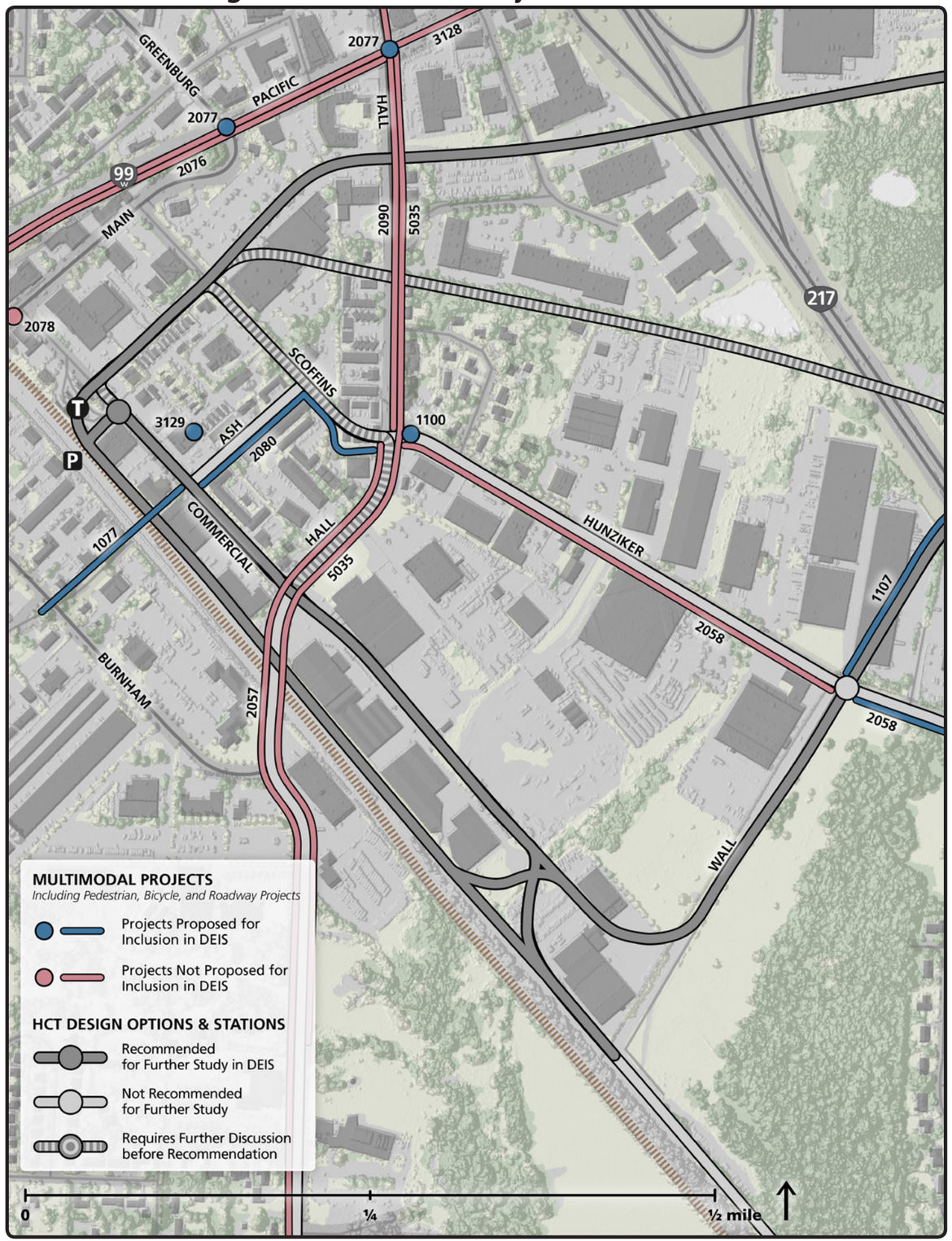
ID	Option	CAP	TRA	ACC	ENV	DEV	PRP	TRF
6. Downtown Tigard								
B	Commercial St with Downtown Loop via Hall	◕	◑	◑	◑	◑	◔	●
C	Commercial St to Tigard TC (no downtown loop)	●	◕	◑	◔	◑	◑	●
D	Downtown Loop via Ash St instead of Loop via Hall	◕	◑	◑	◑	◑	◔	●

CAP = Capital Costs / TRA = Travel Time / ACC = Accessibility to Transit / ENV = Environmental Impacts
DEV = Development/Redevelopment Potential / PRP = Property Impacts / TRF = Traffic Impacts

Best ● ◕ ◑ ◔ ○ Worst

Proposed for Further Study in DEIS | Not Proposed for Further Study in DEIS | Requires Further Discussion before Recommendation

6. Downtown Tigard: Multimodal Projects



Multimodal Projects

Multimodal projects recommended to advance include a new street connection and pedestrian and bicycle projects intended to improve access to potential station areas in downtown Tigard. Several projects were already covered by other projects, or were not along to the recommended transit alignment options, and were not recommended.

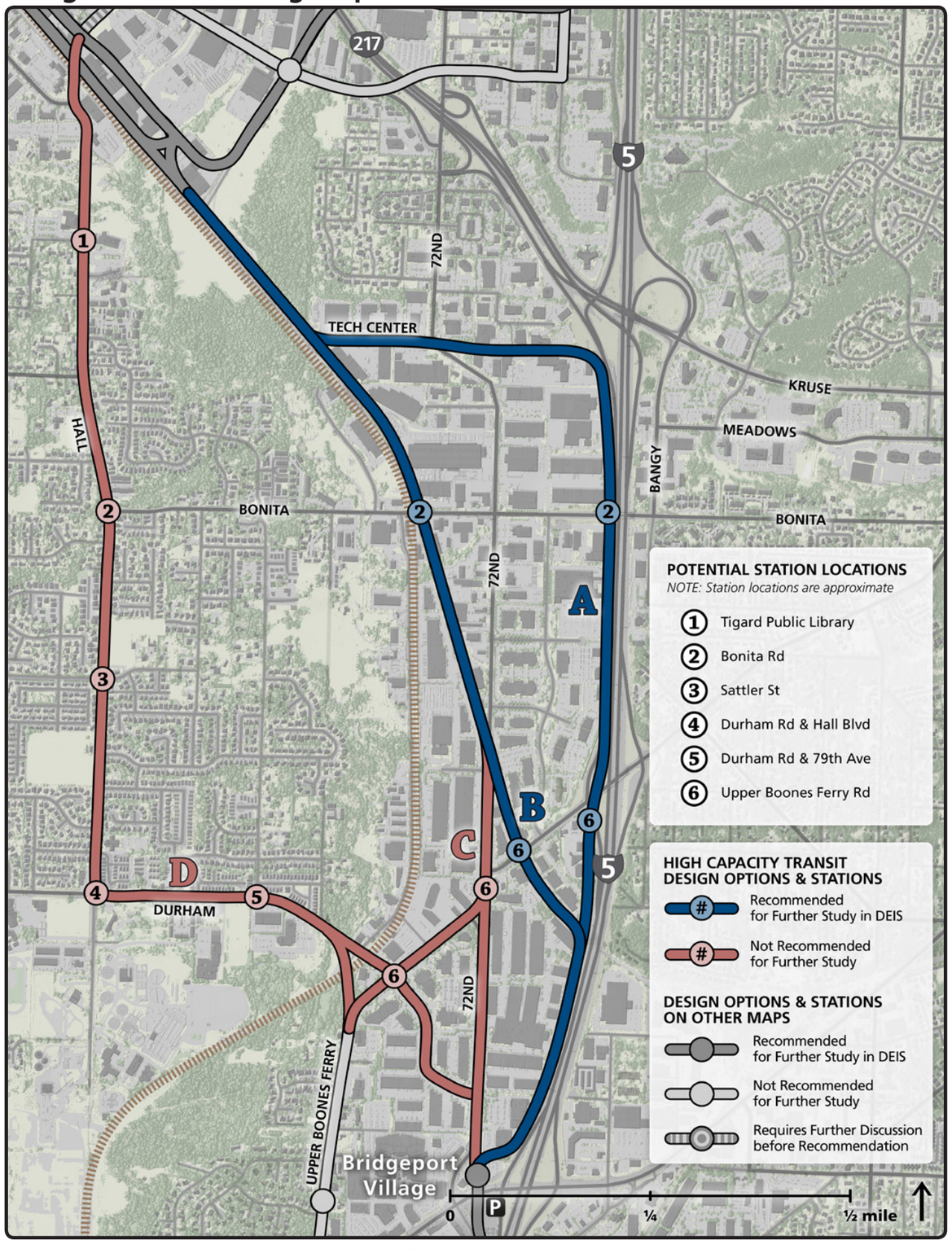
#### City/Ownership	**Project Title** Project Description	Cost Primary Mode	Draft DEIS Recommendation
1077 Tigard	**Ash Avenue railroad crossing (new roadway)** Extend Ash Avenue across the railroad tracks from Burnham to Commercial Street	$ Auto/ Freight	All options: Include. Requires closure of another crossing by city.
1100 Tigard Wash. Co.	**Hall/Hunziker/Scoffins Intersection Realignment** Realign offset intersection to cross intersection to alleviate congestion and safety issues	$ Auto/ Freight	Do not include
1107 Tigard Wash. Co.	**Hwy. 217 Over-crossing - Beveland/Hampton Connection** Build new connection between Hunziker Road and 72nd Avenue at Hampton or Beveland, requires over-crossing over Hwy 217, revises existing intersection.	$$$$ Auto/ Freight	With Beveland or Hampton alignment: Include
2057 Tigard	**Hall Boulevard sidewalks: Hunziker to city limits** Complete gaps in sidewalk on alternating sides of street from Hunziker Street to the South City Limits	$ Pedestrian	Do not include
2058 Tigard	**Hunziker Street Sidewalks: 72nd to Hall** Install sidewalk on both sides of the street from 72nd Avenue to Hall Boulevard	$ Pedestrian	With Hunziker/Beveland station: Include one side from Beveland overcrossing to 72nd (50%)
2066 Tigard ODOT	**Tigard Town Center (Downtown) Pedestrian Improvements** Improve sidewalks, lighting, crossings, bus shelters and benches throughout the downtown including: Highway 99W, Hall Blvd, Main Street, Hunziker, Walnut and neighborhood streets.	$ Pedestrian	Do not include. Vaguely defined; specific transit priorities addressed in other projects.
2076 Tigard ODOT	**Tigard Transit Center 99W sidewalk infill.** Build sidewalks that are at least 10 ft. wide along SW Pacific Hwy (99W), where there are none, and widen existing sidewalk corridors all along 99W, so there is landscaped buffer between pedestrians and the motor vehicles.	$ Pedestrian	Do not include
2077 Tigard ODOT	**Tigard Transit Center crossing improvements.** Shorten crossing distances, make crosswalks more visible, and provide more time for pedestrians to cross at the intersections of 99W and SW Greenburg Rd., 99W & SW Hall Blvd., and 99W & SW Dartmouth St.	$ Pedestrian	All options: Include crosswalk visibility and timing elements at Greenburg, Hall, Dartmouth, 72nd, and 68th.
2078 Tigard	**Tigard Transit Center Park & Ride pedestrian path.** Provide a designated pedestrian path through the transit center park and ride lot, connecting to SW Main St	¢ Pedestrian	Do not include. Feasibility unclear due to existing parking.
2079 Tigard	**Tigard Transit Center pedestrian path** Formalize the informal path running from Center Street to SW Commercial St. to SW Hall Blvd., by paving it, making it ADA accessible, providing lighting, and wayfinding signage.	¢ Pedestrian	All options: Include. Note: may be funded through STIP
2080 Tigard	**Tigard Transit Center sidewalk infill** Build sidewalks, where there are none, along SW Scoffins St. & SW Ash St. These streets are near the Tigard Transit Center and provide access to it. Ensure there is a landscaped buffer between pedestrians and motor vehicles.	¢ Pedestrian	All options: Include
2090 Tigard	**Hall Blvd sidewalks: Locust to Hunziker** Locust St to Hunziker St - pedestrian infill	$ Pedestrian	Do not include
3128 Tigard ODOT	**Pacific Hwy-99W Bike Lanes in Tigard** Fill in gaps in bike lanes along Pacific Hwy-99W within the Tigard city limits. Listed as a Regional Bicycle Parkway in the Regional Active Transportation Plan.	$ Bicycle	Do not include
3129 Tigard	**Tigard Transit Center Bicycle Hub** Provide bicycle hub at Tigard Transit Center	¢ Bicycle	All options: Include as bike 'n ride
5035 Tigard, ODOT, Wash. Co.	**Hall Boulevard Widening, Highway 99W to Fanno Creek** Widen to 3 lanes, or for transit, plus on-street parking (or potential 5 lanes); build sidewalks and bike lanes; safety improvements	$ Multimodal	Do not include

Include in DEIS **Include Partially** **Do Not Include**

Cost: **¢** = up to $500,000 **$** = up to $5M **$$** = up to $10M **$$$** = up to $20 M **$$$$** = more than $20M

7. South Tigard

7. Tigard South: Design Options for BRT and LRT



Design Options

Three of the options in this segment would operate parallel to a portion of the WES alignment between Tigard and Tualatin before reaching Bridgeport Village by differing routes. These options would serve more employment compared to the remaining option, which would connect to Bridgeport Village via Hall Boulevard and serve mainly households. WES alignment options are differentiated by right-of-way ownership and by varying impacts to industrial businesses.

Recommended for further study because:

B. WES Alignment to Parallel I-5 via PNWR Freight Rail ROW would:

- Avoid impacts to industrial business accesses on SW 72nd Avenue;
- Avoid congested intersections along SW 72nd Avenue;
- Require fewer property acquisitions compared to WES option utilizing Tech Center Drive, resulting in lower costs.

A. WES Alignment to Parallel I-5 via Tech Center Drive would:

- Avoid impacts to industrial business accesses on SW 72nd Avenue;
- Avoid congested intersections along SW 72nd Avenue;
- Avoid PNWR freight rail right of way, the use of which would require negotiations with rail owners;
- Provide connectivity to areas east of I-5 at the SW Bonita Road and SW Carman Drive/SW Upper Boones Ferry Road crossings.

Not recommended because:

C. WES Alignment and SW 72nd Ave would:

- Impact industrial business accesses on SW 72nd Avenue;
- Potentially impact traffic on SW 72nd Avenue.

D. Hall Blvd to Durham Rd would:

- Travel through predominantly single family residential areas with limited ridership and development potential;
- Result in slower travel times compared to WES alignment options.

ID	Option	CAP	TRA	ACC	ENV	DEV	PRP	TRF
7. Tigard to Durham								
A	WES Alignment to Parallel I-5 via Tech Center Drive	◔	◔	◑	◔	●	◑	◔
B	WES Alignment to Parallel I-5 via PNWR Freight Rail ROW	●	◑	◕	◑	◕	◕	◕
C	WES Alignment and 72nd Ave	◕	◑	●	◑	◕	◕	◑
D	Hall Blvd to Durham Rd	●	◔	○	◔	◔	◔	◔

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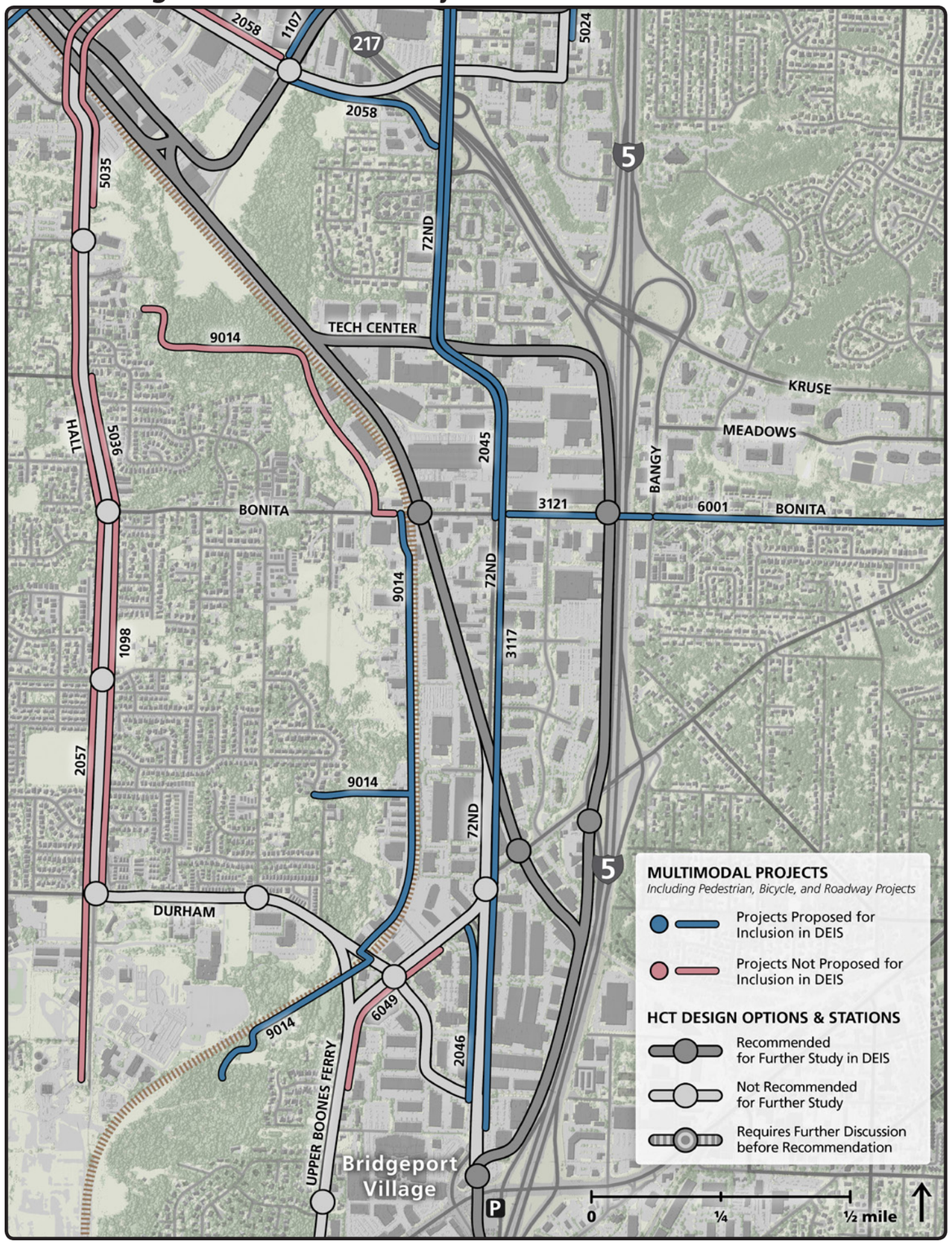
Best ● ◕ ◑ ◔ ○ Worst

Proposed for Further Study in DEIS Not Proposed for Further Study in DEIS

7. South Tigard: Multimodal Projects



Multimodal Projects

Multimodal projects recommended to advance include pedestrian and bicycle projects intended to improve access to potential station areas. Several projects were not along the recommended transit alignment options, and were not recommended.

#### City/Ownership	**Project Title** Project Description	Cost Primary Mode	Draft DEIS Recommendation
1098 Tigard Wash. Co.	**Hall Boulevard Widening, Bonita Road to Durham** Widen to 3 lanes or for transit; build sidewalks and bike lanes; safety improvements (construct 3 lanes with development, preserve ROW for 5 lanes)	$ Auto/ Freight	Do not include
2045 Tigard	**72nd Avenue sidewalks: 99W to Bonita** Complete gaps in sidewalk on both sides of street from Highway 99W to Bonita Road	$ Pedestrian	With Triangle North station: Include one side from 99W-Dartmouth (25%)
			With Triangle South station: Include one side Dartmouth-Hunziker (25%)
			With 72nd/Tech Center Drive station: Include west side Tech Center Dr-south of Landmark Ln (20%)
			With WES/Bonita station: Include east side Bonita-Landmark Ln (10%)
2057 Tigard	**Hall Boulevard sidewalks: Hunziker to city limits** Complete gaps in sidewalk on alternating sides of street from Hunziker Street to the South City Limits	$ Pedestrian	Do not include
2058 Tigard	**Hunziker Street Sidewalks: 72nd to Hall** Install sidewalk on both sides of the street from 72nd Avenue to Hall Boulevard	$ Pedestrian	With Hunziker/Beveland station: Include one side from Beveland overcrossing to 72nd (50%)
3117 Tigard Tualatin	**72nd Avenue bikeway: 99W to city limits** Install bike facilities on both sides of the street from Highway 99W to South City Limits	$ Bicycle	All options: Include if done through re-striping (conversion from 3-lane to 2-lane with bike lanes)
3121 Tigard Lake Oswego	**Bonita Road bike lanes: 72nd to Bangy** Install bike lanes from 72nd Avenue to Bangy Road	¢ Bicycle	With WES/Bonita station: Include as re-striping only
5024 Tigard	**68th Avenue (widen to 3 lanes)** Widen to 3 lanes, or for transit, including sidewalks and bike lanes between Atlanta Street and south end	$$$ Multimodal	With Triangle North station: Include sidewalk on one side from Atlanta to south of Baylor (2%)
			With 68th alignment: Include
5035 Tigard Wash.Co. ODOT	**Hall Boulevard Widening, Highway 99W to Fanno Creek** Widen to 3 lanes, or for transit, plus on-street parking (or potential 5 lanes); build sidewalks and bike lanes; safety improvements	$ Multimodal	Do not include
5036 Tigard Wash. Co.	**Hall Boulevard Widening, McDonald Street to Fanno Creek including creek bridge** Widen to 3 lanes or for transit; preserve ROW for 5 lanes; build sidewalks and bike lanes; safety improvements	$$$ Multimodal	Do not include
6001 Lake Oswego	**Bonita Rd. sidewalks and bike lanes - Carman Dr. to Bangy Rd.** Sidewalks and bike lanes; supplement to Tigard project #3121 which continues to 72nd	¢ Bike/Ped	With WES/Bonita station: Include bike lanes only as minor widening
6049 Durham	**Boones Ferry Sidewalks** Improve sidewalks and bicycle lane on Boones Ferry Road from north of Durham Road to Afton Lane	¢ Bike/Ped	Do not include
9014 Tigard	**Fanno Creek Trail - Tualatin River to Tigard St** Complete gaps along the Fanno Creek multiuse path from the Tualatin River to Tigard Library and from Pacific Hwy-99W to Tigard Street. Listed as a Regional Bicycle Parkway and Regional Pedestrian Parkway in the Regional Active Transportation Plan (5/9/13).	$ Multi-Use Trail	With WES/Bonita station: Include from Bonita to Ashford (20%)
			With Durham/79th station: Include Bonita to Durham Park (40%)
			With Bridgeport West station: Include Bonita to Ashford (20%)

Include in DEIS **Include Partially** **Do Not Include**

Cost: **¢** = up to $500,000 **$** = up to $5M **$$** = up to $10M **$$$** = up to $20 M **$$$$** = more than $20M

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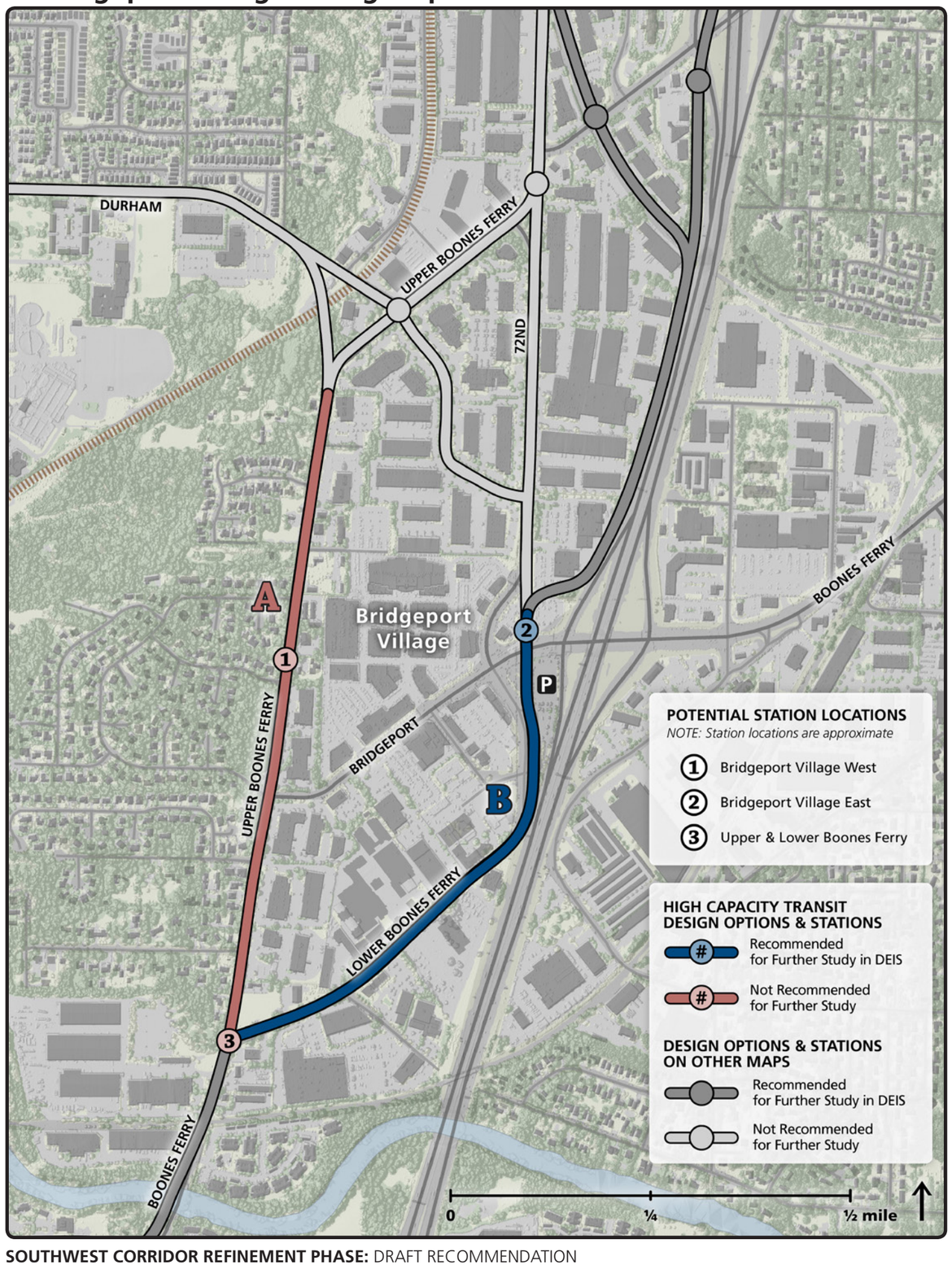
8. Bridgeport Village

8. Bridgeport Village: Design Options for BRT and LRT



Design Options

There are two options under consideration for this segment. Upper Boones Ferry Road, to the west of Bridgeport Village, could connect to the Hall Boulevard or SW 72nd Avenue options to the north. Lower Boones Ferry Road, to the east of Bridgeport Village, could connect to SW 72nd options or options parallel to I-5 to the north.

Recommended for further study because:

B. Lower Boones Ferry Road would:

- Serve the main entrance of Bridgeport Village;
- Provide direct access to Tualatin Park & Ride lot;
- Include a bridge crossing over the SW Lower Boones Ferry/SW Bridgeport Road intersection;
- Be accessible to new housing developments south of Bridgeport Village.

Not recommended because:

A. Upper Boones Ferry Road would:

- Not serve the main entrance of Bridgeport Village;
- Require a long walk to the Tualatin Park & Ride lot;
- Remove recent streetscaping installed by the City of Durham;
- Impact tree groves purchased by Durham through a bond measure;
- Be incompatible with the recommended parallel to I-5 options to the north.

ID	Option	CAP	TRA	ACC	ENV	DEV	PRP	TRF
8. Bridgeport Village								
A	Upper Boones Ferry (from Durham Rd or 72nd)	●	◕	◔	◕	◑	◔	◑
B	Lower Boones Ferry (from Durham Rd, 72nd or parallel to I-5)	◑	◑	◕	●	◑	◑	◑

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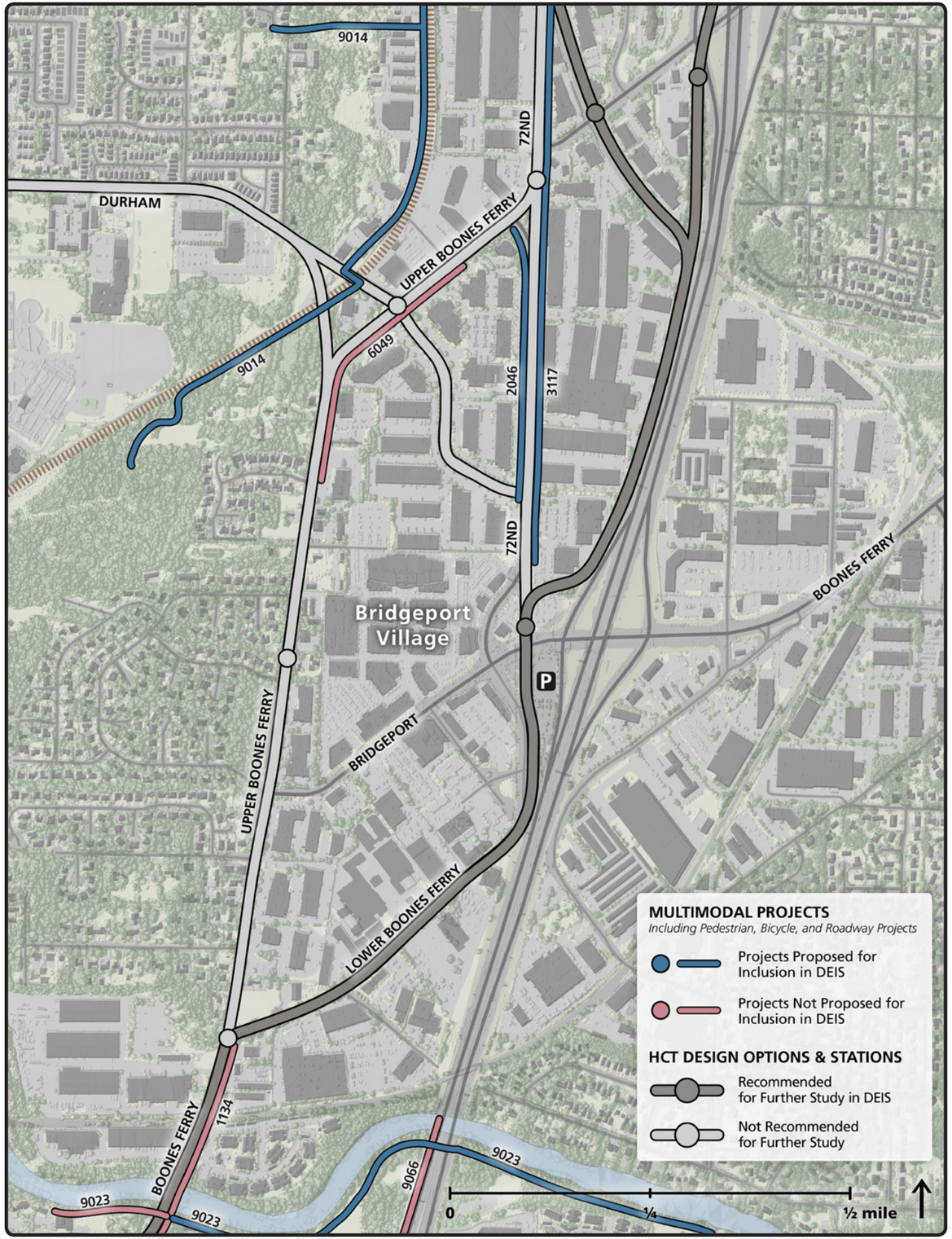
DEV = Development/Redevelopment Potential / PRP = Property Impacts / TRF = Traffic Impacts

Best ● ◕ ◑ ◔ ○ Worst

Proposed for Further Study in DEIS

Not Proposed for Further Study in DEIS

8. Bridgeport Village: Multimodal Projects



Multimodal Projects

Multimodal projects recommended to advance include pedestrian and bicycle projects along 72nd Avenue intended to improve access to potential station areas. One project was not along the recommended transit alignment options, and was not recommended.

#### City/Ownership	**Project Title** Project Description	Cost Primary Mode	Draft DEIS Recommendation
1134 Tualatin Washington Co.	**Boones Ferry Road (reconstruct/widen from Martinazzi to Lower Boones Ferry)** Reconstruction/widen to 5 lanes or for transit from Martinazzi to Lower Boones Ferry Road, including bridge.	$$$ Auto/ Freight	Do not include
2046 Tigard	**72nd Avenue sidewalks: Upper Boones Ferry to Durham** Install sidewalk on both sides of street from Upper Boones Ferry Road to Durham Road	$ Pedestrian	With Bridgeport Village front-door station: Include With 72nd alignment: Include
3117 Tigard Tualatin	**72nd Avenue bikeway: 99W to city limits** Install bike facilities on both sides of the street from Highway 99W to South City Limits	$ Bicycle	All options: Include if done through re-striping (conversion from 3-lane to 2-lane with bike lanes)
6049 Durham	**Boones Ferry Sidewalks** Improve sidewalks and bicycle lane on Boones Ferry Road from north of Durham Road to Afton Lane	¢ Bike/Ped	Do not include
9014 Tigard	**Fanno Creek Trail - Tualatin River to Tigard St** Complete gaps along the Fanno Creek multiuse path from the Tualatin River to Tigard Library and from Pacific Hwy-99W to Tigard Street. Listed as a Regional Bicycle Parkway and Regional Pedestrian Parkway in the Regional Active Transportation Plan (5/9/13).	$ Multi-Use Trail	With WES/Bonita station: Include from Bonita to Ashford (20%) With Durham/79th station: Include Bonita to Durham Park (40%) With Bridgeport West station: Include Bonita to Ashford (20%)
9023 Tigard Tualatin	**Tualatin River Pathway** Develop a continuous multi-use pathway along the Tualatin River from Boones Ferry Road under I-5 to the Tualatin River Greenway and Browns Ferry Park. Listed as a Regional Bicycle Parkway and Regional Pedestrian Parkway in the Regional Active Transportation Plan (5/9/13).	$$ Multi-Use Trail	With Tualatin TC Station or UBF/LBF Station: Include from Boones Ferry Road east to existing trail (80%)
9066 Tualatin ODOT	**North/South I-5 Parallel Path in Tualatin** Ped/bike pathway	$$ Multi-Use Trail	Do not include

Include in DEIS **Include Partially** **Do Not Include**

Cost: **¢** = up to $500,000 **$** = up to $5M **$$** = up to $10M **$$$** = up to $20 M **$$$$** = more than $20M

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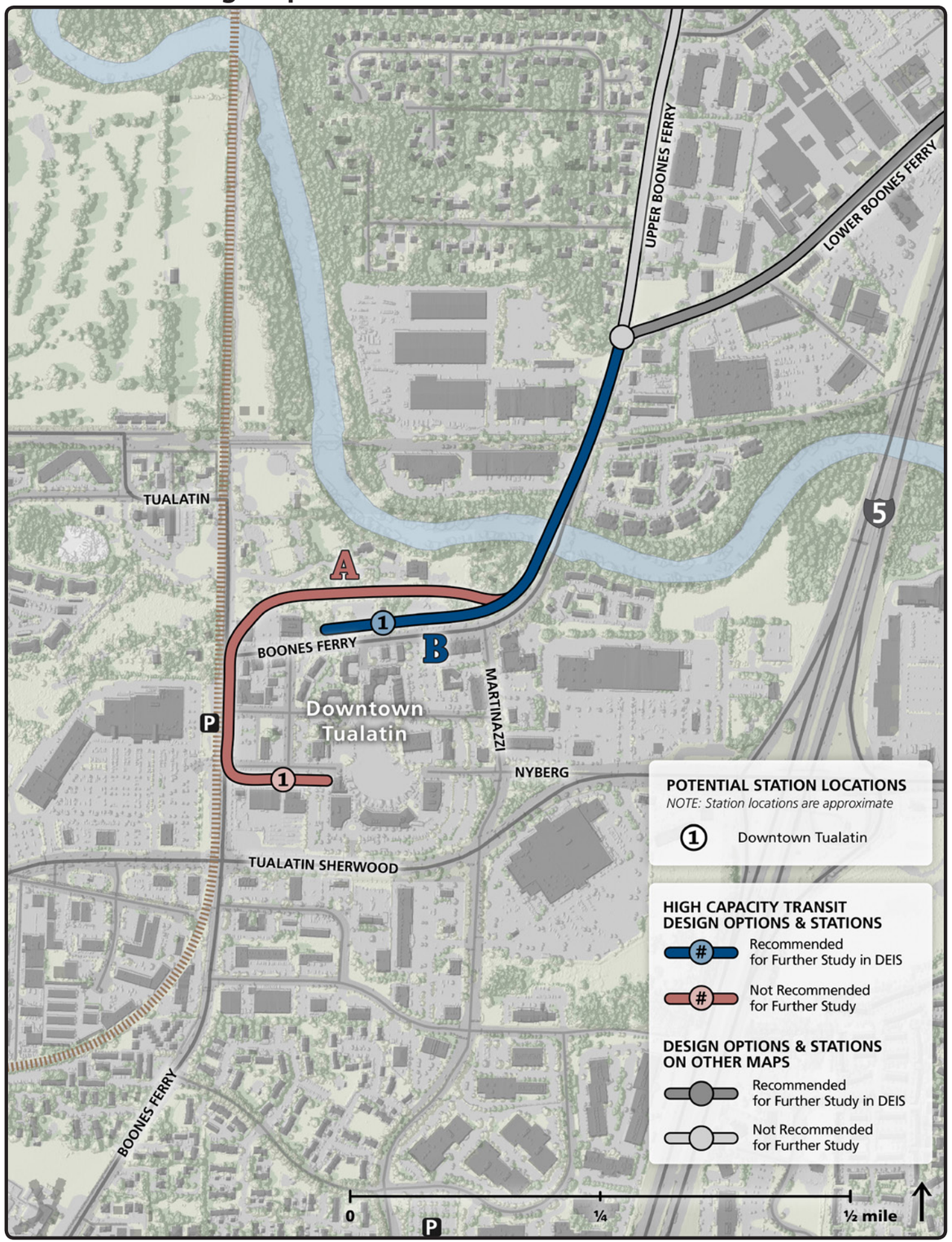
9. Tualatin

9. Tualatin: Design Options for BRT and LRT



Design Options

There are two options under consideration in this segment. Both would include a new crossing parallel to the Boones Ferry Road bridge over freight rail tracks and the Tualatin River, and both would travel north of Boones Ferry Road in downtown Tualatin. The second option would continue south into downtown to better connect with the WES station; however, a station directly adjacent to the WES platform would not be possible without widening Boones Ferry Road and impacting properties.

Recommended for further study because:

B. Parallel to Boones Ferry Road (north of downtown) would:

- Provide walk access to downtown Tualatin and to the WES station;
- Result in fewer property impacts and traffic impacts compared to the alternative option.

Not recommended because:

A. WES Connection via Boones Ferry Road near Nyberg Road would:

- Result in more impacts to commercial properties in downtown;
- Likely require elimination of left turn pockets or other lanes on SW Boones Ferry Road at SW Nyberg Road.

ID	Option	CAP	TRA	ACC	ENV	DEV	PRP	TRF
9. Tualatin								
A	WES Connection via Boones Ferry near Nyberg Rd	◔	◔	◕	○	◑	◔	○
B	Parallel to Boones Ferry Rd (north side of downtown)	◕	●	◑	◑	◑	◑	◕

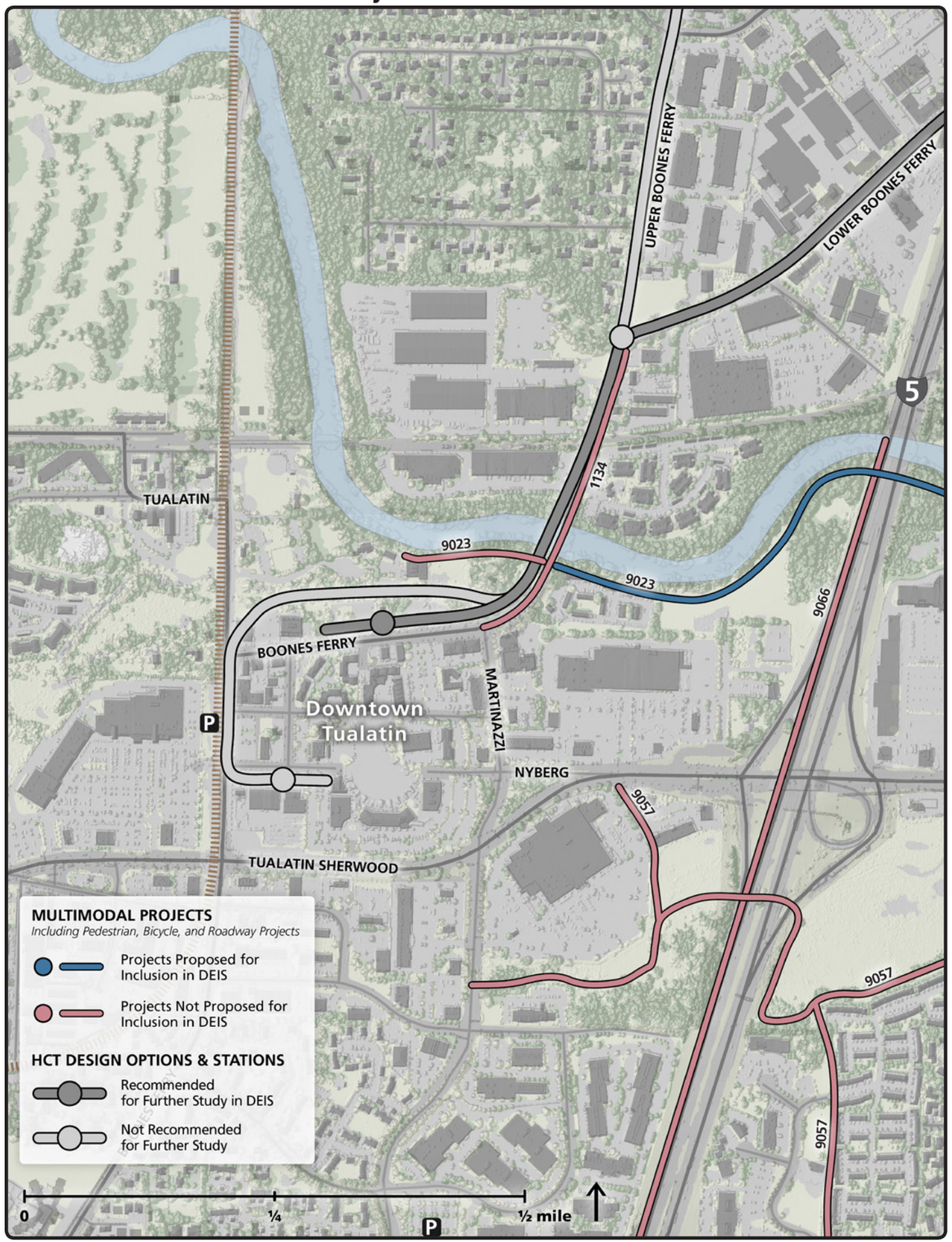
CAP = Capital Costs / TRA = Travel Time / ACC = Accessibility to Transit / ENV = Environmental Impacts
DEV = Development/Redevelopment Potential / PRP = Property Impacts / TRF = Traffic Impacts

Best ● ◕ ◑ ◔ ○ Worst

Proposed for Further Study in DEIS

Not Proposed for Further Study in DEIS

9. Tualatin: Multimodal Projects



Multimodal Projects

One multimodal project was recommended to advance – a trail connection between the potential station area and employment and residential areas to the east. Several projects did not provide direct access to the potential station areas, and were not recommended.

#### City/Ownership	**Project Title** Project Description	Cost Primary Mode	Draft DEIS Recommendation
1134 Tualatin Washington Co.	**Boones Ferry Road (reconstruct/widen from Martinazzi to Lower Boones Ferry)** Reconstruction/widen to 5 lanes or for transit from Martinazzi to Lower Boones Ferry Road, including bridge.	$$$ Auto/ Freight	Do not include
9023 Tigard Tualatin	**Tualatin River Pathway** Develop a continuous multi-use pathway along the Tualatin River from Boones Ferry Road under I-5 to the Tualatin River Greenway and Browns Ferry Park. Listed as a Regional Bicycle Parkway and Regional Pedestrian Parkway in the Regional Active Transportation Plan (5/9/13).	$$ Multi-Use Trail	With Tualatin TC Station or UBF/LBF Station: Include from Boones Ferry Road east to existing trail (80%)
9057 Tualatin	**Nyberg Creek Greenway** Connecting east and west of I-5 then north and south to Hwy 99 to I-5 bikeway (south) and Tualatin River Greenway (north)	$ Multi-Use Trail	Do not include
9066 Tualatin ODOT	**North/South I-5 Parallel Path in Tualatin** Ped/bike pathway	$$ Multi-Use Trail	Do not include

Include in DEIS **Include Partially** **Do Not Include**

Cost: ¢ = up to $500,000 **$** = up to $5M **$$** = up to $10M **$$$** = up to $20 M **$$$$** = more than $20M