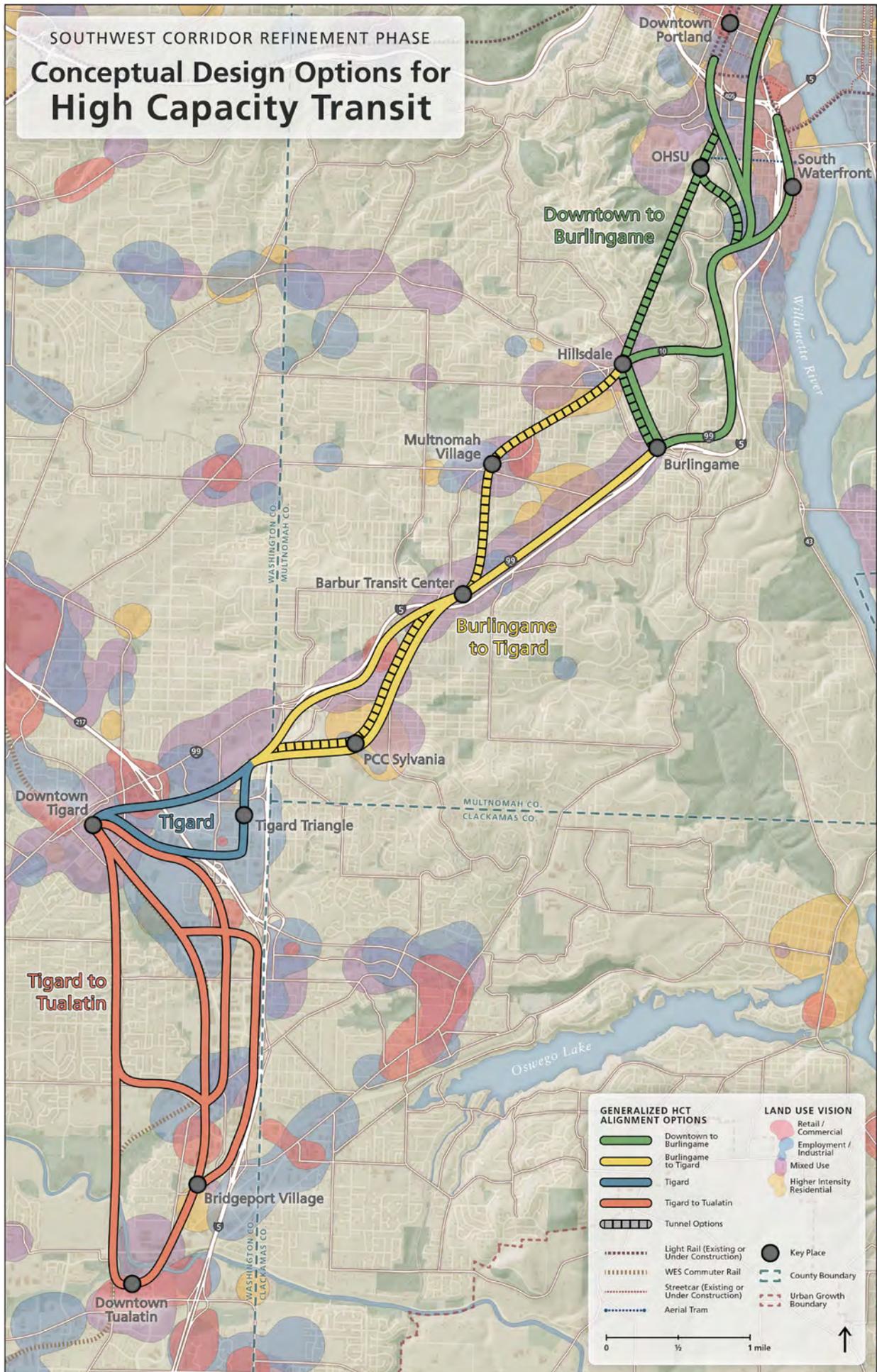


**SOUTHWEST CORRIDOR REFINEMENT PHASE**

**DRAFT HCT Design Option Maps  
& Opportunity/Constraint Analysis**

3/18/14

SOUTHWEST CORRIDOR REFINEMENT PHASE  
**Conceptual Design Options for High Capacity Transit**



# DRAFT HCT Design Options List

*HCT Design Options Proposed for Early Removal / Early Removal Proposed for Light Rail Only*

## Downtown to Burlingame

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- A. **4th & 5th Ave Couplet**
- B. 4th Ave
- C. 4th Ave to 2nd Ave
- D. 1st Ave
- E. Extended 1st Ave to Blue/Red Line LRT
- F. Naito Parkway
- G. Extended Naito Parkway to Steel Bridge
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### *South Portland to Burlingame (p. 8-9)*

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### *PCC Area – BRT-Only Options (p. 12-13)*

- A. Circumferential around North End
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### *PCC Area – BRT/LRT Options (p. 14-15)*

- A. Barbur Blvd
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*NOTE: The transit alignment options for the corridor are in draft form. As the Southwest Corridor Plan continues to study and refine these options, they are very likely to change.*

## Tigard

### *Tigard Triangle (p. 16-17)*

- A. 68th/70th Ave Couplet
- B. 68th/69th Ave Couplet
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- A. Clinton St to Tigard Transit Center
- B. Beveland St North
- C. Beveland St South
- D. Hampton St
- E. **Parallel to 72nd Ave**
- F. **Irving St to Hunziker St**

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- A. **Hunziker St**
- B. Commercial St
- C. Wall to WES Alignment

## Tigard to Tualatin

### *Tigard to Durham (p. 24-27)*

- A. **72nd Ave**
- B. WES to Tech Drive to I-5
- C. WES Alignment to 72nd Ave
- D. **WES Alignment to 85th Ave**
- E. **Hall Blvd to Bonita Rd to 74th Ave**
- F. Hall Blvd to Durham Rd
- G. **Hall to 85th**

### *Bridgeport Village (p. 28-29)*

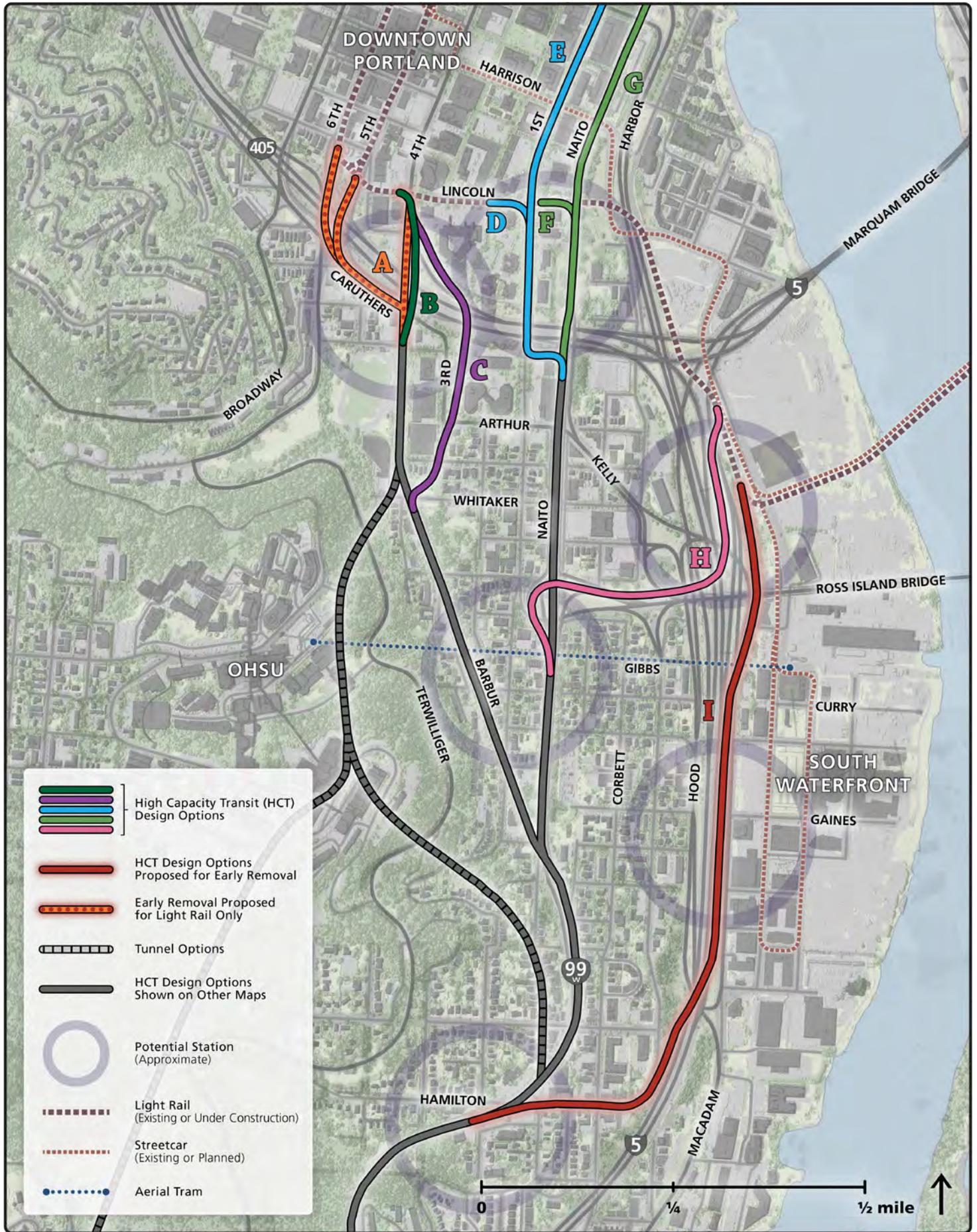
- A. Upper Boones Ferry Rd
- B. **Bridgeport Rd via 72nd Ave**
- C. 72nd Ave
- D. Parallel to I-5

### *Tualatin (p. 30-31)*

- A. **WES Connection via 85th Ave**
- B. WES Connection via Boones Ferry Rd
- C. Out & Back via Boones Ferry Rd
- D. **Adjacent to I-5 & behind Nyberg Rivers**
- E. **Mohawk Park & Ride**

NOTE: The transit alignment options maps for the corridor, as well as associated opportunities and constraints, are in draft form. As the Southwest Corridor Plan continues to study and refine these options, they are likely to change.

# Tie-In to Existing Transit



## Tie-In to Existing Transit (A-E)

### A. 4th & 5th Avenue Couplet

(LRT, BRT; proposed early removal for LRT only)

#### Opportunities for BRT:

- Most direct connection to SW Barbur Boulevard
- Good connection to tunnel options
- Good connection via 5th and 6th to transit mall

#### Reasons for Proposed Removal for LRT:

- Requires reconstruction of the SW 5th Avenue bridge over I-405 to connect to Milwaukie LRT tracks, impacting necessary clearance for I-405
- Requires reconstruction of portions of Portland - Milwaukie LRT tracks and street facilities
- Alternative options on Fourth Avenue, First Avenue, and Naito Parkway would require much less extensive modifications to existing infrastructure
- Adds more transit vehicles to heavily used pedestrian area

### B. SW 4th Avenue (LRT, BRT)

#### Opportunities:

- Good connection between transit mall and SW Barbur Boulevard
- Good connection to tunnel options

#### Constraints:

- *LRT ONLY*: requires new transit-only bridge over I-405 to accommodate existing traffic and HCT
- *BRT ONLY*: a direct and traffic segregated connection to transit mall is difficult to provide
- *BRT ONLY*: connection to transit mall is indirect and will be congested with buses using PMLR bridge
- Concerns about signal phasing because of traffic capacity constraints at SW 4th Avenue and SW Lincoln Street

### C. SW 4<sup>th</sup> Avenue to 2<sup>nd</sup> Avenue (LRT, BRT)

#### Opportunities:

- Good connection to transit mall for LRT
- Avoids intersections along SW Broadway south of I-405
- Good connection to OHSU tunnel options

#### Constraints:

- Requires tunnel and a new long bridge over I-405
- Significant property impacts along SW 3<sup>rd</sup> Avenue
- *BRT ONLY*: a direct and traffic-segregated connection to transit mall is difficult to provide

### D. SW 1st Avenue (LRT, BRT)

#### Opportunities:

- *LRT ONLY*: connection to Lincoln Street station provides walk access to River Place (within ½ mile)
- *BRT ONLY*: connection close to Lincoln Street station
- Uses existing bridge over I-405
- Alignment on SW 1st Avenue to Sheridan would have relatively few property impacts due to wide right-of-way

#### Constraints:

- Less direct connection between the transit mall and the corridor
- Potential impacts to condominiums at SW 1st and Lincoln
- Additional turns and signals at Naito, First and Sheridan will increase travel time
- *BRT ONLY*: connection to transit mall is indirect and will be congested with buses using PMLR bridge
- *BRT ONLY*: connection to transit mall is indirect and will be congested with buses using PMLR bridge

### E. Extended SW 1st Ave to Blue/Red Line LRT (LRT)

#### Opportunities:

- Supports City of Portland's West Quadrant Plan, which seeks to promote household growth near the waterfront in downtown Portland
- Potentially faster travel time through downtown Portland to eastside (more direct path to Steel Bridge) if with transit signal priority given over autos at Hawthorne Bridgehead

#### Constraints:

- Conflicts with traffic and signal timing at the Hawthorne Bridgehead. If transit given priority, signal timing designed to help traffic flow would be disrupted. If transit not given priority, LRT would suffer regular delays at signals.
- Misses transfer connections to buses on transit mall
- Misses the heart of downtown serving destinations only along the edge
- Traffic impacts with conversion of lanes on SW 1st Avenue to transit only lanes (also would constrain ability to make modifications to Ross Island bridgehead which would use SW 1st Avenue to distribute traffic displaced on SW Naito Parkway)

## Tie-In to Existing Transit (F-I)

### **F. SW Naito Parkway** (LRT, BRT)

#### **Opportunities:**

- Potential redesign of SW Naito Parkway to enhance neighborhood accessibility and ped/bike safety
- Avoids intersections along SW Broadway south of I-405
- Could catalyze Ross Island Bridgehead realignment to address current traffic issues

#### **Constraints:**

- Less direct connection between the transit mall and the corridor
- Current viaduct south of I-405 is narrow; adding bike lanes and sidewalks with HCT is challenging
- *LRT ONLY*: requires rebuild of PMLR track and change of elevation of Naito, which could also affect streetcar (vertical curve – can't construct a switch)
- Potential traffic impacts through Ross Island Bridgehead area if no other roadway realignments completed in conjunction with HCT project
- *BRT ONLY*: a direct and traffic segregated connection to transit mall is difficult to provide

### **G. Extended SW Naito Parkway to Steel Bridge** (BRT)

#### **Opportunities:**

- Supports City of Portland's West Quadrant Plan, which seeks to promote household growth near the waterfront in downtown Portland
- Faster travel time through downtown Portland to eastside (more direct path to Steel Bridge)

#### **Constraints:**

- Misses transfer connections to buses on transit mall
- Misses the heart of downtown, serving destinations only the edge
- Conflicts with traffic and signal timing at the Hawthorne Bridgehead. If transit given priority, signal timing designed to help traffic flow would be disrupted. If transit not given priority, BRT would suffer regular delays at signals.
- Traffic impacts with conversion of lanes on SW Naito Parkway to transit only lanes

### **H. South Waterfront – Short Tunnel** (LRT)

#### **Opportunities:**

- Direct connection between the corridor and South Waterfront
- Ties into Portland-Milwaukie LRT

#### **Constraints:**

- Duplicative of streetcar connection between downtown Portland and South Waterfront
- Construction impacts to I-5
- High cost of tunnel
- Would not support land use vision on Naito or Barbur
- Technically difficult to construct
- Out-of-direction route between corridor and transit mall

### **I. South Waterfront – Long**

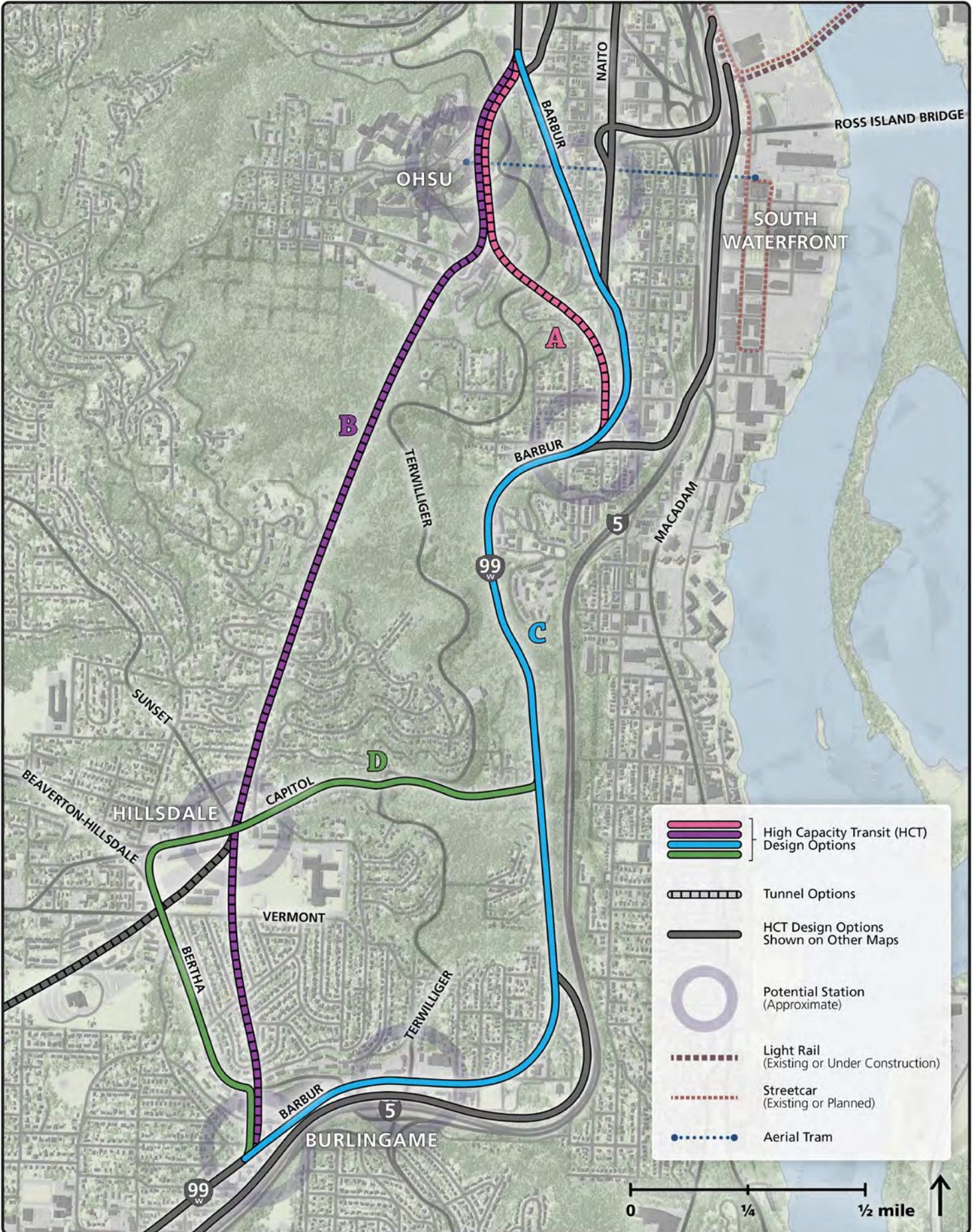
(LRT; proposed for early removal)

#### **Reasons for Proposed Removal:**

- Requires extensive structure including bridges adjacent to and crossing over I-5 and tunnels to reach grade at SW Barbur Boulevard
- Traffic impacts on SW Hamilton Street
- Restricts future I-5 lane expansion/modification
- Out-of-direction route between corridor and transit mall which negatively effects travel time
- Doesn't support land use vision
- Options using SW Barbur Boulevard or SW Naito Parkway would provide a more direct and faster route between the corridor and the transit mall

NOTE: The transit alignment options maps for the corridor, as well as associated opportunities and constraints, are in draft form. As the Southwest Corridor Plan continues to study and refine these options, they are likely to change.

# South Portland to Burlingame



- High Capacity Transit (HCT) Design Options
- High Capacity Transit (HCT) Design Options
- High Capacity Transit (HCT) Design Options
- Tunnel Options
- HCT Design Options Shown on Other Maps
- Potential Station (Approximate)
- Light Rail (Existing or Under Construction)
- Streetcar (Existing or Planned)
- Aerial Tram



NOTE: The transit alignment options maps for the corridor, as well as associated opportunities and constraints, are in draft form. As the Southwest Corridor Plan continues to study and refine these options, they are likely to change.

## South Portland to Burlingame

### A. Short Tunnel - Exit at Hamilton

#### Opportunities:

- Most direct connection to Marquam Hill/OHSU via elevator
- Shortest tunnel option – less expensive compared to longer tunnel options
- Would avoid congested areas of northern SW Barbur Boulevard
- Potentially faster travel times compared to surface options

#### Constraints:

- Technically challenging and expensive compared to surface options
- Fewer stations serving South Portland neighborhood
- Potential vibration impacts at OHSU research and medical facilities
- Misses/foregoes land use redevelopment opportunities in South Portland
- Misses/foregoes opportunities for pedestrian, bicycle and stormwater improvements along SW Barbur Boulevard or SW Naito Parkway

### B. Medium Tunnel - Exit at Bertha

#### Opportunities:

- Direct connection to Marquam Hill/OHSU via elevator
- Serves Hillsdale
- Avoids congested areas of northern SW Barbur Boulevard
- Potentially faster travel times compared to surface options

#### Constraints:

- Technically challenging and expensive compared to surface options and short tunnel
- Fewer stations serving South Portland neighborhood
- Potential vibration impacts at OHSU research facilities
- Misses/foregoes land use redevelopment opportunities in South Portland
- Misses/foregoes opportunities for pedestrian, bicycle and stormwater improvements along SW Barbur Boulevard or SW Naito Parkway

### C. Barbur (BRT, LRT)

#### Opportunities:

- Replacement of viaducts improves travel for autos, bikes, and pedestrians
- Creates opportunities for access to SW Hamilton commercial node and South Portland and Homestead neighborhoods

#### Constraints:

- Significant traffic impacts during construction unless new parallel structure(s) built
- Limited land use opportunities between SW Hamilton and SW Terwilliger

### D. Hillsdale via Barbur

(BRT, LRT in tunnel through Hillsdale center)

#### Opportunities:

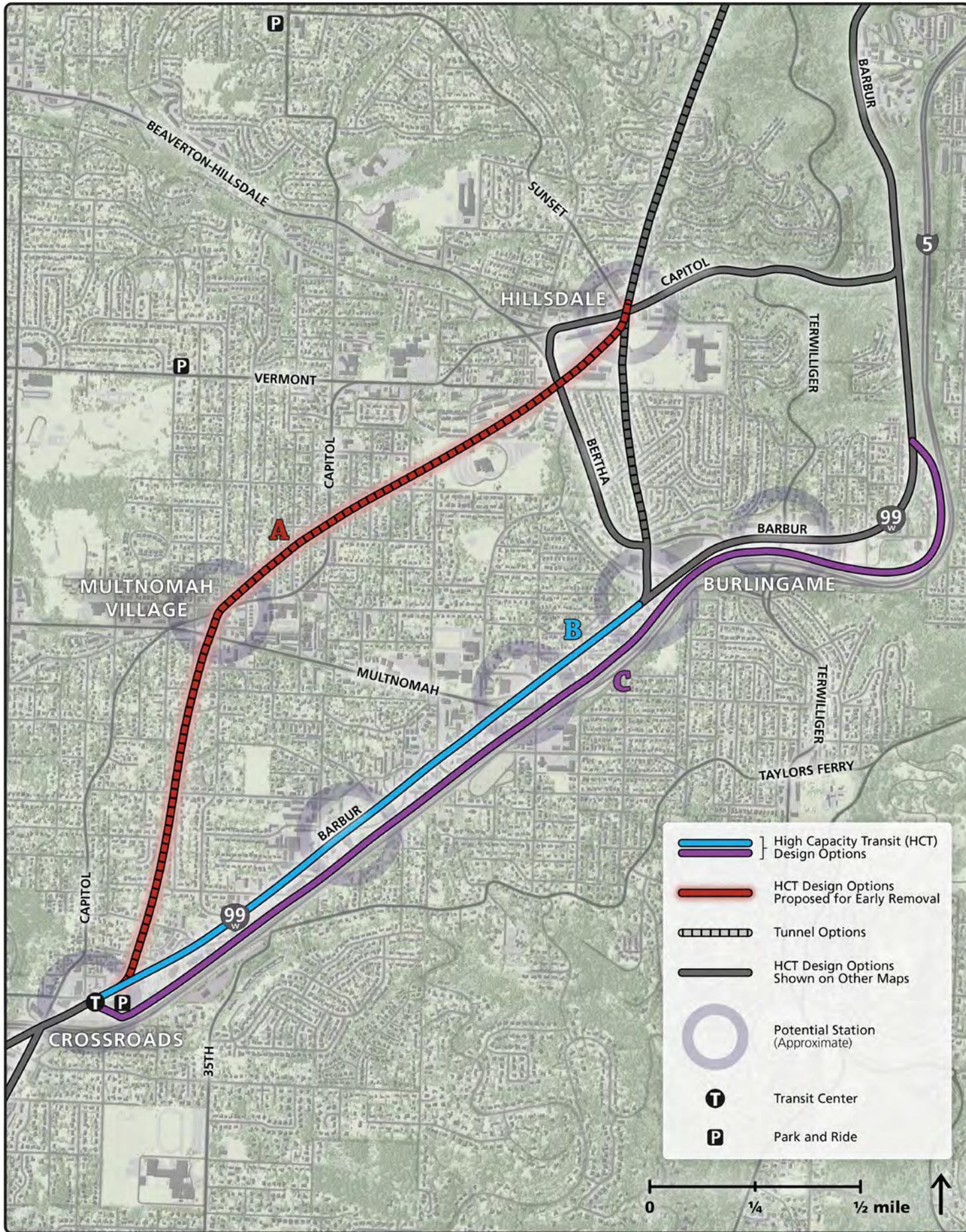
- Provides HCT access to Hillsdale town center
- Avoids replacement of trestles on SW Barbur Boulevard
- Avoids difficult SW Terwilliger and SW Barbur intersections
- Development opportunities on Bertha near Hillsdale and near SW Barbur Boulevard

#### Constraints:

- Requires LRT in tunnel or BRT in mixed traffic
- Potential slower HCT travel times
- Potential traffic and property impacts
- BRT in mixed traffic results in slower travel travel times
- BRT would need traffic signal changes at Bertha

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

# Burlingame to Barbur Transit Center



NOTE: The transit alignment options maps for the corridor, as well as associated opportunities and constraints, are in draft form. As the Southwest Corridor Plan continues to study and refine these options, they are likely to change.

## Burlingame to Barbur Transit Center

### **A. Long Tunnel - Exit at Barbur Transit Center**

(proposed for early removal)

#### **Reasons for Proposed Removal:**

- At nearly twice the length of medium tunnel, very expensive relative to other tunnel options and surface options
- In order to serve Multnomah Village, misses historic portion of SW Barbur Boulevard, the focus area of Barbur Concept Plan
- Misses/foregoes land use redevelopment opportunities in South Portland
- Misses/foregoes opportunities for pedestrian, bicycle and stormwater improvements along SW Barbur Boulevard or SW Naito Parkway
- Potential vibration impacts at OHSU research facilities
- To serve Multnomah Village, does not serve historic portion of SW Barbur Boulevard, the primary goal of the Barbur Concept Plan

### **B. Barbur (BRT, LRT)**

#### **Opportunities:**

- Supports the development of historic SW Barbur Boulevard section identified in SW Corridor Plan land use vision and the City of Portland's Barbur Concept Plan
- Adds sidewalks, bike facilities stormwater features, streetscape, urban spaces etc. in addition to HCT facilities

#### **Constraints:**

- Potential to impact traffic at key intersections and restrict access to businesses, depending on design

### **C. Adjacent to I-5 (BRT, LRT)**

#### **Opportunities:**

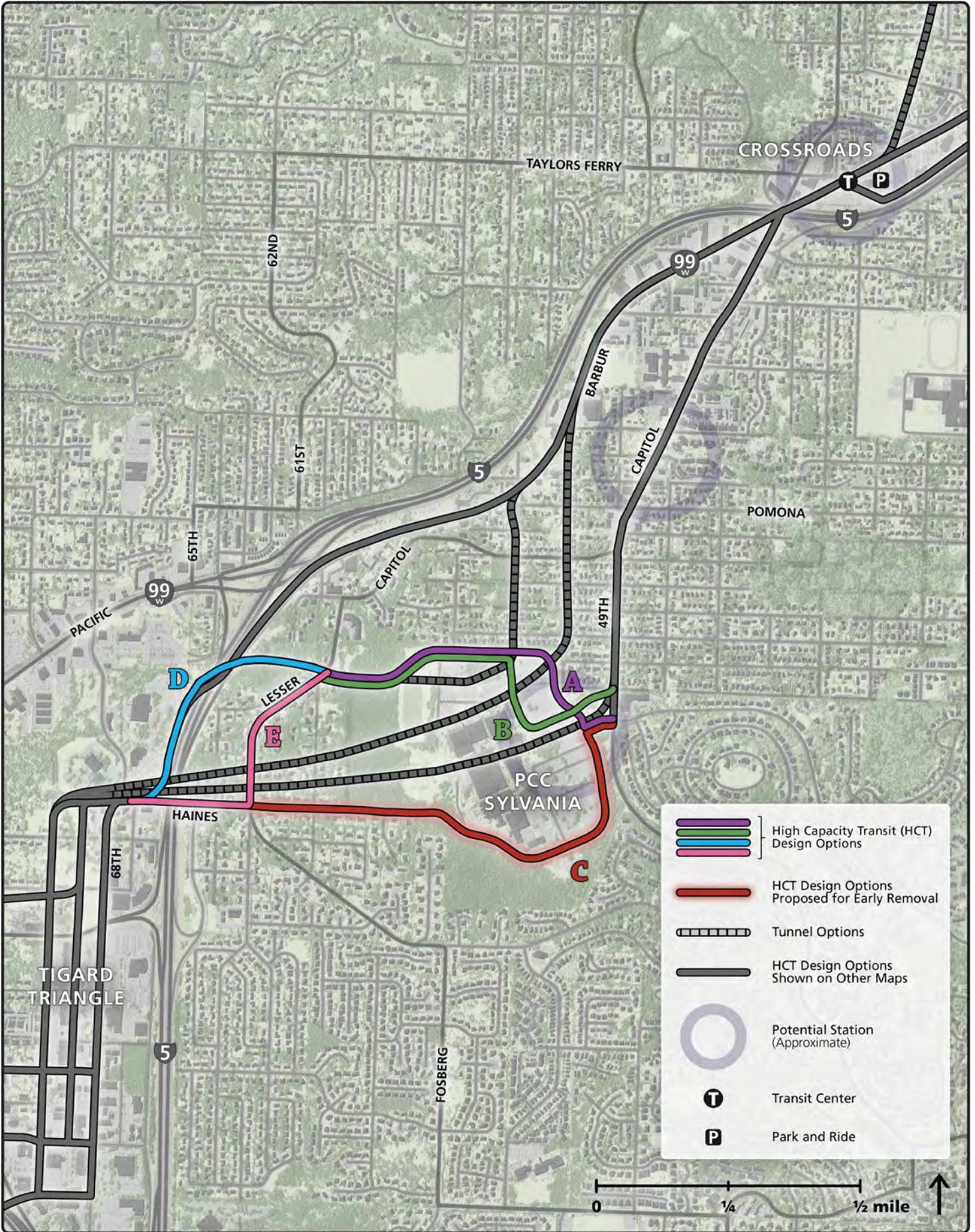
- Avoids key intersections along SW Barbur Boulevard and business accesses

#### **Constraints:**

- More limited support of development along historic SW Barbur Boulevard section
- Technical challenges as routing would require significant structure on steep slopes to avoid Barbur, and to travel over or under ramps to SW Barbur Boulevard
- More difficult to make pedestrian connections to stations compared to options on SW Barbur Boulevard

NOTE: The transit alignment options maps for the corridor, as well as associated opportunities and constraints, are in draft form. As the Southwest Corridor Plan continues to study and refine these options, they are likely to change.

# PCC Area – BRT-Only Options



- High Capacity Transit (HCT) Design Options
- HCT Design Options Proposed for Early Removal
- Tunnel Options
- HCT Design Options Shown on Other Maps
- Potential Station (Approximate)
- Transit Center
- Park and Ride

NOTE: The transit alignment options maps for the corridor, as well as associated opportunities and constraints, are in draft form. As the Southwest Corridor Plan continues to study and refine these options, they are likely to change.

## PCC Area - BRT-Only Options

### A. Circumferential around North End (BRT)

#### Opportunities

- Fewer impacts to the inner campus compared to front door option
- Slightly shorter travel times compared to front door option

#### Constraints:

- Longer walk to station compared to front door option
- More signalized crossings of internal streets needed

### B. Front Door (BRT)

#### Opportunities:

- Front door access to PCC
- Station on Capitol Hwy that serves neighborhood

#### Constraints:

- Less-direct route through campus may result in longer travel times than circumferential routes
- Disruption to the inner campus road network and parking lots

### C. Circumferential around South End

(BRT – recommended for early removal)

#### Reasons for Proposed Removal:

- Requires connection to Upper Haines Street, resulting in impacts to parks, old-growth trees, and properties
- Other design options provide comparable travel times and access to PCC with fewer impacts

### D. New Bridge (BRT, LRT)

#### Opportunities:

- More direct route from PCC campus to the Tigard triangle, resulting in faster travel times compared to the Haines option
- Less disruption to the residential area along SW Lesser Road and SW Haines Street
- Can be built with grades appropriate for both BRT and LRT

#### Constraints:

- Higher capital cost compared to option of using existing Haines bridge

### E. Haines Bridge (BRT)

#### Opportunities:

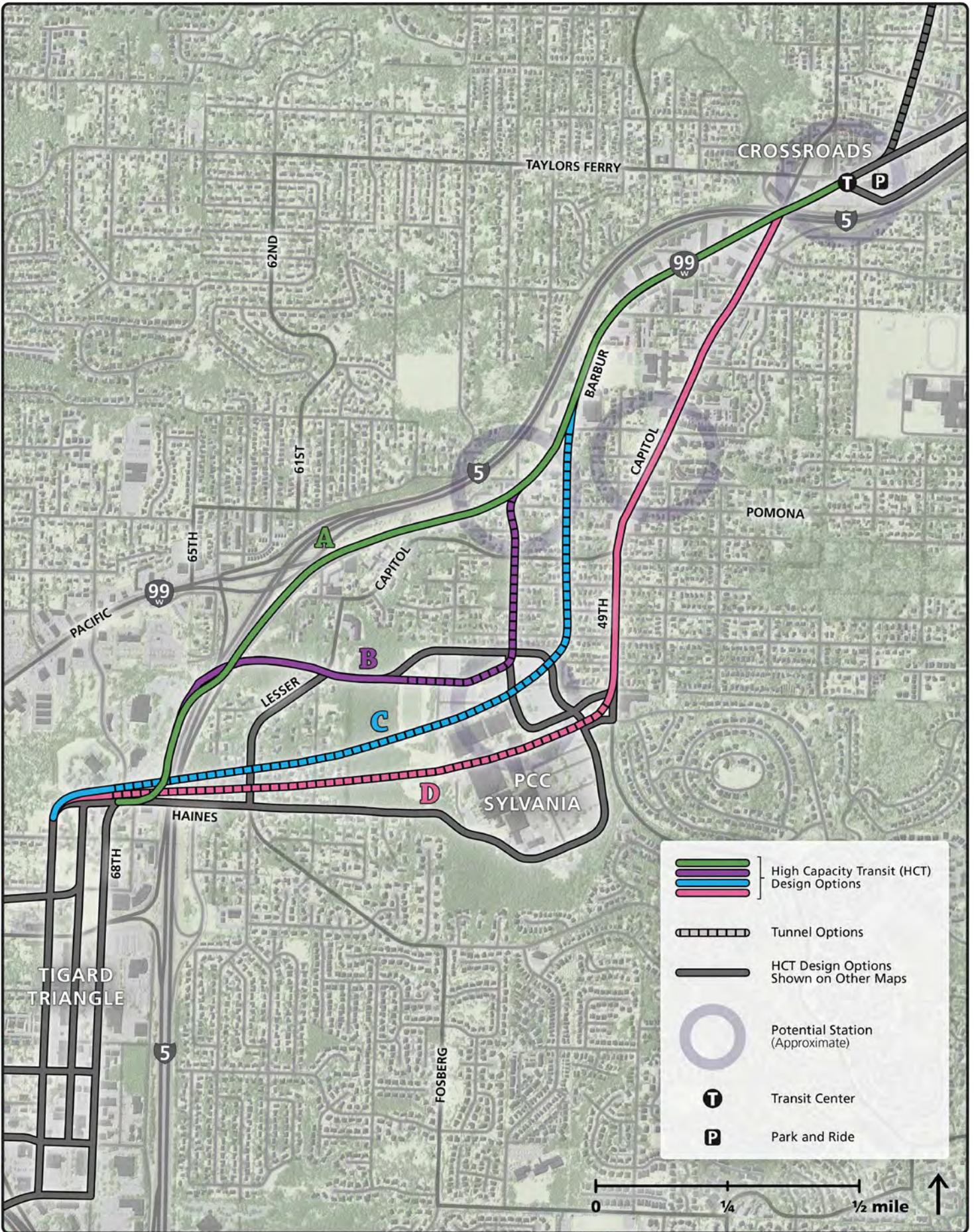
- Lower capital cost due to use of an existing bridge to cross -I-5 into the Tigard Triangle

#### Constraints:

- Less direct route from PCC campus to the Tigard Triangle, resulting in slower travel times compared to the new bridge option
- Potential disruption to residential area along SW Lesser Road and SW Haines Street
- Existing grades on bridge are not compatible with LRT maximum slopes (over 7%)

NOTE: The transit alignment options maps for the corridor, as well as associated opportunities and constraints, are in draft form. As the Southwest Corridor Plan continues to study and refine these options, they are likely to change.

# PCC Area – BRT/LRT Options



NOTE: The transit alignment options maps for the corridor, as well as associated opportunities and constraints, are in draft form. As the Southwest Corridor Plan continues to study and refine these options, they are likely to change.

## PCC Area - BRT/LRT Options

### A. Barbur (BRT, LRT)

#### Opportunities:

- HCT would diverge from Barbur east of I-5, minimizing traffic impacts to the busy intersection of Barbur and SW 64th Avenue
- Faster travel times compared to BRT surface options serving campus
- Opportunity to site station and Park and Ride lot on ODOT property North of SW Barbur Boulevard at SW 55th Avenue

#### Constraints

- High capital cost due to construction of a new bridge crossing I-5
- No direct PCC access
- No station on SW Capitol Highway to serve neighborhood

### B. Short Tunnel via Barbur (BRT, LRT)

#### Opportunities:

- Station north of heart of PCC campus
- Faster travel times compared to BRT surface options serving campus
- Shortest cut-and-cover tunnel, less expensive than other tunnel options

#### Constraints:

- Station not as close to center campus as other tunnel options
- More expensive compared to surface options
- No station on SW Capitol Highway to serve neighborhood
- More impacts during construction than bored tunnels (Options C & D)

### C. Tunnel via Barbur (BRT, LRT)

#### Opportunities:

- Station at heart of PCC campus
- Faster travel times compared to BRT surface options serving campus

#### Constraints:

- More expensive compared to surface options or shorter tunnel options
- No station on SW Capitol Highway to serve neighborhood

### D. Tunnel via Capitol Highway (BRT, LRT)

#### Opportunities:

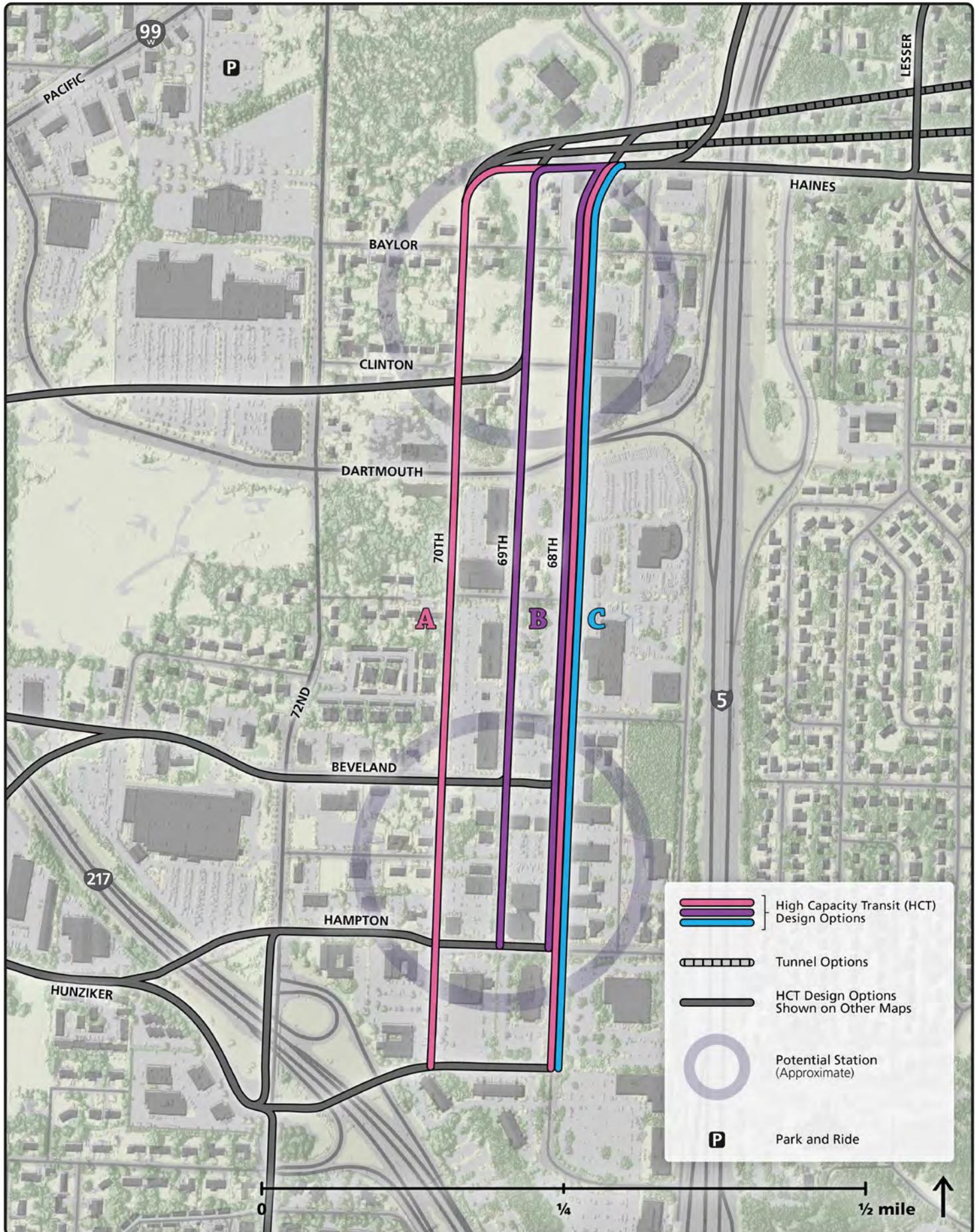
- Station at heart of at PCC campus
- Faster travel times compared to BRT surface options serving campus

#### Constraints:

- Deep tunnel is more expensive compared to surface options or shorter tunnel options

NOTE: The transit alignment options maps for the corridor, as well as associated opportunities and constraints, are in draft form. As the Southwest Corridor Plan continues to study and refine these options, they are likely to change.

# Tigard Triangle



## Tigard Triangle

### A. 68th/70th Avenue Couplet (BRT, LRT)

#### Opportunities:

- Less right-of-way needed with one direction of HCT and one direction of vehicle traffic compared to two-way HCT options
- Greater distance from I-5 could mean fewer potential traffic impacts compared to SW 68th/69th Avenue couplet
- Increases connectivity in Tigard Triangle with additional north/south street that is not currently developed
- Couplets tend to be efficient for traffic flow and transit operations

#### Constraints:

- Higher capital costs compared to two-way street options
- Current land uses on SW 70th Avenue are not supportive of a fronting couplet street given residential character and parking lots behind businesses on SW 68th Avenue
- Because SW 70th Avenue has a narrower existing right-of-way than SW 69th and 68th Avenues, more right-of-way is required than for the SW 68th/69th Avenue couplet option

### B. 68th/69th Avenue Couplet (BRT, LRT)

#### Opportunities:

- Less right-of-way needed with one direction of HCT and one direction of vehicle traffic compared to two-way HCT options
- Less right-of-way needed for SW 68th and 69th Avenue couplet than for a couplet that utilizes SW 70th Avenue
- Couplets tend to be efficient for traffic flow and transit operations

#### Constraints:

- Higher capital costs compared to two-way street options
- Cross slope on SW 70th Avenue requires retaining walls on both sides

### C. 68th Avenue Two-Way (BRT, LRT)

#### Opportunities:

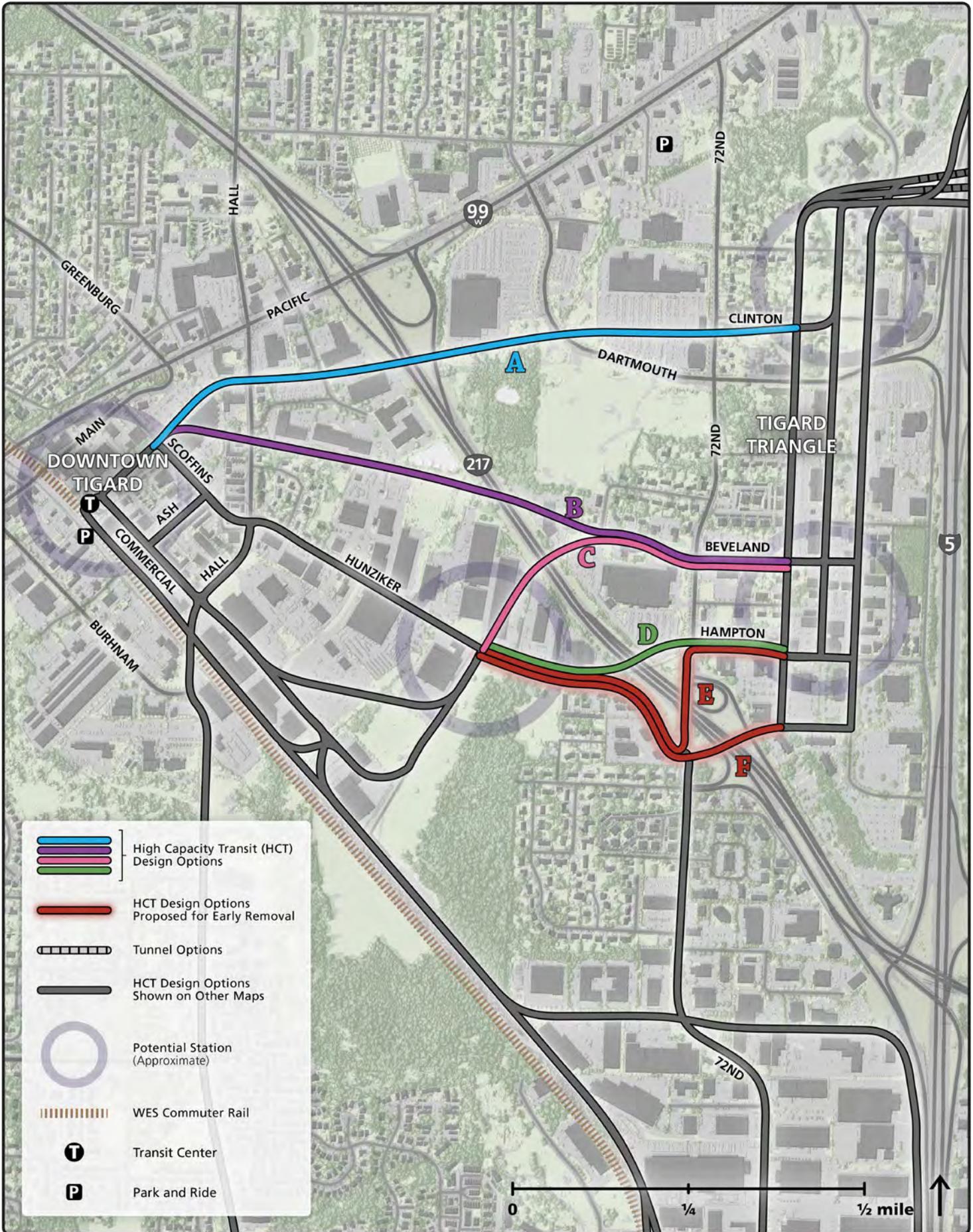
- Lower capital costs compared to couplet options
- Focuses mobility on SW 68th Avenue, preserving SW 69th and 70th Avenues as primarily pedestrian and retail corridors

#### Constraints:

- More right-of-way required on SW 68th Avenue compared to couplet options, thus more property impacts
- Potential traffic impacts to I-5 interchange at SW Dartmouth Street and SW 68th Avenue

# OR-217 Crossing

NOTE: The transit alignment options maps for the corridor, as well as associated opportunities and constraints, are in draft form. As the Southwest Corridor Plan continues to study and refine these options, they are likely to change.



## OR-217 Crossing (A-D)

### A. Clinton to Tigard Transit Center (BRT, LRT)

#### Opportunities:

- Most direct, fastest connection between Tigard Triangle and Tigard Transit Center
- Avoids congested intersections at southern end of Tigard Triangle
- Provides most efficient transition between alignment north of Tigard and alignment south of Tigard
- Provides an opportunity for a new multi-modal connection between downtown Tigard and the Tigard Triangle

#### Constraints:

- Potential natural area/wetlands impacts
- Impacts to commercial parking lots in Triangle and in downtown Tigard
- Potential property impacts in downtown Tigard.
- Provides less HCT access to southern portion of Tigard Triangle compared to other options
- Requires a long bridge, with associated cost and visual impacts
- Traffic impacts on Hall in close proximity to OR-99W, a significant queuing area

### B. Beveland North (BRT, LRT)

#### Opportunities:

- Avoids a congested area at the OR-217 interchange with SW 72nd Avenue and SW Hunziker Road
- More direct, faster connection between the Tigard Triangle and Tigard Transit Center compared to options crossing further south
- Provides opportunity for new multi-modal connection between downtown Tigard and the Tigard Triangle

#### Constraints:

- Natural area/wetlands impacts
- Impacts to parking lots behind industrial buildings on SW Hunziker Street
- Property impacts in downtown Tigard
- Greater travel time than Clinton to Tigard Transit Center alignment which provides a more direct connection

### C. Beveland South (BRT, LRT)

#### Opportunities:

- Avoids a congested area at the OR-217 interchange with SW 72nd Avenue and SW Hunziker Road
- More direct, faster connection between the Tigard Triangle and Tigard Transit Center compared to options crossing further south
- Provides opportunity for new multi-modal connection between downtown Tigard and the Tigard Triangle
- Serves potential redevelopment area near SW Wall Street

#### Constraints:

- Industrial property impacts near SW Hunziker Street
- Greater travel time than Clinton to Tigard Transit Center alignment which provides a more direct connection

### D. Hampton (BRT, LRT)

#### Opportunities:

- Fewer property impacts to industrial properties in Tigard Triangle

#### Constraints:

- Traffic impacts to the OR-217 interchange at SW Hunziker Road and 72nd Avenue
- Less direct option compared to options crossing to the north, resulting in slower travel times without providing access to additional riders

NOTE: The transit alignment options maps for the corridor, as well as associated opportunities and constraints, are in draft form. As the Southwest Corridor Plan continues to study and refine these options, they are likely to change.

## OR-217 Crossing (E-F)

### **E. Parallel to 72nd**

(LRT, BRT – recommended for early removal)

#### **Reasons for Proposed Removal:**

- Traffic impacts at three currently congested intersections: OR-217 interchanges at SW Hunziker Road and at SW 72nd Avenue, and at SW 72nd Avenue and SW Hampton Street
- Infeasible for LRT to complete sharp curves between SW 72nd Avenue and SW Hunziker Road; for BRT, structure required to accommodate curves
- Least direct option of all crossings, resulting in slowest travel times without providing access to additional riders
- Alternative options that cross near SW Hampton Street or SW Beveland Street would avoid congested intersections completely and would provide faster travel times without compromising access to HCT

### **F. Irving to Hunziker**

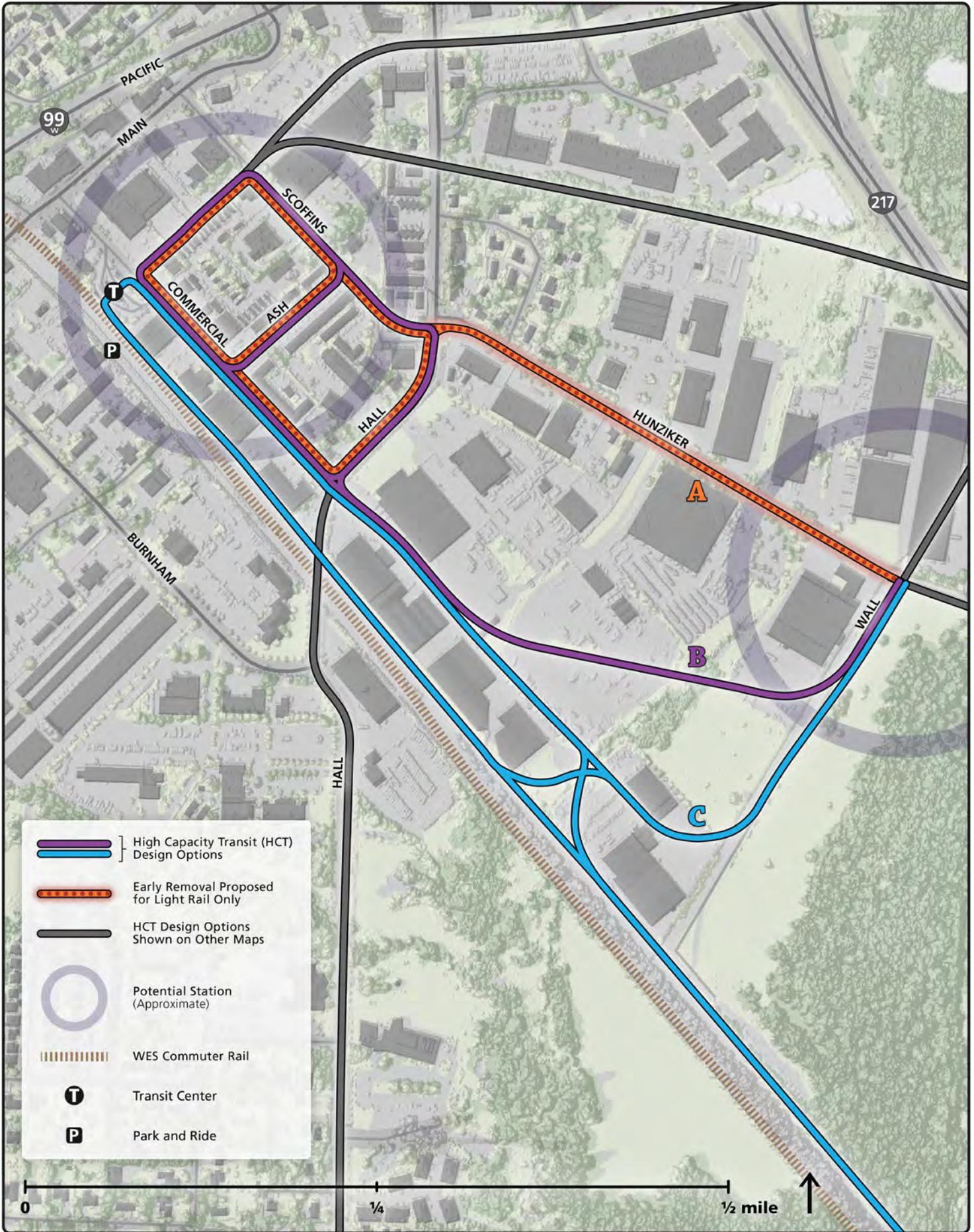
(BRT, LRT - recommended for early removal)

#### **Reasons for Proposed Removal:**

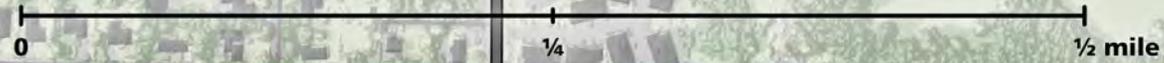
- Significant impacts east of OR-217 due to lack of right-of-way
- Significant traffic impacts at SW 72nd Avenue/OR-217 ramps, requiring additional signals and violating ODOT standards
- Slow transit travel time compared to most options due to out-of-direction travel
- Alternative options crossing at SW Hampton Street or SW Beveland Street avoids impacts to intersections and provides faster travel times

# Downtown Tigard

NOTE: The transit alignment options maps for the corridor, as well as associated opportunities and constraints, are in draft form. As the Southwest Corridor Plan continues to study and refine these options, they are likely to change.



- High Capacity Transit (HCT) Design Options
- Early Removal Proposed for Light Rail Only
- HCT Design Options Shown on Other Maps
- Potential Station (Approximate)
- WES Commuter Rail
- Transit Center
- Park and Ride



NOTE: The transit alignment options maps for the corridor, as well as associated opportunities and constraints, are in draft form. As the Southwest Corridor Plan continues to study and refine these options, they are likely to change.

## Downtown Tigard

### A. Hunziker

(LRT, BRT- recommended for early removal for LRT)

#### **Reasons for Proposed Removal for LRT:**

- Property impacts to industrial business on Hunziker with LRT tracks eliminating access to left-turning vehicles. BRT could avoid impacts by operating in mixed traffic.

#### **Opportunities for BRT:**

- More direct connection to downtown Tigard compared to options to the south of SW Hunziker Road
- Potential site for future park & ride and additional station

#### **Constraints for BRT:**

- BRT must operate in mixed traffic to maintain access to businesses along SW Hunziker Road

### B. Commercial (BRT, LRT)

#### **Opportunities:**

- Fewer impacts compared to other options
- Provides access to redevelopment opportunity on vacant land near SW Wall Street
- The one-way loop design would require less right-of-way on individual roads than an out & back alignment
- Potential site for future park & ride and additional station

#### **Constraints:**

- Less direct option compared to options to the north, resulting in slower travel times
- Property impacts to existing industrial buildings

### C. Wall to WES Alignment (LRT)

#### **Opportunities:**

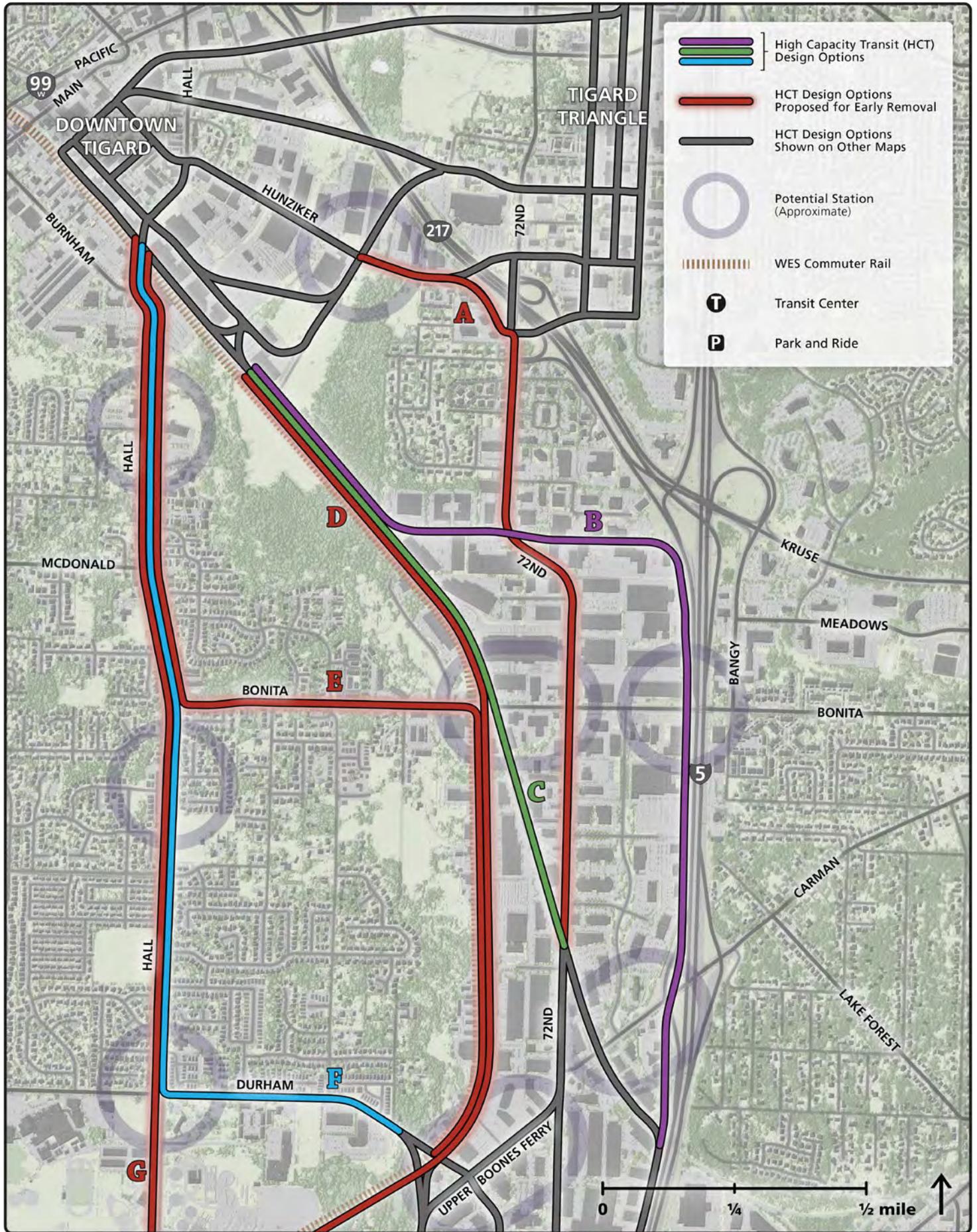
- Avoids impacts to downtown road network while still providing direct access to the Tigard Transit Center and connection to WES

#### **Constraints:**

- Infeasible for BRT
- Challenging connection to Hall Boulevard design options heading south to Tualatin because of the height needed to cross over the freight rail lines

NOTE: The transit alignment options maps for the corridor, as well as associated opportunities and constraints, are in draft form. As the Southwest Corridor Plan continues to study and refine these options, they are likely to change.

# Tigard to Durham



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## Tigard to Durham (A-D)

### A. 72nd Avenue

(BRT, LRT- recommended for early removal)

#### Reasons for Proposed Removal:

- Traffic impacts to intersections of SW Hunziker Road/SW 72nd Avenue and SW Varns Street/SW 72nd Avenue
- Poor transit performance relative to other options, as travel times would be longer with substantial out of direction travel and fewer locations would be served
- *LRT ONLY*: access to properties along 72nd would be restricted to right-turns only; vehicles circulating through the area would exacerbate current congestion
- *BRT ONLY*: buses can operate in mixed traffic to avoid access impacts, but transit performance and reliability would suffer greatly with buses trapped in congestion
- Alternative options provide more direct and reliable service while serving more locations, and avoiding the intersections impacted by this option

### B. WES to Tech Drive to I-5 (BRT, LRT)

#### Opportunities:

- Less impacts to existing roadways relative to some options.
- Provides increased access to HCT to areas east of I-5 at SW Bonita Road and SW Upper Boones Ferry Road via existing over passes.
- Avoids both SW 72nd Avenue / SW Upper Boones Ferry Road intersections
- Improved travel time as speeds could be greater than operating within roadway.

#### Constraints:

- Provides less access to SW 72nd Avenue employment area
- Limited development opportunity adjacent to I-5

### C. WES Alignment to 72nd (BRT, LRT)

#### Opportunities:

- Avoids impacts to residential area directly south of downtown Tigard
- Most direct route to Tualatin results in fastest travel times among options
- Provides service to Bridgeport Village

#### Constraints:

- Requires structure to cross over freight rail line at SW 72nd Avenue
- Doesn't serve Tigard library or municipal offices

### D. WES Alignment to 85th

(BRT, LRT – recommended for early removal)

#### Reasons for Proposed Removal:

- Does not serve Bridgeport Village, which has been identified as a key HCT station
- Impacts to Cook Park, Durham City Park and Tualatin Community Park
- Roadway project extension of 85th Avenue was removed from Tualatin TSP due to public opposition to new river crossing
- All alternative options not using an extension of SW 85th Avenue would serve Bridgeport Village and avoid park impacts

## Tigard to Durham (E-G)

### **E. Hall to Bonita to 74th**

(BRT, LRT – recommended for early removal)

#### **Reasons for Proposed Removal:**

- SW Hall Boulevard and SW Bonita Road are mainly low density residential neighborhoods with little or no development/redevelopment opportunities
- Property impacts to fronting buildings including an historic building and park on SW Bonita Road
- Due to the narrow right-of-way on 74th, there would be property impacts and constraints to access for existing businesses

### **F. Hall to Durham** (BRT, LRT)

#### **Opportunities:**

- Serves Tigard library and municipal offices
- Provides direct connection out of downtown Tigard traveling south

#### **Constraints:**

- *LRT ONLY*: crossing of heavy rail line south of downtown Tigard requires grade separation, either with a long bridge or tunnel.
- *LRT ONLY*: structure required to cross heavy rail at SW Boones Ferry Road
- On Hall Boulevard, travels through a largely single family residential area, need for additional right-of-way would create property impacts to landscaping, decks, fences, etc.
- Does not provide access to the commercially developed area west of I-5 in Tigard
- Less direct route results in slower travel times and higher capital costs

### **G. Hall to 85th**

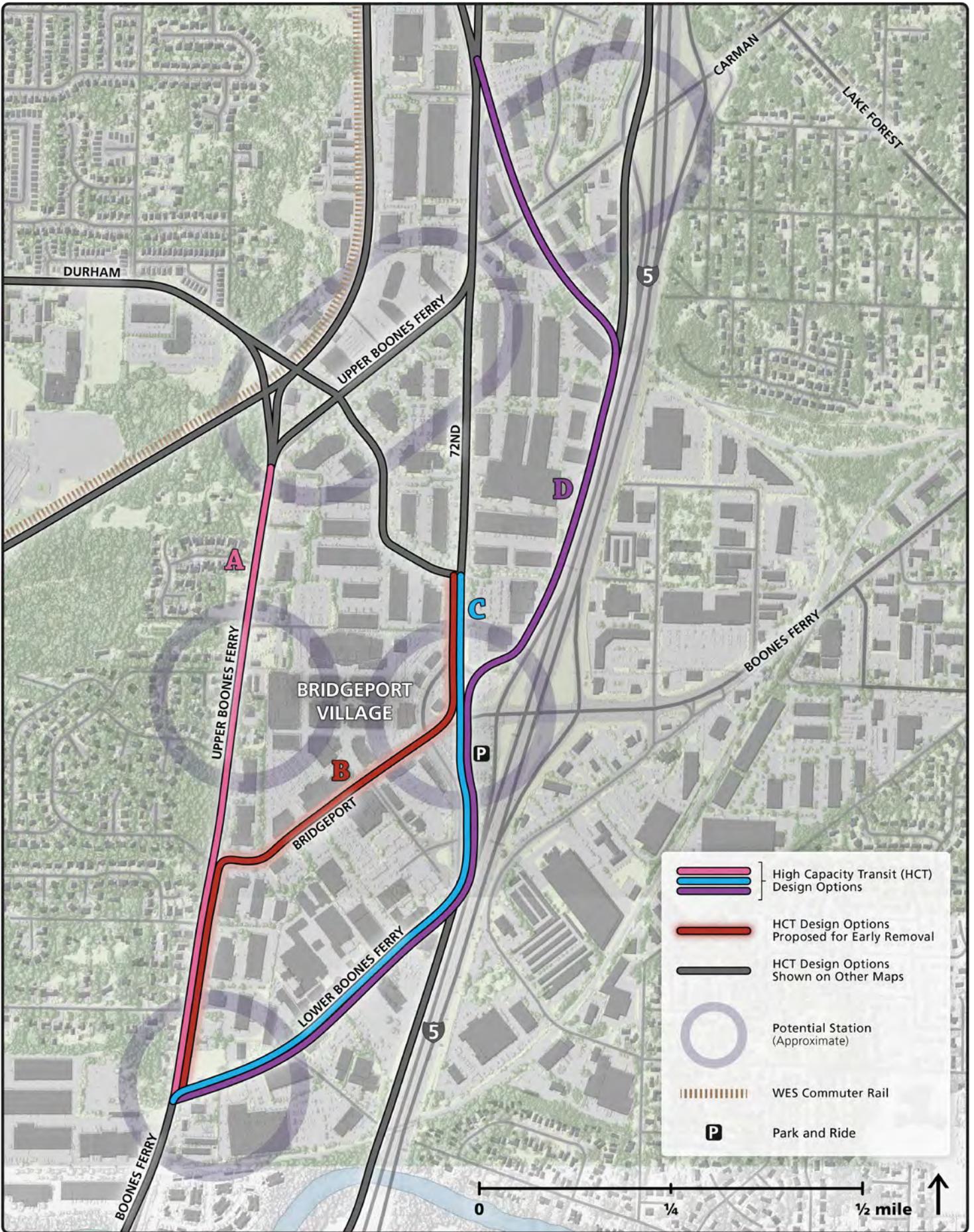
(BRT, LRT – recommended for early removal)

#### **Reasons for Proposed Removal:**

- An extension of SW 85th Avenue over the Tualatin River and into Tualatin would not serve Bridgeport Village, identified as a key HCT station location
- An extension of 85th Avenue as a roadway crossing the Tualatin River was strongly opposed by the community of Tualatin, and the project was removed from the Tualatin TSP.
- Impacts to Cook Park, Durham City Park and Tualatin Community Park.
- Alternative options utilizing the WES right-of-way would serve Bridgeport Village and would not result in a Tualatin River crossing near the three parks.

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# Bridgeport Village



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## Bridgeport Village

### A. Upper Boones Ferry Road (BRT, LRT)

#### Opportunities:

- Avoids congested area at the I-5 interchange with Lower Boones Ferry Road, for both reduced traffic impacts and faster transit performance

#### Constraints:

- Impacts to trees and to recent streetscaping projects
- Impacts to commercial parking
- HCT less visible from the primary access roads to Bridgeport Village
- Limited access to businesses across I-5 from Bridgeport Village
- A park and ride associated with a station on Upper Boones Ferry Road would be difficult to site and would have indirect to access from I-5

### B. Bridgeport Road via 72nd

(BRT, LRT – recommended for early removal)

#### Reasons for Proposed Removal:

- Potentially extensive property/traffic impacts on SW Bridgeport Road
- Structure could be used to avoid property impacts, but this would result in high capital costs relative to competing at-grade options
- Routing onto Upper Boones Ferry Road results in impacts to trees and recent streetscaping improvements
- All alternative options in this segment would avoid Bridgeport Road and associated property impacts. The options on SW 72nd Avenue would also avoid Upper Boones Ferry Road and the impacts to trees.

### C. 72nd Avenue (BRT, LRT)

#### Opportunities:

- Better accessibility to Bridgeport Village compared to Upper Boones Ferry option
- Direct access to existing Tualatin park-and-ride facility

#### Constraints:

- Impacts to parking and landscaping along SW 72nd Avenue and SW Lower Boones Ferry Road
- Requires structure to avoid impacts to traffic at the I-5 interchange with Lower Boones Ferry Road.

### D. Parallel to I-5 (BRT, LRT)

#### Opportunities:

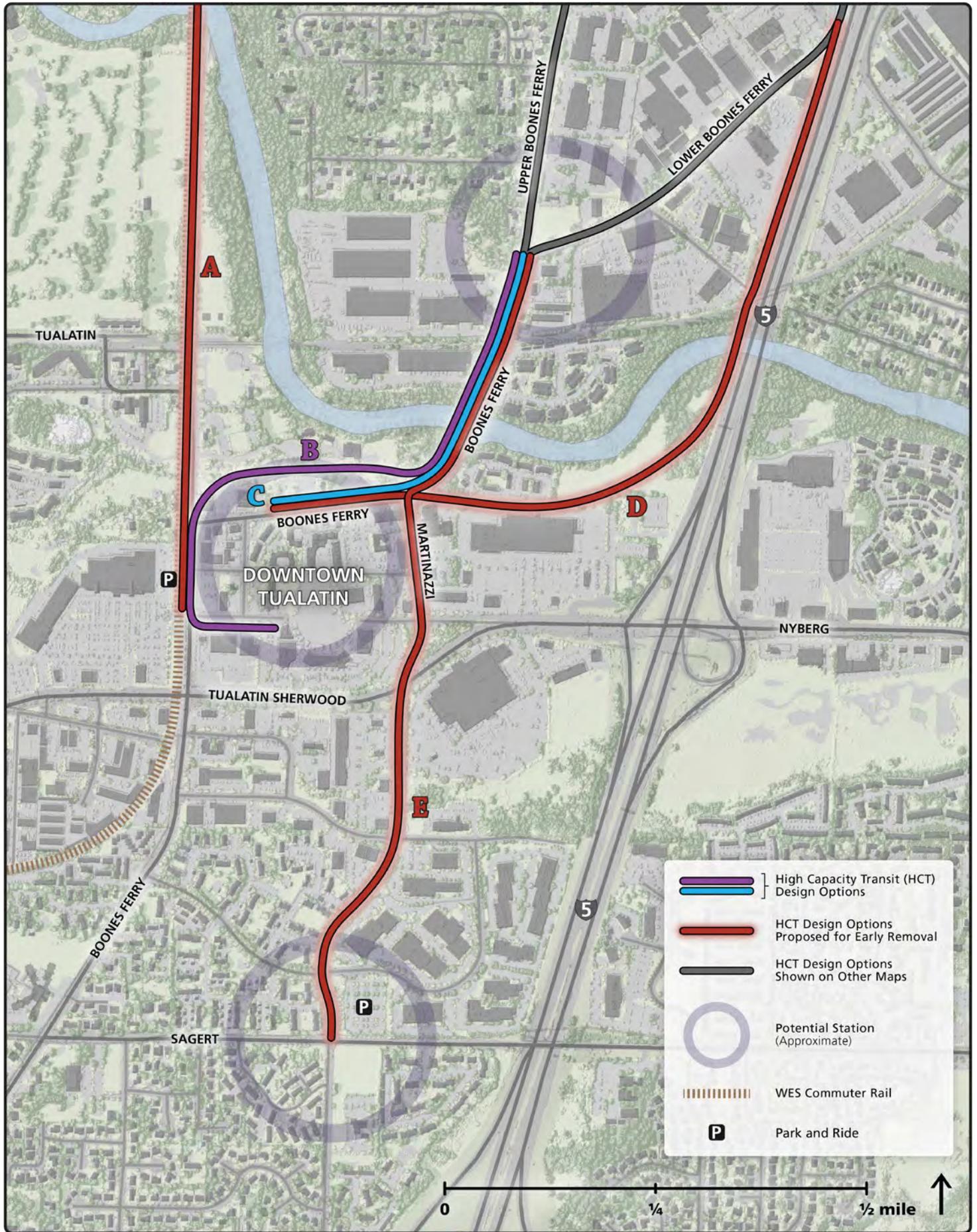
- Avoids both SW 72nd Avenue / SW Upper Boones Ferry Road intersections
- Less impacts to existing roadways when compared with all other options
- Better accessibility to Bridgeport Village compared to Upper Boones Ferry option
- Direct access to existing Tualatin park-and-ride facility

#### Constraints:

- Provides less access to SW 72nd Avenue employment area
- Limited development opportunity adjacent to I-5

NOTE: The transit alignment options maps for the corridor, as well as associated opportunities and constraints, are in draft form. As the Southwest Corridor Plan continues to study and refine these options, they are likely to change.

# Tualatin



# Tualatin

## A. WES Connection via 85th

(BRT, LRT – recommended for early removal)

### Reasons for Proposed Removal:

- Does not serve Bridgeport Village, which has been identified as a key HCT station
- Impacts to Cook Park, Durham City Park and Tualatin Community Park
- Roadway project extension of 85th Avenue was removed from Tualatin TSP due to public opposition to new river crossing
- All alternative options not using an extension of SW 85th Avenue would serve Bridgeport Village and avoid park impacts

## B. WES Connection via Boones Ferry (BRT, LRT)

### Opportunities:

- Closest connection to WES station
- Fastest Tualatin connection

### Constraints:

- Impacts to commercial properties in downtown Tualatin
- Due to inadequate available width, left turn pockets or other lanes would need to be eliminated on Tualatin Rd. at Nyberg St. resulting in traffic impacts

## C. Out & Back via Boones Ferry (BRT, LRT)

### Opportunities:

- Minimal traffic impacts in downtown Tualatin
- Within short walking distance of WES station

### Constraints:

- May impact access to properties north of Boones Ferry on northern edge of downtown Tualatin

## D. Adjacent to I-5 & behind Nyberg Rivers

(BRT, LRT – recommended for early removal)

### Reasons for Proposed Removal:

- This option requires substantial amounts of structure to tunnel under the heavy rail north of the Tualatin River, bridge over the river and over circulation and loading behind proposed future development. Finally to site a station, the alignment must tunnel under Boones Ferry Rd.
- The option also potentially impacts planned bike/pedestrian path behind future development
- Precludes a potential station location to serve the southern edge of the Bridgeport Area
- Better options for reaching the same station location are available

## E. Mohawk Park & Ride

(BRT, LRT – recommended for early removal)

### Reasons for Proposed Removal:

- Requires a very long structure (approximately 2/3 mile long) along SW Boones Ferry Road and SW Martinazzi Avenue, resulting in high capital costs relative to other options
- A large structure would not fit with the character of downtown Tualatin
- Options crossing the Tualatin River adjacent to the Lower Boones Ferry Bridge and turning west instead of continuing south would require far less structure and would result in fewer impacts to the built environment