

WELCOME!

Thank you for joining us at the second open house for the Center City Connector Transit study!

AGENDA

5:30-7:30 Open House

6:00 Brief Presentation

What you can do

- ⦿ Review information displays
- ⦿ Listen to presentation
- ⦿ Ask questions
- ⦿ Provide input

Please fill out a comment card before you leave

STUDY OVERVIEW

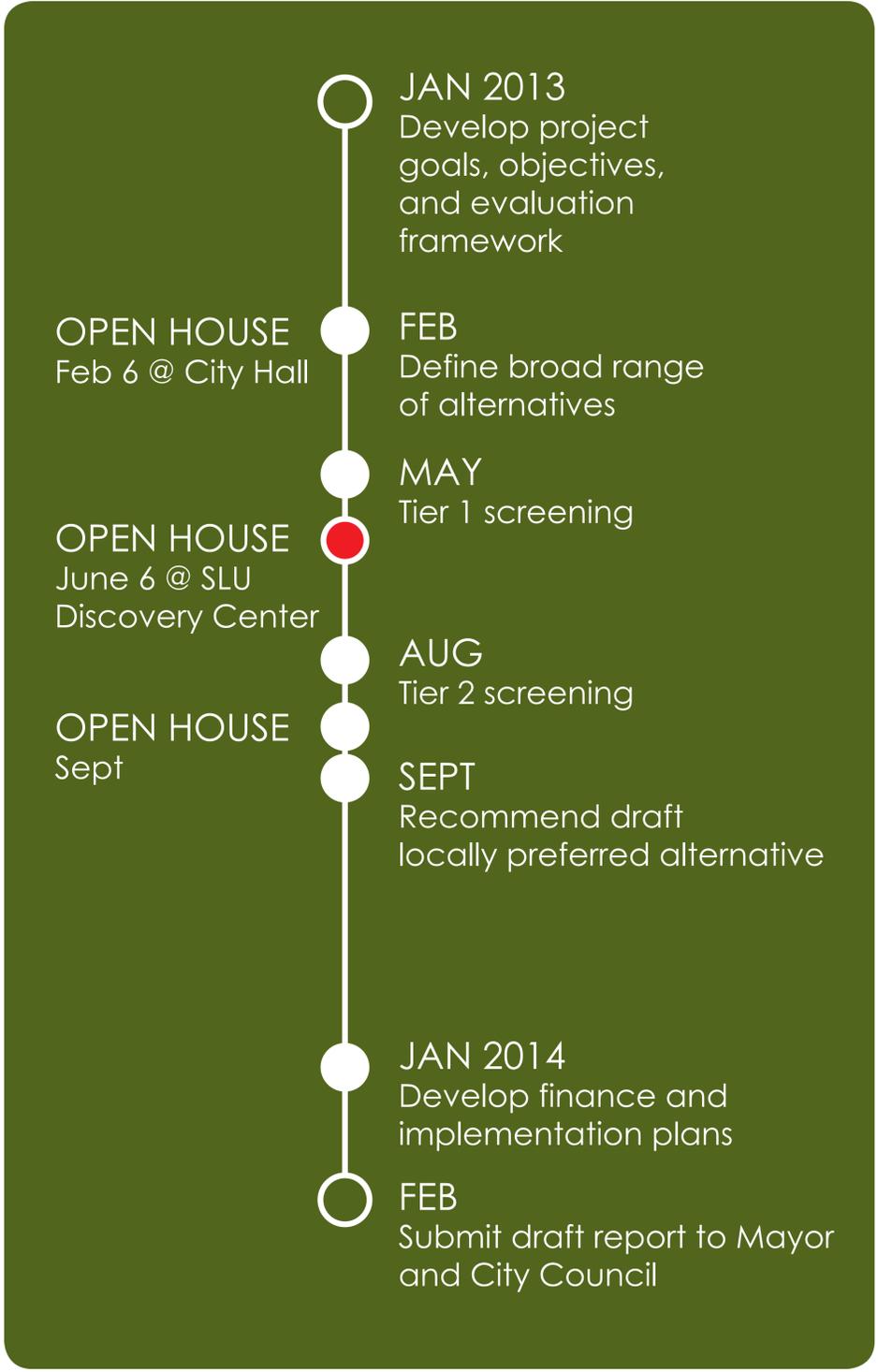


Project Overview

The goal of the Center City Connector Transit Study is to improve north-south transit mobility through downtown and link the First Hill and South Lake Union streetcars. It will:

- ⦿ Look at a variety of street alignment options.
- ⦿ Result in the selection of a locally preferred alternative (LPA) that:
 - Has stakeholder, public, and elected official support.
 - Is backed by a viable financial and implementation plan.
 - Positions the City for future funding opportunities to help design and build the project.

Center City Connector Transit Study Timeline



PROJECT PURPOSE AND GOALS



Project Purpose

The Center City Connector project addresses a priority in the Seattle Transit Master Plan (TMP)—to improve Seattle Center City transit services by:

- ⦿ Increasing transit capacity.
- ⦿ Enhancing transit service quality and reliability.
- ⦿ Improving transit options for residents, workers, and visitors traveling between and within Center City neighborhoods and attractions.

The purpose of the Seattle Center City Transit Connector project is to determine a preferred mode and alignment to improve north-south transit mobility through downtown and to connect the South Lake Union Streetcar and First Hill Streetcar (currently under construction with planned opening in 2014).

Project Goals

ENHANCE

Enhance the customer experience on transit

CONNECT

Connect neighborhoods and improve local circulation

DEVELOP

Support local and regional economic development goals

THRIVE

Strengthen downtown and Center City neighborhoods

SUSTAIN

Improve and sustain human and ecological health

EVALUATION OVERVIEW



Evaluation Process Overview

INITIAL SCREENING

A broad range of alternatives are screened based on project purpose and need.

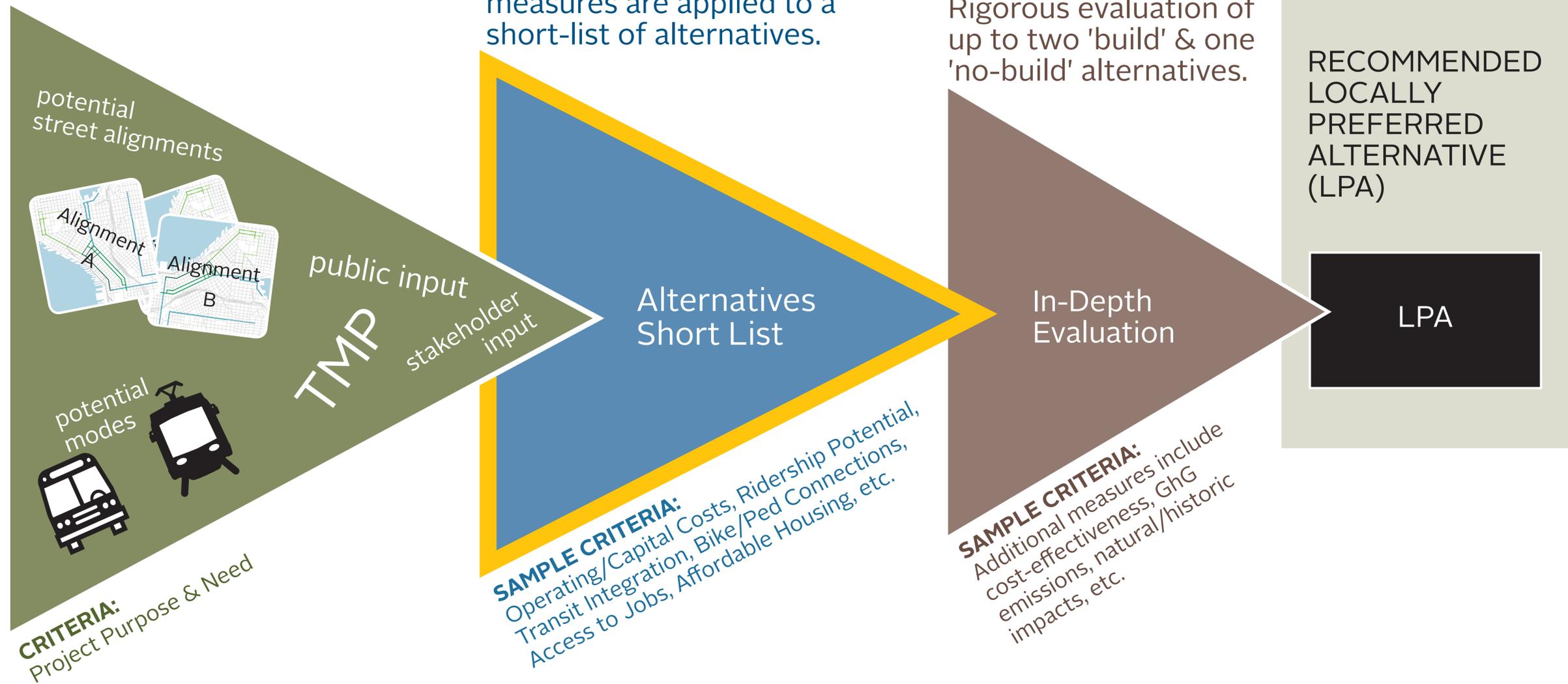
TIER ONE SCREENING

Qualitative & quantitative measures are applied to a short-list of alternatives.

TIER TWO EVALUATION

Rigorous evaluation of up to two 'build' & one 'no-build' alternatives.

RECOMMENDED
LOCALLY
PREFERRED
ALTERNATIVE
(LPA)

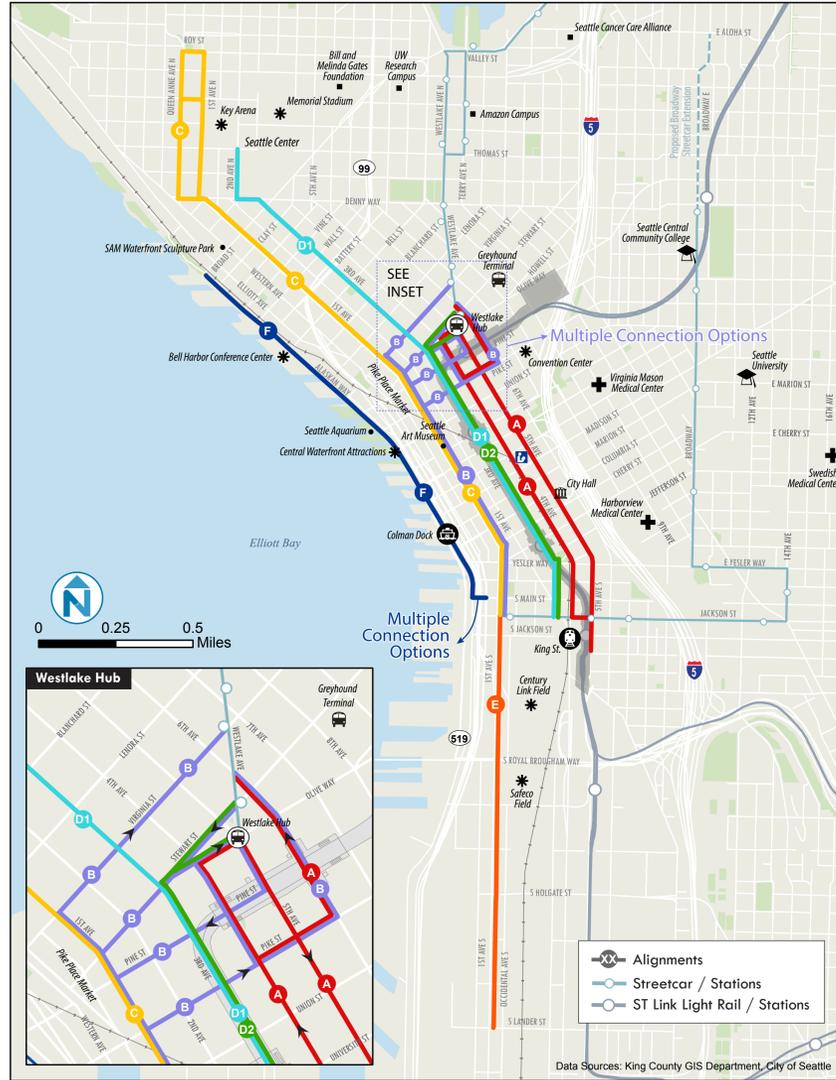


Key questions assessed in the initial screening include:

- ⦿ Does the alternative serve the project purpose?
- ⦿ Is the alternative consistent with local and regional plans?
- ⦿ Does the alternative meet needs identified in the project purpose and need statement?
- ⦿ Does the alternative serve key destinations and attractions?
- ⦿ Does the alternative have public and stakeholder support?

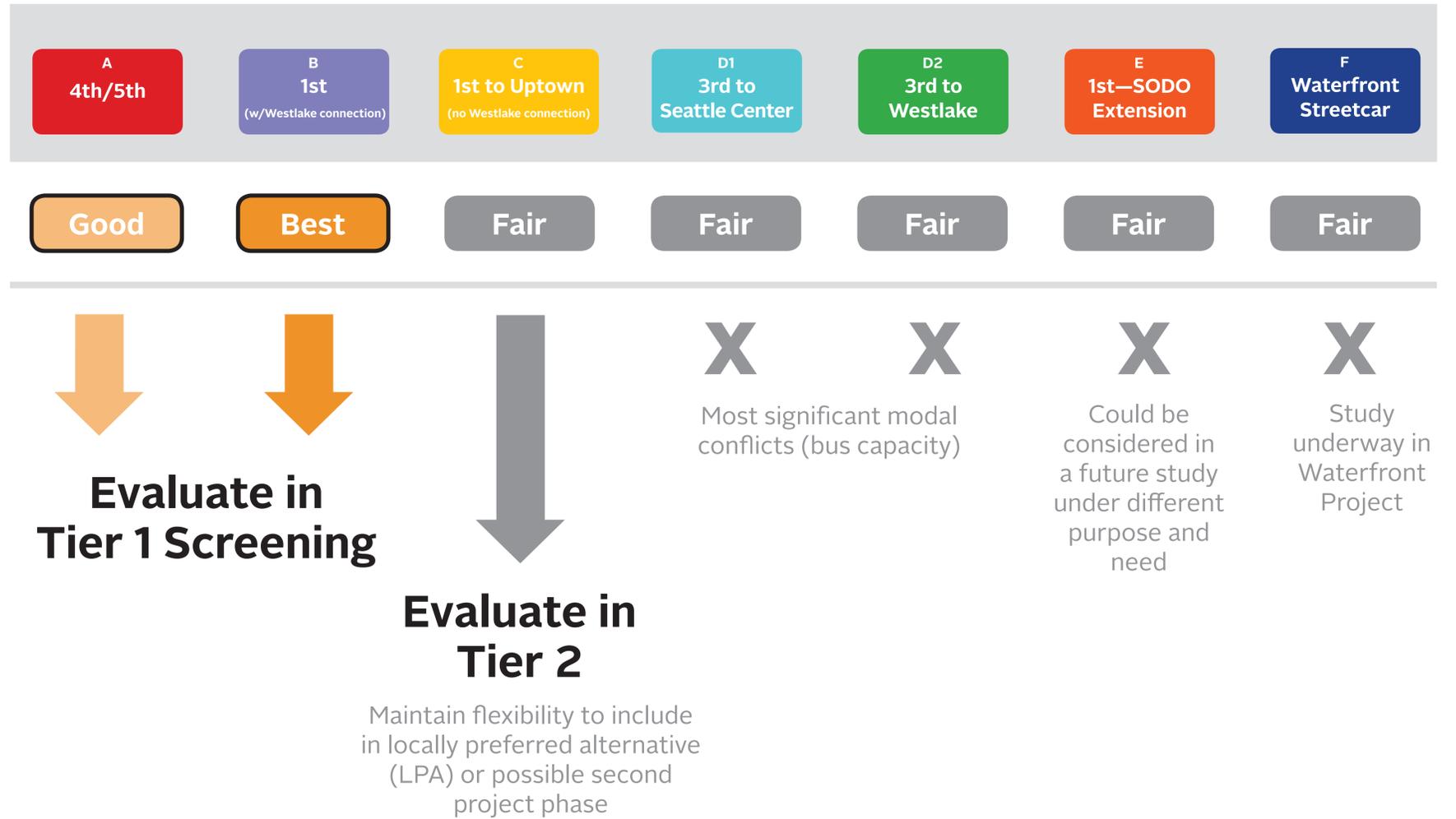
INITIAL SCREENING OF POTENTIAL ALIGNMENTS

Potential Street Alignment Options



- A** 4TH/5TH
- B** 1ST WITH WESTLAKE CONNECTION
- C** 1ST TO UPTOWN (NO WESTLAKE CONNECTION)
- D1** 3RD TO SEATTLE CENTER
- D2** 3RD TO WESTLAKE
- E** 1ST—SODO EXTENSION
- F** WATERFRONT STREETCAR

Overall Evaluation



Ⓞ **Alignments A and B:** 4th and 5th Avenues and 1st Avenue with a connection to Westlake serve the key project purpose of connecting the South Lake Union and First Hill streetcars.

Ⓞ **Alignment C:** The 1st Avenue alignment with an extension to serve Uptown received strong support, but in isolation does not serve the key project purpose of connecting the South Lake Union and First Hill streetcars. Alignment C will be evaluated in Tier 2 as a potential future phase project.

INITIAL SCREENING OF POTENTIAL MODES

Overall Evaluation



Image from Flickr user Andrew Nash

Image from Flickr user wings777

Streetcar-
Mixed-Traffic

Streetcar-
Exclusive

Enhanced
Bus

Monorail

Link
Light Rail

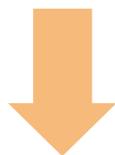
Best

Good

Fair

Poor

Poor



X

X

X

Do not meet the project purpose of connecting the South Lake Union and First Hill streetcars or are not consistent with local and regional plans.

Mixed-Traffic and Exclusive Streetcar forwarded to Tier 1 screening

Tier 1 Modes: Mixed-Traffic and Exclusive Streetcar

MIXED-TRAFFIC

EXCLUSIVE



- ⦿ Primarily mixed-traffic operations.
- ⦿ Limited intersection signal priority.
- ⦿ Shorter spacing between stops.

- ⦿ Dedicated streetcar/transit lanes where feasible.
- ⦿ More extensive intersection signal priority.
- ⦿ Longer spacing between stops.

Mixed-traffic and exclusive streetcar modes will be differentiated in the Tier 1 screening by the extent of exclusive right-of-way, the overall level of transit priority, and other characteristics. These scenarios are intended to illustrate a range of potential benefits and impacts.

Either option could include higher capacity vehicles, off-board fare payment, and other features. These will be evaluated in more detail in Tier 2.

TIER 1 OPERATING SCENARIOS



Tier 1 Estimated Operating and Maintenance Costs and Vehicle Requirements

Tier 1 Alternative	Map Colors	Tier 1 Operating Scenario Description	Annual Operating Cost Estimate ²	Total Number of Vehicles ³	Vehicle Capital Costs ⁴
4th/5th Avenue Alternatives					
A1: Mixed-Traffic	RED GOLD	» SLU Line + CCC Line via 4th/5th Aves » Transfer to First Hill Line at International District Station	\$12.3 M	13	\$13.5 M
A2: Exclusive (CCC Only) ¹	RED GOLD	» SLU Line + CCC Line via 4th/5th Aves » Transfer to First Hill Line at International District Station	\$12.0 M	12	\$9.0 M
1st Avenue Alternatives					
B1: Mixed-Traffic	BLUE GOLD	» SLU Line + CCC Line via 1st Ave » Transfer to First Hill Line at Pioneer Square	\$12.3 M	13	\$13.5 M
B1: Mixed-Traffic	GREEN	» SLU Line + CCC Line via 1st Ave + First Hill Line (through-routed with no transfers)	\$12.3 M	13	\$23.5 M
B2: Exclusive (CCC Only) ¹	GREEN	» SLU Line + CCC Line via 1st Ave + First Hill Line (through-routed with no transfers)	\$11.2 M	11	\$14.5 M

Notes: (1) Exclusive operating scenarios assume exclusive characteristics on Center City Connector (CCC) segment only. (2) Based on existing South Lake Union (SLU) and planned First Hill streetcar operating costs. (3) Total number of vehicles required to operate streetcar on the SLU, CCC, and First Hill lines, including spares. (4) Based on a cost of \$4.5 million per vehicle and assumes the ability to utilize the existing (SLU) and planned (First Hill) streetcar fleets. The vehicle capital cost reflects only the added cost to supply the additional vehicles required for the CCC line. If all three streetcar lines were operated as completely through-routed, it would require replacing existing SLU vehicles, which cannot operate off-wire. It is assumed that these vehicles could be sold (a resale value of \$2.0 million is assumed). (5) Additional dwell or layover time may be needed for transfer scenarios.

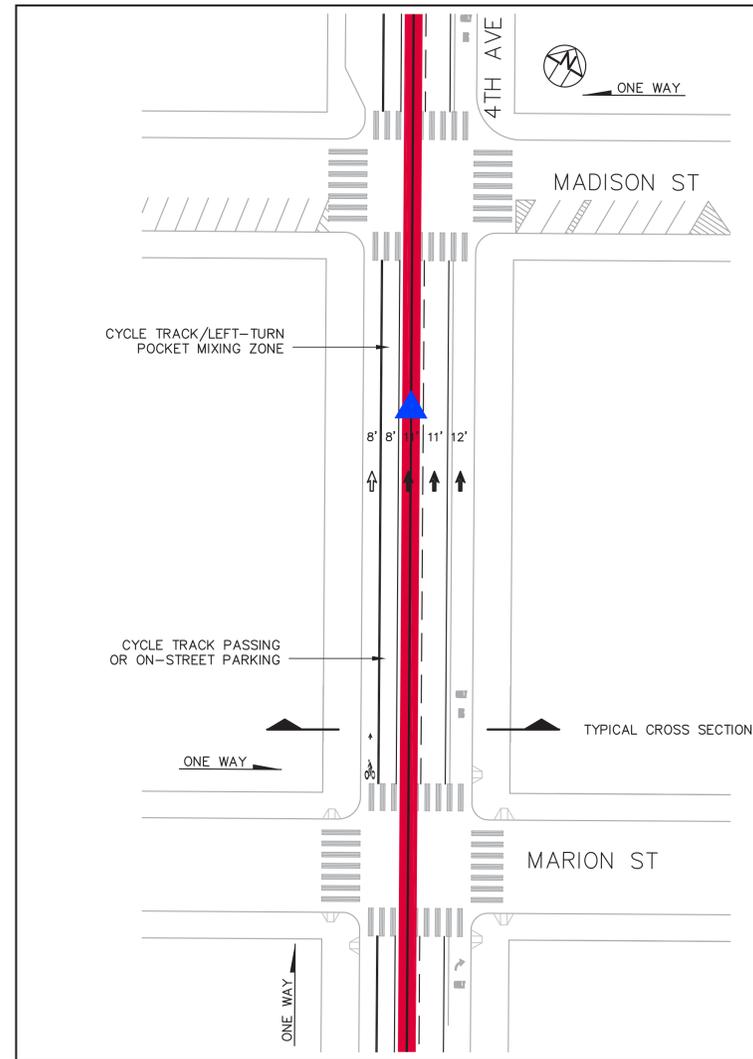
The potential operating scenarios for the Center City Connector provide options for connecting the South Lake Union (SLU) and First Hill streetcar lines, with the following characteristics:

- ⦿ 10-minute weekday peak headways; 15-minute off-peak.
- ⦿ Operates 18.5 hours Monday through Thursday, 20 hours on Friday and Saturday, and 15.5 hours on Sundays and Holidays.

- ⦿ Exclusive streetcar alternatives achieve the highest speeds on each alignment, e.g., via longer stop spacing. This reduces operating costs and vehicle requirements compared to mixed-traffic alternatives.
- ⦿ 1st Avenue Exclusive alternative has the lowest annual operating costs.
- ⦿ No appreciable cost difference between transfer and through-routed operating scenarios (e.g., for 1st Avenue Mixed-Traffic) but through-routing increases reliability and passenger convenience and reduces recovery time built into the schedule.
- ⦿ All operating scenarios (transfer or through-routed) would have lower operating costs compared to all three lines operating in isolation.

4TH AVENUE MIXED-TRAFFIC STREETCAR

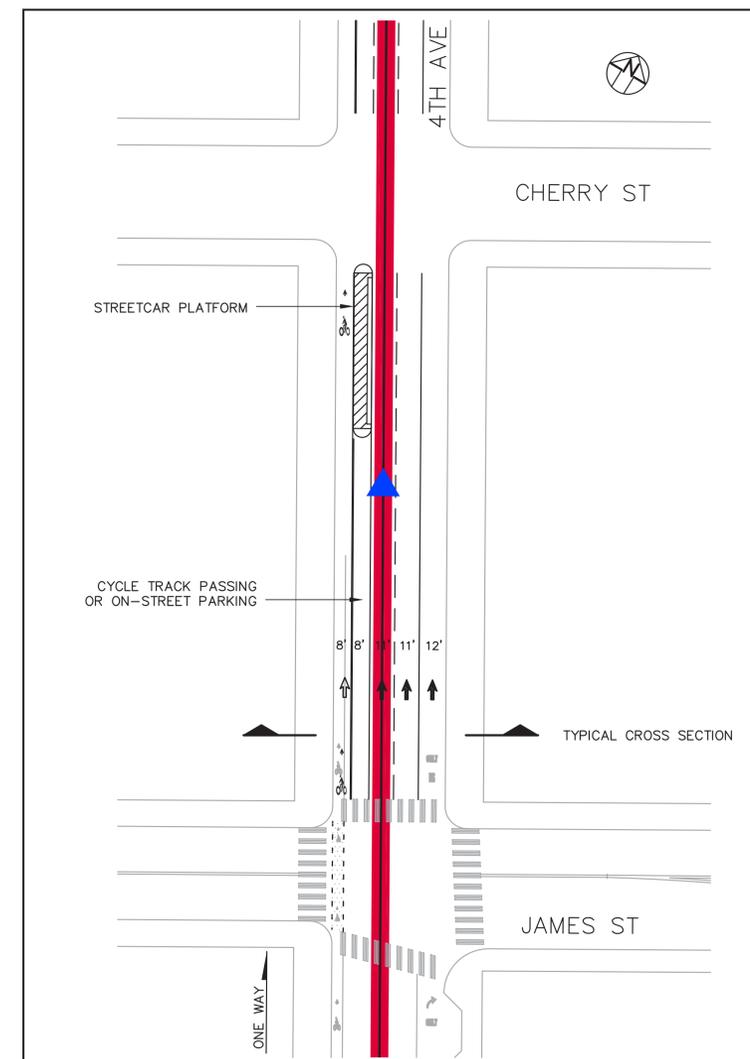
Between Stations (Marion-Madison)



Source: URS

- ⊙ **Streetcar.** Streetcar would share a general purpose lane on the west side of 4th.
- ⊙ **Transit.** Bus-only eastern curb lane would be maintained similar to existing conditions, with right-turns permitted for general purpose traffic.
- ⊙ **Bicycle Treatment.** An 8-foot one-way raised cycle track would be located along the west side of 4th; this requires eliminating one existing general purpose travel lane. The cycle track could include passing lane segments.
- ⊙ **General Purpose Vehicles.** Two general purpose lanes available including the shared streetcar lane. On-street parking or left-turn pockets could be located on the west side of 4th in some blocks, between the cycle track and general purpose lanes.

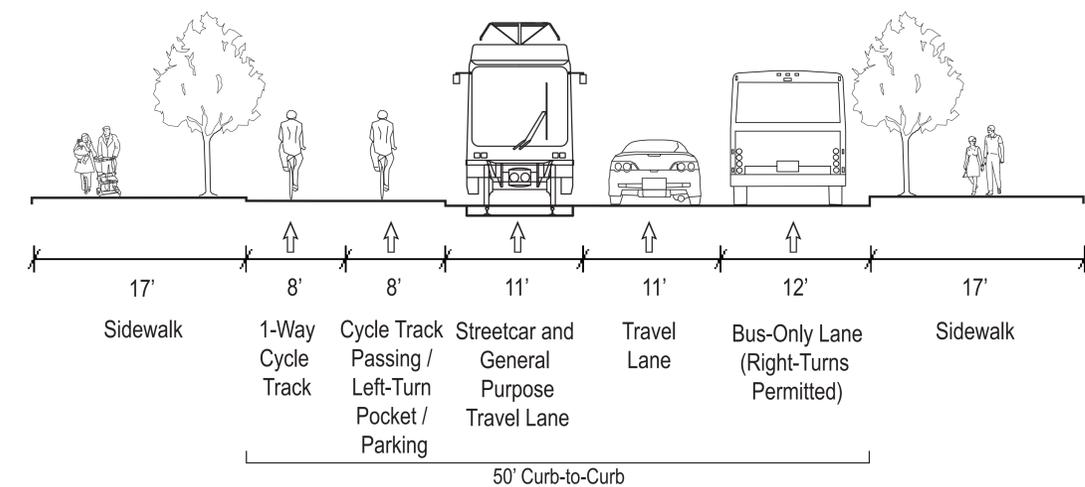
At Stations (James-Cherry)



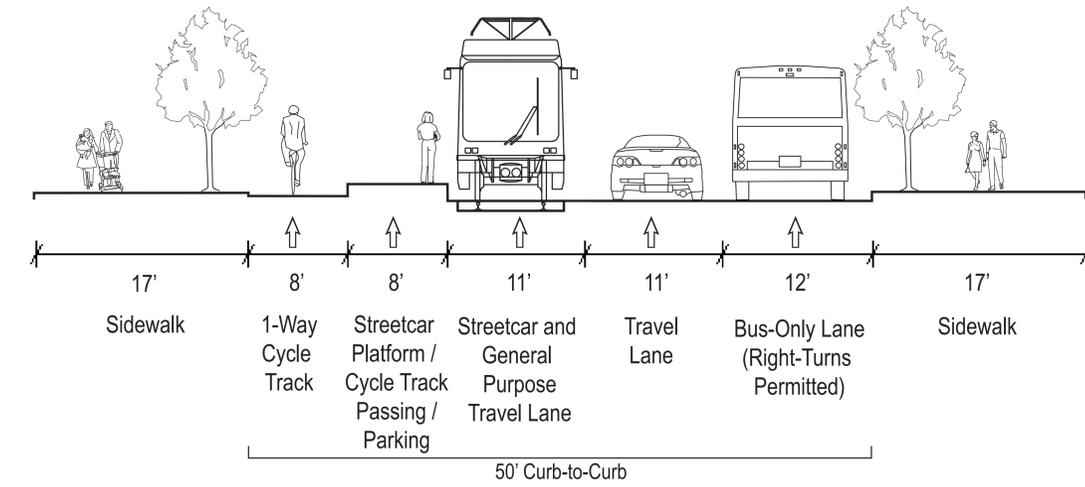
Source: URS

- ⊙ Station platforms would be located on the west side of 4th, between the streetcar lane and the cycle track.
- ⊙ See the sidebar on the next board (4th Avenue Exclusive) for examples of transit platforms integrated with a cycle track.

Between Stations (Marion looking North)

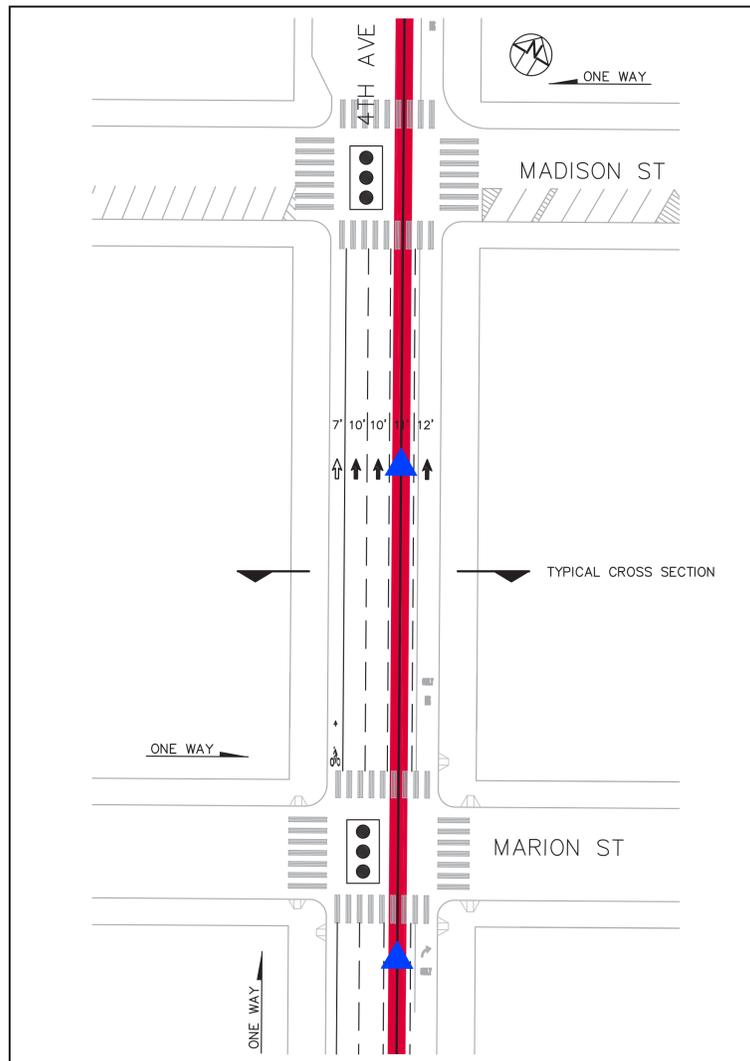


Between Stations (Cherry looking North)



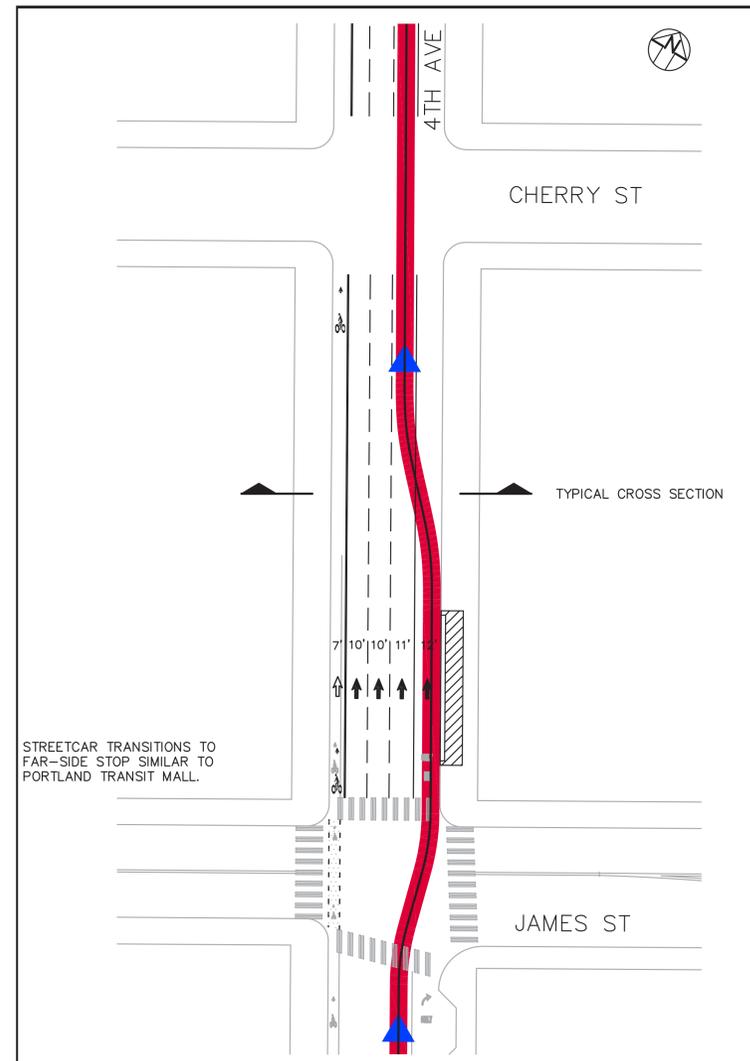
4TH AVENUE EXCLUSIVE STREETCAR

Between Stations (Marion-Madison)



Source: URS

At Stations (James-Cherry)



Source: URS



Image from Flickr user resea.rch

Buffered bike lanes run on the curb side of bus islands on Dexter Ave.



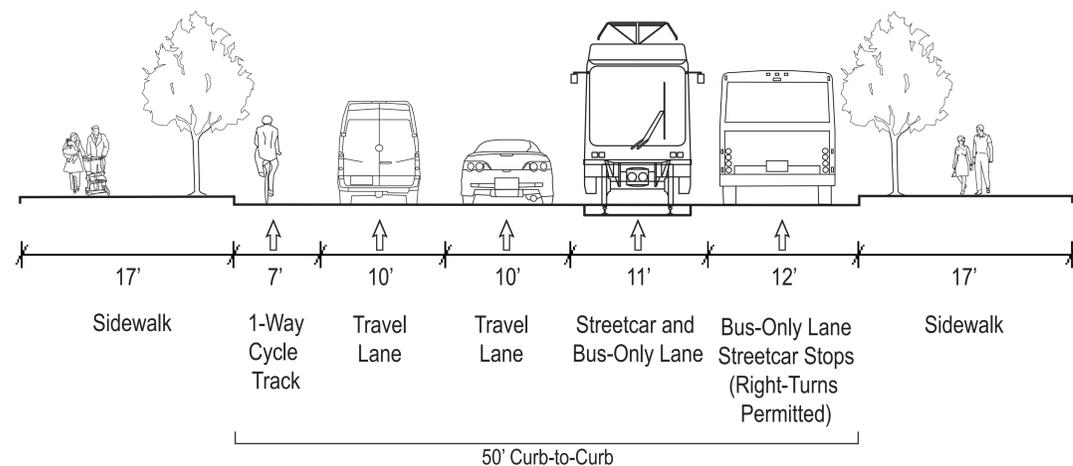
Image from Flickr user Paul Krueger

The Dunsmuir Bikeway in Vancouver BC has marked crossings between the transit boarding islands and the sidewalk.

Integrating Streetcar Platforms and Cycle Tracks

When cycle tracks are routed on the curb side of streetcar station platforms, best practices include providing clearly defined transitions between the sidewalk and the platform, with “ladder” or raised crosswalks and signage. Formalizing the pedestrian crossing zone raises the visibility of pedestrians to bicyclists and ensures that pedestrians understand that they are about to cross a bicycle throughway.

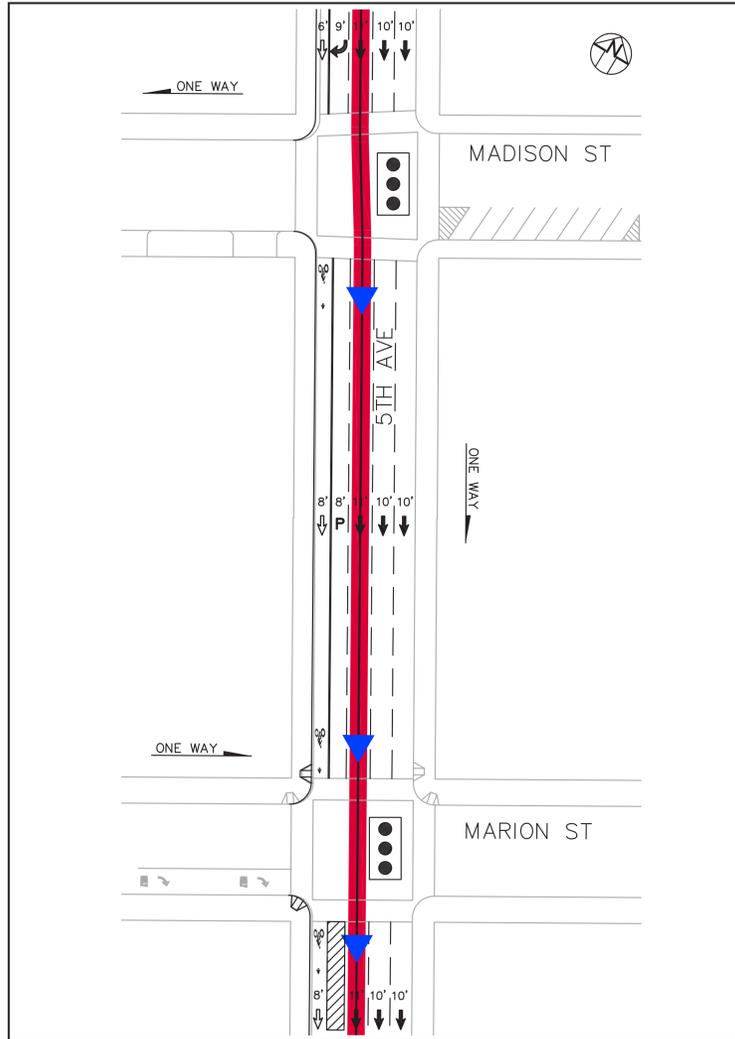
Between Stations (Marion Looking North)



- ⦿ The streetcar would run in the 2nd eastern lane, which would be transit-only. General purpose right-turns would typically still be permitted in the eastern lane.
- ⦿ The streetcar would weave to the eastern curb (right) lane and typically have stops on the far-side of intersections. The streetcar would weave back to the 2nd eastern lane as it leaves the platform to reduce conflicts with stopping buses.
- ⦿ A raised cycle track (typically 7-foot including a 2-foot buffer) would be located on the west side of 4th.

5TH AVENUE MIXED-TRAFFIC/EXCLUSIVE STREETCAR

Typical (Marion-Madison)



- ◎ **Streetcar/Transit.** Streetcar would share the western travel lane with general purpose traffic and buses as follows:

 - Mixed-Traffic: lane is shared with buses and general purpose travel, similar to current conditions.
 - Exclusive: same as mixed, with a streetcar/transit-only lane from approximately Spring to Cherry.
- ◎ **Bicycle/Pedestrian Treatment.** A 6- to 8-foot one-way raised cycle track could be located on the western side of 5th in both the Mixed-Traffic and Exclusive alternatives. The cycle track could include passing lane segments. Currently cyclists use all lanes on 5th Avenue for southbound travel, especially outside lanes.
- ◎ **General Purpose Vehicles.** Two general purpose lanes would be available north of Spring and south of Cherry, including the streetcar lane. Three lanes would be available for general purpose travel between Spring and Cherry; one would be transit-only in the Exclusive alternative. Right-turns for general purpose travel would typically be permitted, with turn pockets at key intersections, e.g., Madison and Columbia. On-street parking could be provided between the streetcar lane and cycle track in some blocks.

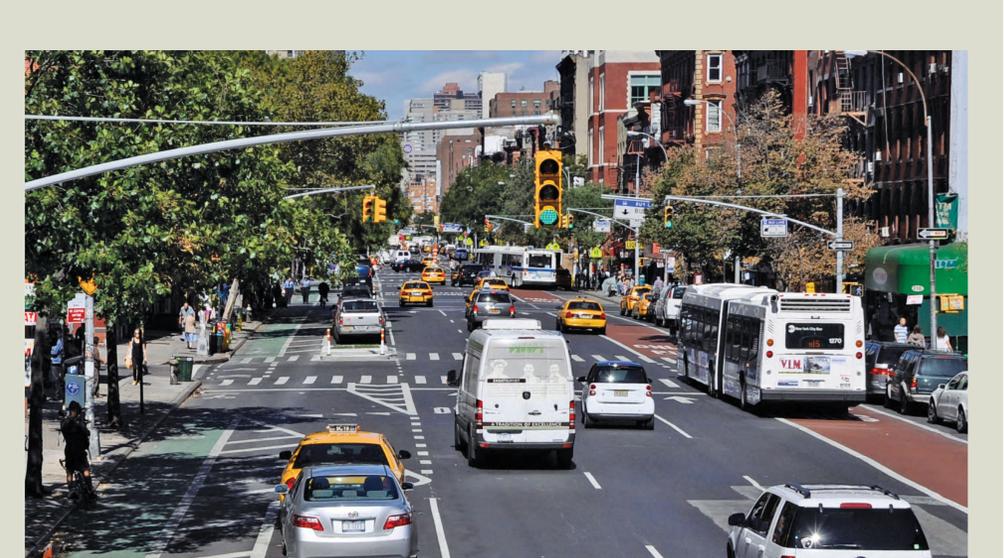
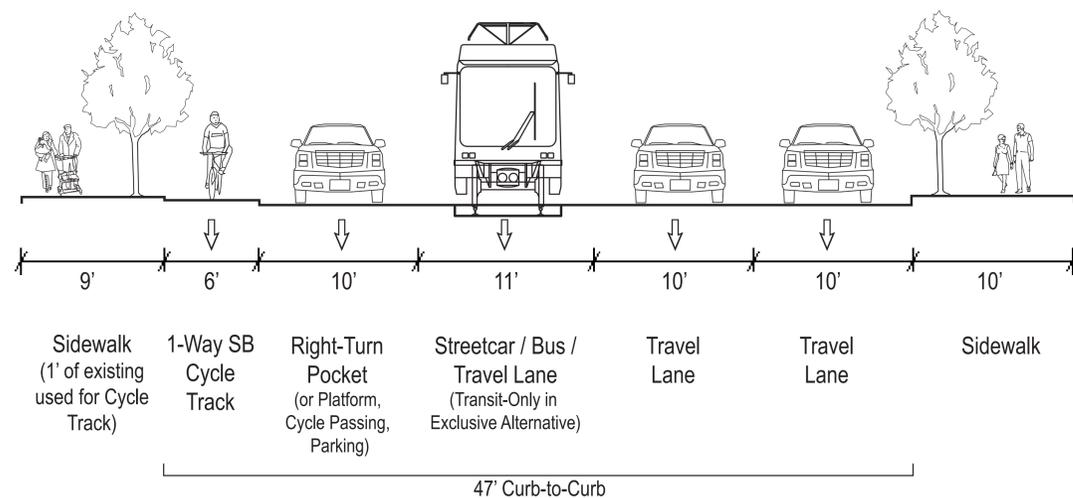


Image from New York City DOT

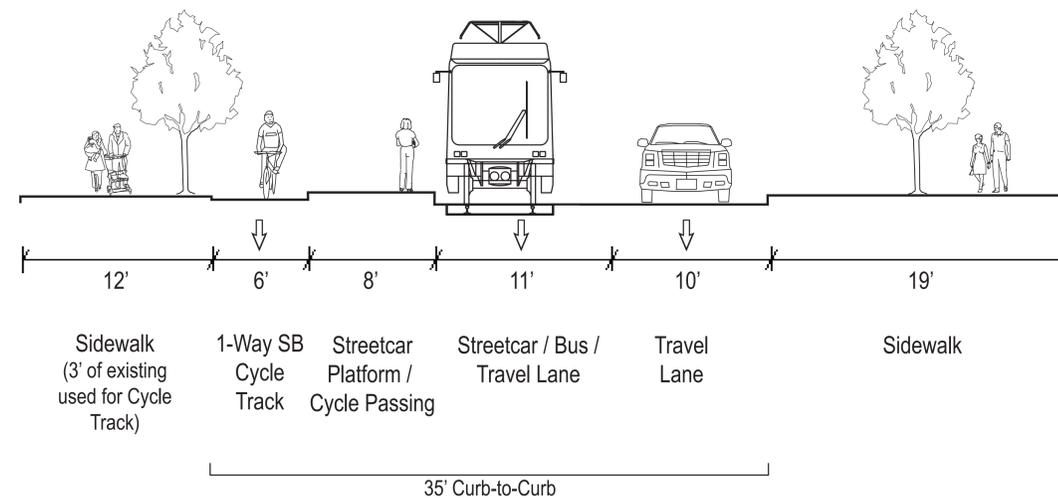
Cycle Tracks and Turning Vehicles: Managing Conflicts

Careful facility design is required to manage conflicts between cycle tracks and vehicles making turns across the cycle track. This example illustrates a mixing/yield zone with a left-turn pocket.

Central Portion of 5th with Right-Turn Pocket (Columbia looking North)



Northern Portion of 5th Narrows (Union Looking North)



1ST AVENUE

Street Alignment and Conceptual Stations

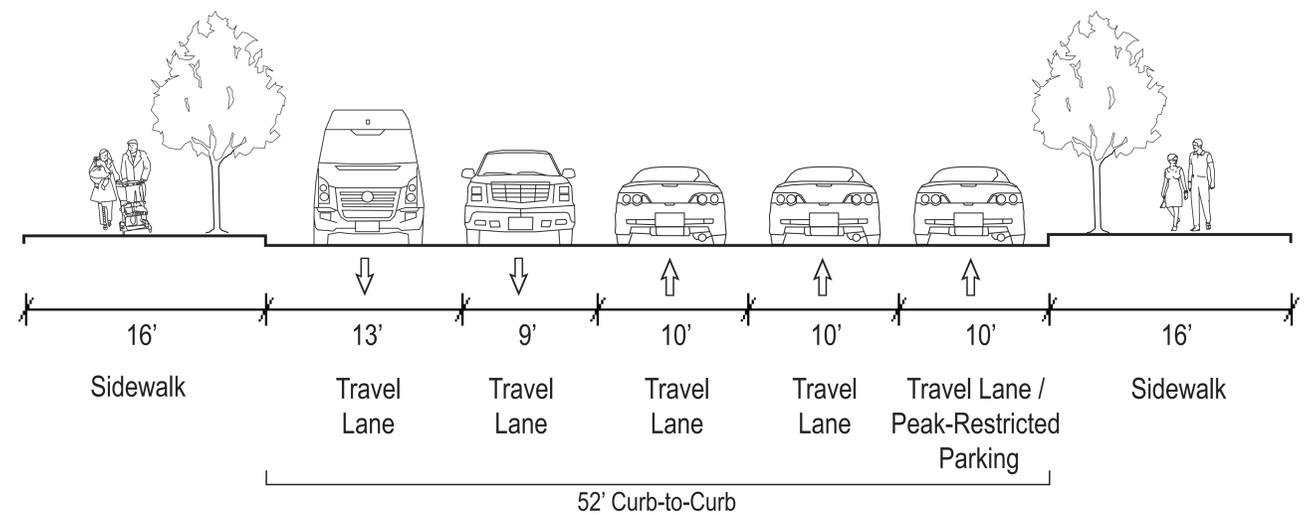


The Mixed-Traffic and Exclusive scenarios are intended to illustrate a range of potential benefits and impacts for the streetcar. Tier 2 alternatives will be refined and analyzed in greater detail.

Key Assumptions

- Streetcar runs in the center lanes on 1st Avenue between Jackson Street and the Pike Place Market area.
- In the Exclusive alternative, the center-running lanes would be streetcar-only with extensive signal priority and fewer stations than the Mixed-Traffic alternative.
- Alternatives assume that Stewart Street and Olive Way are used between 1st Avenue and the existing SLU streetcar at Westlake. Additional 1st Avenue to Westlake connection options will be analyzed in the Tier 2 evaluation.
- A connection to Uptown will be analyzed in the Tier 2 evaluation.

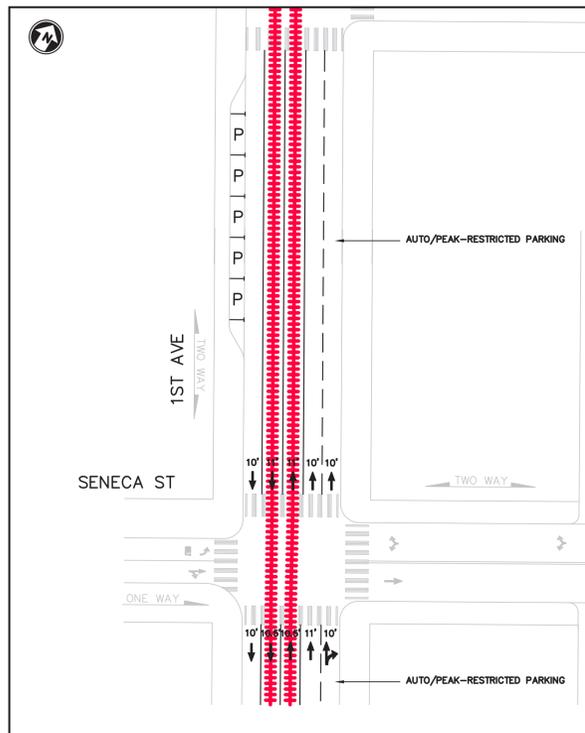
Existing 1st Avenue (Madison Looking North)



- Transit:** There is limited local bus service on 1st Avenue.
- Bicycle:** There are no existing or planned bike facilities on 1st Avenue.
- General Travel:** Between Virginia and Spring, there are three general purpose northbound travel lanes and two general purpose southbound travel lanes. On-street parking is present in some blocks, e.g., between University and Spring.

1ST AVENUE MIXED-TRAFFIC STREETCAR

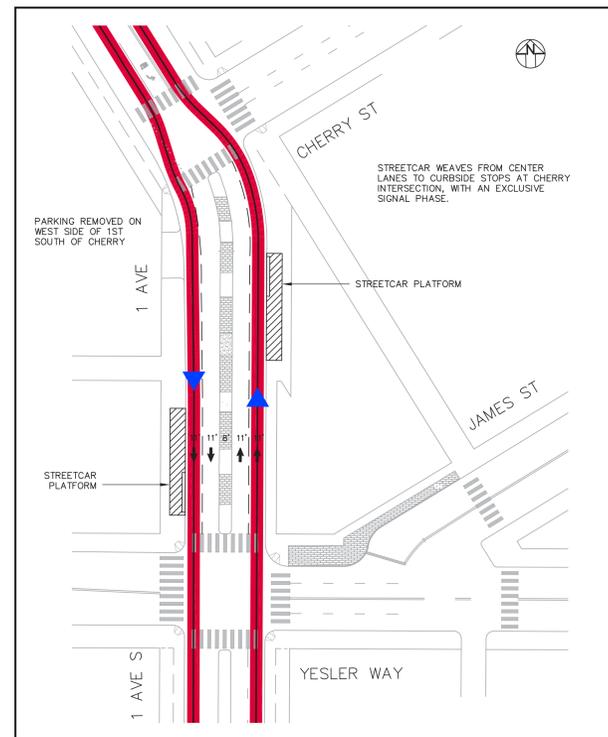
Between Stations (Seneca) - Typical



Source: URS

- Streetcar would run in center lanes shared with general purpose travel. The streetcar lanes would diverge to make room for station platforms. Stations could be staggered across intersections to allow more room for passengers.
- Southbound left-turns would typically be permitted.
- One curbside lane in each block could allow parking.

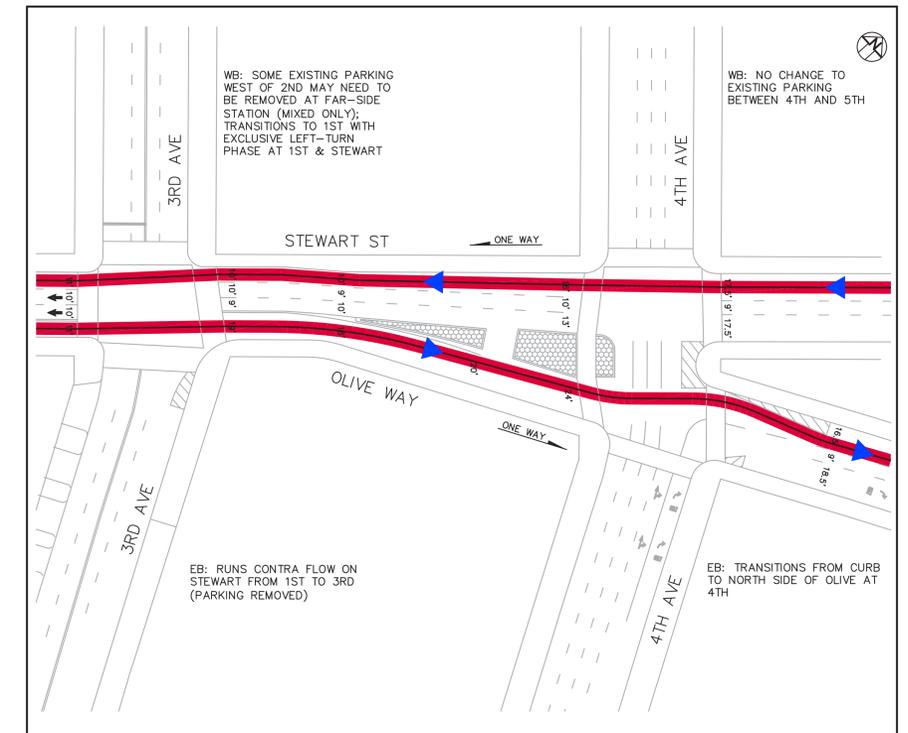
Cherry-Yesler



Source: URS

- Due to median street trees, this alternative assumes the streetcar would weave to curbside stops in this block.
- The streetcar would run curbside between Cherry and Jackson, requiring removal of on-street parking.

Stewart/Olive (Mixed-Traffic and Exclusive)

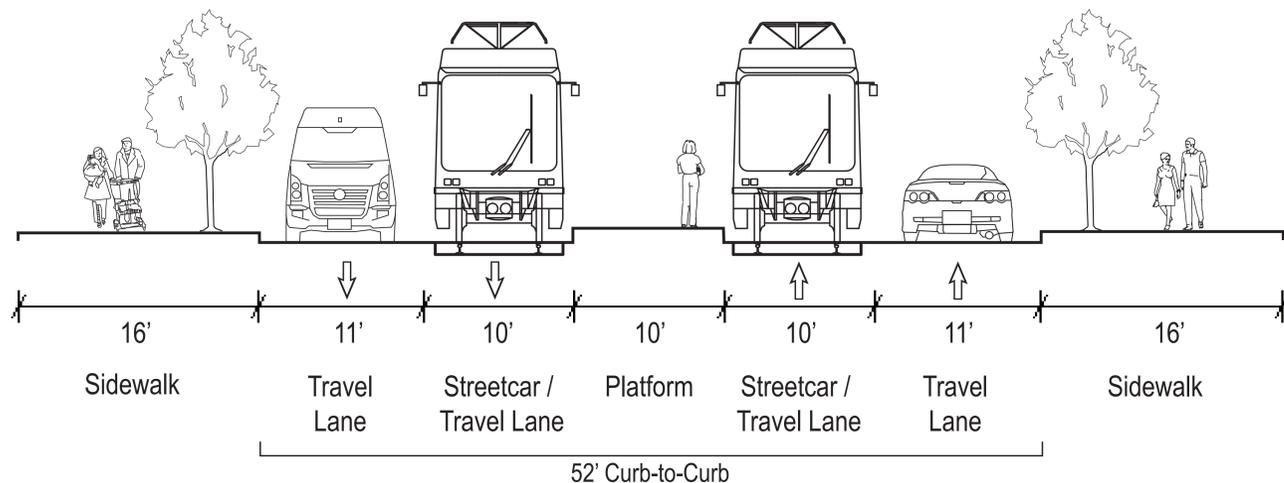


Source: URS

- The streetcar would operate in the curbside lane in both directions on Stewart Street and Olive Way:
- Stewart/Olive (NB/EB direction to Westlake):** Streetcar would run contra-flow, switching to north-side along Olive Way at the 4th Ave intersection.
- Stewart (SB/WB direction to 1st Avenue):** Streetcar would run along the curb with a curbside platform next to the Westin Hotel.

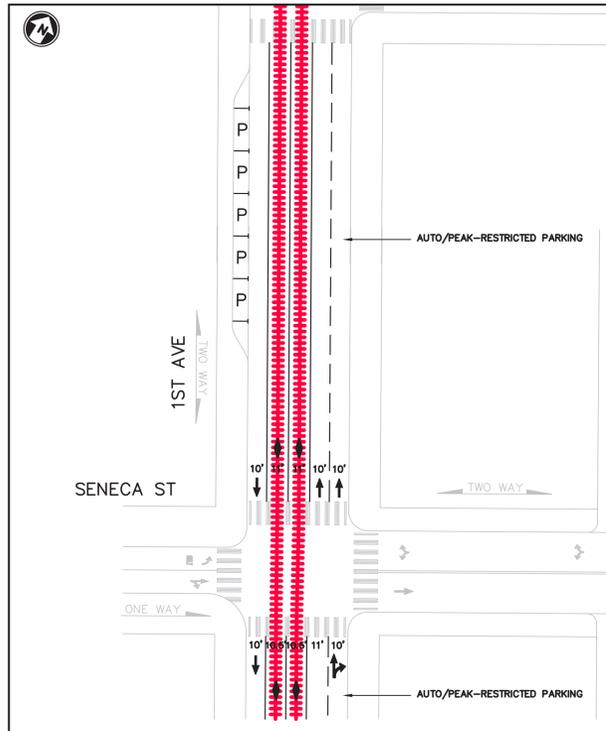
Additional 1st Avenue to Westlake connection options will be analyzed in the Tier 2 evaluation.

At Stations (Madison Looking North)



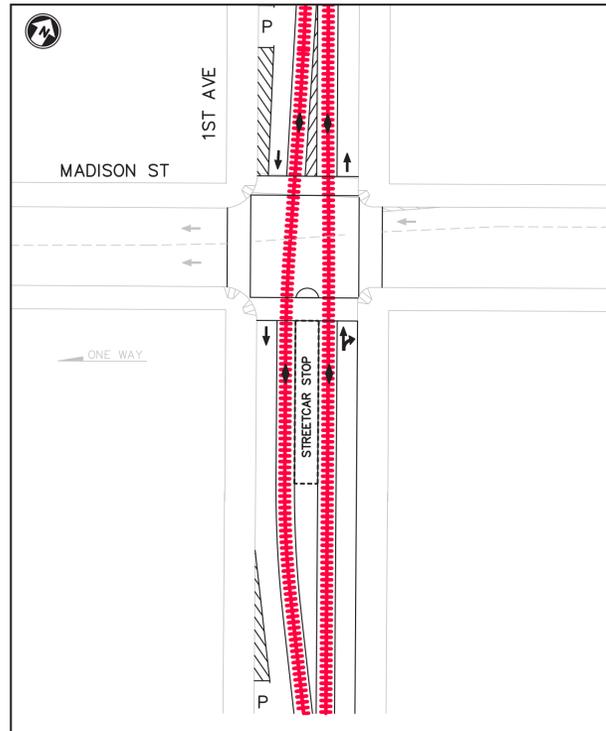
1ST AVENUE EXCLUSIVE STREETCAR

Between Stations (Seneca)



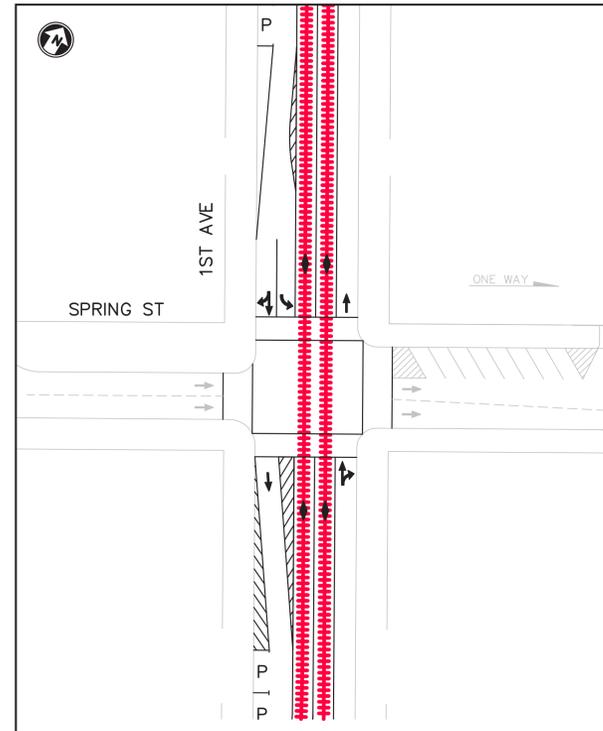
Source: URS

At Stations (Madison)



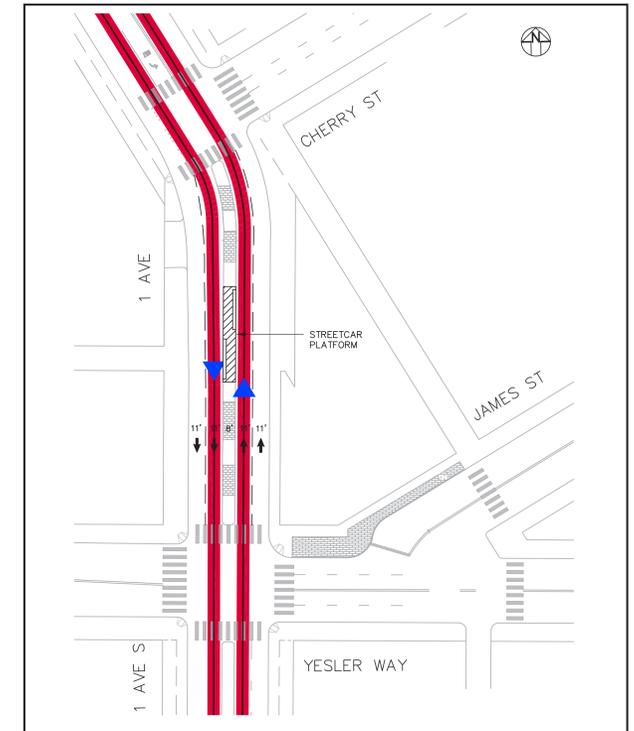
Source: URS

Critical Intersections (Spring)



Source: URS

Cherry-Yesler



Source: URS

- One general purpose travel lane would be maintained in each direction. One additional lane, shown in the northbound direction, could be used for on-street parking (may be peak-restricted) or right-turns.

- On-street parking would terminate at stop locations, which would be located in the street median.

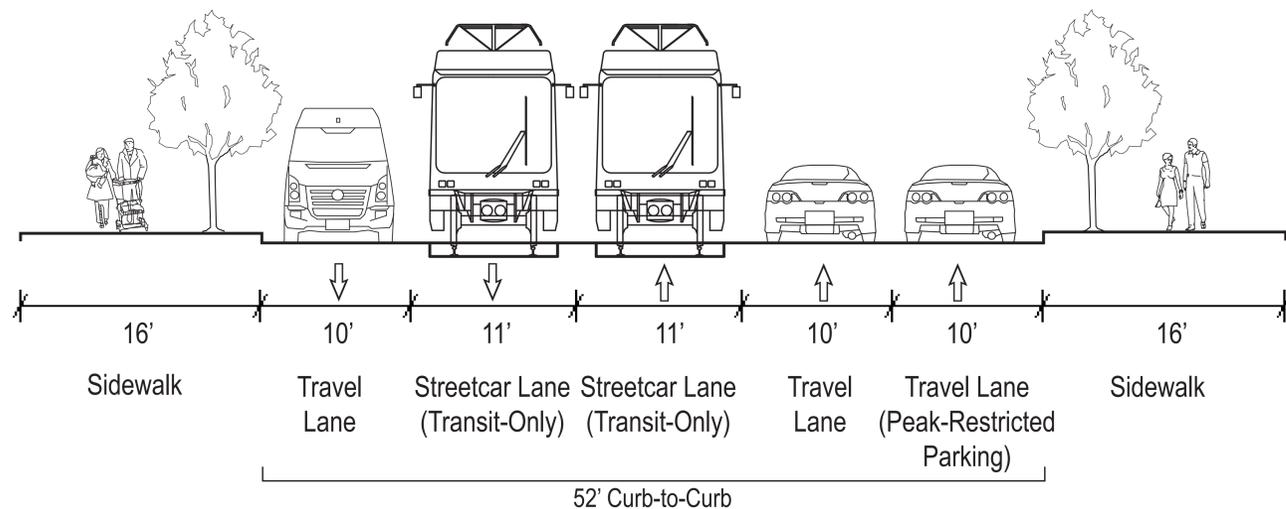
Turn pockets would enable left-turns at critical intersections connecting to the freeway or waterfront:

- Northbound: Madison and Pike
- Southbound: University, Spring, Cherry, and Jackson

Left-turns would not be permitted at other locations.

- In this alternative it is assumed that the streetcar would have median stops between Cherry and Yesler, which would require removal of median street trees.
- The Mixed-Traffic alternative includes an option for curb stops that would not impact the median street trees.

Between Stations (Seneca Looking North)



FEEDBACK ON TIER 1 ALTERNATIVES



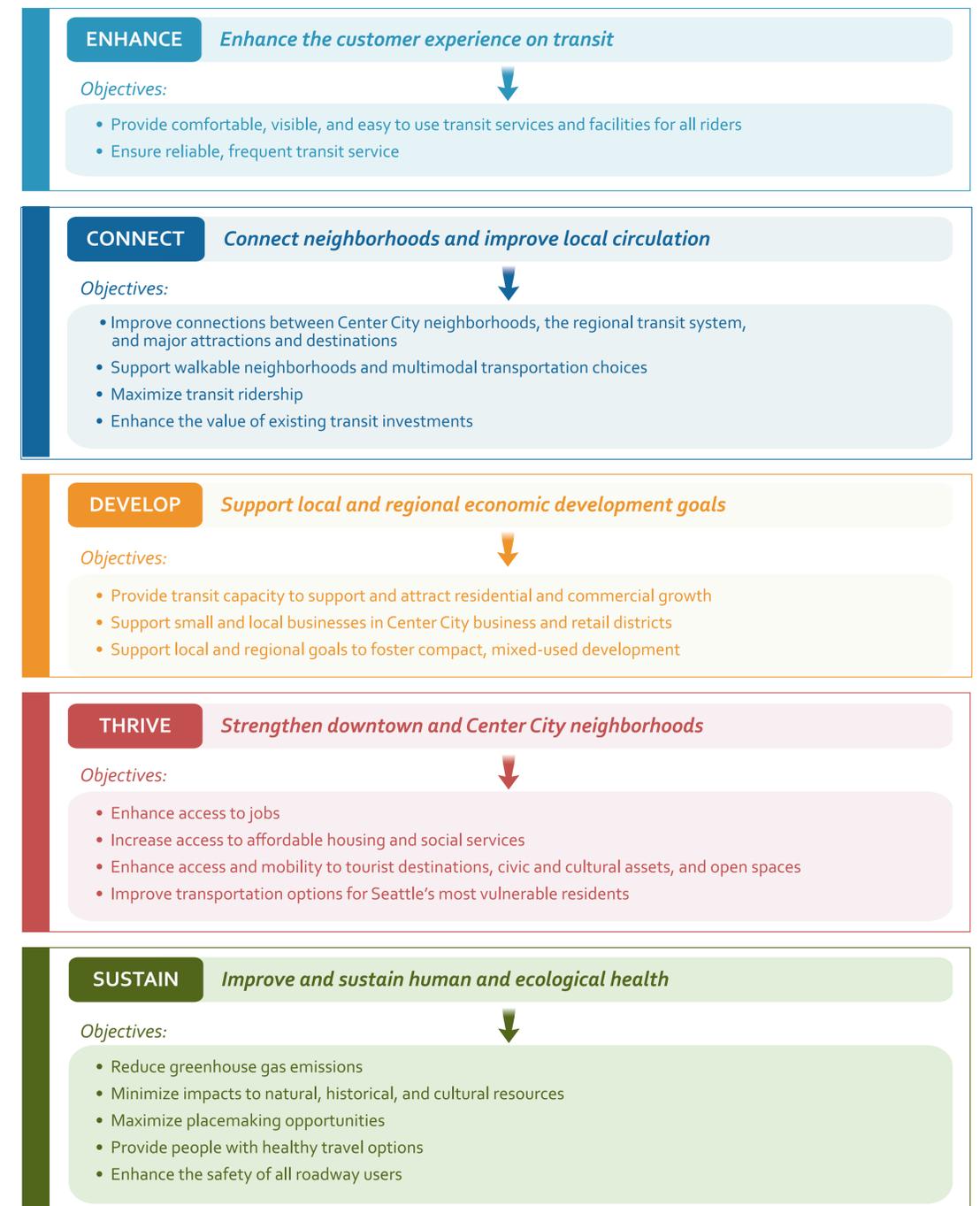
We need your input to select alternatives for further study!

- ① Pick up a comment card.
- ① Review the evaluation measures presented on the display boards.
- ① Rank the alternatives based on how well you think they meet the project purpose and goals.
- ① Tell us which measures (up to 5) are the most useful/important in deciding between the alternatives.

Goals and Objectives

The goals and objectives in the graphic below relate to the project Purpose and Need. The goals were first presented at the February open house.

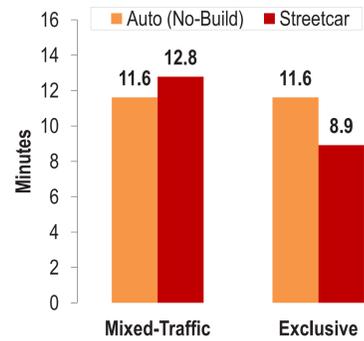
Qualitative and quantitative measures related to the goals and objectives were used in the Tier 1 screening of alternatives. The display boards that follow present the evaluation results.



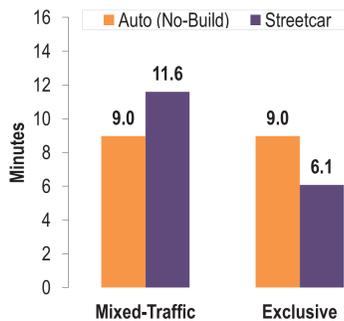
Streetcar Travel Times

- Both Exclusive alternatives provide a faster streetcar travel time than driving.
- 1st Ave Exclusive alternative provides the shortest streetcar travel time.
- Both Mixed-Traffic alternatives provide slower streetcar travel times (including stops) than driving.
- Transit receives the least benefit in the Exclusive alternatives on:
 - 4th Ave (Pike to Westlake)
 - All of 5th Ave
 - Stewart (westbound direction)
- Streetcar operates primarily in mixed-traffic in the above segments.

4th/5th Aves: One-Way Streetcar Travel Times vs. Auto (No-Build)



1st Ave: One-Way Streetcar Travel Times vs. Auto (No-Build)



Streetcar Travel Times by Segment



Note: Streetcar travel times include an assumed 20-second dwell time at stations. Travel times are the average of one-way northbound and southbound travel times.

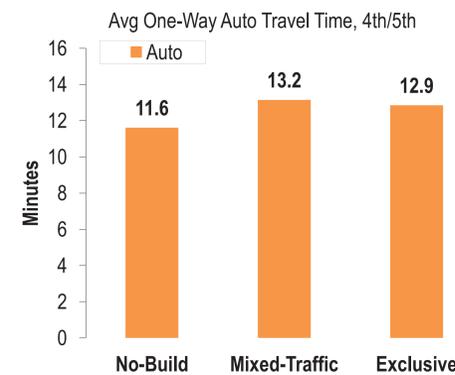
A 4TH/5TH AVENUE		B 1ST AVENUE	
Mixed Streetcar	Exclusive Streetcar	Mixed Streetcar	Exclusive Streetcar
Fair	Good	Fair	Best

Auto Travel Times and Relative Diversion Impacts

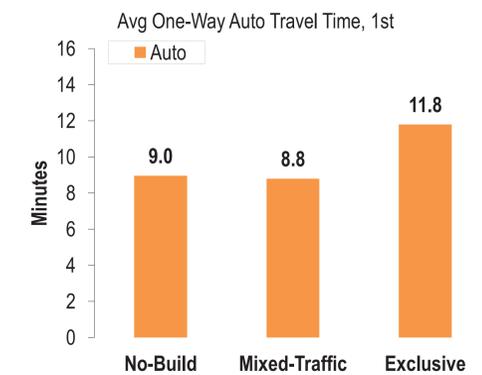
Relative to No-Build, average one-way auto travel time and impacts:

- 4th/5th Mixed-Traffic
 - Increases by 1.6 minutes (14%) on 4th/5th Aves
 - Up to 25% diversion to other streets
- 4th/5th Exclusive
 - Increases by 1.3 minutes (11%) on 4th/5th Aves
 - Up to 30% diversion to other streets
- 1st Mixed-Traffic
 - Decreases by 0.2 minutes (2%) on 1st Ave
 - Minimal diversion to other streets
- 1st Exclusive
 - Increases by 2.8 minutes (31%) on 1st Ave
 - Up to 50% of traffic diverted to other streets

4th/5th Aves: One-Way Auto Travel Times in No-Build and Streetcar Scenarios



1st Ave: One-Way Auto Travel Times in No-Build and Streetcar Scenarios

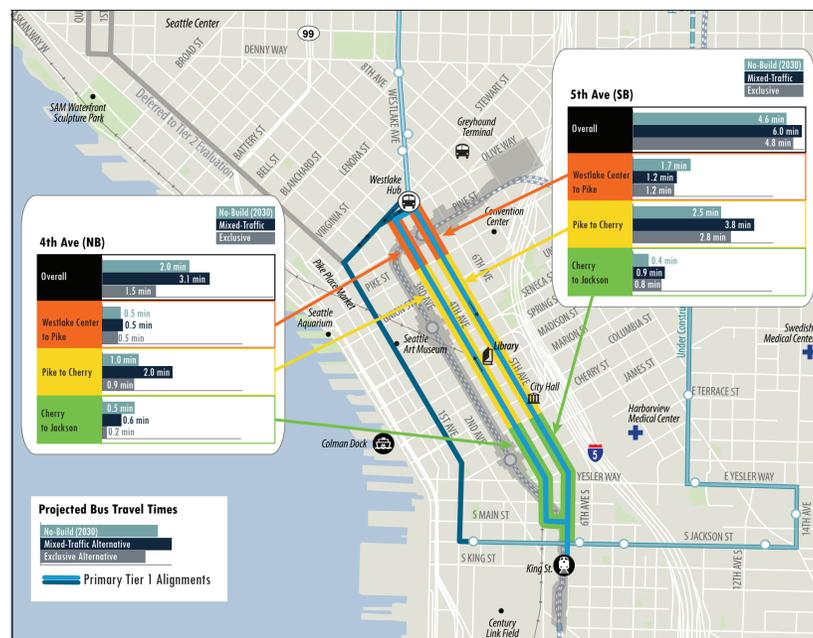


A 4TH/5TH AVENUE		B 1ST AVENUE	
Mixed Streetcar	Exclusive Streetcar	Mixed Streetcar	Exclusive Streetcar
Fair	Fair	Best	Fair

Bus Travel Time and Reliability Impacts

- Adding cycle tracks on 4th and 5th Avenues reduces lane capacity for general purpose vehicles and impacts bus operations in mixed traffic.
- Exclusive transit lanes mitigate the overall increase in delay. This is in part due to reduced delay for routes that only use 4th Avenue south of Washington to access 3rd Avenue.

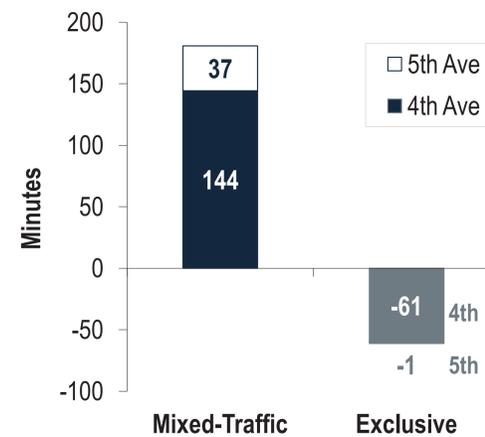
Bus Travel Times by Segment: No-Build (2030) and Mixed-Traffic and Exclusive Alternatives



Change in Bus Delay (Relative to No-Build)

- Mixed-Traffic: Aggregate bus delay increases by about 60% on 4th Avenue and by about 25% on 5th Avenue.
- Exclusive: Aggregate bus delay decreases by 25% on 4th Avenue, due to a second transit-only lane. On 5th Avenue the increase in aggregate bus delay is mitigated with a transit-only lane over part of the alignment.

Change in Aggregate Bus Delay on 4th and 5th Avenues Relative to No-Build (5-6 PM, Minutes per Day)



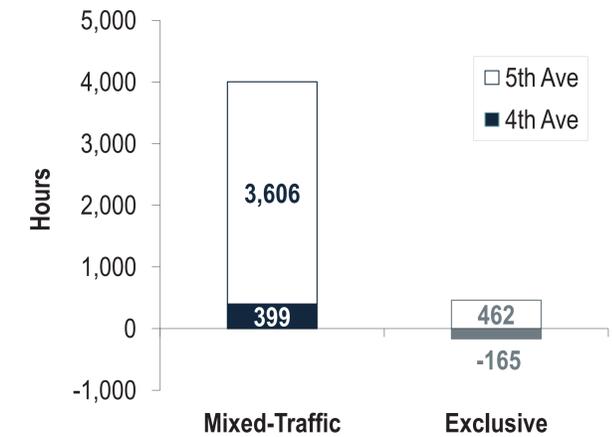
Bus delay was calculated based on 2030 traffic model data from the Alaskan Way Viaduct project for each block of 4th and 5th Avenues and on the total number of trips currently scheduled to operate on each block from 5:00 to 6:00 PM. The estimate assumes routes that currently operate in the Downtown Seattle Transit Tunnel (DSTT) will likely move to surface streets when the tunnel closes to buses in the future. The assessment of bus delay was performed on 4th/5th because 1st Avenue has limited bus activity. Source: CH2MHill, NelsonNygaard, King County Metro, Sound Transit

A 4TH/5TH AVENUE		B 1ST AVENUE	
Mixed Streetcar	Exclusive Streetcar	Mixed Streetcar	Exclusive Streetcar
Poor	Fair	Best	Best

Change in Bus Passenger Delay (Relative to No-Build)

- Mixed-Traffic: Aggregate bus passenger delay increases by about 60% on 4th Avenue and by over 40% on 5th Avenue.
- Exclusive: Aggregate bus passenger delay decreases by 25% on 4th Avenue due to a second transit-only lane. On 5th Avenue, delay increases by 5% with a transit-only lane over part of the alignment.

Change in Aggregate Bus Passenger Delay on 4th and 5th Avenues Relative to No-Build (5-6 PM, Hours per Day)



Relative to 2030 No-Build and assumes that buses currently traveling in the Downtown Seattle Transit Tunnel will move to surface streets. Based on estimated bus delay along each segment of 4th and 5th Avenues and average inbound and outbound passengers per trip on routes traveling on 4th and 5th Aves in the PM peak (5-6 PM).

A 4TH/5TH AVENUE		B 1ST AVENUE	
Mixed Streetcar	Exclusive Streetcar	Mixed Streetcar	Exclusive Streetcar
Poor	Fair	Best	Best

Multimodal Conflicts

- ⦿ The Bike Master Plan Update recommends bicycle facilities for the 4th/5th Avenue corridor.
- ⦿ Implementing cycle tracks with streetcar creates design challenges and requires tradeoffs to balance the requirements of each mode, while providing adequate capacity for buses and autos.

Mode	4th/5th Ave. Mixed	4th/5th Ave. Exclusive	1st Ave Mixed	1st Ave. Exclusive
Bicycles	<ul style="list-style-type: none"> Potential cycle track visibility issues based on station placement and left turns (4th Ave.) or right turns (5th Ave.). 	<ul style="list-style-type: none"> Less right-of-way available for cycle track with second exclusive transit lane. Potential fall hazard for bicyclists. 	<ul style="list-style-type: none"> No planned bicycle facilities on 1st Ave. Sharrows on Stewart St. but other east-west options exist. 	
Pedestrians	<ul style="list-style-type: none"> Potential conflicts with cycle track. Cycle track may require right-of-way from west sidewalk on 5th Ave. in certain blocks. 	<ul style="list-style-type: none"> Streetcar platforms are on east curb while cycle track is on east curb. 	<ul style="list-style-type: none"> Potential for streetcar to improve pedestrian conditions, e.g., sidewalks, street crossings, etc. 	
Bus	<ul style="list-style-type: none"> Potential conflicts / capacity reduction in shared bus/streetcar lane on 5th Ave. 	<ul style="list-style-type: none"> A second transit lane reduces travel delay. The streetcar stops in the eastern curb lane, reducing bus stop capacity and creating potential for conflicts. Transit lane is possible on only a portion of 5th Ave. alignment. 	<ul style="list-style-type: none"> Limited existing bus routes use portions of 1st Ave.; no route operate on the full extent of 1st Ave. 	
Freight	<ul style="list-style-type: none"> 4th and 5th Ave. are not designated freight routes. Likely minimal impacts to local deliveries (more large buildings with loading docks). 		<ul style="list-style-type: none"> 1st Ave. is not a designated freight route. Potential for local delivery conflicts exists (smaller-format, street-front retail), but mitigated by center-running design. 	

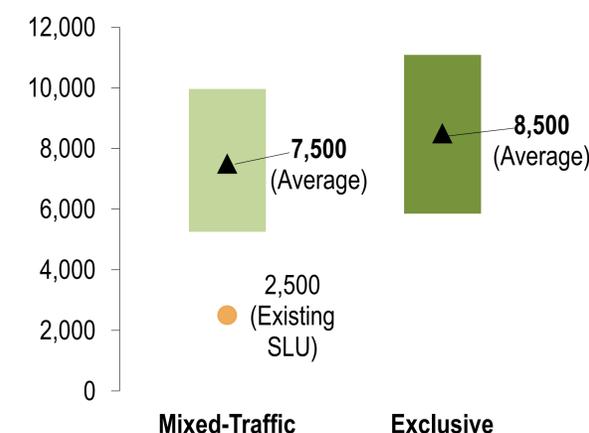
Note: Additional tradeoffs, e.g., travel times between autos, buses, and streetcar are assessed under the Enhance goal.

A 4TH/5TH AVENUE		B 1ST AVENUE	
Mixed Streetcar	Exclusive Streetcar	Mixed Streetcar	Exclusive Streetcar
Fair	Poor	Best	Best

Ridership Potential

- ⦿ Ridership estimates for 4th/5th Avenue and 1st Avenue alternatives are comparable at this level of evaluation.
- ⦿ An Exclusive alternative would be expected to attract higher ridership than a Mixed-Traffic alternative.
- ⦿ A significantly more detailed ridership forecast will be developed in the Tier 2 evaluation.

Estimated Average Daily Riders (SLU, Center City Connector, and First Hill)



Initial, high-level estimate based on data from peer streetcar systems, including the SLU streetcar. The estimate will be refined based on detailed ridership modeling as part of the Tier 2 evaluation.

A 4TH/5TH AVENUE		B 1ST AVENUE	
Mixed Streetcar	Exclusive Streetcar	Mixed Streetcar	Exclusive Streetcar
Good	Best	Good	Best

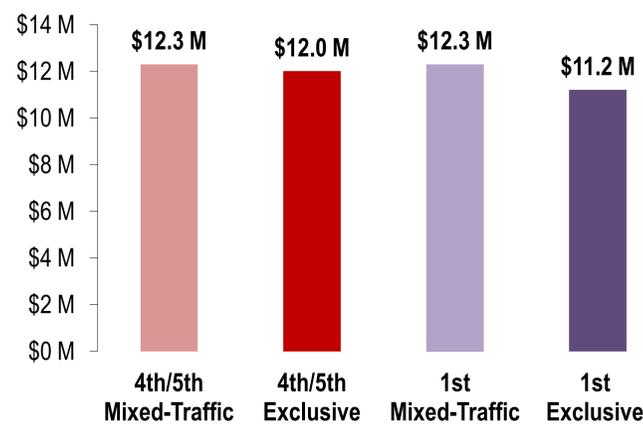
Annual Operating and Maintenance Costs

- Exclusive streetcar alternatives achieve the highest speeds on each alignment, e.g., via longer stop spacing. This reduces operating costs and vehicle requirements compared to the Mixed-Traffic alternatives.
- 1st Avenue Exclusive alternative has the lowest annual operating costs.

Capital Costs

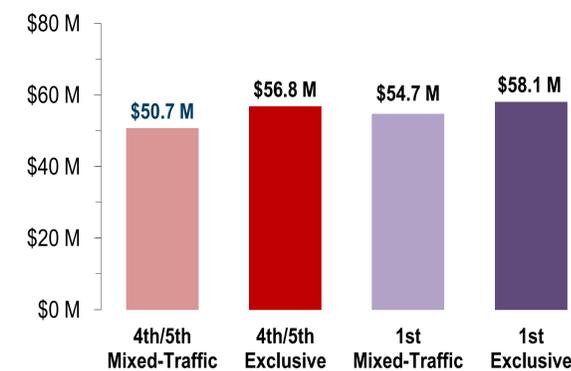
- It is generally less expensive to construct a streetcar on two one-way streets due to increased flexibility in accommodating existing utilities, potential to modify rather than replace traffic signals, and reduced construction footprint.
- Higher cost of Exclusive alternatives accounts for extra traffic signal treatments, reconfiguring parking, and channelization.
- Bicycle facility costs represent about \$3.0 million (about 5%) of overall 4th/5th Avenue capital costs.

Annual Operating and Maintenance Costs

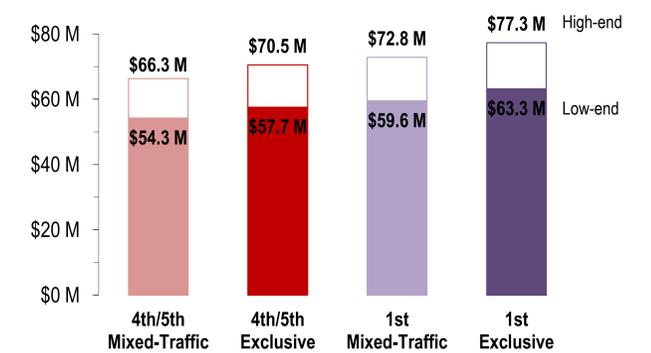


Combined SLU, Center City Connector, and First Hill streetcar operations and maintenance. Operating costs are in 2012 dollars. See the Tier 1 Operating Scenarios board for additional detail.

Capital Cost per Mile



Total Capital Costs (Range)



Costs are based on cost per-mile data (2013 dollars) from recent similar projects. The 4th/5th Avenue alternatives include a 16" water line on 4th and cycle tracks on both streets. The route distances are 1.13 miles for the 4th/5th couplet and 1.21 miles for 1st Avenue. More detailed cost estimates will be developed as part of the Tier 2 evaluation.

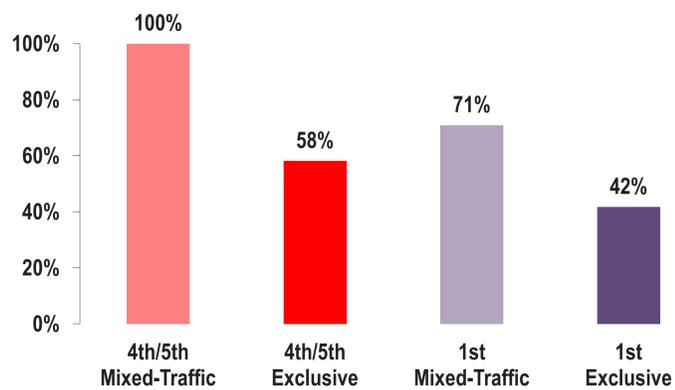
A 4TH/5TH AVENUE		B 1ST AVENUE	
Mixed Streetcar	Exclusive Streetcar	Mixed Streetcar	Exclusive Streetcar
Fair	Good	Fair	Best

A 4TH/5TH AVENUE		B 1ST AVENUE	
Mixed Streetcar	Exclusive Streetcar	Mixed Streetcar	Exclusive Streetcar
Best	Good	Good	Fair

On-Street Parking Impacts

- On-street parking supports small and local businesses in Center City business and retail districts.
- There are 24 existing block faces with on-street parking on the 4th/5th Avenue alignment and 31 existing block faces with on-street parking on the 1st Avenue alignment.
- High-level assumptions were developed in the traffic analysis for net parking impacts in each alternative.
- On-street parking and access to off-street parking will be assessed in greater detail in the Tier 2 evaluation.

Percent of block faces that retain on-street parking in each alternative relative to existing conditions



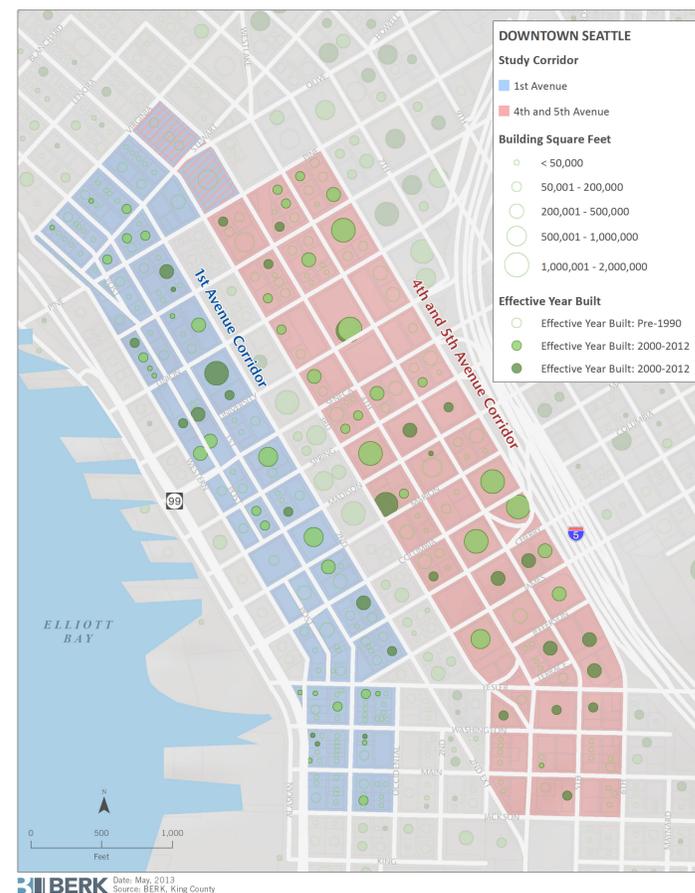
Notes: Net impacts are based on the number of block faces with existing parking (including peak-restricted parking) minus the number of block faces where parking is assumed in each alternative. A more detailed analysis will be conducted as part of the Tier 2 evaluation.

A 4TH/5TH AVENUE		B 1ST AVENUE	
Mixed Streetcar	Exclusive Streetcar	Mixed Streetcar	Exclusive Streetcar
Best	Fair	Good	Fair

Economic Development Opportunities

- 4th and 5th Avenues present significant development opportunities and provide the best connection to existing jobs. The potential for transit investment to influence future development is rated only fair due to the already strong market preference and the relative proximity of the transit tunnel stations.
- 1st Avenue has a somewhat greater number of reinvestment and redevelopment opportunities, however due to lower height limits total development capacity is less than the 4th/5th corridor. This corridor offers good connections to existing jobs and housing and much better opportunity for transit investments to have a material impact on future development decisions.

Recent Investment/Reinvestment



Economic Development Opportunities



A 4TH/5TH AVENUE		B 1ST AVENUE	
Mixed Streetcar	Exclusive Streetcar	Mixed Streetcar	Exclusive Streetcar
Good	Good	Best	Best

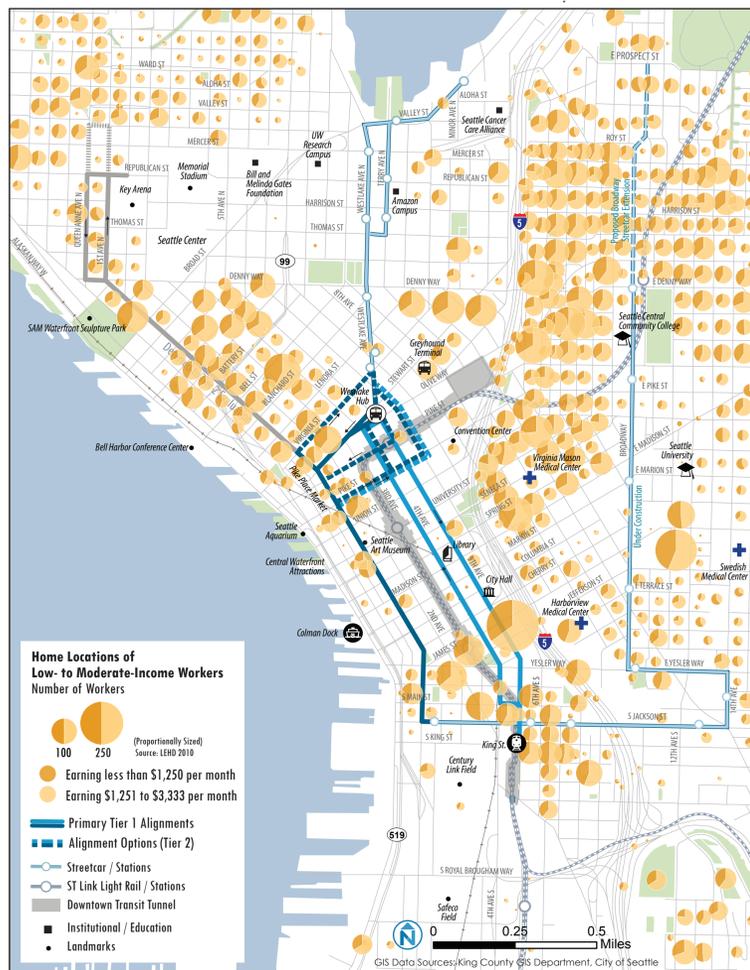
Access to Jobs

- Residential locations of low-to-moderate income workers in the study area are concentrated in the southern portion of the 4th/5th Avenue corridor and the northern portion of the 1st Avenue corridor, including Belltown.
- Both corridors enhance access to employment, but the 4th/5th Avenue corridor is expected to serve a larger number and concentration of employees.
- The 1st Avenue corridor is expected to serve a larger population and higher residential density.

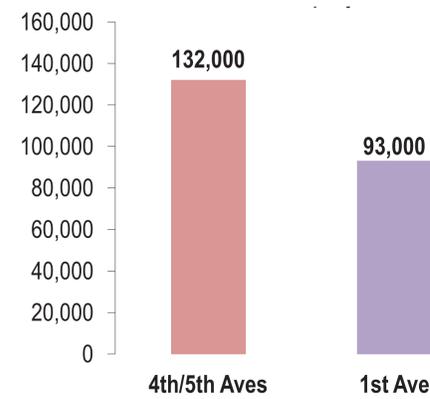
Transportation Options for Vulnerable Residents and Access to Social Services and Affordable Housing

- Both corridors serve populations who rely on public transportation (including low-income households, persons with disabilities, seniors, and youth).
- These populations, social service sites, and affordable housing locations are concentrated in the southern portion of 4th/5th Avenues and the northern portion of 1st Avenue, including Belltown.

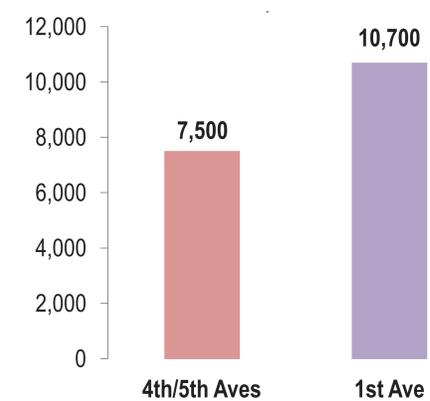
Home Locations of Low- to Moderate-Income Workers, 2010



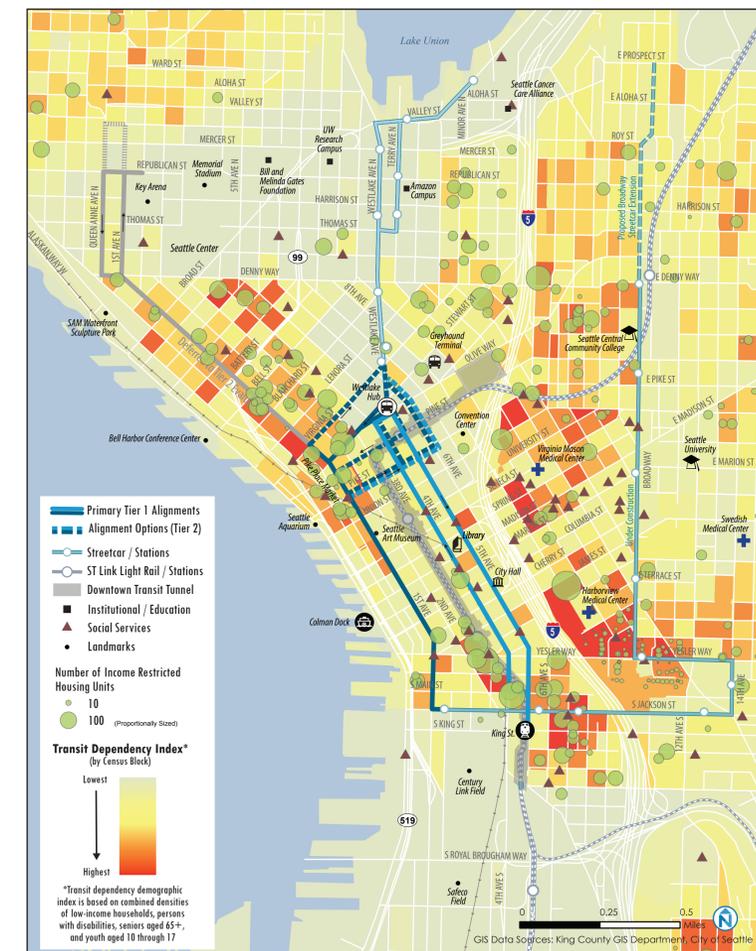
Number of Employees, 2030



Population, 2030



Transit-Reliant Populations, Social Service Sites, and Affordable Housing



A 4TH/5TH AVENUE		B 1ST AVENUE	
Mixed Streetcar	Exclusive Streetcar	Mixed Streetcar	Exclusive Streetcar
Good	Good	Good	Good

A 4TH/5TH AVENUE		B 1ST AVENUE	
Mixed Streetcar	Exclusive Streetcar	Mixed Streetcar	Exclusive Streetcar
Good	Good	Good	Good

Access and Mobility to Tourist Destinations, Civic and Cultural Assets, and Open Spaces

- ◎ The 4th/5th Avenue corridor serves more hotel rooms and civic assets.
- ◎ The 1st Avenue corridor provides access to more tourist destinations and cultural assets including Pike Place Market, waterfront attractions, and the Seattle Art Museum.
- ◎ The 4th/5th Avenue corridor serves more hotel rooms.
- ◎ The 1st Avenue corridor serves more special event sites and a larger number of attractions that draw more annual visitors.

Public and Stakeholder Support

Based on stakeholder interviews conducted in November-December 2012 and the February 2013 open house:

- ◎ The vast majority of stakeholders interviewed and participants at the February open house preferred a streetcar mode. Reasons included a desire for a seamless connection between the two streetcars.
- ◎ A number of comments at the February open house emphasized the importance of fast and reliable service.
- ◎ Many of the stakeholders interviewed identified specific benefits from a 1st Avenue alignment, including potential for future extensions to the north and south. They also expressed concerns about conflicts between streetcar and other modes on 4th and 5th Avenues.
- ◎ In a prioritization exercise at the February open house, participants placed nearly three times as many dots in support of 1st Avenue street alignments (about 60) as did for 4th and 5th Avenue alignments (about 20).

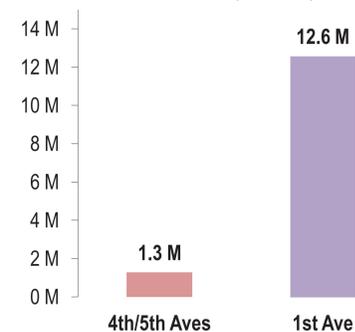
Landmarks and Attractions



Number of Hotel Rooms, 2012



Number of Visitors, 2011



A 4TH/5TH AVENUE		B 1ST AVENUE	
Mixed Streetcar	Exclusive Streetcar	Mixed Streetcar	Exclusive Streetcar
Good	Good	Best	Best

Ratings based on stakeholder and public input received prior to tonight's open house.

A 4TH/5TH AVENUE		B 1ST AVENUE	
Mixed Streetcar	Exclusive Streetcar	Mixed Streetcar	Exclusive Streetcar
Fair	Fair	Best	Best

Placemaking and Urban Form Assessment

4th/5th Avenues



5th & Main, facing north



5th and Pike, facing south



5th and Cherry, facing north



4th and James, facing north



4th and Madison, facing north



4th and Pike, facing north

- Generally, larger-scale office buildings with greater set-backs.
- One-way couplet, generally 3 travel lanes in each direction.
- Fewer retail frontages than 1st Avenue alignment.
- Wide sidewalks through most of the corridor.
- Westlake Park and Westlake Center are large public and civic areas with excellent placemaking opportunities.
- Direct access to a variety of transit facilities.

Images from VIA

1st Avenue



1st and Washington



1st and Cherry



1st Ave and University St.



1st and Pike, facing north



1st and Madison, facing south



1st and Spring, facing south

- Generally, finer-grain development with a mix of retail, residential, and office uses.
- Excellent access to major tourist destinations including Pike Place, waterfront attractions, and Seattle Art Museum.
- Wide sidewalks with many covered sections, street-front retail, and numerous outdoor restaurants and bar patios.
- Provides connection to Seattle's three multimodal hubs and to destinations that currently are not well-served by transit.

Images from VIA

- Both corridors offer opportunities for a good pedestrian experience and could be further developed to provide the amenities needed by transit users and other pedestrians.
- 4th and 5th Avenues have pedestrian and transit facilities that are currently more developed and in better condition; 1st Avenue has greater opportunity for improvement.
- 1st Avenue offers more existing and potential placemaking opportunities, including:
 - Connections to public space and attractions.
 - A variety of street-front retail and patio spaces.
 - Two-way street traffic and a partial boulevard with medians and greater enclosure.
 - Two-way traffic increases storefront visibility, lowers travel speeds to more comfortable levels for pedestrians, and improves pedestrian safety at crossings.

Ratings based on opportunity for transit investment to improve conditions.

IMPROVEMENT POTENTIAL	A 4TH/5TH AVENUE		B 1ST AVENUE	
	Mixed Streetcar	Exclusive Streetcar	Mixed Streetcar	Exclusive Streetcar
Sidewalks and Pedestrian Amenities	Good	Good	Best	Best
Pedestrian Crossings	Fair	Fair	Good	Good
Transit Facilities	Fair	Fair	Good	Good
Placemaking	Good	Good	Best	Best
Small Business Opportunities	Good	Good	Best	Best

PROJECT NEED



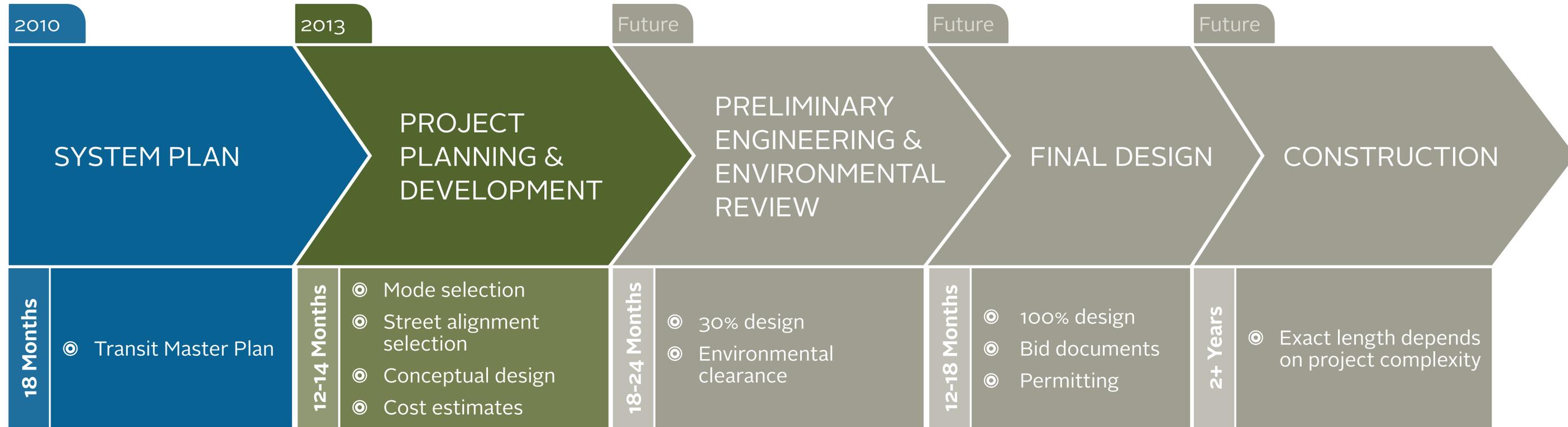
The statements of project need identify specific needs and challenges that are to be addressed by the Center City Connector transit project and will be used to guide the evaluation of alternatives.

The need for the Center City Connector project is based on:

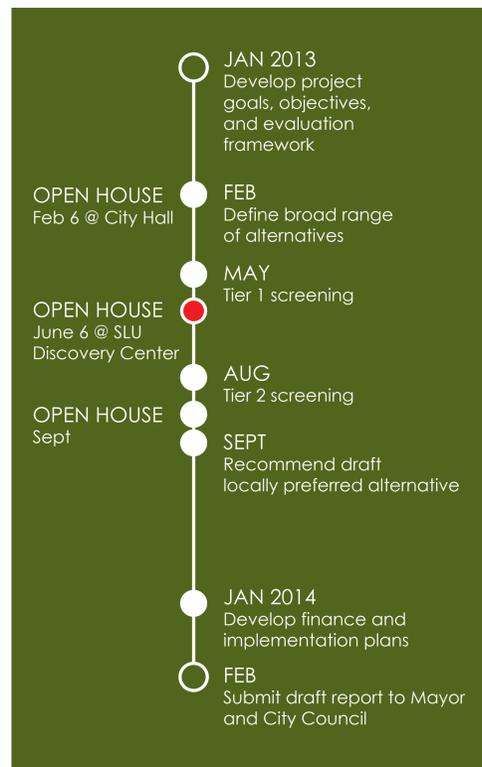
- ◎ **Significant existing population and employment and projected growth in the Seattle Center City.** Seattle's Center City neighborhoods have a significant concentration of households and employment, and are forecast to see employment growth of 60% and residential population growth of 97% by 2030.
- ◎ **Growth in demand for Center City circulation trips.** There is high demand for trips between Center City neighborhoods and for "last mile" connections on existing and planned local and regional transit.
- ◎ **Constraints on expansion of Center City transportation capacity.** There are limited north-south through streets available for transit. Existing and planned transit will utilize much of the available capacity.
- ◎ **Special mobility needs of tourists, visitors, and casual users in the Center City.** Approximately nine million annual tourists visit Seattle each year and many rely on transparent and easily understood transit connections.

- ◎ **Affordable transportation access to key social and human services located in the Center City.** A large concentration of social service agencies in the Center City relies on good transit connections.
- ◎ **Connections for low-income workers who live in the Center City to jobs in the Center City.** There is a growing concentration of affordable housing and low- and moderate-income jobs in the Center City.
- ◎ **Reduction in greenhouse gas (GhG) emissions from private vehicle travel and traffic congestion.** Seattle's Climate Action Plan relies on higher-capacity transit to support dense mixed-use neighborhoods in the Center City.

PROJECT TIMELINE



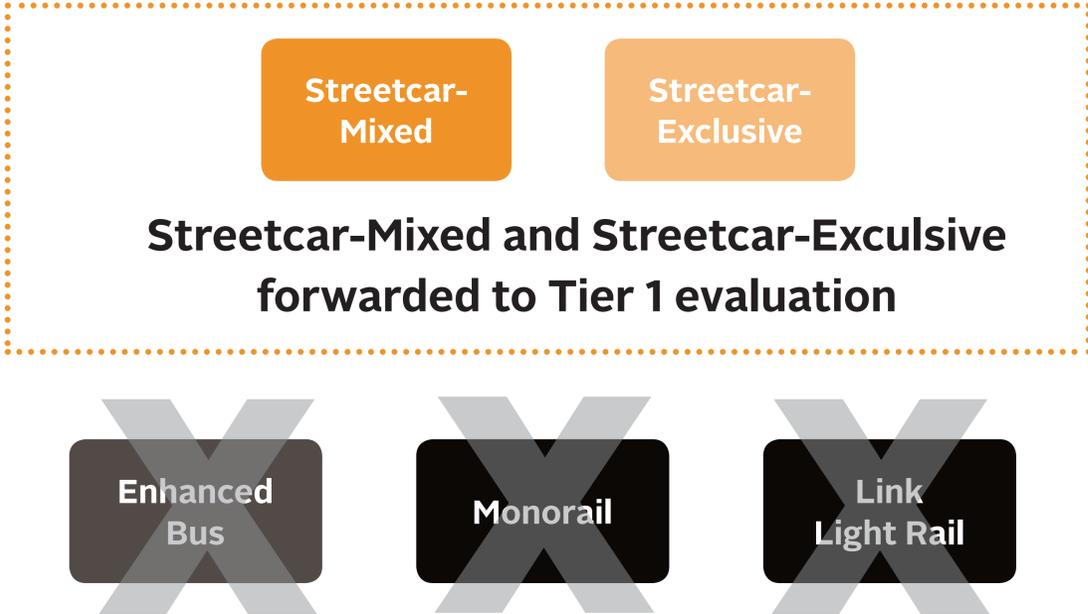
Center City Connector Transit Study Timeline



INITIAL SCREENING OVERVIEW



Summary of Initial Screening: Modes



Summary of Initial Screening: Alignments

