



# WELCOME

## MADISON CORRIDOR BRT STUDY

Thank you for joining us at this open house for the Madison Corridor Bus Rapid Transit Study! Your participation is a valuable part of our planning process. At this open house you are encouraged to:

- Learn about the project and next steps
- Comment on the preferred design concept
- Share comments

# Project Overview



## WHAT IS THE STUDY ABOUT?

The Madison Bus Rapid Transit (BRT) Study is a project of the Seattle Department of Transportation (SDOT). The purpose of the Study is to identify a preferred concept for BRT service in the Madison corridor between the waterfront and Madison Valley. Service is proposed to begin in 2019.

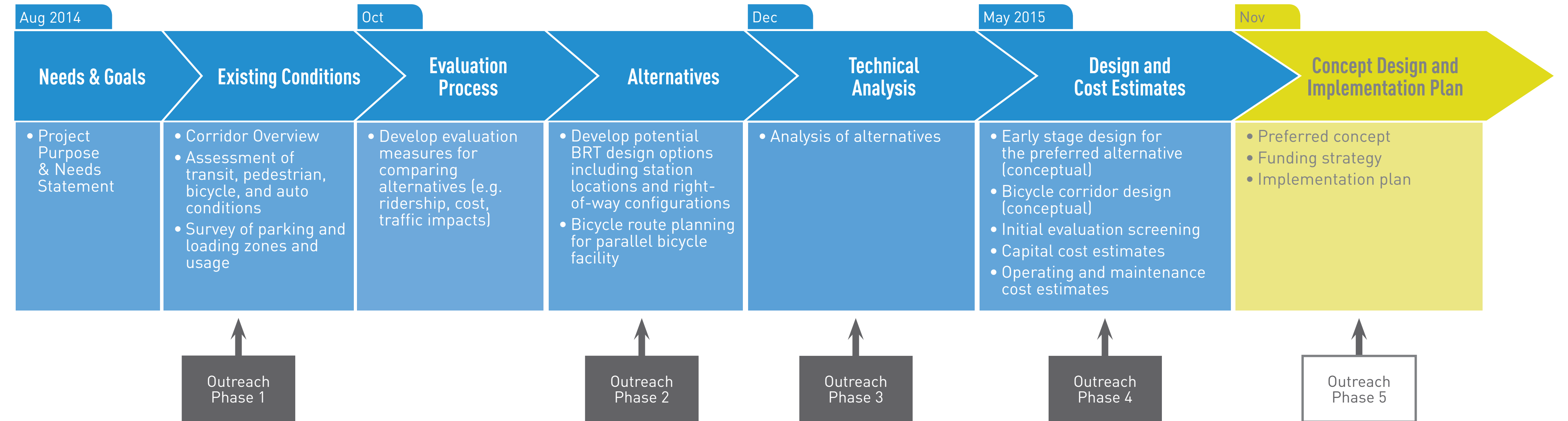
The study developed and evaluated BRT alternatives that included transit facilities and operations, streetscape and pedestrian improvements, and an alternate bike facility. The study process included on-going community engagement, particularly at key decision points.

## STUDY OUTCOMES

This study has developed a BRT concept for the corridor that:

- Has stakeholder, public, and elected official support
- Is backed by a viable phasing and implementation plan
- Positions the City for future funding opportunities to help design and build the project

# MADISON BRT CONCEPT DESIGN STUDY TIMELINE



# MADISON CORRIDOR BUS RAPID TRANSIT PREFERRED CONCEPT

## OPERATING PLAN

The Madison BRT line operates as an independent high-capacity service between Downtown Seattle and Martin Luther King Jr. Way in Madison Valley, providing high-frequency, all-day service.

## DAILY SPAN OF SERVICE

- Monday – Saturday: Up to 20 hours (5 am to 1 am)
- Sunday: Up to 17 hours (6 am to 11 pm)

## FREQUENCIES

- 6 min: 6 am to 7 pm weekdays and Saturdays
- 15 min or better: evening and Sundays

## RUNNING WAY

Madison BRT will use dedicated transit lanes between 1st and 18th Avenue.

The BRT line will run in median transit lanes between 9th and 14th Avenue.

## PROJECT NEED

- Transit travel time up to 67% longer than driving.
- Over 25% of trips on Routes 11 and 12 are more than 10 minutes late.
- 30,000 daily transit boardings within 1/2-mile of Madison.
- 80% of AM peak trips have max. loads over seated capacity.

## PROJECT PERFORMANCE

- Transit travel time from 23rd to 1st Ave improves 40% from 16.3 to 9.8 minutes. Auto travel time increases by 3.6 minutes.
- Travel time variance between trips reduced from 7 minutes to 0.6 minutes.
- 12,000 daily riders with 2015 land use; 71% increase versus existing ridership.

## STATIONS

Madison BRT plans full-featured BRT stations including comfortable seating, weather protection, level-boarding, and real-time information so that passengers know exactly when the next bus will arrive.



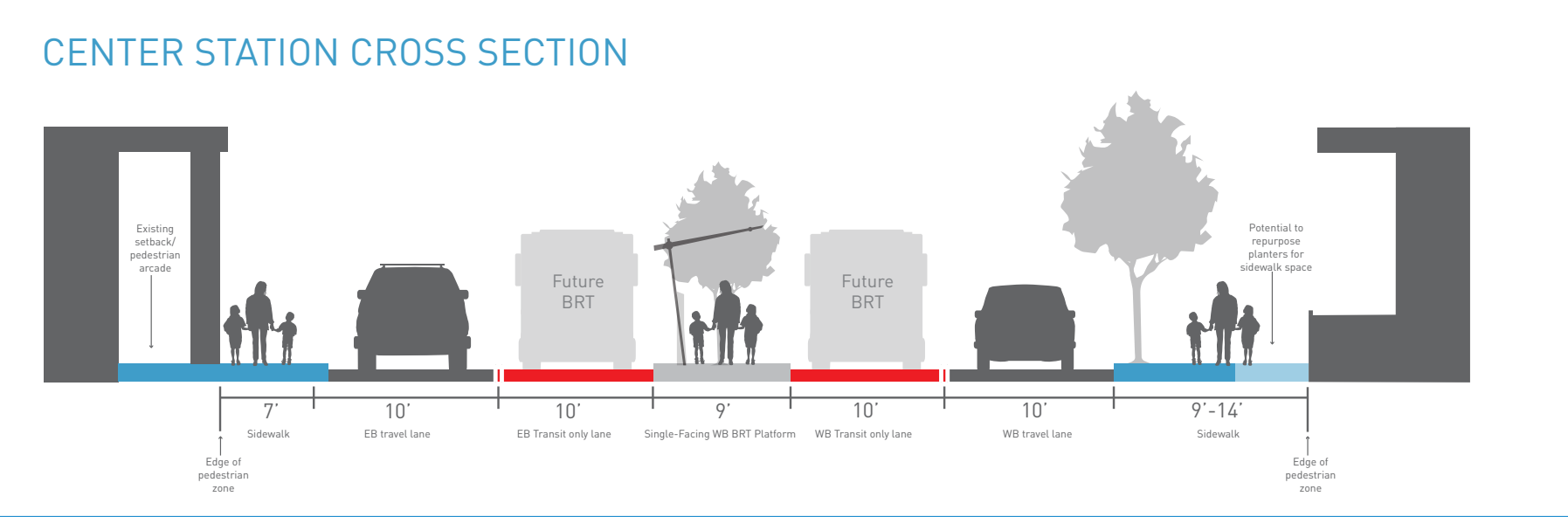
## COMPLETE STREETS INVESTMENTS

The project also includes sidewalk repair, ADA upgrades, landscaping, and investments in adjacent bicycle facilities in coordination with Bicycle Master Plan implementation.



### LEGEND

- Madison BRT Eastbound Stop
- Madison BRT Westbound Stop
- Streetcar Platform
- LINK Light Rail Station
- RapidRide Stop
- Madison BRT Eastbound (dedicated)
- Madison BRT Eastbound (mixed traffic)
- Madison BRT Westbound (dedicated)
- Madison BRT Westbound (mixed traffic)
- Streetcar Line
- LINK Light Rail
- Neighborhood Greenway
- Protected Bike Lane
- Left Turns Allowed



# Preferred Concept: Madison/Spring couplet from 1st to 9th Avenue

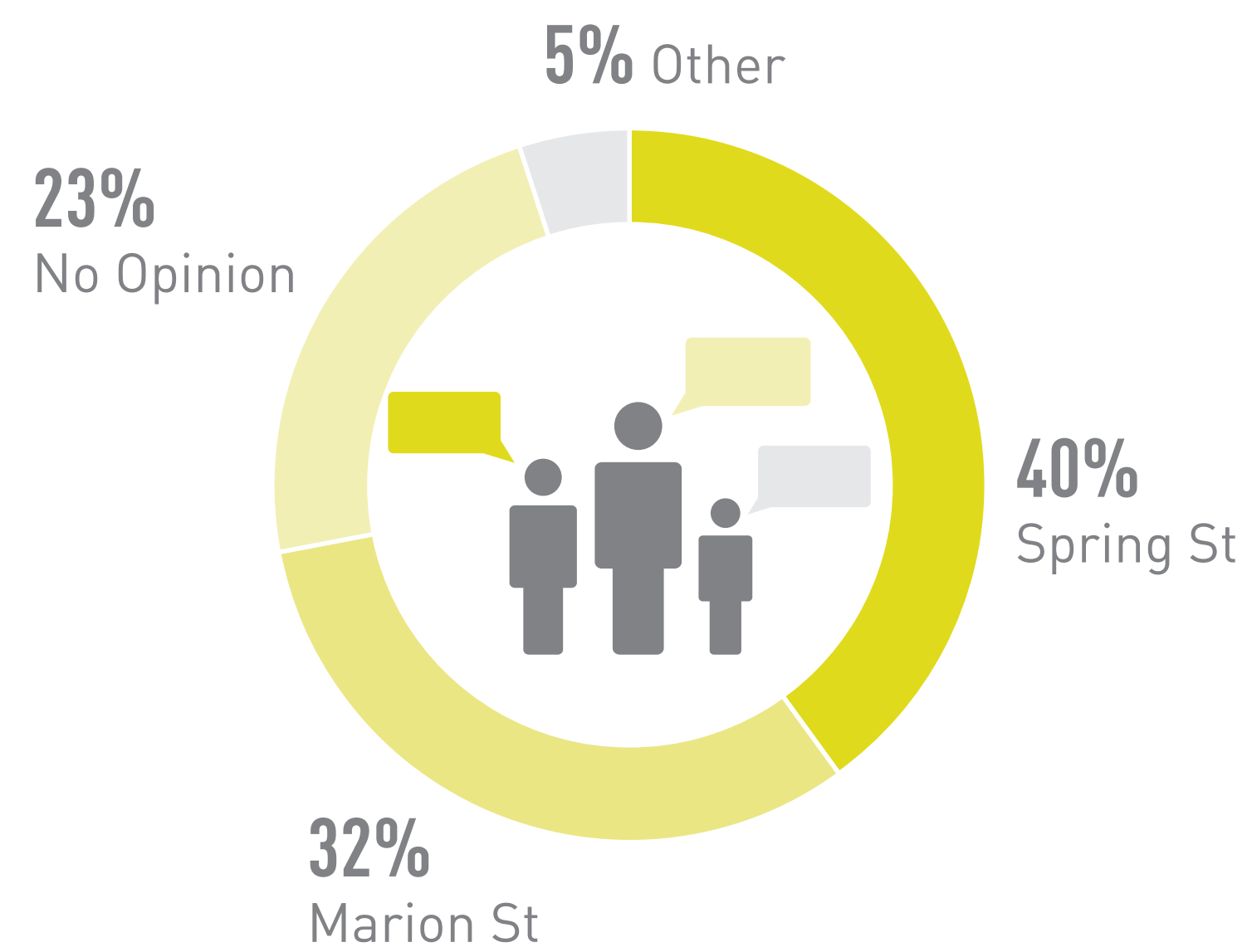


BRT service will travel west on Madison Street. The western terminal will be at 1st Avenue, using a platform shared with the streetcar on 1st Avenue. BRT service will then travel eastbound on Spring Street in a north-side transit lane.

There will be stations at 3rd, 5th, and 8th Avenues on both Madison and Spring Street. Stations will be left or right-door boarding, depending on the station location.

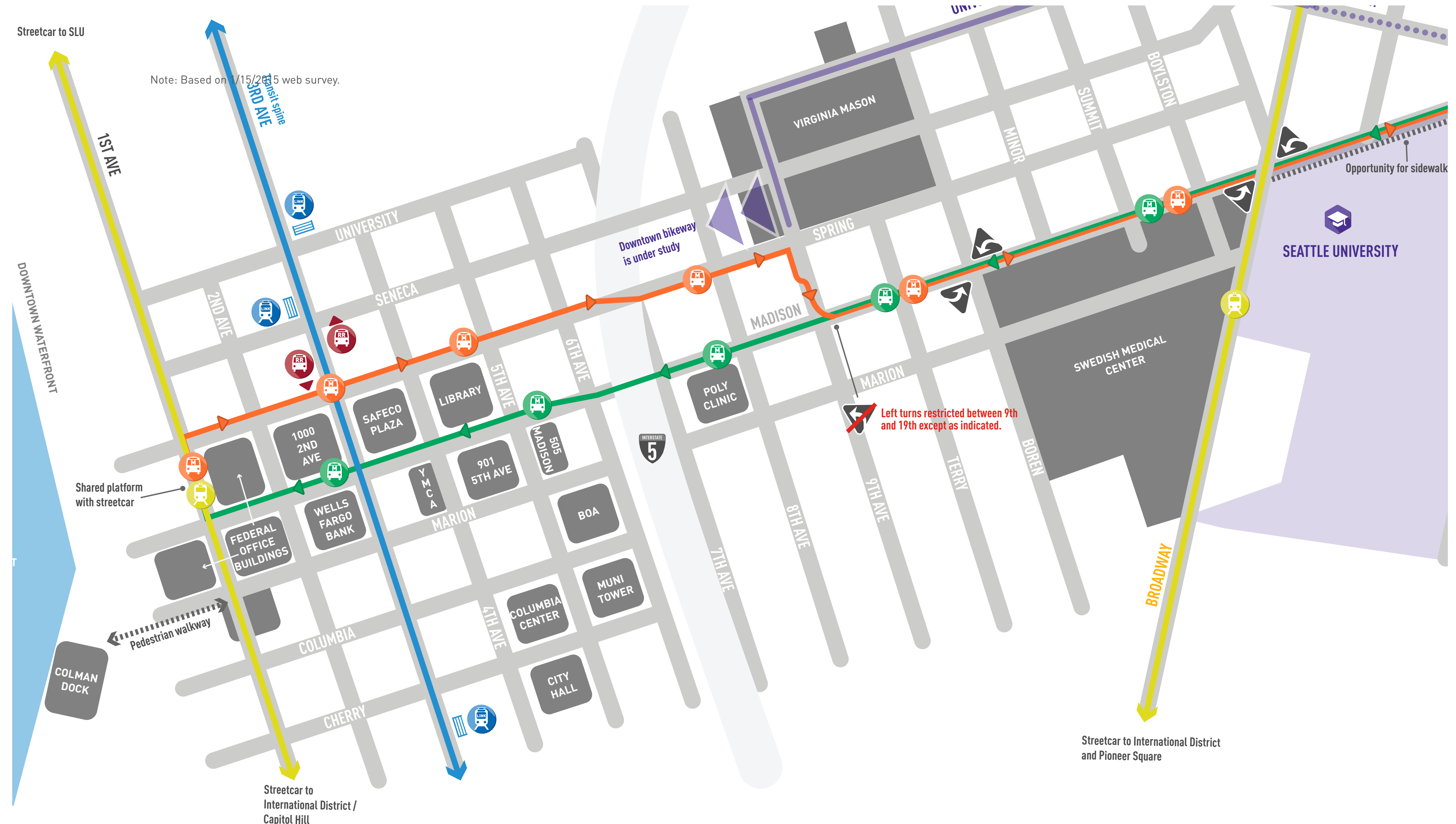
Limited parking will remain on Madison and Spring Streets in this section of the corridor. The project will also make safety improvements to the existing Spring Street bike lane from 1st to 4th, making it a protected bike lane.

## COMMUNITY SUPPORT



## IMPACTS + BENEFITS FOR OTHER TRANSIT USERS

- Offers connectivity within one block of the Downtown Seattle Transit Tunnel
- Allows Route 2 to take advantage of future bus-only lanes
- Offers opportunity for a seamless transfer to the Center City Connector streetcar with a shared platform
- Station provides a one block, level walk to the pedestrian causeway to Colman Dock

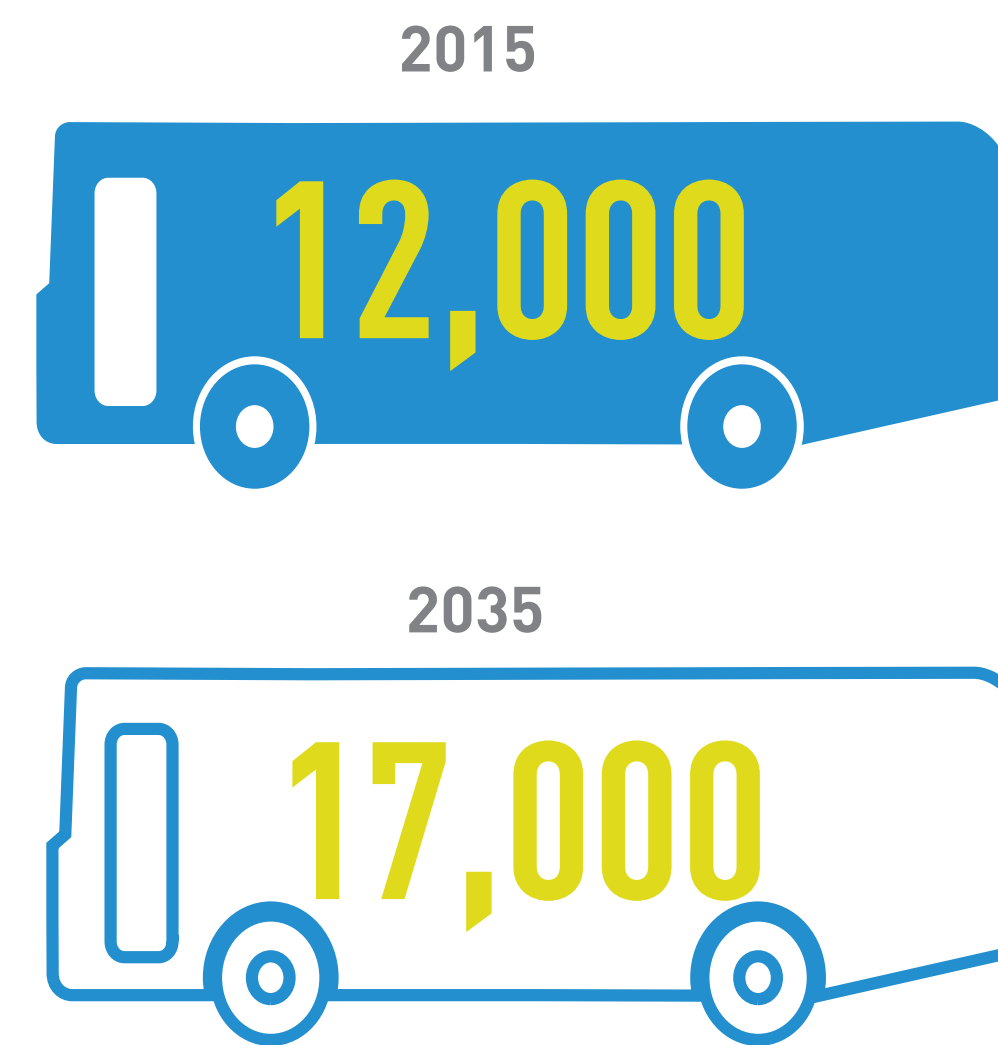


# Preferred Concept: Costs and Ridership



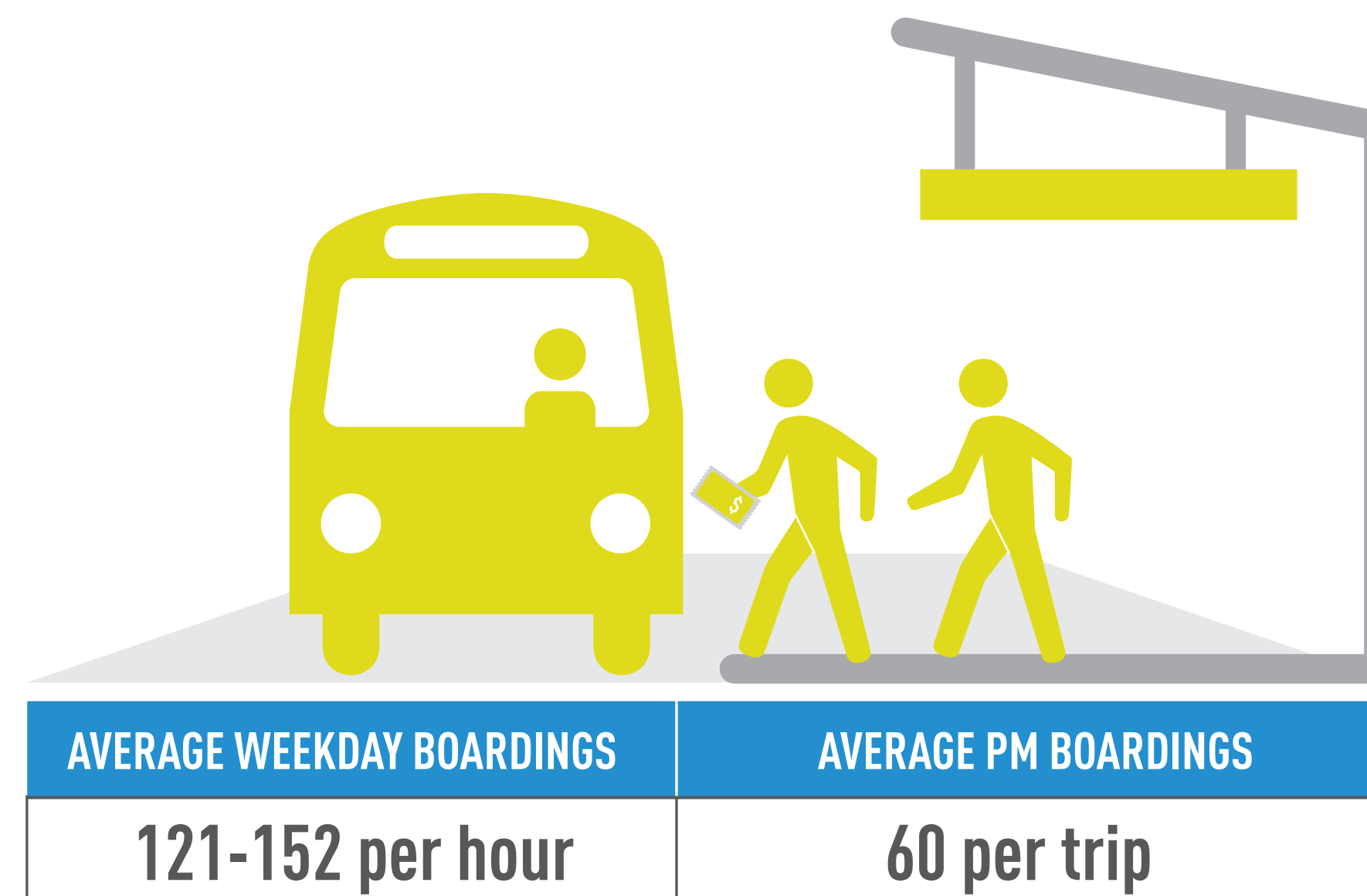
Estimates of BRT capital cost, operating cost, and ridership show the preferred concept is cost effective compared to local and national BRT lines.

## AVERAGE WEEKDAY BOARDINGS



## PRODUCTIVITY + LOADS

Productivity and loads are calculated using average weekday boardings per revenue hour and average boardings per PM peak trip. A ridership forecast model demonstrated significant increases for both metrics compared to current service.



## COST EFFECTIVENESS



Note: In 2013, Metro's systemwide average cost per boarding was \$4.26.  
Source: Metro Online

## CAPITAL COST

# \$120M

### Major cost categories include:

- Construction design, engineering, management & related costs (\$23 M)
- Bus Rapid Transit vehicles (\$12 M)
- Bus Rapid Transit stations (\$10 M)
- Electrification for vehicle power (\$10 M)
- New and upgraded traffic signals (\$6 M)
- Concrete bus lanes & paint (\$4 M)
- Utility relocation, replacement (\$3 M)
- Sidewalks, ADA ramps, & street furniture (\$3 M)
- Landscaping and plaza improvements (\$3 M)

Note: Costs are in 2015 dollars. Does not include all cost categories

# Preferred Concept:

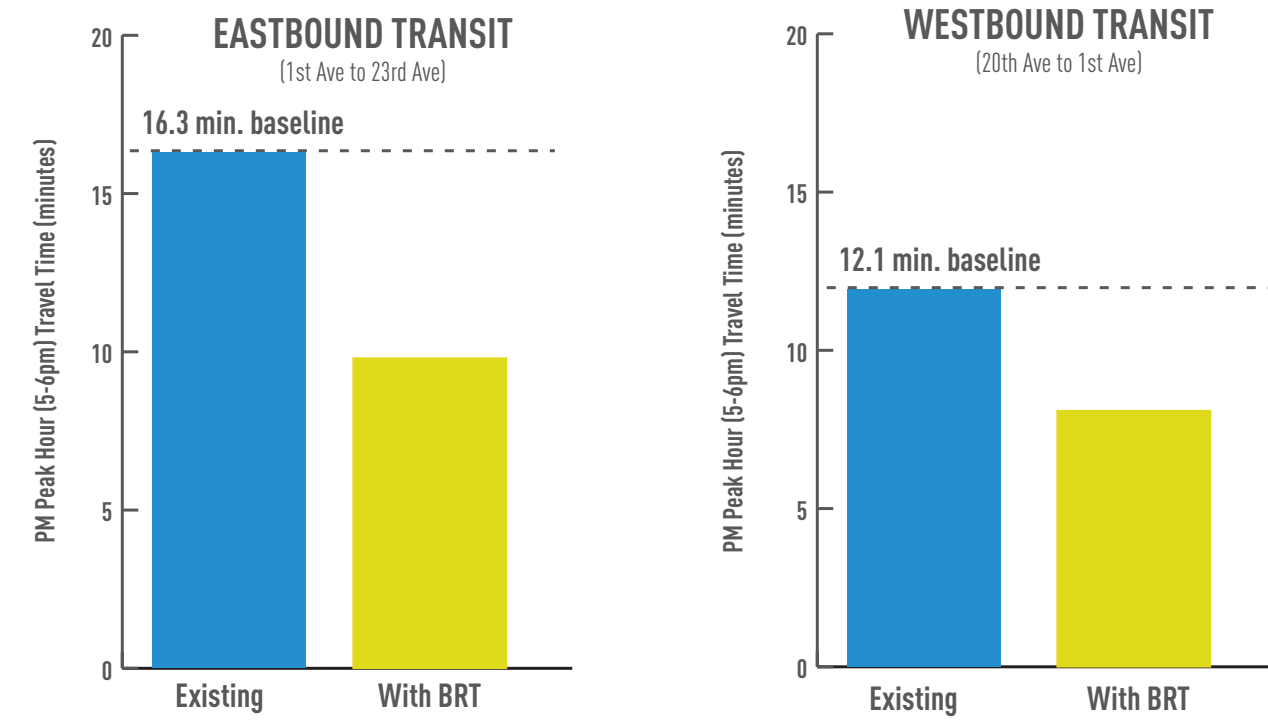
# Faster & More Reliable



The preferred Madison BRT concept will significantly improve transit speed and reliability for passengers traveling throughout the corridor. As right-turning movements and pedestrian volumes increase over time, the center-running design ensures continued fast and reliable transit in the Madison corridor will be maintained.

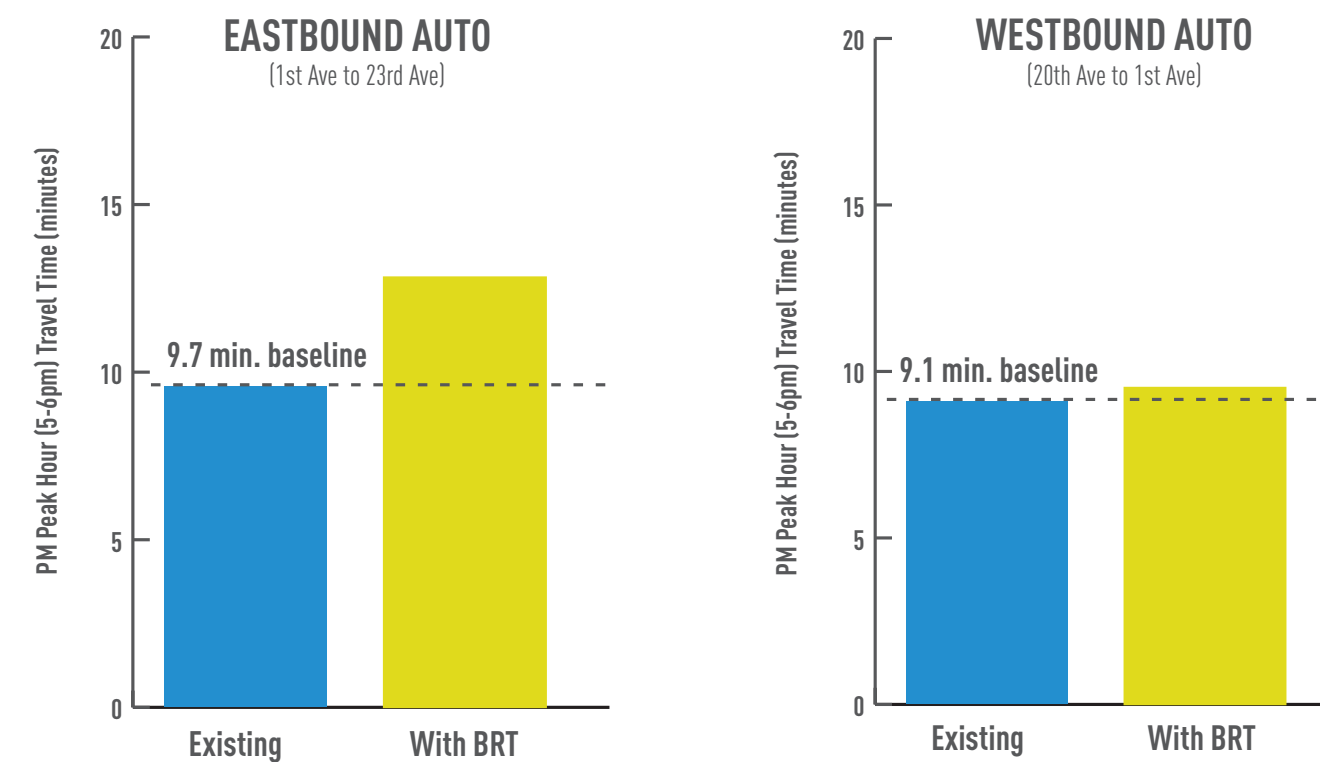
## TRANSIT TRAVEL TIME

Transit travel time from 23rd to 1st Avenue improves 40% from 16.3 minutes to 9.8 minutes.



## AUTO TRAVEL TIME

Auto travel time increases by 3.6 minutes eastbound and 20 seconds westbound.



## TRANSIT RELIABILITY

Today a transit trip between 6th and 13th Avenues, westbound in the PM peak hour, may take as little as 7 minutes and as much as 14 minutes. Transit travel time in the corridor varies by an average of 7 minutes; nearly 50% of the corridor travel time. The BRT project would reduce travel time variability per trip to under a minute.

**7.0 min.**  
variability between  
shortest and longest run



**0.6 min.**  
variability between  
shortest and longest run



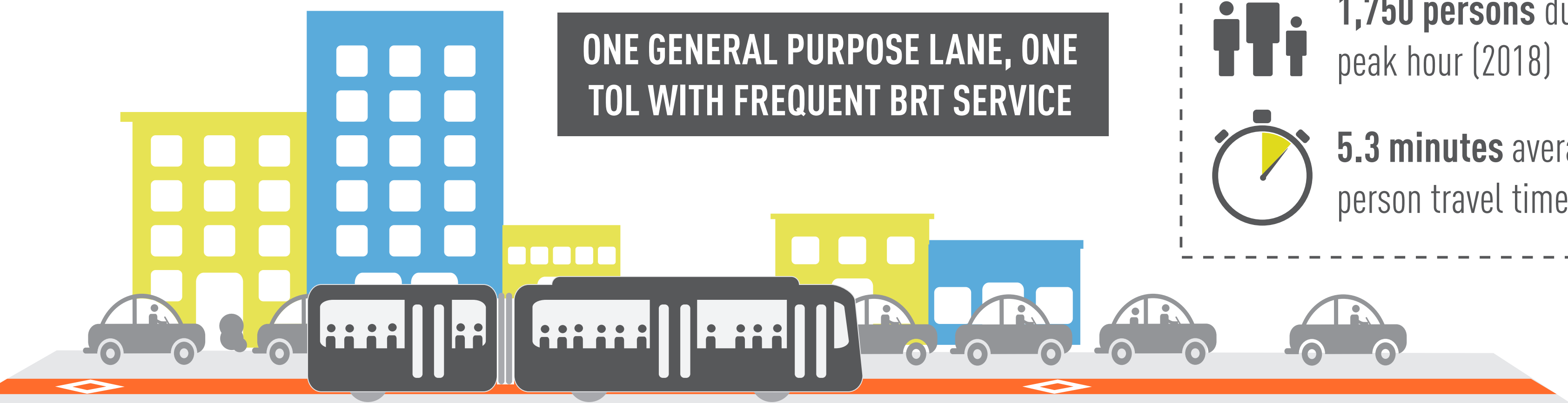
## DEDICATED TRANSIT LANES



**1,200 persons** during peak hour (2018)  
**7.1 minutes** average person travel time (2015)

Repurposing a general purpose travel lane to a transit only lane (TOL) or business access transit (BAT) lane is justified where it increases the person carrying capacity of the roadway and improves the average person travel time in the corridor.

Transit only lanes (TOL) or business access transit lanes (BAT) are critical to ensuring rapid, reliable transit operations. The extent and exclusivity of these lanes helps to dictate the quality of the service and protect operational reliability as traffic congestion increases.



**1,750 persons** during peak hour (2018)  
**5.3 minutes** average person travel time (2015)

## Preferred Concept:

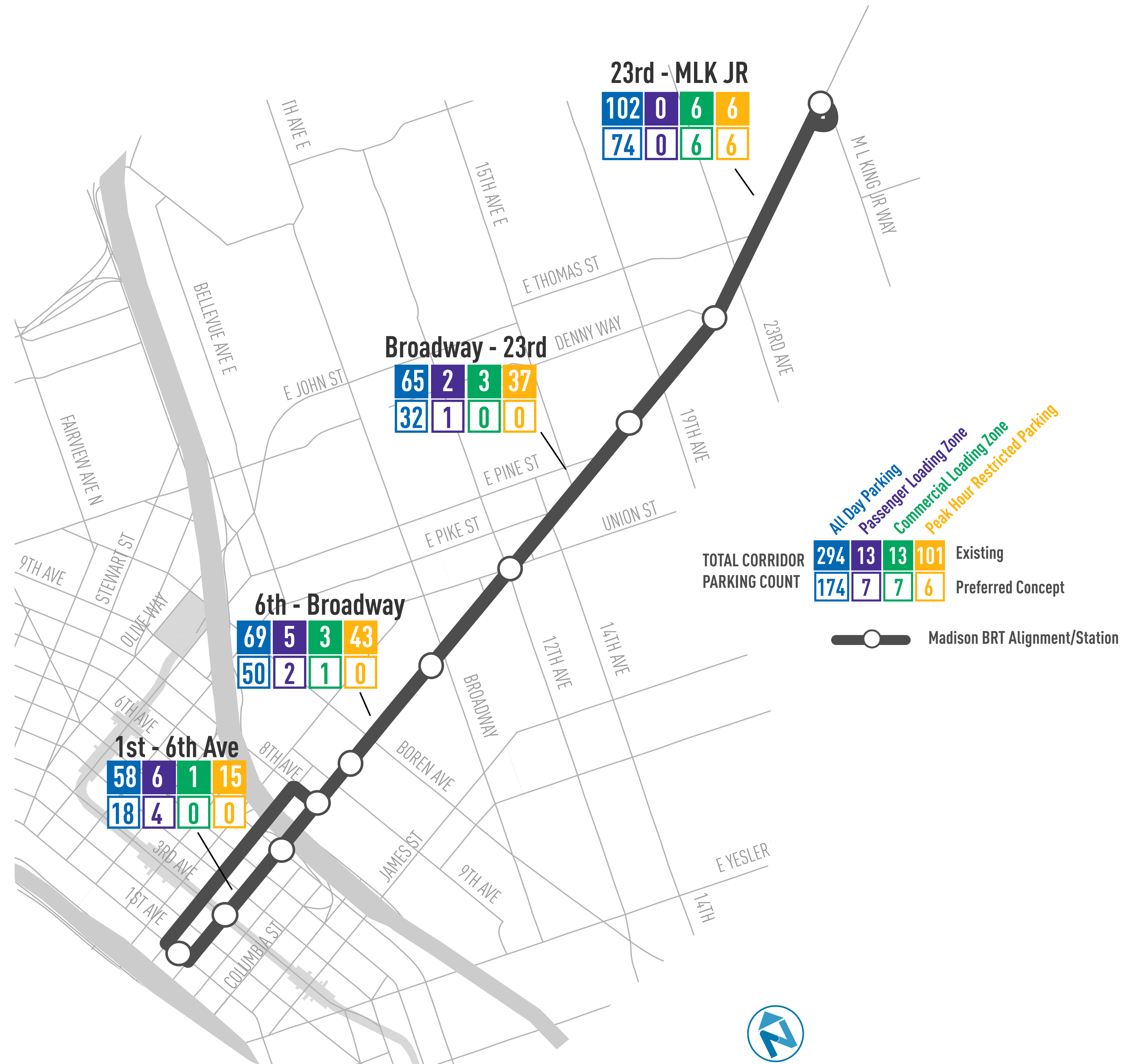
# Parking & Loading Impacts



As indicated at right, the preferred concept would remove approximately 227 total on-street parking spaces between 1st Avenue and Martin Luther King, Jr. Way. Of this estimated total, 12 would be passenger or delivery loading spaces, 120 would be parking spaces that are available all day, and 95 would be spaces that are restricted during peak periods.

Most of the removed spaces would be between 1st Avenue and 22nd Avenue. Carpool and other specially reserved spaces (such as spaces reserved for police) might be replaced nearby. A number of mitigation strategies are possible and will be identified in the next phases of corridor design.

According to the most recent data available from the Puget Sound Regional Council, there are a total of 28,471 off-street parking spaces within one-quarter mile of the corridor west of 13th Avenue (including both public and private spaces as well as carpool, vanpool, motor pool and customer parking spaces).



# Preferred Concept: Bike Route Design Alternatives



As Seattle grows, we need to accommodate predictable movement of people and goods; affordable transportation options; and continue transforming our streets into safer and healthier public spaces. The Madison BRT project is helping us to do this by creating an interconnected, easy to use transportation system. Madison is a relatively narrow street that cuts diagonally across the street grid and as a result, we are exploring routes other than Madison Street where we can make biking safer and more comfortable and link people to the places they want to go.

How do we do this? Our starting point is the City Council adopted Bicycle Master Plan (BMP). We look at what is recommended and start overlaying what we've heard from community members as we've been doing outreach.

This map illustrates a concept based on feedback and the Seattle BMP's recommendations. However, before the most promising route is confirmed, we must continue engaging affected neighborhoods, conduct traffic and parking analysis, look at network connections, and consider the freight and pedestrian master plans among other things.

The project is also investing in high priority bike crossings in the corridor, in response to community requests, and considering how people would use their bikes to access the BRT service in the design of the stations and buses.



	DOWNTOWN	FIRST HILL	EAST OF BROADWAY	
SEGMENT	<ul style="list-style-type: none"> <li>Spring Street 1st to 4th</li> <li>Additional routes TBD, per Center City Bike Network Project</li> </ul>	<ul style="list-style-type: none"> <li>University Street from 9th Avenue to Broadway</li> </ul>	<ul style="list-style-type: none"> <li>Phase 1: Denny/Thomas</li> </ul>	<ul style="list-style-type: none"> <li>Phase 2: Union Street from Broadway to 27th</li> <li>27th Avenue</li> </ul>
CONCEPTS	<ul style="list-style-type: none"> <li>Recommended design: Improve safety for existing Spring Street bike lane from 1st to 4th by upgrading existing bike lane to protected bike lane, as part of the Madison BRT project</li> <li>Additional routes downtown to be determined through the Center City Bike Network Project currently underway</li> </ul>	<ul style="list-style-type: none"> <li>Recommended design: Greenway treatments from 9th to Broadway</li> <li>Implementation in 2017, as part of BMP program</li> </ul>	<ul style="list-style-type: none"> <li>Recommended design: Greenway treatments from Broadway to 24th</li> <li>Implementation in 2019, as part of BMP program</li> <li>Madison BRT project will include pedestrian and bicycle crossing improvements at 24th &amp; Madison</li> </ul>	<ul style="list-style-type: none"> <li>Recommended design: Two one-way PBLs – safety key factor</li> <li>Madison BRT Project will include protected bike lanes on Union from 12th to 14th, where project will be changing the roadway design</li> <li>2015 next steps: Assess additional funding options</li> <li>If funding identified, advance a corridor design study</li> </ul>



## Preferred Concept:

# First Hill and Capitol Hill Center Running BRT



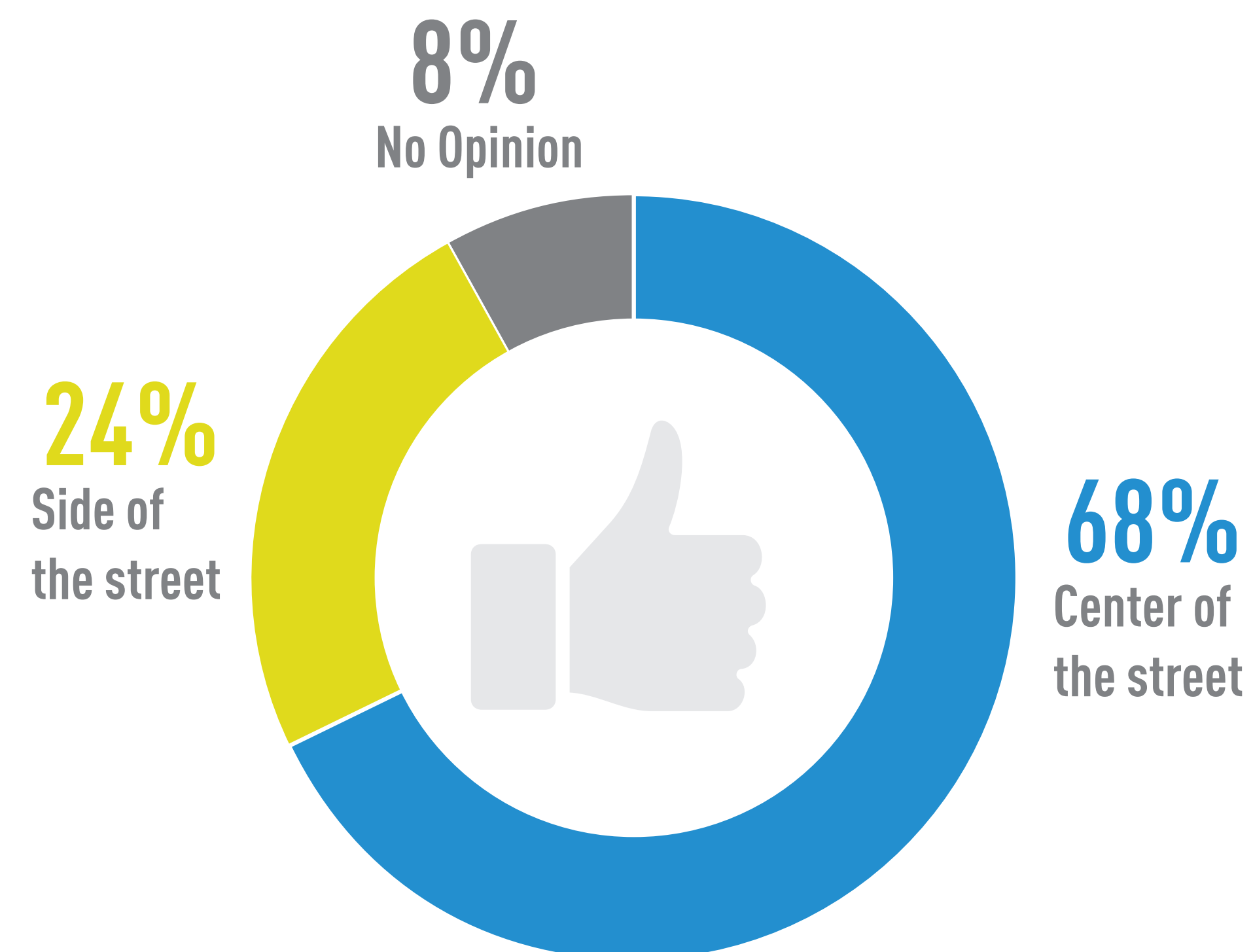
BRT service will travel in center-running, transit-exclusive lanes from 9th to 14th Avenue. Center, left-door boarding stations will be located at Terry, Summit/Boylston, and 12th/13th. Dedicated left turns would be provided at key intersections, including Boren, Broadway, 12th, and 19th. Parking will be removed from Madison Street in this section of the corridor.

## BENEFITS

- **Faster and more reliable BRT service** (40% faster) by separating transit vehicles from lanes with right-turn movements.
- Over time, as pedestrian and right-turn volumes increase, **transit service will remain fast and reliable** (travel time variability of less than a minute per trip).
- Separates transit waiting areas from sidewalks to **increase overall pedestrian space** in the corridor.
- Creates opportunities for **landscaping and sidewalk improvements** along the corridor.
- Station locations **serve key destinations** in the corridor, including Virginia Mason, Swedish Hospital, Seattle University and the 12th Avenue corridor.

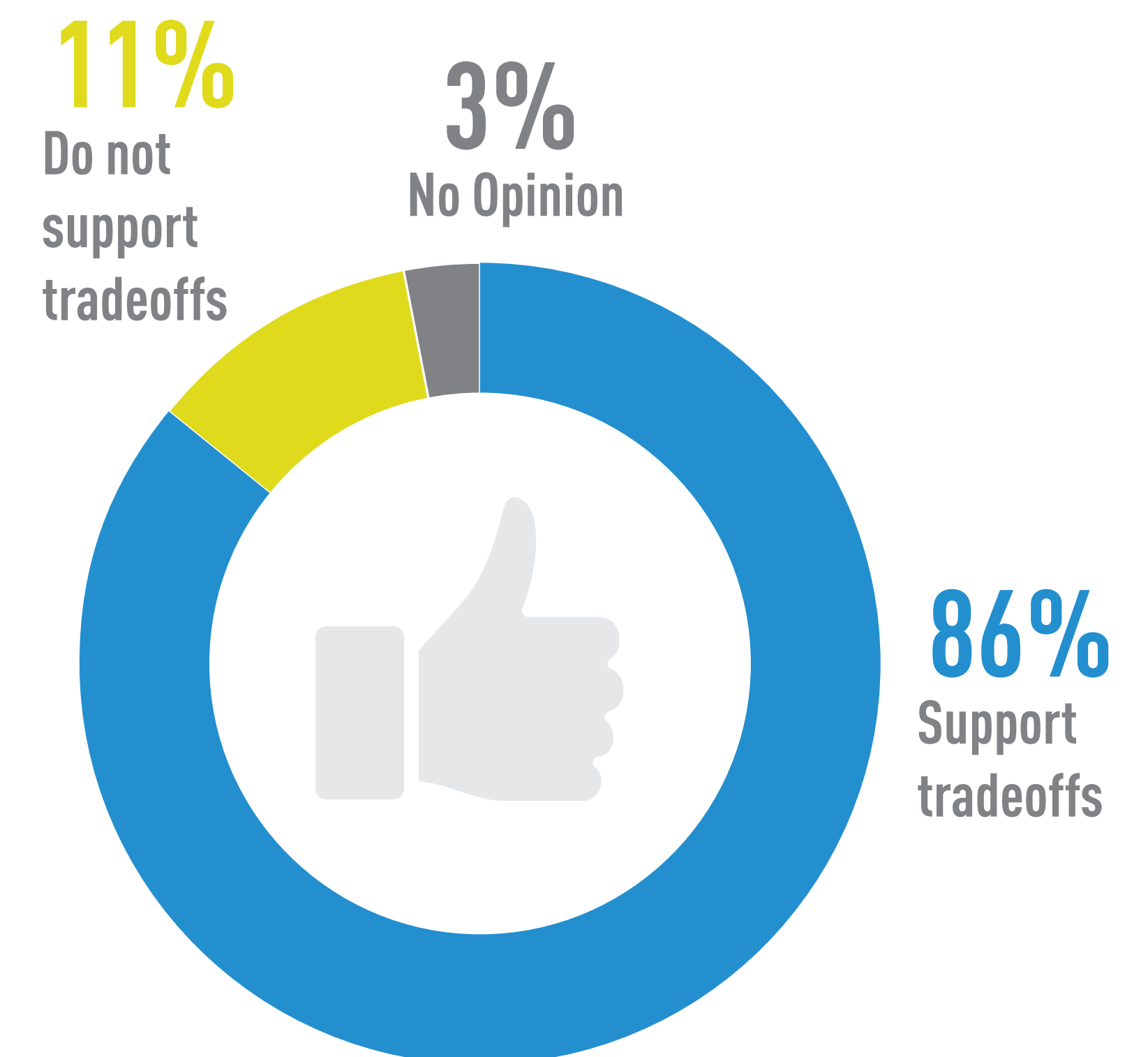
## SURVEY RESPONSE

Where would you prefer transit lanes between 8th and 20th Avenues?



## SURVEY RESPONSE

How do you feel about the tradeoffs between auto and transit travel time?



## Preferred Concept:

# Central Area to Madison Valley



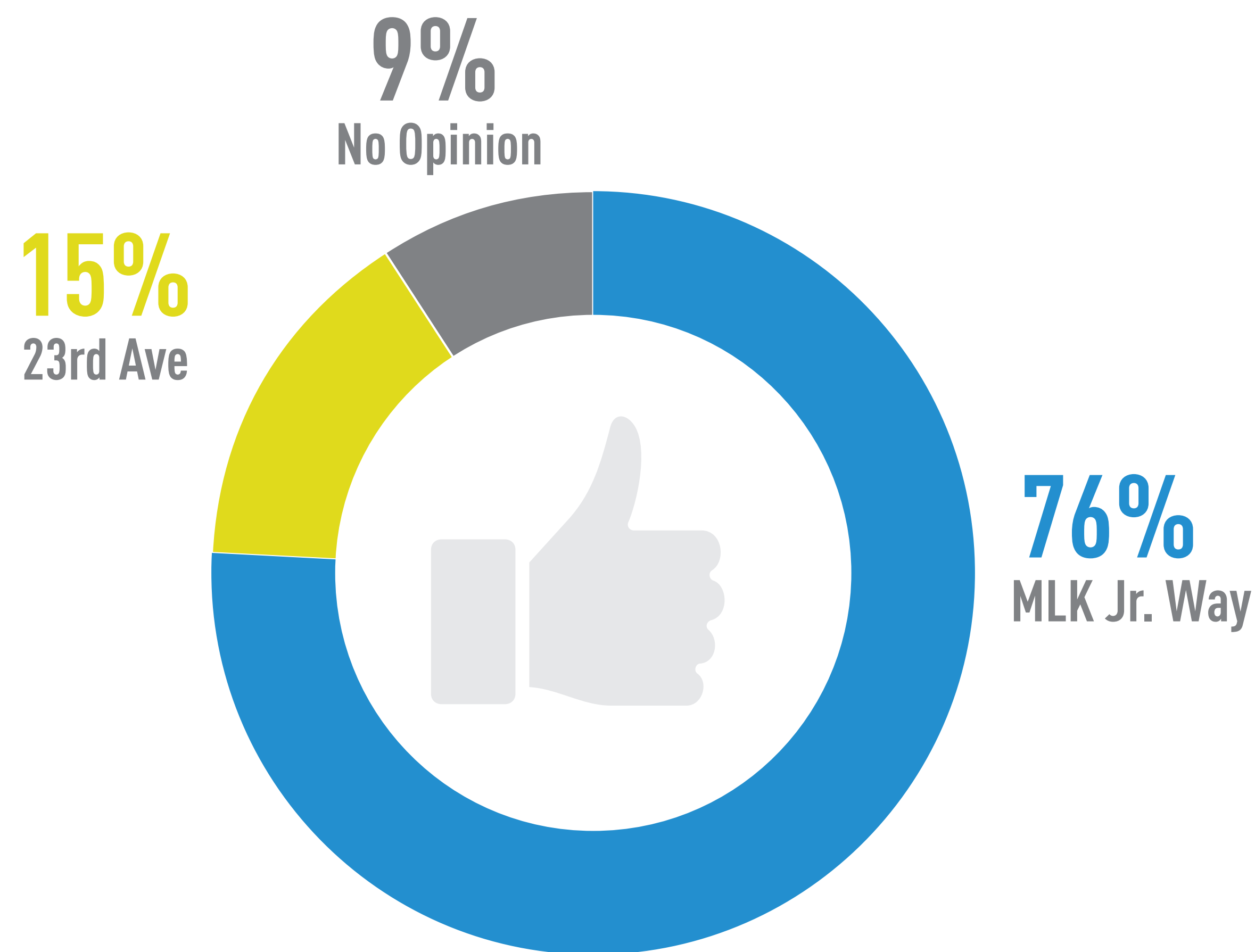
East of 14th Avenue, BRT service will transition to side-running transit lanes serving a station at 17th Avenue. East of 18th Avenue, BRT service will travel in mixed traffic to Madison Valley with stations at 22nd, 24th/25th, and Martin Luther King Jr. Way. Some parking will be removed in portions of the corridor.

## BENEFITS

- Extent of dedicated transit facility balanced with overall travel needs in the corridor, including **maintaining left turns and some parking.**
- Leverages wider sidewalks and existing stop locations to **minimize extent of roadway reconstruction.**
- Provides **zero-emission, quiet, all-electric, high-frequency transit** service to Madison Valley
- Responds to community request by providing an **additional station pair and crossing improvements at 24th Ave.**

### SURVEY RESPONSE

Of the two options for an eastern end to the BRT service, which do you prefer?



## Preferred Concept:

# Madison Valley Layover



As part of the current Study, we evaluated three layover options for Madison Valley:

- Arthur Place, between MLK and 28th
- Martin Luther King Jr Way, split with a downtown location
- Lake Washington Blvd

Outreach for these layover options included project mailings, online information, and a site walk.

## WHAT WE HEARD

- **Strong opposition to the layover on Arthur Place**, as it would have required eliminating all parking. Specifically, we heard concerns about the compatibility of layover on a street dominated by residential and small businesses uses. We also heard that residents and businesses on this street have few other alternatives for the current parking.
- General community **feedback was mixed on MLK Jr Way vs. Lake Washington Blvd.**
- **Serious concerns about the impacts to the historic character and park attributes** caused by the proposed modifications to Lake Washington Blvd.

Lake Washington Blvd is protected under federal law as a park, which extends to changes in the right of way. Pursuing this option would have added significant—time and expense to the project. This option was also more costly and had larger parking impacts than other options.

## RECOMMENDATION

- **Consolidating layover in one location**, rather than splitting between Madison Valley and Downtown, makes the service easier to use and operate, as all trips run in the same pattern.
- With modifications to the curb, all three layover locations can be provided proximate to arterials, **away from residential streets.**
- It is the less **costly option**, as compared to Lake Washington Blvd, and has significantly fewer impacts to park properties.



## Preferred Concept:

# Potential Future Extension to Madison Park



Over the past year, we have heard interest in the BRT service extending to Madison Park. We prepared analysis of the potential cost and benefits of extending service to Madison Park, shown here.

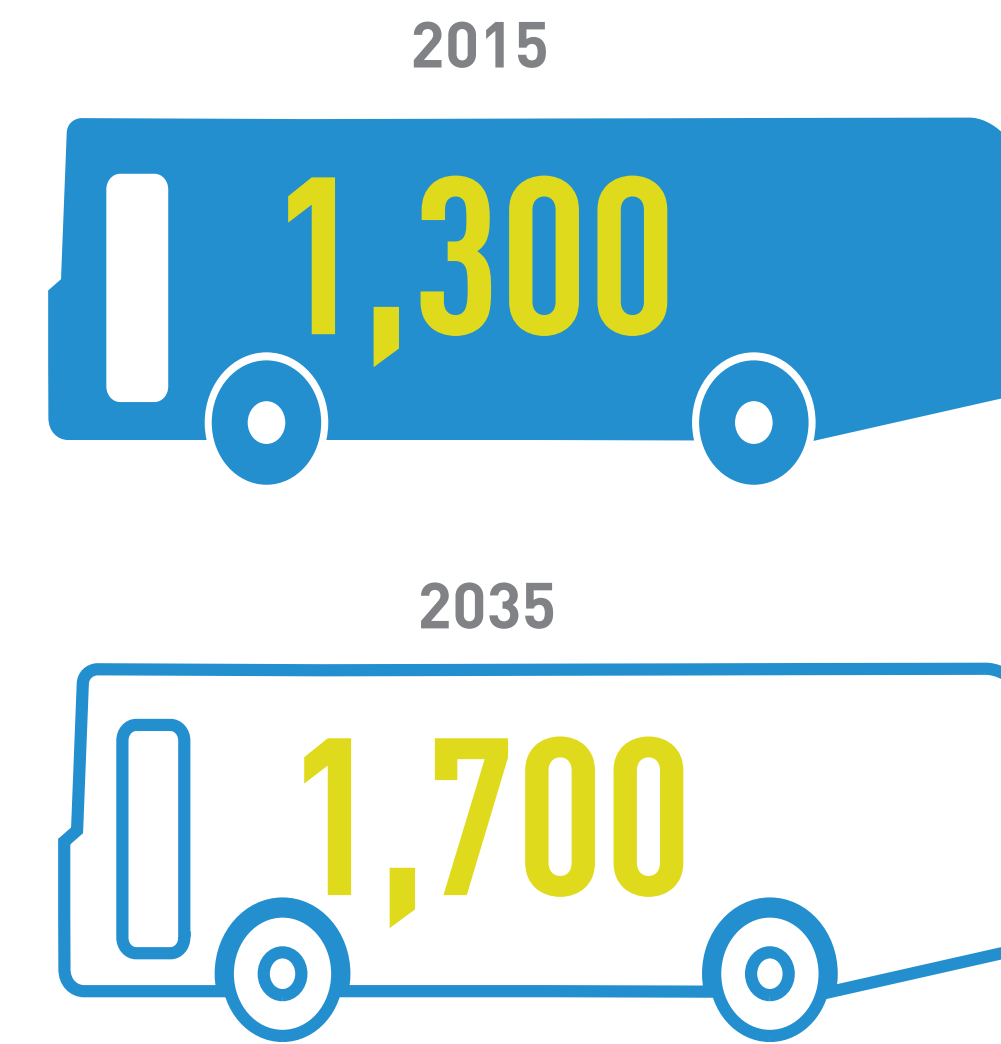
Given the high capital cost of overhead trolley wire as compared to the potential increase in ridership, we are not proposing to extend service as part of the first phase of the project. However, as battery technology evolves, it may be possible to extend service at a future date via off-wire, battery operation.

In the meantime, we would like to hear from you whether you support an extension of BRT service to Madison Park as part of a future phase of the project. This will inform additional technology analysis and project phasing options.

### OPERATING COST

Annual O & M  
**\$0.77M**  
 to  
**\$1.36M**

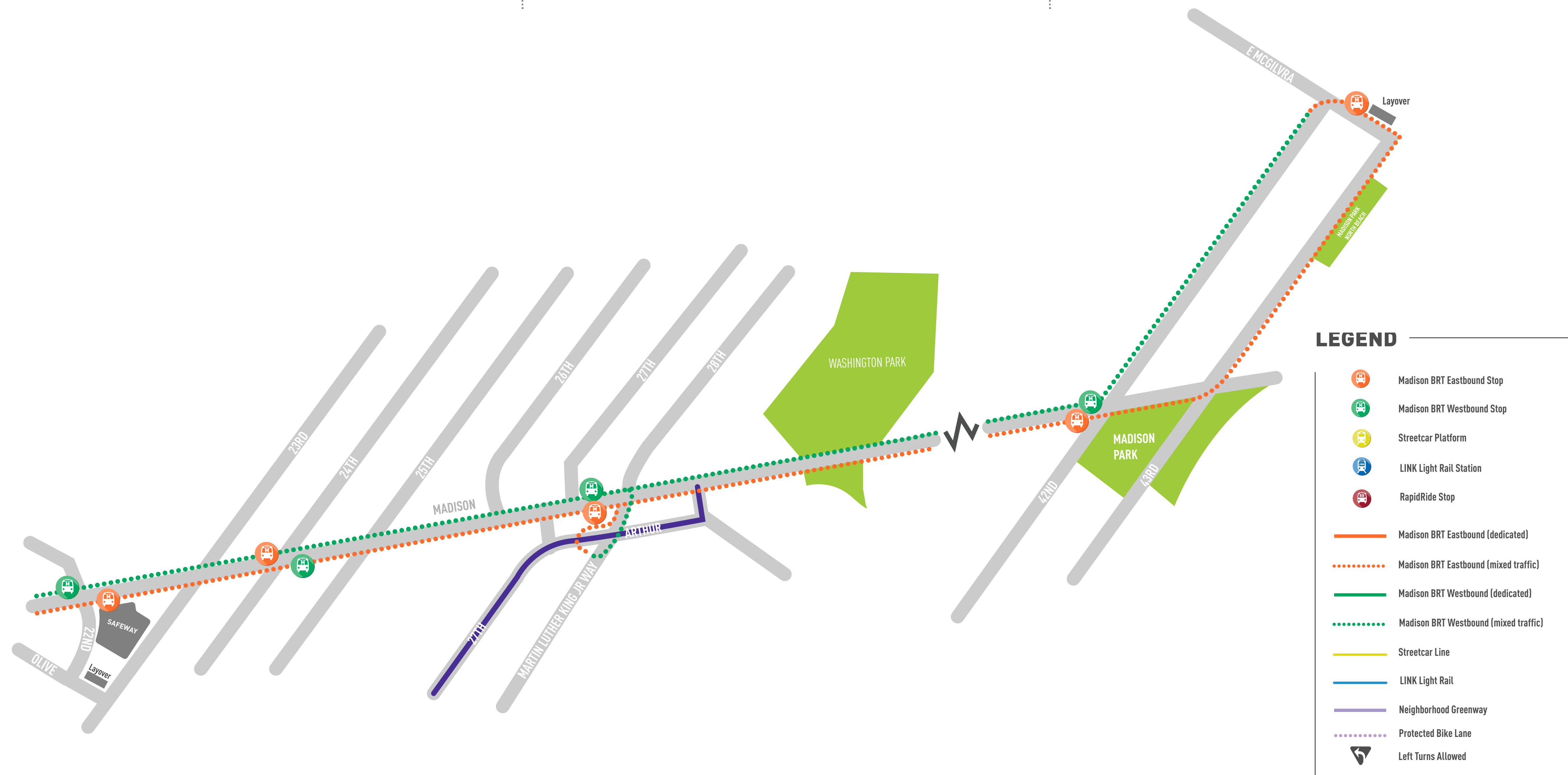
### RIDERSHIP



### CAPITAL COST\*

**\$22.6M**  
 to  
**\$23.1M**

\*Includes overhead trolley wire. Without trolley wire, estimated cost is \$5.2-\$5.7 million.



#### LEGEND

- Madison BRT Eastbound Stop
- Madison BRT Westbound Stop
- Streetcar Platform
- LINK Light Rail Station
- RapidRide Stop
- Madison BRT Eastbound (dedicated)
- Madison BRT Eastbound (mixed traffic)
- Madison BRT Westbound (dedicated)
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- Streetcar Line
- LINK Light Rail
- Neighborhood Greenway
- Protected Bike Lane
- Left Turns Allowed

# The Seattle BRT Network: Routes and Features

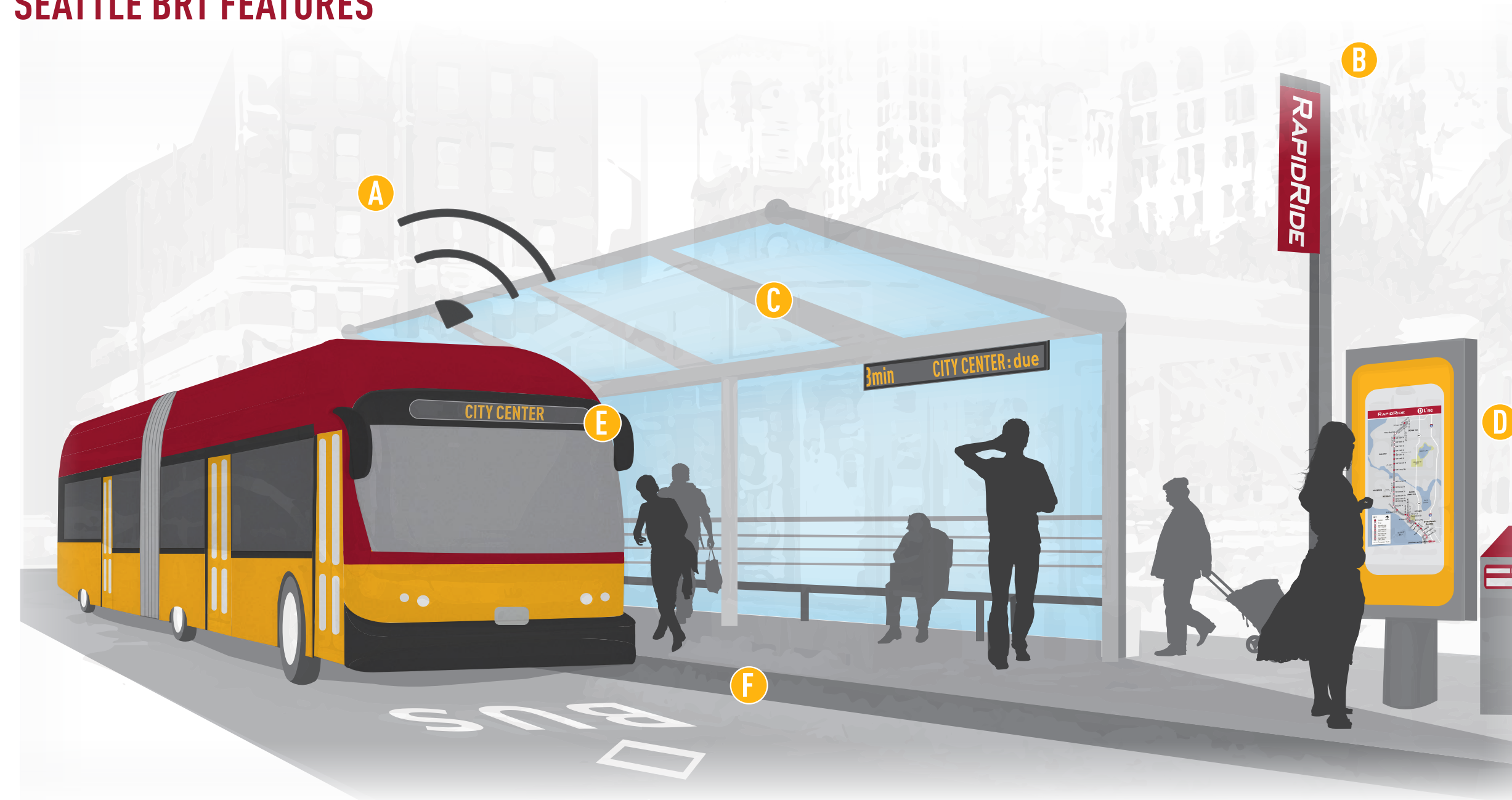


Seattle is preparing to add seven new bus rapid transit corridors. RapidRide is King County's bus rapid transit system, with three corridors serving Seattle. This system operates on a mix of exclusive and shared lanes, and includes enhanced stations with off-board fare payment, outstanding service frequency and high ridership.

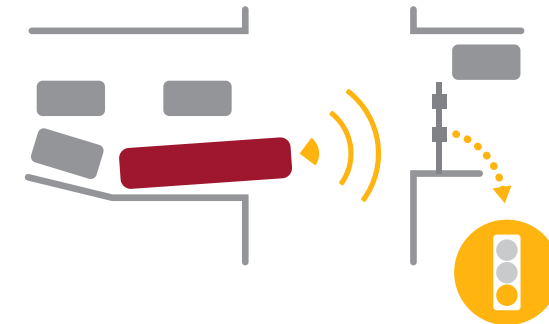
## SYSTEM CHARACTERISTICS

- 7 new BRT corridors added to the existing three corridors
- 100,000 new average daily riders (2030)
- Mix of dedicated lanes
- Signal priority
- Electric, dual side doors with buses
- 40+ mile network
- 6 to 10 minute headways
- 24-hour daily service span
- Enhanced stations with real-time transit information
- Dedicated branding

## SEATTLE BRT FEATURES



**A TRANSIT SIGNAL PRIORITY**  
Intersection improvements including transit signal priority (TSP) allow buses to bypass congestion. TSP does so by giving buses earlier and/or longer green lights.



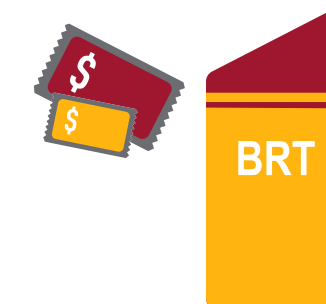
**B BRT BRANDING**  
Unique designs make buses and stations more visible, raising awareness of BRT and increasing customer expectations for higher levels of service.



**C ENHANCED STATIONS**  
BRT stations include raised platforms, off-board fare payment, real-time arrival information, larger shelters, and other passenger amenities.



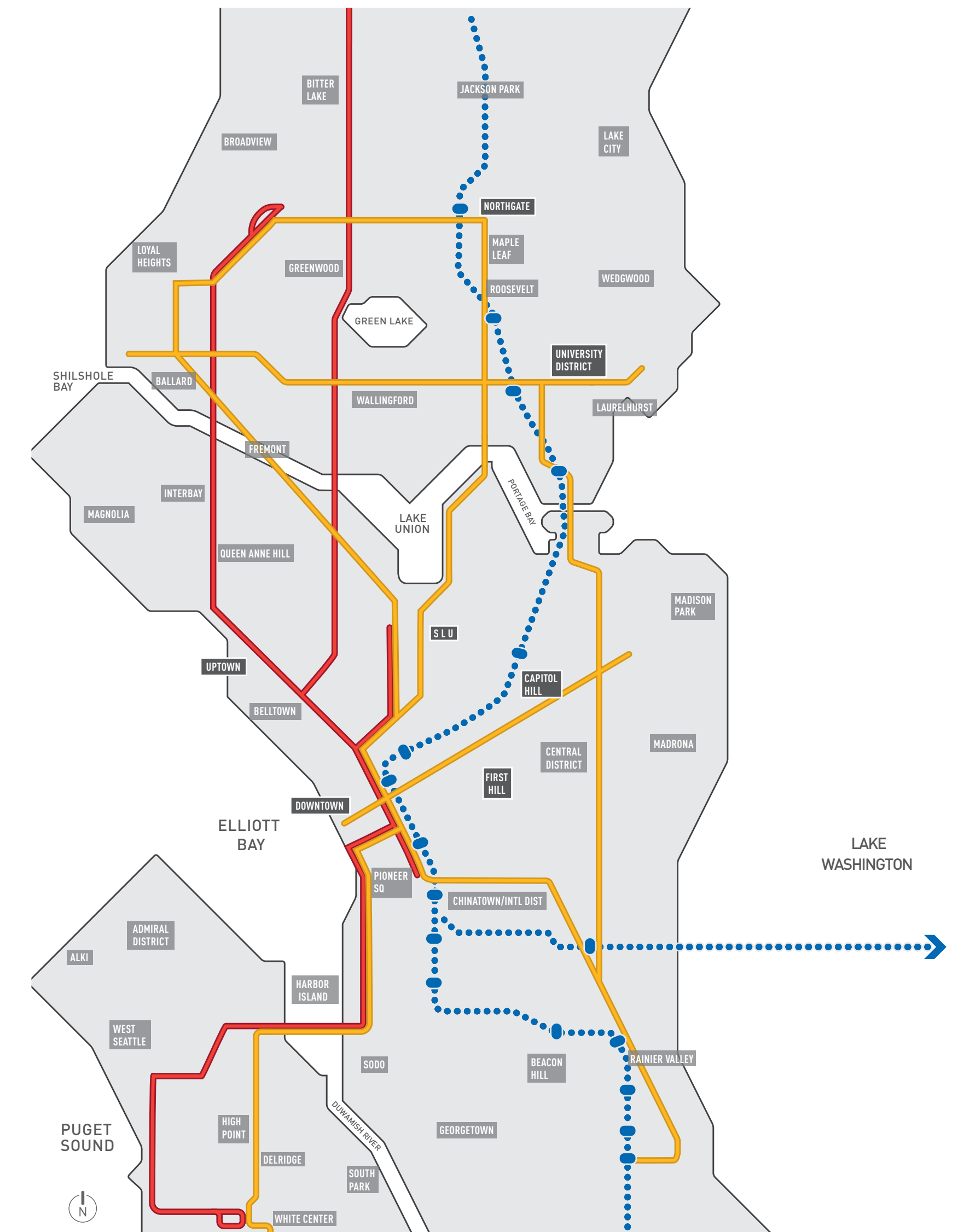
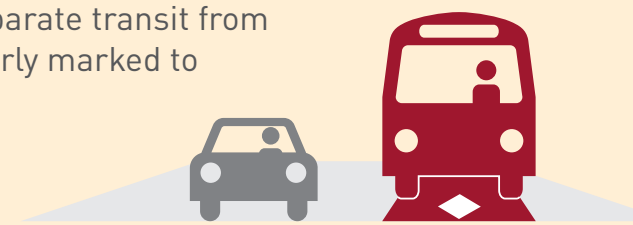
**D ENHANCED FARE COLLECTION SYSTEMS**  
Off-board fare collection using ticket vending machines, card readers, and other tools at stations allow passengers to load without waiting in line to pay their fares.



**E SPECIALIZED VEHICLES**  
Custom buses provide more capacity, more doors, and lower floors for easier loading and unloading, and unique designs.



**F DEDICATED RUNNING WAY**  
Bus-only lanes separate transit from traffic and are clearly marked to increase visibility.



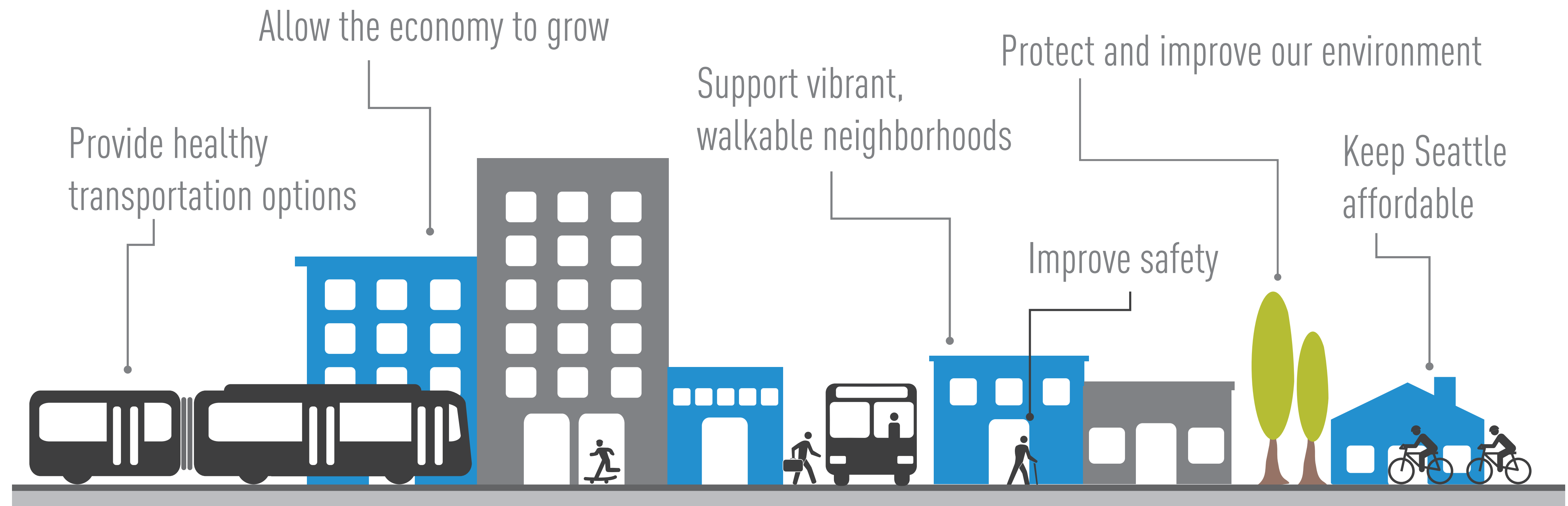
## RAPIDRIDE BRT NETWORK

- 10 min service
- Link Light Rail/Station
- RapidRide or Greater Level of Investment
- Existing RapidRide
- Streetcar
- Urban Center
- Neighborhood

# The Seattle BRT Network: Community Benefits



- Provides 72% of Seattle residents with a 10 minute or better all-day transit service within a 10-minute walk from their home by 2025
- Implements several coordinated corridors in a streamlined and cost-effective manner by employing unified design standards, a standardized fleet, stations, and operations.
- Links diverse and low-income neighborhoods to center city transit hubs, employment opportunities, and shopping districts
- Utilizes dual door coaches supporting level boarding and fully accessible connections for persons of all abilities
- Connects with Seattle's expanding light rail, streetcar, bus, and bike share systems to provide an integrated transit network



## HOUSEHOLDS WITH TRANSIT SERVICE WITHIN CLOSE WALKING DISTANCE\*

