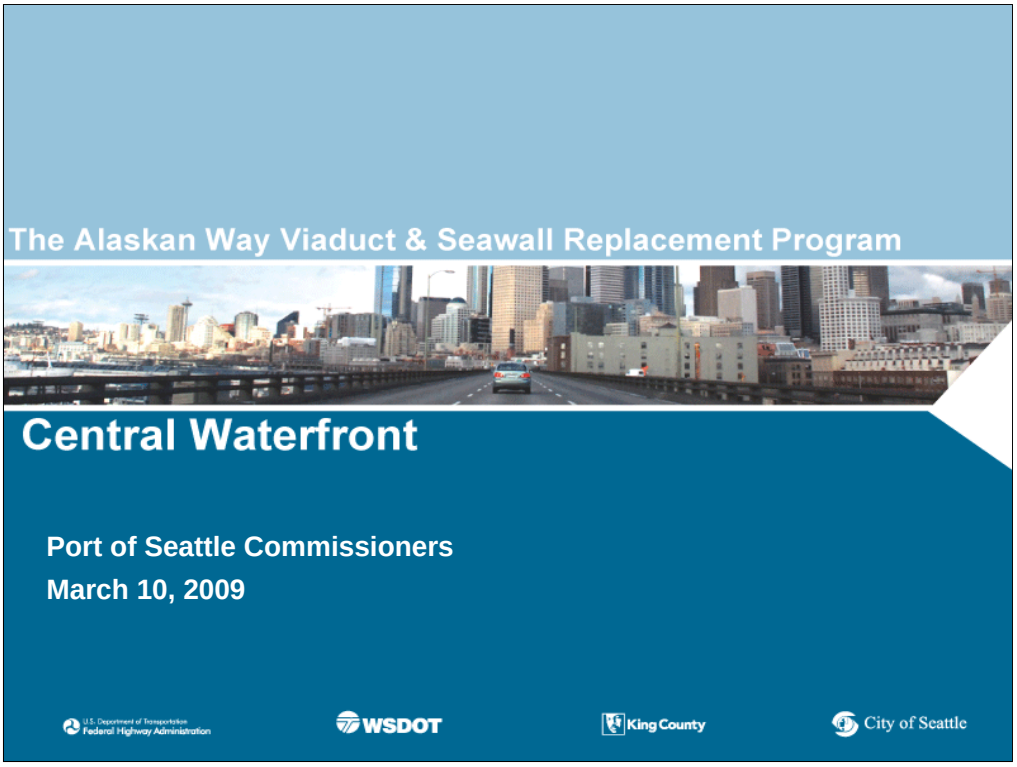


RON

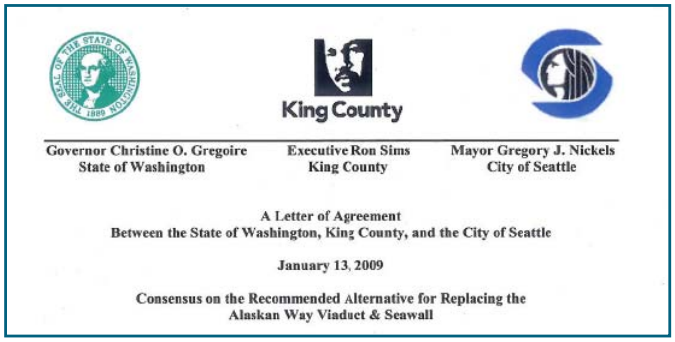
•Greet and thank audience.

The Alaskan Way Viaduct & Seawall Replacement Program

Central Waterfront

Letter of Agreement

On Jan. 13, 2009, Governor Gregoire, King County Executive Sims and Mayor Nickels signed a letter of agreement signifying their support of the bored tunnel hybrid alternative.



King County

Governor Christine O. Gregoire
State of Washington

Executive Ron Sims
King County

Mayor Gregory J. Nickels
City of Seattle

A Letter of Agreement
Between the State of Washington, King County, and the City of Seattle

January 13, 2009

Consensus on the Recommended Alternative for Replacing the
Alaskan Way Viaduct & Seawall

Ron

- On January 13, Governor Gregoire, Executive Sims and Mayor Nickels recommended that the central section of the Alaskan Way Viaduct be replaced with a 4-lane bored tunnel, a new surface street and pedestrian promenade along the waterfront, improvements to city streets, a First Avenue Streetcar and additional transit service.
- The recommendation was based on the results of an in-depth technical analysis, work with our stakeholder advisory committee, 8 public meetings, and hundreds of public comments over the past year.
- A Letter of Agreement signed by the three executives can be found on the program Web site.

The Alaskan Way Viaduct & Seawall Replacement Program

Central Waterfront

Bored Tunnel Hybrid

- Improves public safety.
- Encourages job creation and health of the regional economy.
- Maintains movement of people and goods for trips to and through downtown.
- Improves pedestrian access.
- Improves transit frequency and reliability.
- Minimizes construction and traffic impacts.
- Improves key east/west city street connections.
- Reconnects downtown and Elliott Bay, creating a world-class waterfront.

Ron

- Because the bored tunnel hybrid was based on a set of guiding principles, it benefits the region in multiple ways. By providing a bypass facility under downtown and by improving transit and city streets, there is a lot to gain.

The Alaskan Way Viaduct & Seawall Replacement Program

Central Waterfront

Bored Tunnel Hybrid Alternative

Ron

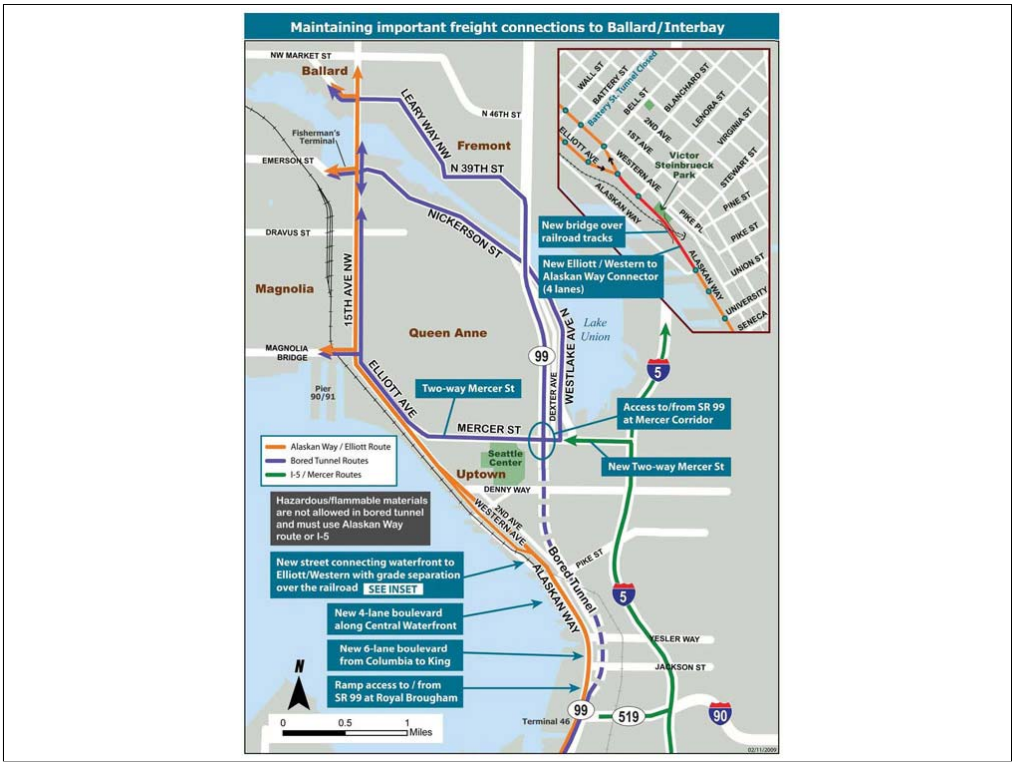
- This map shows the different components of the bored tunnel hybrid alternative. The alternative includes:
  - Single bored tunnel under First Ave., two-lanes in each direction.
  - Southern portal near Qwest and Safeco Fields, connecting to Aurora Ave. north of the Battery Street Tunnel.
  - Replacement of Seattle's seawall from Colman Dock to Pine St.
  - A new surface boulevard from S. Royal Brougham Way to Western Ave.
  - Investments in Mercer and Spokane streets.
  - Increased transit service to improve access to and through downtown Seattle.
  - A First Avenue streetcar.

- Improvements to I-5 are still necessary and there were a lot of good ideas that came out of the scenario review process. Those ideas are now being pursued under a separate project.

Freight mobility

Powers

•Maintaining freight mobility is an important part of the bored hybrid alternative.



Powers

- The bored tunnel and related improvements will maintain all freight connections to Ballard and Interbay.
- All trucks, except those with hazardous or flammable materials, will be allowed to use the bored tunnel. Grades in the tunnel, as well as uphill ramps to & from the tunnel will be 5% or less.
- Trucks, including those with hazardous or flammable materials, will also use the Alaskan Way to Elliott/Western route. Grades on the new connector will be 6% or less. This will also be the over-size vehicle route.
- Two-way Mercer will provide a new westbound option for trucks bound for Interbay from I-5 and the bored tunnel. (the grade on Mercer Place is about 51/2 %)

Powers

- Similar to today, resident, employees, truckers and others from Northwest Seattle will have a number of options for traveling to and from the south through downtown Seattle.
- Which route they take may depend on their specific origin and destination, as well as the time of day.
- This map shows how this area will access the bored tunnel. The three general access routes:
    - North of the Ship Canal, (same as today)
    - via 15th and Elliott to Mercer, and
    - using Dexter or Westlake from either the Fremont Bridge or Nickerson.
- What's different?
- Two-way Mercer makes it possible to cross Aurora from east to west, so you can exit the bored tunnel and head west on Mercer; or cross Aurora from Dexter or Westlake and head south into the tunnel.
- The bored tunnel will take 1 to 2 minutes <u>off</u> of a trip that is now made using Aurora and the viaduct to get through downtown during peak periods.

The Alaskan Way Viaduct & Seawall Replacement Program

Central Waterfront

Connections to Elliott and Western avenues

- Road grades will be similar to what they are today with improved connections to the new Alaskan Way at Elliott and Western avenues.
  - Elliott Avenue connection to new Alaskan Way will be approximately 6 percent.
  - Viaduct's existing on-ramp at Elliott Avenue is 6.3 percent.
- Bored tunnel will have 5 percent grade.
- Tunnel ramps are expected to have grades between 5 and 7 percent.

Powers

- Currently the connection at Elliott and Western avenues is not a truck friendly route. New connections at Elliott and Western will create a more easily maneuverable trip for freight.
- The bored tunnel ramp grades are expected to be between 5% and 7% - this is within WSDOT design guidelines.
- For the new Alaskan Way surface street, the anticipated grade of the connection from Elliott Avenue to Alaskan Way is approximately 6%. This estimate may change slightly depending on where we connect to Alaskan Way and Elliott Avenue.
- The northbound on-ramp from First Avenue is a 6% upgrade.

Powers

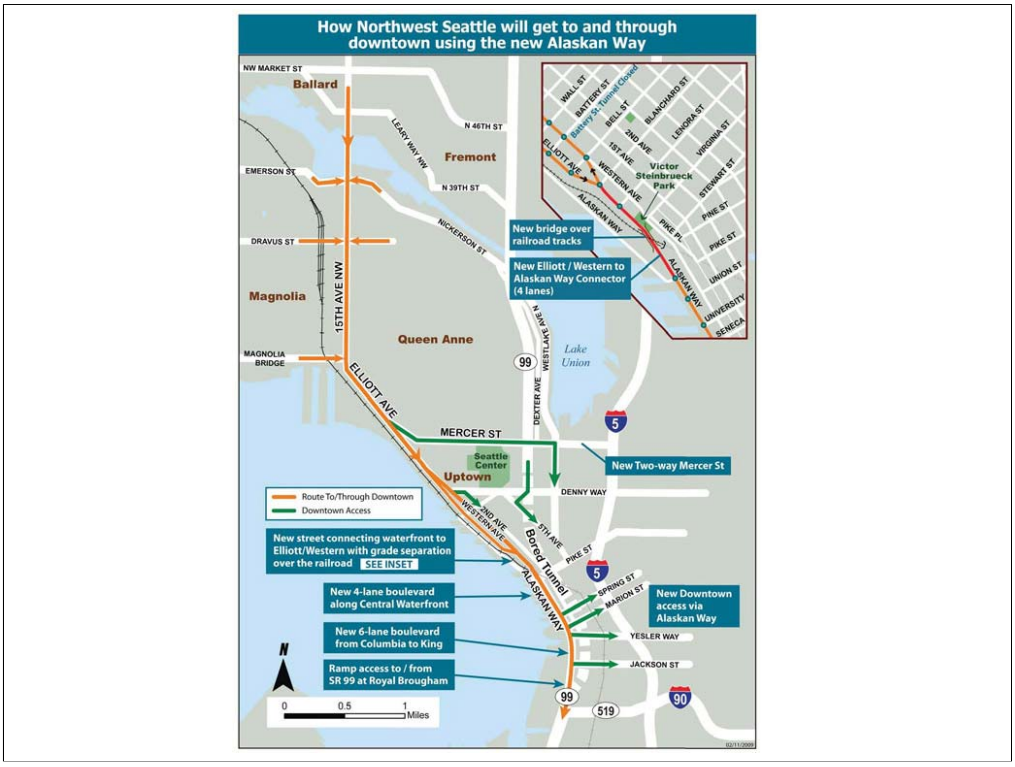
•This is a rendering of what the new waterfront surface street will look like.

•It’s important to note that this will not be the same as the existing Alaskan Way.

•The new street will be a four-lane boulevard in the footprint of the existing viaduct.

•All traffic signals will be sequenced to improve traffic flows and provide safer pedestrian crossings.

•With 180 feet of right of way to work with, we will have ample room to keep people and goods moving while creating a vibrant and active waterfront.


How Northwest Seattle will get to and through downtown using the new Alaskan Way
NW MARKET ST
Ballard
LEARY WAY NW
N 46TH ST
Fremont
EMERSON ST
N 39TH ST
NICKERSON ST
DRAVUS ST
Magnolia
15TH AVE NW
MAGNOLIA BRIDGE
Queen Anne
ELLIOTT AVE
MERCER ST
Seattle Center
Uptown
99
Lake Union
WESTLAKE AVE N
DEXTER AVE
5
DENNY WAY
2ND AVE
WESTERN AVE
7TH AVE
PIKE ST
Bored Tunnel
ALASKAN WAY
SPRING ST
MARION ST
YESLER WAY
JACKSON ST
519
90
WALL ST
BATTERY ST
Battery St. Tunnel Closed
BELL ST
BLANCHARD ST
LENORA ST
VIRGINIA ST
1ST AVE
Victor Steinbrueck Park
STEWART ST
PINE ST
PIKE PL
UNION ST
UNIVERSITY
SENECA
New bridge over railroad tracks
New Elliott / Western to Alaskan Way Connector (4 lanes)
New Two-way Mercer St
Route To/Through Downtown
Downtown Access
New street connecting waterfront to Elliott/Western with grade separation over the railroad
SEE INSET
New 4-lane boulevard along Central Waterfront
New 6-lane boulevard from Columbia to King
Ramp access to / from SR 99 at Royal Brougham
New Downtown access via Alaskan Way
N
0
0.5
1
Miles

Powers

North portal

Ron

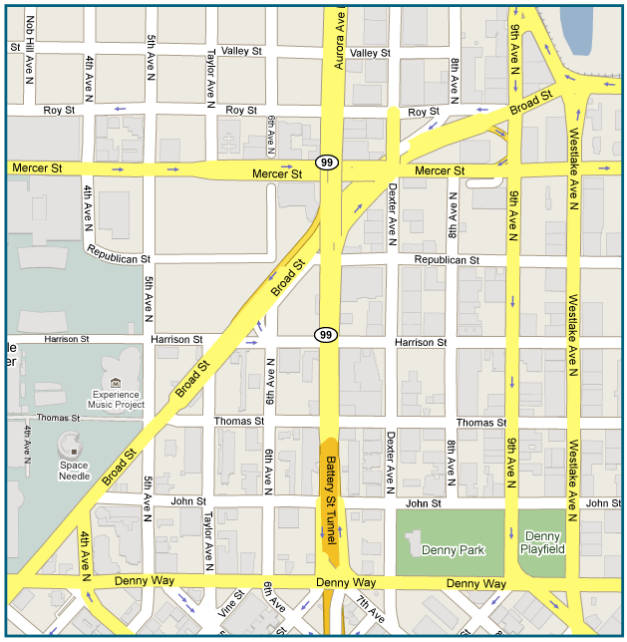
•I’d like to focus now on the north portal.

The Alaskan Way Viaduct & Seawall Replacement Program

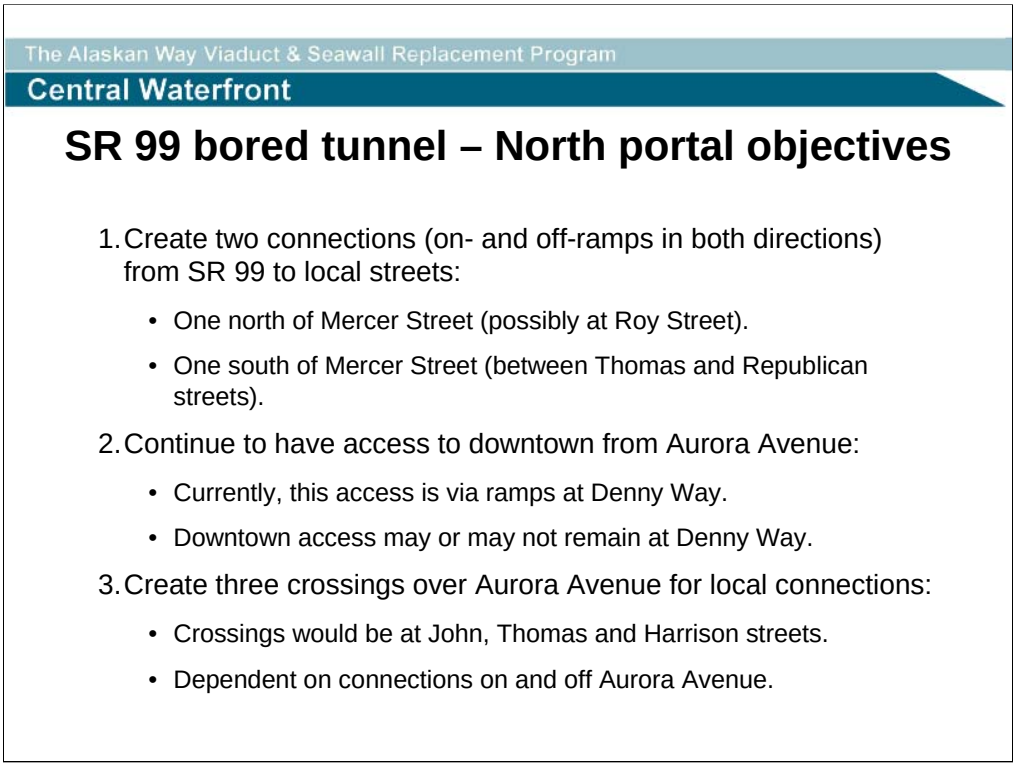
Central Waterfront

SR 99 bored tunnel

North portal will connect to Aurora Avenue N.

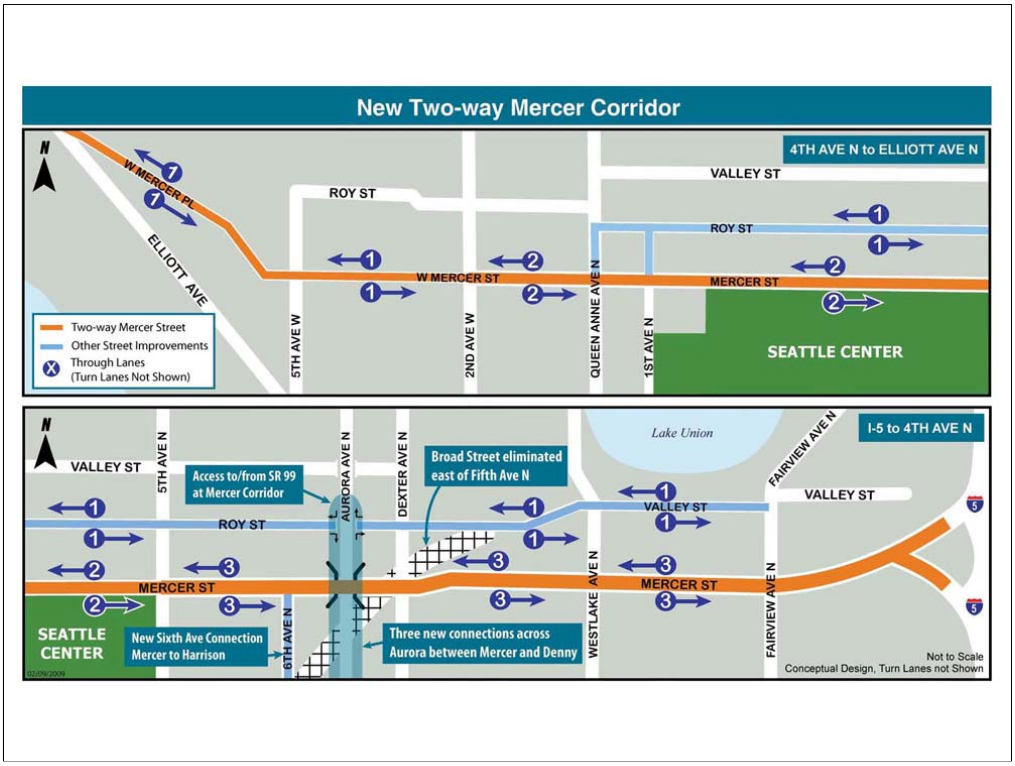


Ron



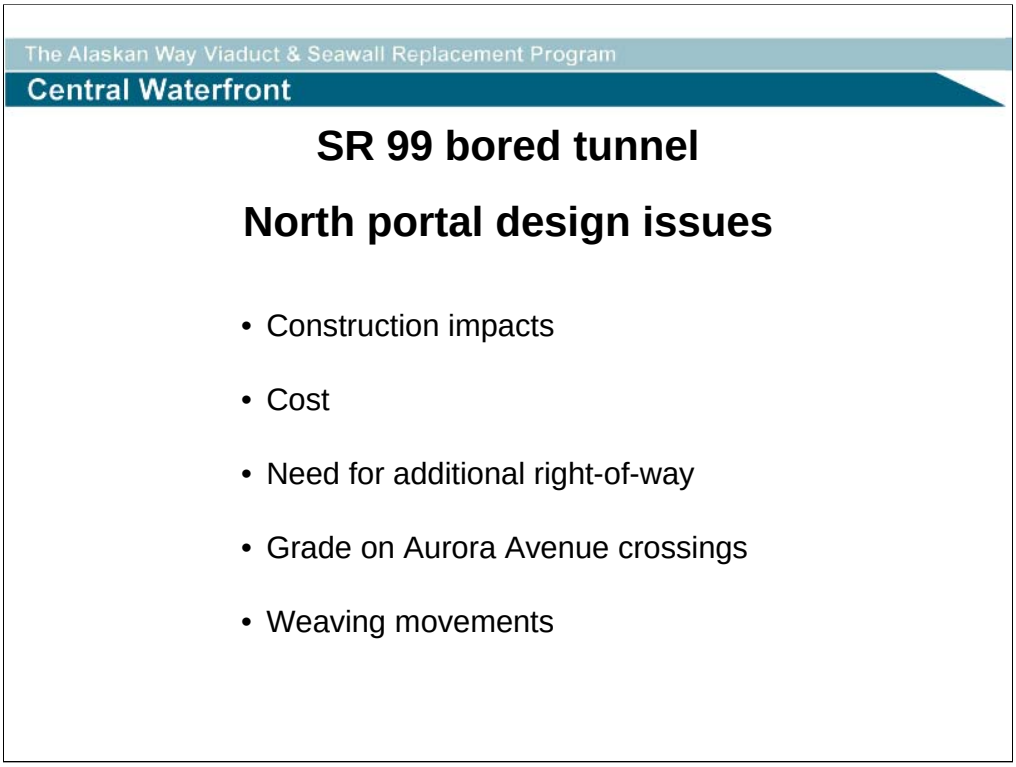
Ron

- We are looking to create two connections from SR 99 to local streets. These connections would allow drivers to enter and exit SR 99 from the northbound and southbound directions.
- Drivers will still be able to access downtown from Aurora Avenue. This access today is at the Denny Way ramps.
- Dependent on the design for the bored tunnel, the downtown access may or may not remain at Denny Way.
- The state has committed to creating three crossings over Aurora Avenue for local connections. The crossings would be at John, Thomas and Harrison streets.
- These crossings are dependent on how the connections on and off Aurora Avenue work.



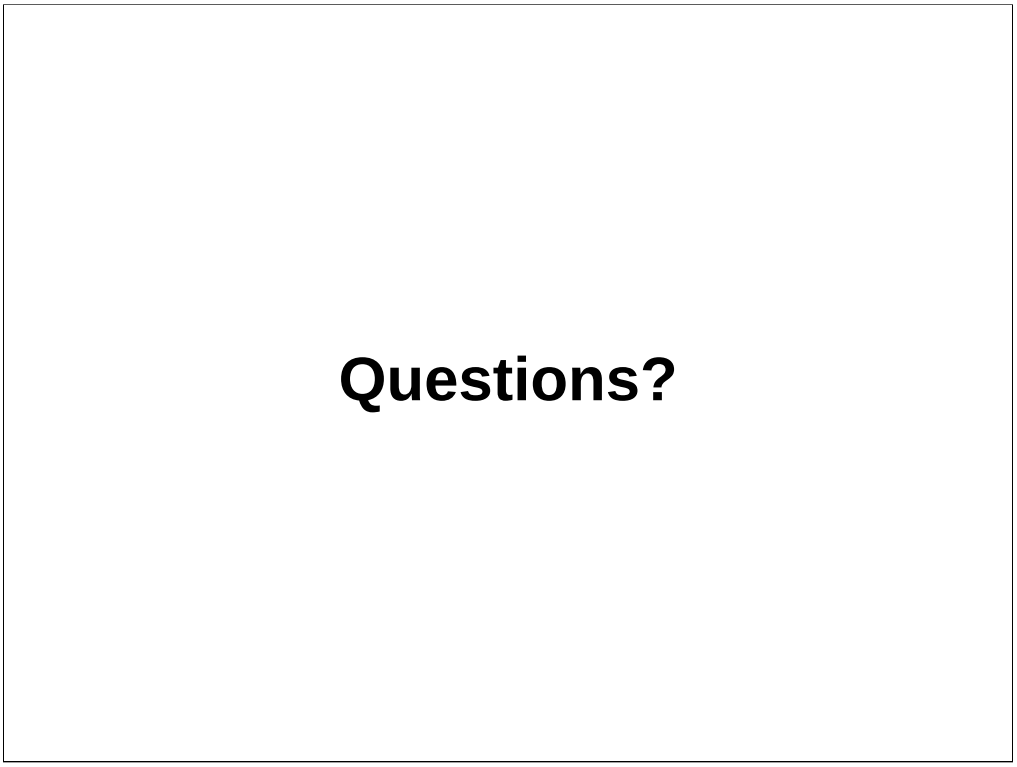
Ron

- Here is more detail of Two-way Mercer Street from I-5 to Elliott Ave W.
- Mercer will be widened to accommodate 3 lanes in each direction, as well as left-turn lanes between Fairview and Fifth Ave N. The underpass at Aurora will have wider sidewalks and a bike path, as well. (bikes will use Roy street to the east and west of Aurora)
- We are also looking at the projected demand and traffic operations on Mercer Place and at the Elliott Ave W intersection to determine if improvements are needed along that stretch.
- At Aurora/SR 99 - We are working on options for design of the north portal area, but I can discuss the general concept.
- Traffic will exit and enter Aurora at points north and south of Mercer, using existing streets, such as Roy and Republican to tie into the street grid.
- Dexter Avenue North and sixth Avenue North will serve as distributors of traffic from SR 99 to Mercer and other streets.
- There will be up to three additional crossings of Aurora south of Mercer Street to re-connect Uptown and South Lake Union and relieve Mercer.



Ron

- Minimize construction impacts - Have to coordinate exit pit for tunnel boring machine and construction of vent building while keeping SR 99 traffic moving
- Minimize need for additional right-of-way - Space needed for tunnel boring machine pit, new vent building, construction detours
- Minimize weaving movements of final roadway leading to the bored tunnel and new SR 99 on- and off-ramps
- Minimize grade on new Aurora Avenue crossings at John, Thomas and/or Harrison streets



Ron

We’d be happy to take questions at this point.

The Alaskan Way Viaduct & Seawall Replacement Program

Central Waterfront

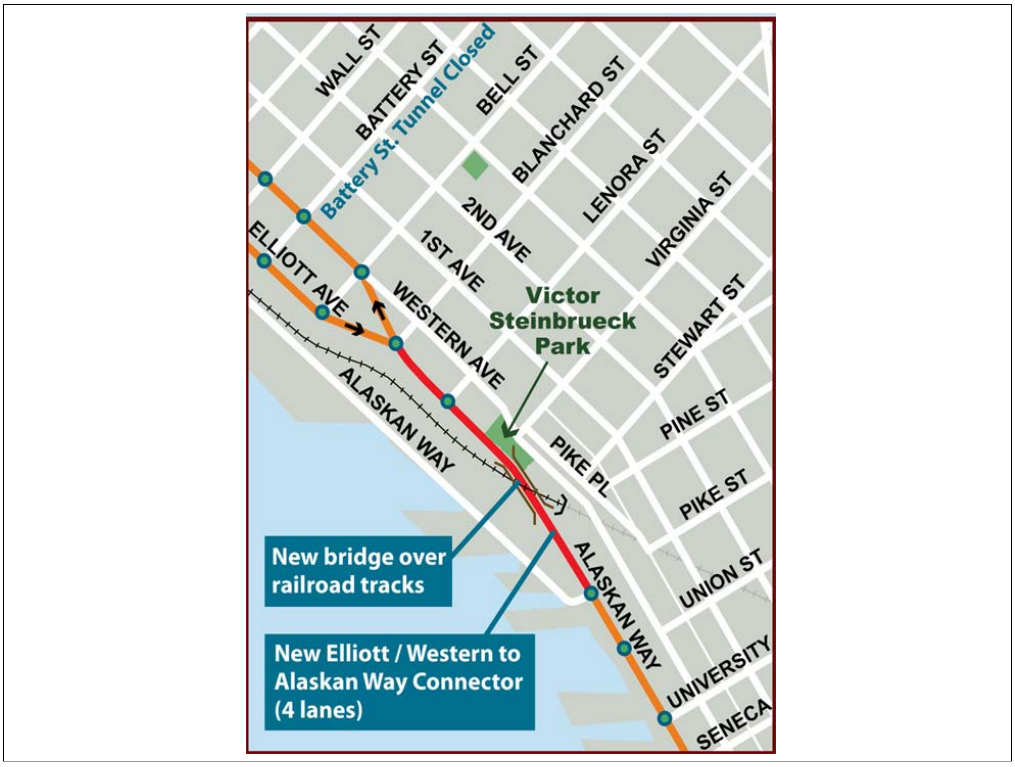
Alaskan Way Viaduct and Seawall Replacement Program

Follow our progress: www.alaskanwayviaduct.org

Ron

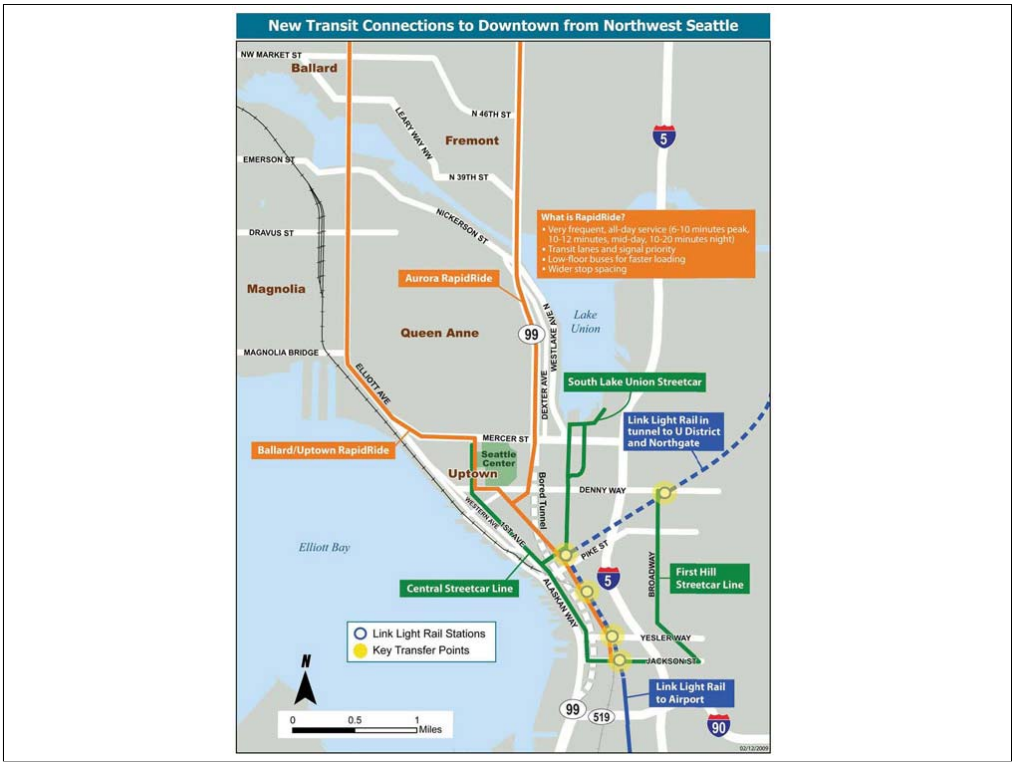
- Our Web site contains a wealth of information about the project. I encourage you to visit and look around.

- Back Pocket



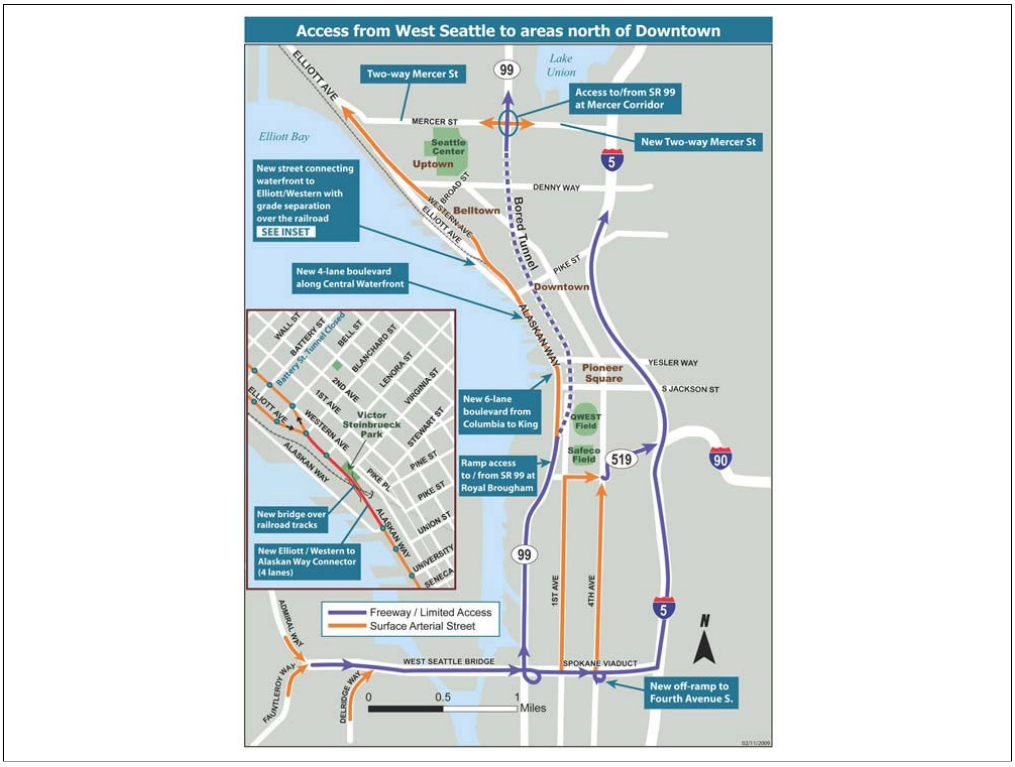
Powers

- On this slide you can see a detailed view of the Elliott/Western connection.
- A reliable and direct route through Downtown will continue to be 15th Avenue to Elliott and then using the new surface Alaskan Way boulevard through downtown.
- The traffic model predicts that a majority of trips that use SR99 today will continue to use this route.
- The route will be improved greatly over today.
- First the back-ups that currently plague Elliott Avenue to the Viaduct southbound on ramp during peak periods will disappear. A new four lane connector between Elliott and Western to Alaskan Way will move traffic efficiently through this area.
- Second – the street will cross the BNSF railroad tracks on a new bridge adjacent to the Pike Place Market, so there will be no delays due to trains that currently plague use of the Alaskan Way surface route.
- Third, the new Alaskan Way Boulevard will be a much more efficient street than the current Alaskan Way. There will be four lanes (2 lanes each way) plus turn lanes between Pike and Columbia. South of Columbia the street expands to six lanes. All intersections will be signalized and signals will be timed to move traffic efficiently. Pedestrian crossing at signals will ensure safe pedestrian crossings and more predictability for vehicles, particularly trucks.
- When drivers get to the stadium area they will be able to access SR99 southbound at new ramps that allow access on and off SR99 at approximately Royal Brougham.
- Travel times are predicted to be similar to today - approximately 2 to 3 minutes longer than the current trip on the Viaduct.



Speaker

- As part of the bored tunnel program there will be significant improvements to transit serving Northwest Seattle.
- Metro plans to implement Rapidride service serving the Ballard/Uptown corridor and the Aurora Avenue Corridor
- RapidRide is a version of Bus Rapid Transit and features:
    - high frequency throughout the day (6-10 mins peak, 10-12 mins midday),
    - faster service because of transit priority measures such as dedicated transit lanes and signal priority
    - wider stop spacing
    - new low floor buses with quicker loading
- Rapid Ride will use the Third Avenue transit spine in downtown where easy connections can be made to regional LINK light rail and connections south to the Airport.
- Another significant transit improvements is the new Central Streetcar line that will run on First Avenue between the west side of Seattle Center and the King Street Station. Service will run every 6 minutes and will be connected to the planned First Hill Streetcar line funded by Sound Transit Phase 2.



Speaker

- West Seattle will have similar options for getting through downtown as they do today.
- The one change will be the route along the waterfront. They will exit SR 99 just before the tunnel portal, near the stadiums, and travel north along Alaskan Way and use the new connection to Elliott and Western.

Speaker

- Access from West Seattle and other areas to the south and west to Downtown will change from today.
- Rather than exiting at Seneca Street in the mid-town area, traffic will exit SR 99 near the stadiums with a direct ramp connection to Alaskan Way. They will then take Alaskan Way north and enter the downtown street grid at a number of locations.
- While this may increase travel times to areas in the north part of downtown, it is overall more efficient than focusing all of the traffic on one off-ramp in the middle of downtown.
- Alaskan Way will be six lanes to Marion Street.

The Alaskan Way Viaduct & Seawall Replacement Program

Central Waterfront

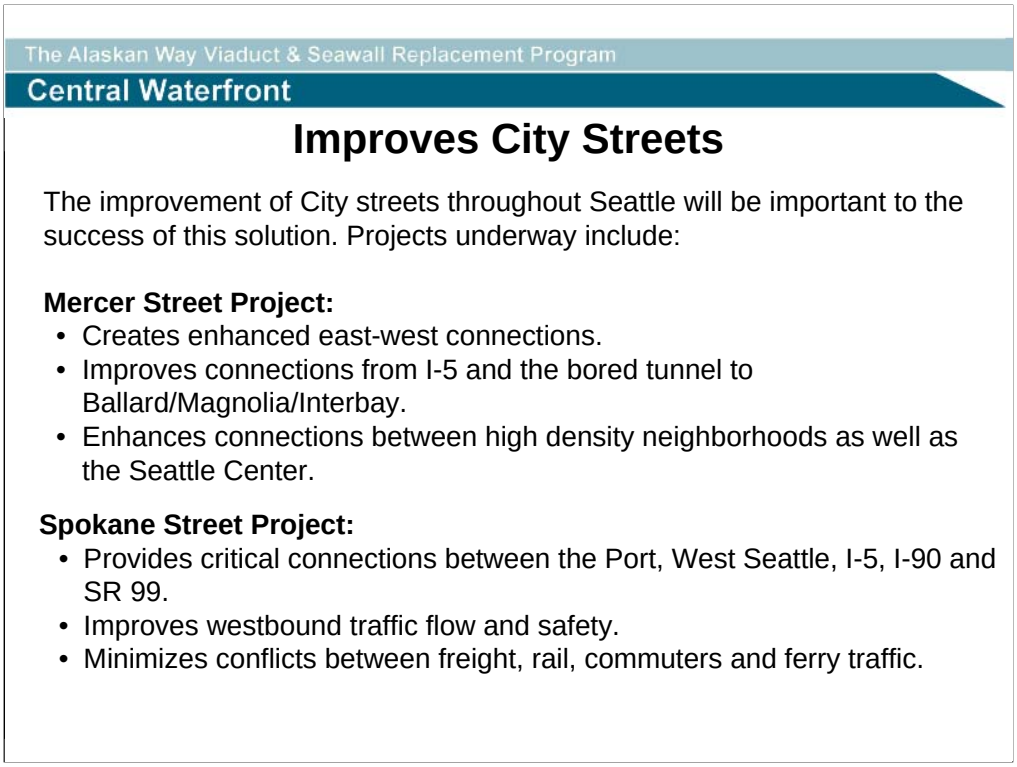
Systems Solution

Upon evaluation of the new project area and with a clear direction to consider the entire system of streets, the three executives recommended that investments be made in:

- Improved city streets
- Enhanced transit service
- New bored tunnel

Speaker

- The state, county and city transportation agencies approached the problem by looking at the entire system of streets, transit service, and freeways from Lake Washington to Elliott Bay, and from NE 85th Street in the north to Seattle's city limits in the south.
- In the end, we evaluated eight scenarios to replace the viaduct. The bored tunnel with transit and city street improvements provided the most benefit for the city and region.
- The three executives agreed that a solution to replace the AWV should consider the entire system, and should look at how we might use I-5, transit, surface streets, and policy and management tools to provide mobility rather than simply rebuilding all the capacity wholly in the SR-99 corridor.



Speaker

City street improvements are an important component of this solution. Projects underway include:

Mercer Street Project:

- Improves connections from I-5 and the bored tunnel to Ballard/Magnolia/Interbay.
- Creates enhanced east-west connections.
- Improves connections from Ballard/Magnolia/Interbay to I-5 and the bored tunnel.
- Enhances connections between high density neighborhoods as well as the Seattle Center.

Spokane Street Project:

- Provides critical connections between the Port, West Seattle, I-5, I-90 and SR 99.
- Improves westbound traffic flow and safety.
- Minimizes conflicts between freight, rail, commuters and ferry traffic.

The Alaskan Way Viaduct & Seawall Replacement Program

Central Waterfront

Enhances Transit Service

Transit enhancements will provide important mobility during and after construction and are critical to the success of the bored tunnel solution.

- Enhanced service to accommodate demand
  - Additional bus service
  - First Avenue streetcar
- Access to downtown
- Construction mitigation
- Environment

Speaker

Transit is also critical to the success of this alternative.

Enhanced service to accommodate demand

- Expanded transit will be needed to accommodate increases in travel demand that will come with the expected growth in the region. Buses are projected to provide between 34 and 39 percent of all morning peak period trips to downtown. Without improved transit, many of these trips will be taken by other means such as private vehicle. The increased transit service proposed is consistent with the city and region's growth policies.

Access to downtown

- The bored tunnel will provide a through route for traffic to bypass downtown Seattle. With this alternative, SR 99 will no longer have mid-town ramps at Seneca and Columbia or at Elliott and Western. The AWV transit package includes capital projects such as transit priority pathways to help transit provide fast, reliable service to and from downtown Seattle. These capital improvements along with expanded bus service are needed to provide the public with quick reliable options traveling to and from downtown.

Construction mitigation

- Transit is essential to keep people moving during construction. As part of the Moving Forward projects, King County Metro received $32 million for transit service to keep people moving during construction in particular the south end construction. The construction impacts of the central waterfront and the other elements such as the seawall are not determined at this time.

The Alaskan Way Viaduct & Seawall Replacement Program

Central Waterfront

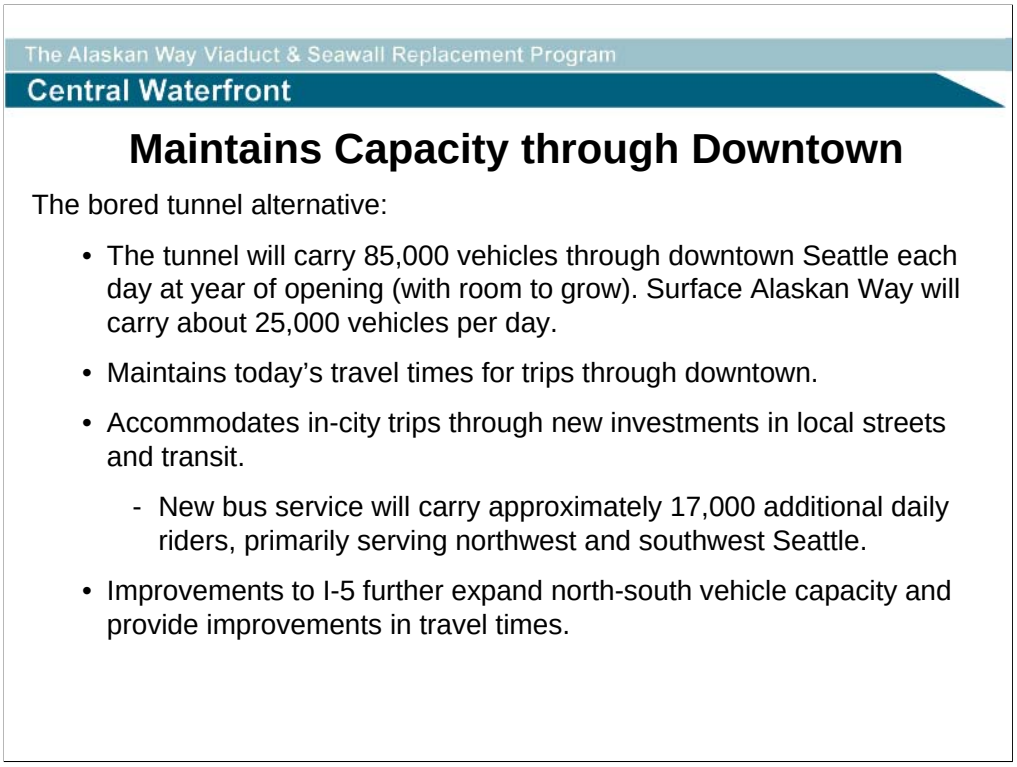
Bored Tunnel

A bored tunnel under First Avenue is the new SR 99. Some features include:

- Least traffic and business disruptions during construction.
- Two lanes of traffic, with shoulders, in each direction.
- Approximately two miles long.
- Between 30 and 200 feet underground.

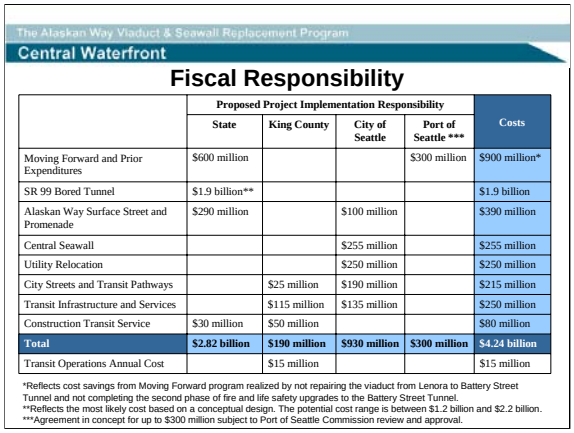
Speaker

- The bored tunnel will be approximately two miles long .
- We expect to begin construction in 2011 and open the tunnel to drivers in 2015.
- Alaskan Way will carry 25,000 vehicles each day -- some of the increase will be from the traffic that currently gets on the viaduct using the ramps at Elliott and Western avenues. Depending on their destinations – these trips will have two choices in the future: they can use Alaskan Way on the waterfront to get through downtown Seattle or they can enter the tunnel north of Denny Way.
- I am sure many of you have heard from drivers that use these ramps today and are unhappy about the change in their driving route, which will take longer than today. In addition to drivers, it also affects companies that transfer freight and fishing supplies (including hazardous oil) between the SODO and Port industrial areas and the Interbay industrial area.
- We will be setting up a regular working group with freight interests and other representatives from the NW Seattle neighborhoods to work through these issues and identify the best strategies for addressing those impacts.



Speaker

- The bored tunnel will carry 85,000 vehicles each day through downtown Seattle in 2015 when it opens, and has capacity to accommodate more as the region grows. It also maintains today's travel times for through trips. This will keep vehicles off the downtown street system, creating a better environment for bikes, walkers, and transit.
- In addition, the other investments made in city streets and transit will carry approximately 17,000 additional daily riders, primarily serving the west Seattle neighborhoods, like Ballard and West Seattle, that rely on the viaduct to get to or through downtown today.
- This accommodates the 60,000 to 65,000 vehicles that currently use BST with room for more than half of the traffic that now uses the Elliott/Western ramps.



The Alaskan Way Viaduct & Seawall Replacement Program

Central Waterfront

Fiscal Responsibility

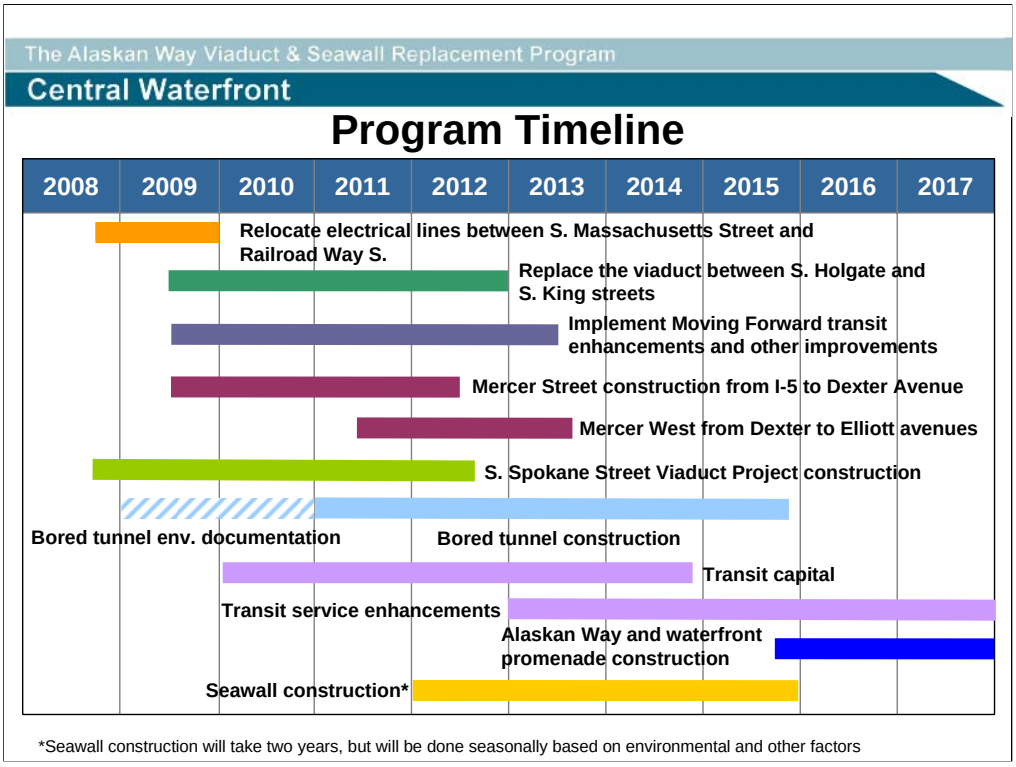
	Proposed Project Implementation Responsibility				Costs
	State	King County	City of Seattle	Port of Seattle ***	
Moving Forward and Prior Expenditures	$600 million			$300 million	$900 million*
SR 99 Bored Tunnel	$1.9 billion**				$1.9 billion
Alaskan Way Surface Street and Promenade	$290 million		$100 million		$390 million
Central Seawall			$255 million		$255 million
Utility Relocation			$250 million		$250 million
City Streets and Transit Pathways		$25 million	$190 million		$215 million
Transit Infrastructure and Services		$115 million	$135 million		$250 million
Construction Transit Service	$30 million	$50 million			$80 million
Total	**$2.82 billion**	**$190 million**	**$930 million**	**$300 million**	**$4.24 billion**
Transit Operations Annual Cost		$15 million			$15 million

*Reflects cost savings from Moving Forward program realized by not repairing the viaduct from Lenora to Battery Street Tunnel and not completing the second phase of fire and life safety upgrades to the Battery Street Tunnel.
**Reflects the most likely cost based on a conceptual design. The potential cost range is between $1.2 billion and $2.2 billion.
***Agreement in concept for up to $300 million subject to Port of Seattle Commission review and approval.

Speaker

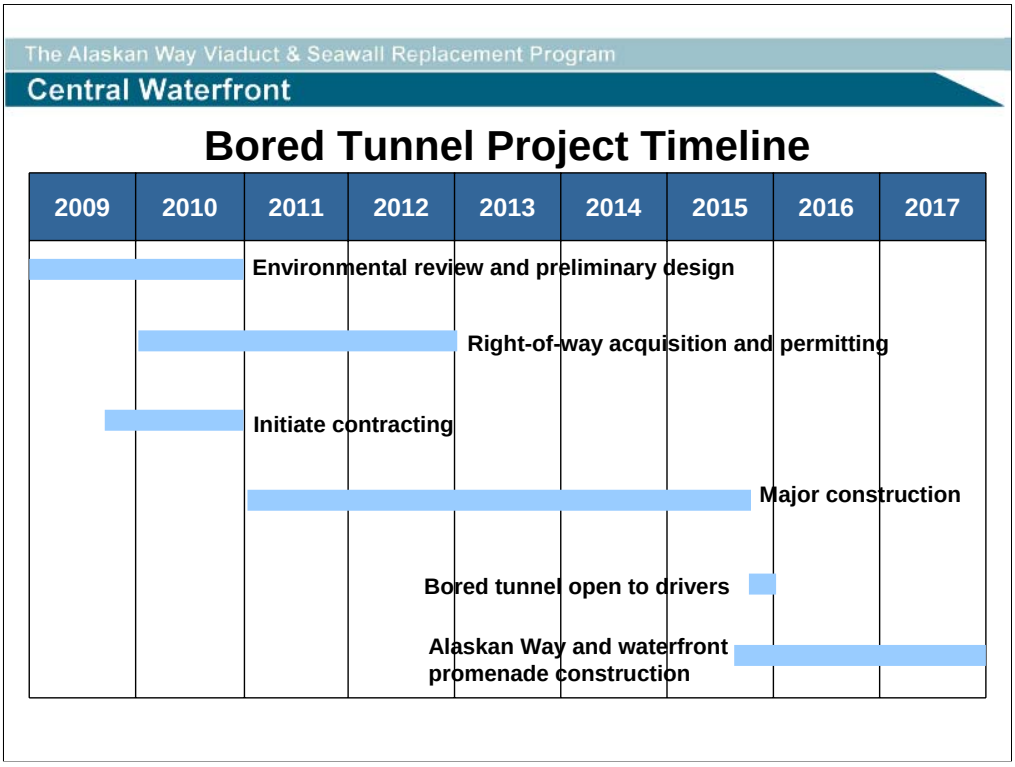
The plan makes financial sense and will support a strong economy.

- The state, county, and city have all agreed to be part of making this solution a reality by working with their legislative bodies to fund their portions of the project. The Port of Seattle has also committed to work toward funding a portion of the project.
- **State**
- The state's component of the alternative is made up of the bored tunnel, the Alaskan Way surface street and promenade and the Moving Forward projects.
    - Moving Forward and prior expenditures = $600m (Port to contribute $300m)
    - SR 99 bored tunnel = 1.9b
    - Alaskan Way surface street and promenade = $290m
    - Construction transit service = $30m
- The bored tunnel estimated cost is 1.9 billion including risk and contingency.
- **King County**
    - City street and transit pathways = $25m
    - Transit infrastructure and services = $115m
    - Construction transit service = $50m
    - Annual operating costs = $15m
- **City of Seattle**
    - Alaskan Way surface street and promenade = $100m
    - Central seawall = $255m
    - Utility relocation = $250
    - City streets and transit pathways = $190m
    - Transit infrastructure and services = $135m
- Each agency is responsible for their cost overruns or cost savings, which means that the state will be responsible for any tunnel overruns.



Speaker

- Construction will start this year on the south mile of the viaduct, and transit and city street investments to keep people and goods moving during the work.
- The Mercer Street and Spokane Street projects will be completed in 2012.



Speaker

- For the bored tunnel, we will complete the environmental review and preliminary design by the end of 2010.
- Major construction will begin in 2011 and we will be able to open the bored tunnel to drivers in 2015.

The Alaskan Way Viaduct & Seawall Replacement Program

Central Waterfront

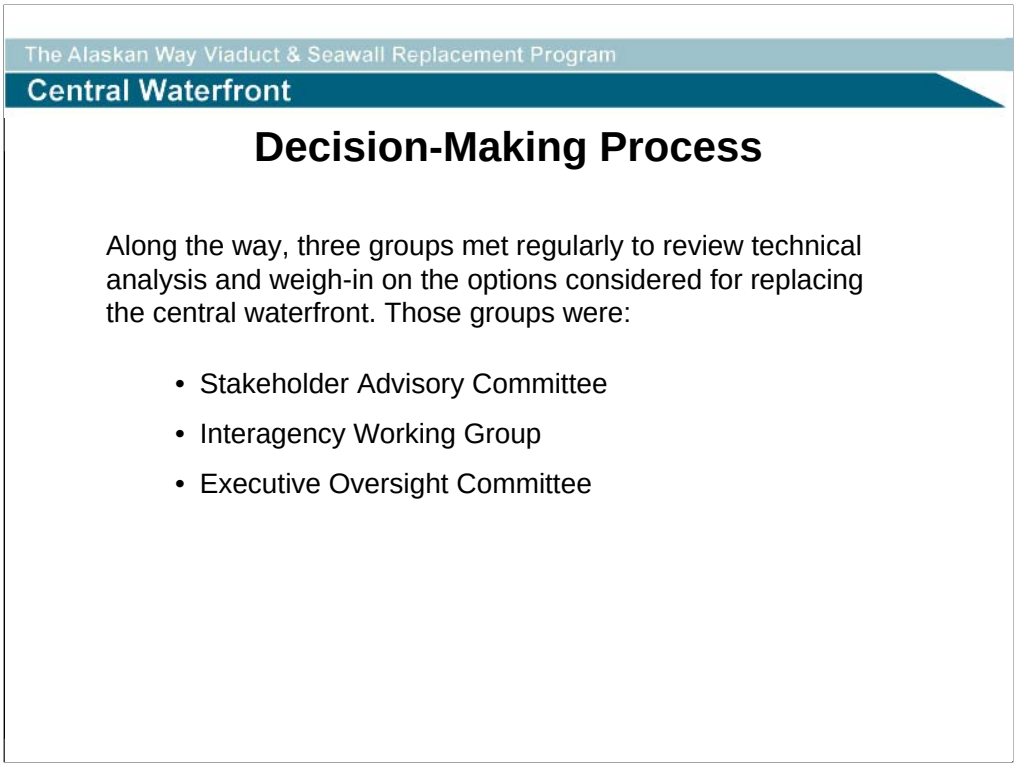
Support a Strong State and Regional Economy

The bored tunnel alternative:

- Maintains capacity in the SR 99 corridor.
- Preserves I-5 for state and regional through trips.
- Provides room for freight and port traffic to grow.
- Minimal impacts to waterfront businesses and the local community.
- Maintains and creates 10,000 jobs each year over the course of the project.

Speaker

- Since the project began and even more so during these difficult economic times we have heard many questions about disruptions during construction. Many supporters of this option like the fact that it give us the opportunity to keep traffic on the viaduct during construction and moves construction under downtown Seattle. It also minimizes construction impacts on waterfront businesses, which was a significant concern about the proposed cut-and-cover tunnel.
- A construction project of this size will also create jobs – we estimate that 10,000 jobs will be supported by this project each year.
- It also preserves I-5 as a through route for the region and state and ensures future investments accommodate expected growth.



Speaker

Stakeholder Advisory Committee

- 29 individuals representing communities, economic interests and cause-driven organizations.
- Met 16 times over a 13-month period to review and provide comment to program staff.

Interagency Working Group

- 14 agencies reviewed and provided input on the technical details of waterfront replacement options.

Project Oversight Committee:

- Included the Governor, King County Executive, Mayor, State Senate Transportation Chair, State House Transportation Chair, King County Council Transportation Chair and Seattle City Council Transportation Chair.
- Reviewed options an analysis throughout the 13-month period.

Speaker

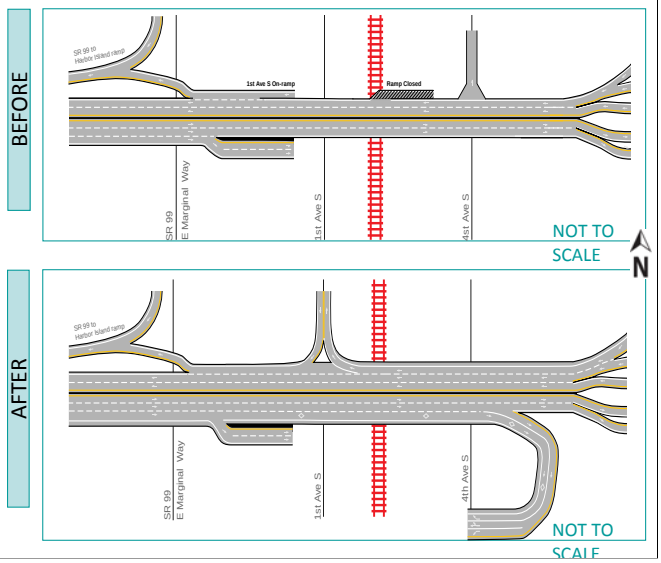
- The bored tunnel alternative is made up of more than just the bored tunnel.
- It includes a new Alaskan Way along the waterfront, as well as a pedestrian promenade. It also includes improvements to several city streets including Mercer and Spokane streets, and increased transit service.

The Alaskan Way Viaduct & Seawall Replacement Program

Central Waterfront

Spokane Street Project

- Provides critical connections between the Port, West Seattle, I-5, I-90 and SR 99.
- Improves westbound traffic flow and safety.
- Minimizes conflicts between freight, rail, commuters and ferry traffic.



Speaker

•Provides critical connections between the Port, West Seattle, I-5, I-90 and SR 99.

•Improves westbound traffic flow and safety.

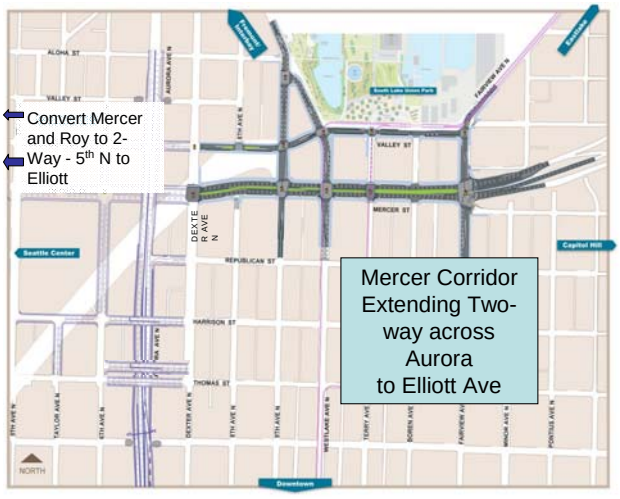
•Minimizes conflicts between freight, rail, commuters and ferry traffic.

The Alaskan Way Viaduct & Seawall Replacement Program

Central Waterfront

Mercer Corridor Project

- Creates enhanced east-west connections.
- Improves connections from Ballard/Magnolia/ Interbay to I-5 and the bored tunnel.
- Removes barriers, such as turn restrictions, and makes it easier to get around by car, truck, foot or bike.
- Enhanced connections between high density neighborhoods as well as the Seattle Center.



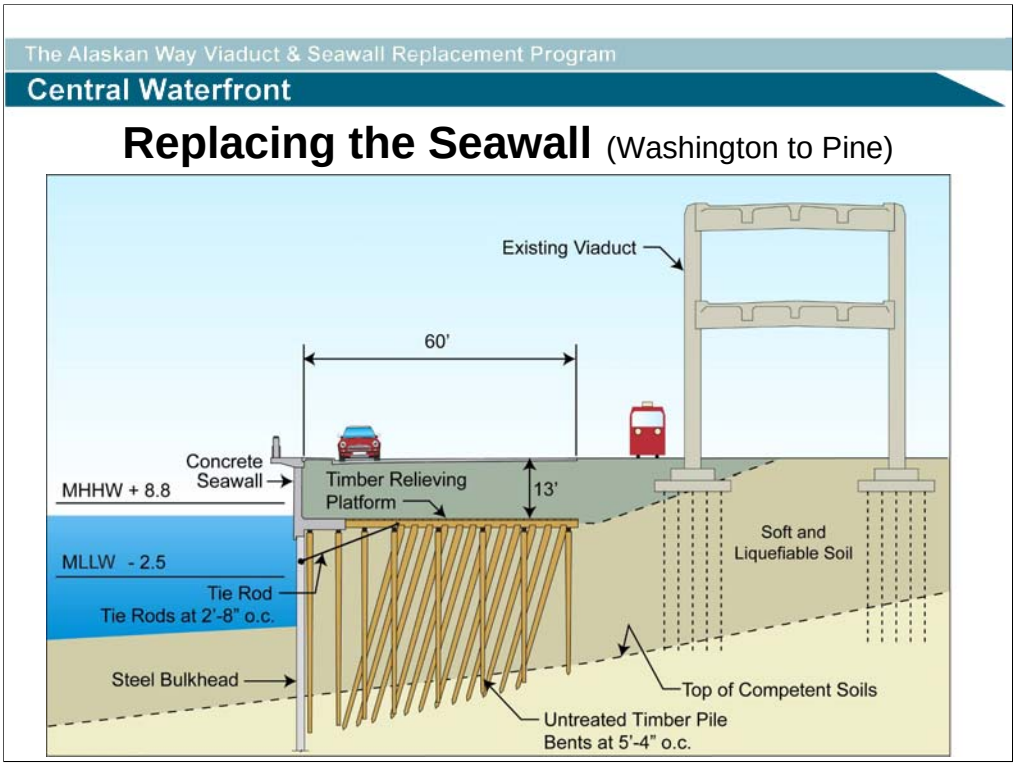
Speaker

•Improves connections from I-5 and the bored tunnel to Ballard/Magnolia/Interbay.

•Creates enhanced east-west connections.

•Improves connections from Ballard/Magnolia/Interbay to I-5 and the bored tunnel.

•Enhances connections between high density neighborhoods as well as the Seattle Center.



Speaker

•Many think that the seawall is just the cement that you can see from the piers, but in actuality, the seawall goes back sixty feet under Alaskan Way and needs to be replaced.

•The seawall is over 70 years old and is at risk for failure due to age, deterioration and the soft soils in which it is built.

The Alaskan Way Viaduct & Seawall Replacement Program

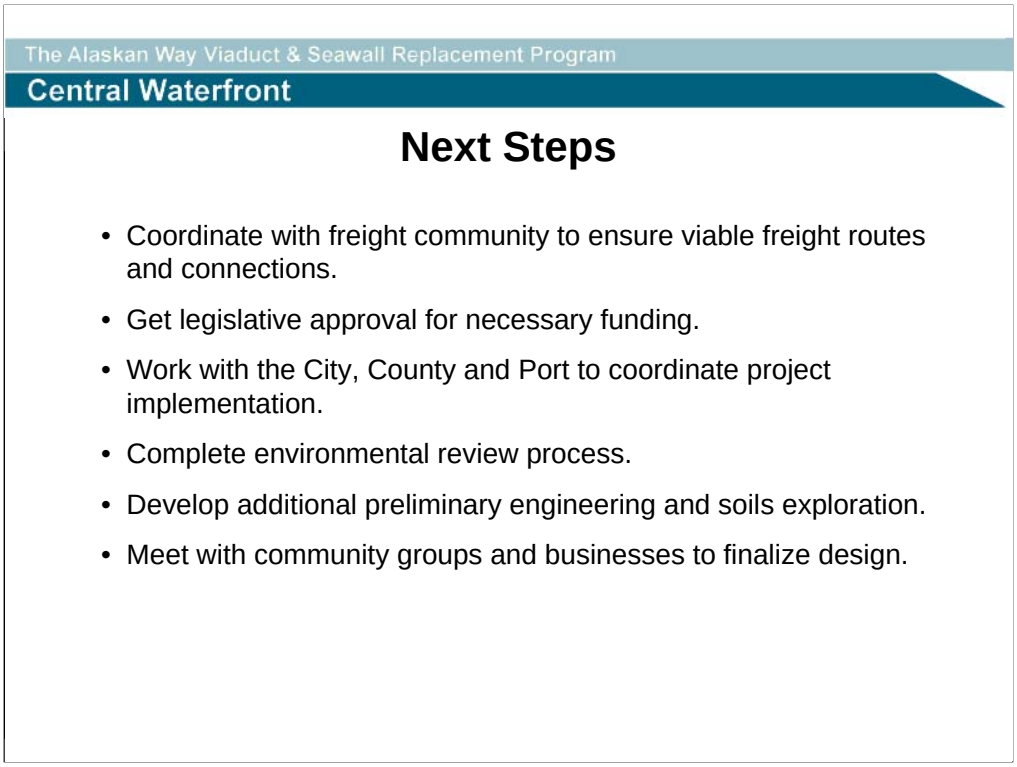
Central Waterfront

First Avenue Streetcar

- Connects to the First Hill Streetcar.
- Connects to Ballard and West Seattle RapidRide lines.
- Connects to Amtrak, Commuter Rail and Light Rail at King Street Station.
- Provides easy access to Colman Dock.
- Connects major activity centers: Seattle Center, Pike Place Market and the stadium area.

Speaker

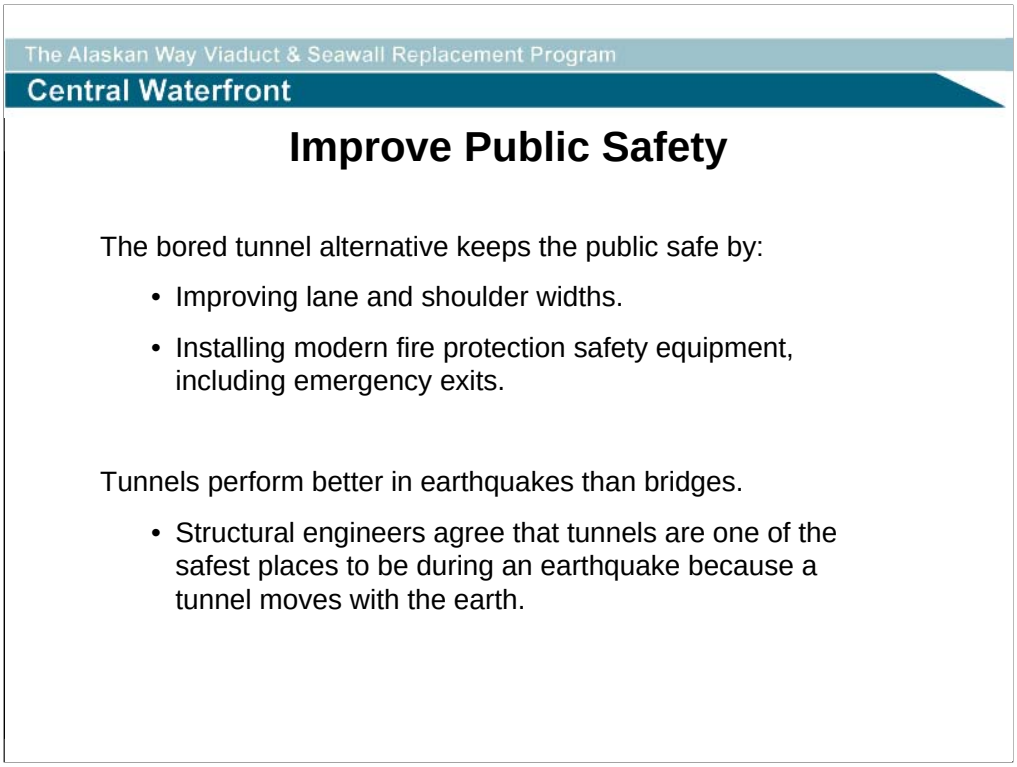
- Connects to the existing South Lake Union Streetcar and the Sound Transit-funded First Hill Streetcar.
- Connects to King County Metro's RapidRide bus rapid transit lines to Ballard and West Seattle.
- Connects to Amtrak, Commuter Rail and Light Rail at King Street Station.
- Easy access to Washington State Ferries.
- Connects major activity centers including Seattle Center, Pike Place Market and Seahawks/Mariners stadium area.
- Expected to carry 4 million riders per year, comparable to Portland Streetcar and San Francisco Embarcadero Line.
- $135 M, including 8-vehicle fleet capable of providing service every 6 minutes.



Speaker

We have a lot to do over the next several months, including:

- Coordinate with freight community to ensure viable freight routes and connections.
- Get legislative approval for necessary funding.
- Work with the City, County and Port to coordinate project implementation.
- Complete environmental review process.
- Develop additional preliminary engineering and soils exploration.
- Meet with community groups and businesses to finalize design.



Speaker

- The bored tunnel will be designed to safely accommodate all vehicles, including freight, and will meet today's national safety standards with ventilation systems, emergency access, and wider lanes and shoulders than are on the viaduct today and can accommodate disabled vehicles. As with the Battery Street Tunnel, vehicles carrying flammable materials will not be allowed in the bored tunnel.
- There have also been concerns expressed about whether a tunnel is a safe place to be in an earthquake. Structural engineers will tell you that tunnels are one of the safest places to be in an earthquake – the BART tunnel under San Francisco Bay in the late 1980s was re-opened hours after the earthquake and after safety inspections were conducted.
- Drivers in the Puget Sound region are also used to driving in tunnels – there are tunnels on I-90 in Seattle and Mercer Island; the Battery Street Tunnel is on the north end of the viaduct today; and riders will traveling under Beacon Hill in a bored tunnel later this year when LINK light rail opens.

The Alaskan Way Viaduct & Seawall Replacement Program

Central Waterfront

Enhance Seattle's Waterfront, Downtown and Adjacent Neighborhoods

The bored tunnel alternative:

- Moves SR 99 underground and eliminates noise, shadowing and view blockage from the existing viaduct.
- Reconnects downtown with the natural environment in Elliott Bay.
- Creates a memorable place for people to live, work and play.

Speaker

- The bored tunnel also creates a world-class waterfront and helps ensure Seattle is a 21st Century city.
- A 21st Century city needs to send the right message to the world to attract visitors and investments. Removing the viaduct will re-connect the city with its waterfront and create a world-class destination. This will make our economy stronger and leave a legacy we can take pride in.
- The waterfront will also be better for people and the natural environment. The plan builds a new promenade for people to play and work without the noise, shadows, and dust from the viaduct. It also eliminates many of the 110,000 vehicles from the water's edge that contribute to air and stormwater pollution.

The Alaskan Way Viaduct & Seawall Replacement Program

Central Waterfront

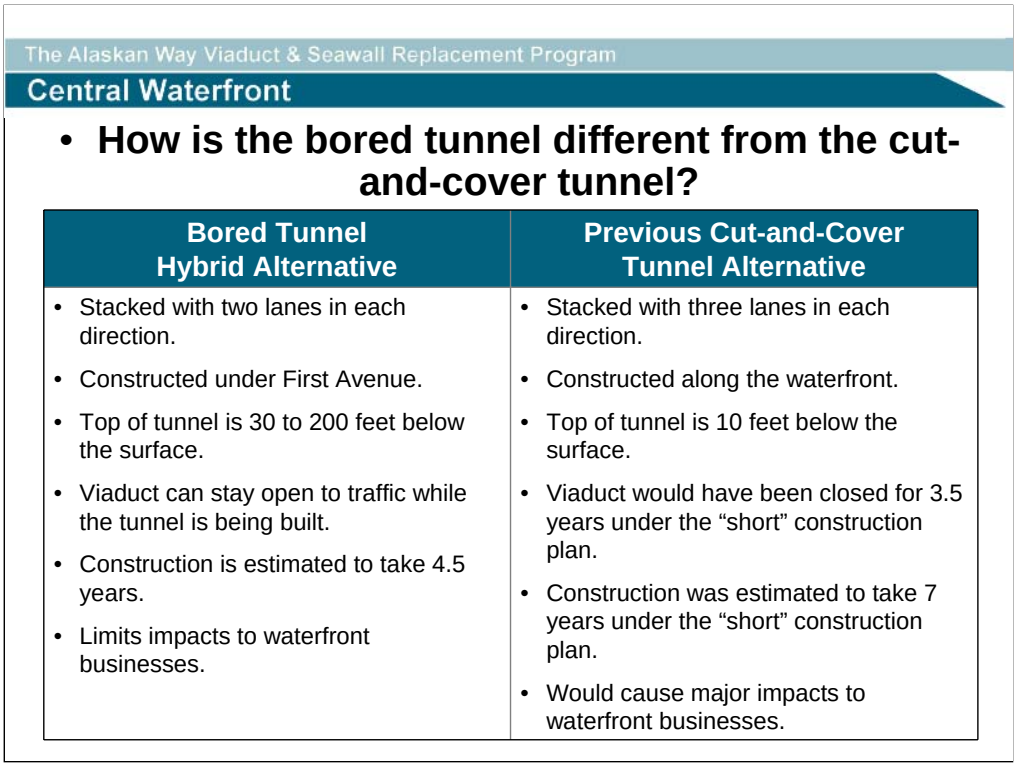
Improve the Health of the Environment

The bored tunnel alternative:

- Creates a new system to improve and handle storm water runoff.
- Creates new transit, bike and pedestrian connections.
- Adds one million hours of new transit service.

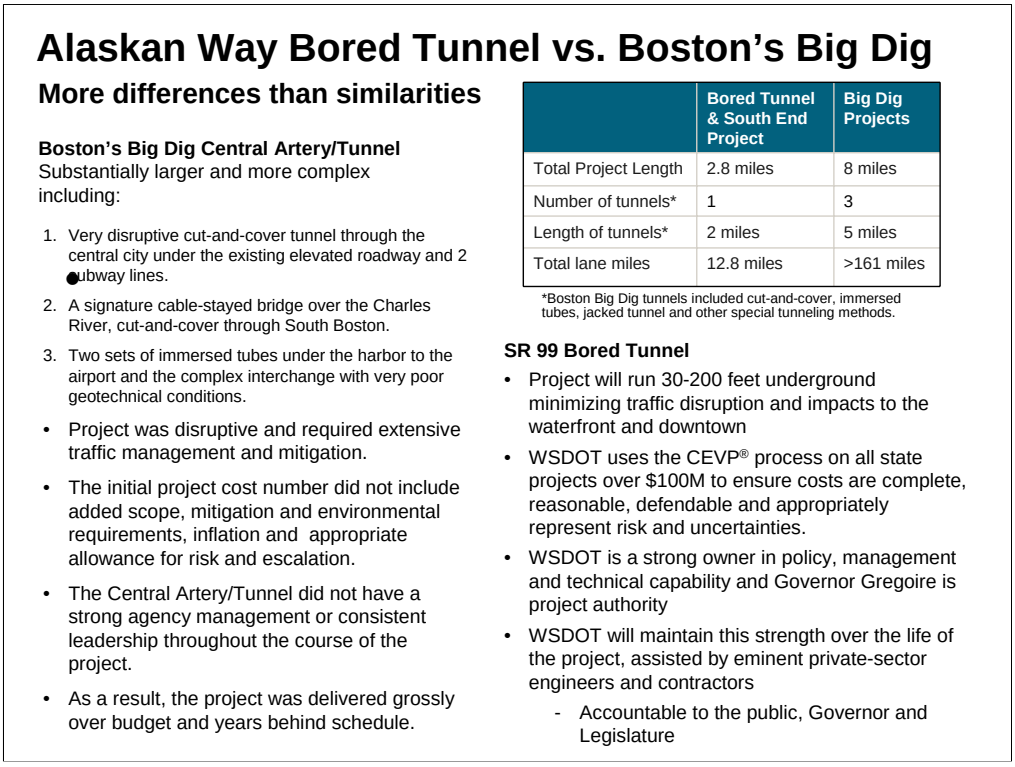
Speaker

- And finally, the bored tunnel will help us improve the natural environment by removing the viaduct from the waterfront. This will allow us to better treat the stormwater run-off from the highway.
- It will also encourage people to get out of their cars and find new ways to move around downtown – whether it is by foot, bike, or on transit.



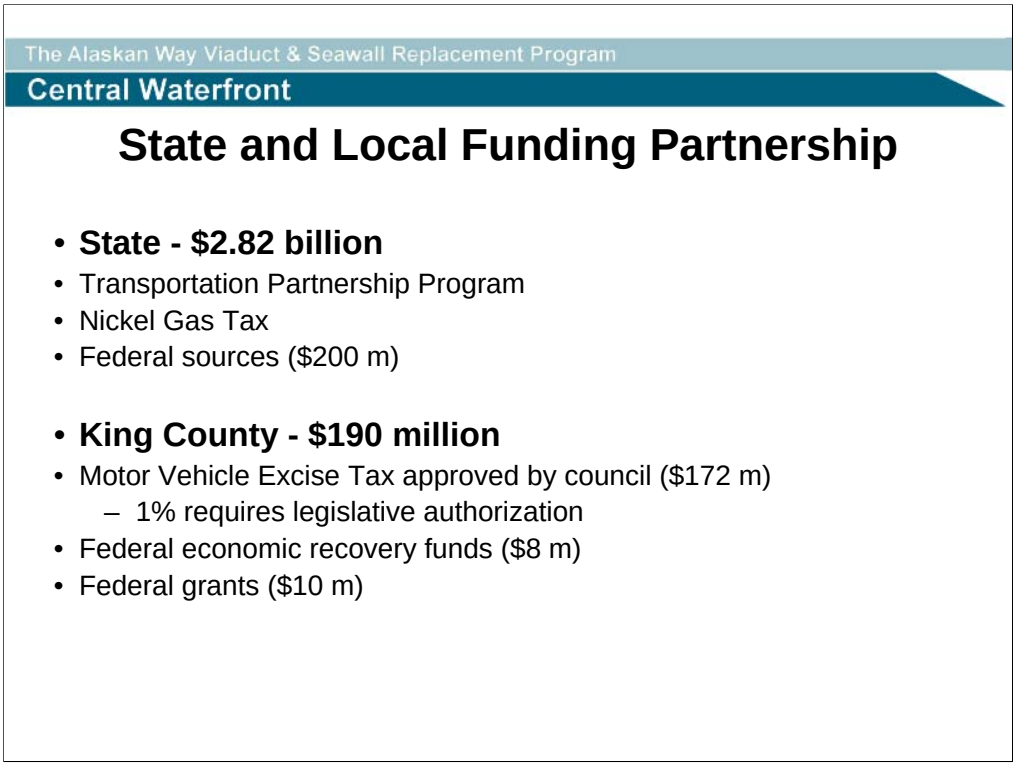
Speaker

- It is easy to compare this tunnel with the cut-and-cover tunnel previously considered on the central waterfront – they are very different in fact.
- This bored tunnel moves the major construction area away from the central waterfront and loose fill to dense hard soil under downtown. It also gives us the opportunity to keep the viaduct open during construction to minimize impacts to the traveling public and business due to longer trips. The overall construction period is also shorter.
- And very importantly, it moves the major construction zone away from the waterfront, which limits the impacts on waterfront businesses. There will still be impacts during construction on the waterfront with the demolition of the viaduct, construction of a new surface street, and replacement of a seawall. However, it eliminates the need to dig a 60-foot deep trench outside their front doors.



Speaker

- If you just consider the size and scale of the project you will see there are more differences than similarities.
- Our total project length, including the south mile of the viaduct which will begin construction this year, is 2.8 miles. The Big Dig was 8 miles long.
- We are proposing one tunnel. Three were built in Boston. This tunnel will be approximately 2 miles long; Boston's were 5 miles long.
- We have gone back and met with the program team and project owner to understand what worked and what didn't work on the Big Dig. We are then applying those lessons learned to this project and other WSDOT projects. One example is the CEVP process that we now use to estimate costs.



Speaker

- The funding on this slide is subject to federal, legislature, county council, city council and port commission actions and approvals.

State and Local Funding Partnership (cont'd)

- **City of Seattle - $957 million**
- Parking tax ($200 m)
- LIFT and/or LID ($300 m)
- Transportation benefit district ($65 m)
- Utilities ($252 m)
- Transportation Improvement Board ($5 m)
- Federal grants ($55 m)
- Federal economic recovery funds ($80 m)

- **Port of Seattle - $300 million**

Speaker

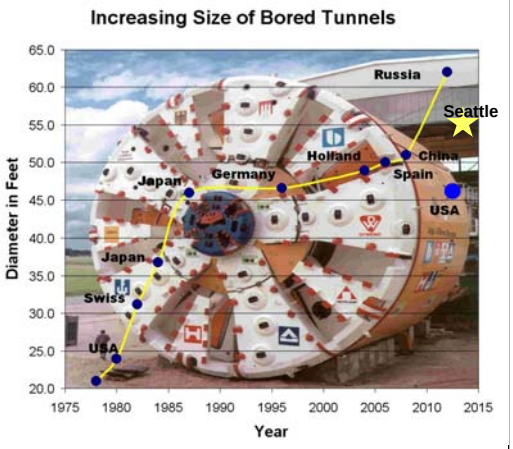
- The funding on this slide is subject to federal, legislature, county council, city council and port commission actions and approvals.

The Alaskan Way Viaduct & Seawall Replacement Program

Central Waterfront

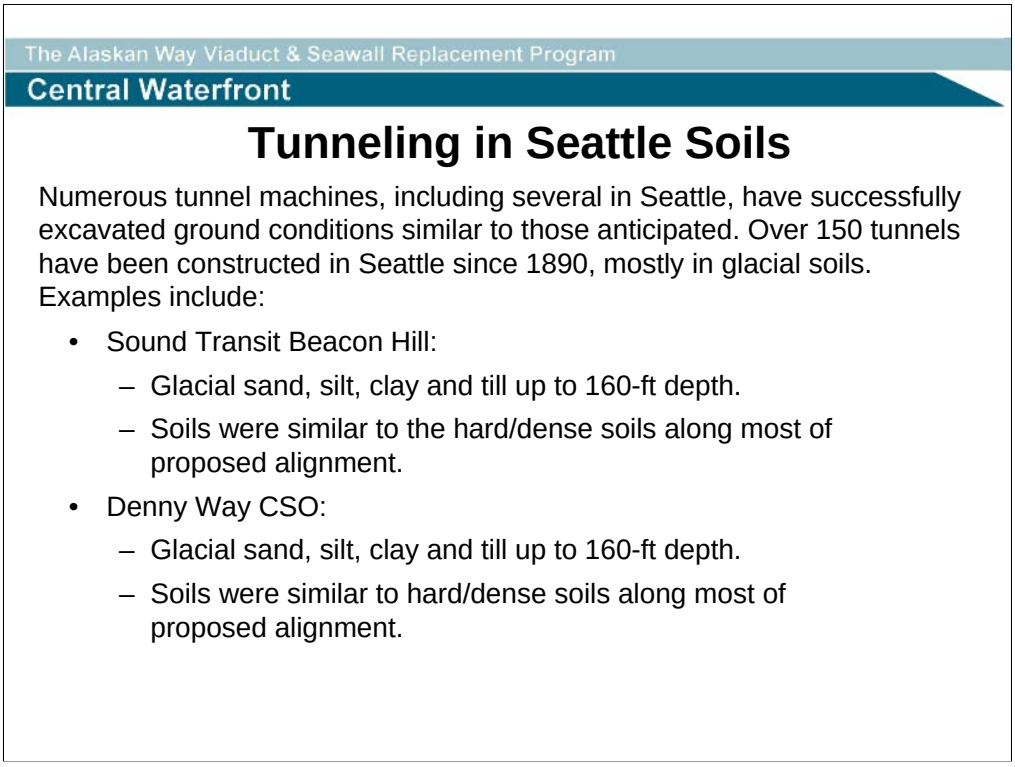
Tunneling Technology

- Tunneling technology is rapidly advancing, with tunnel boring machines as large as 62 feet in diameter on order.
- Successful tunnel boring machine projects:
  - Sound Transit Beacon Hill: 21 feet in diameter
  - Hamburg and Moscow: 46.6 feet in diameter
  - Madrid: 50 feet in diameter
  - Shanghai: 50.6 feet in diameter



Speaker

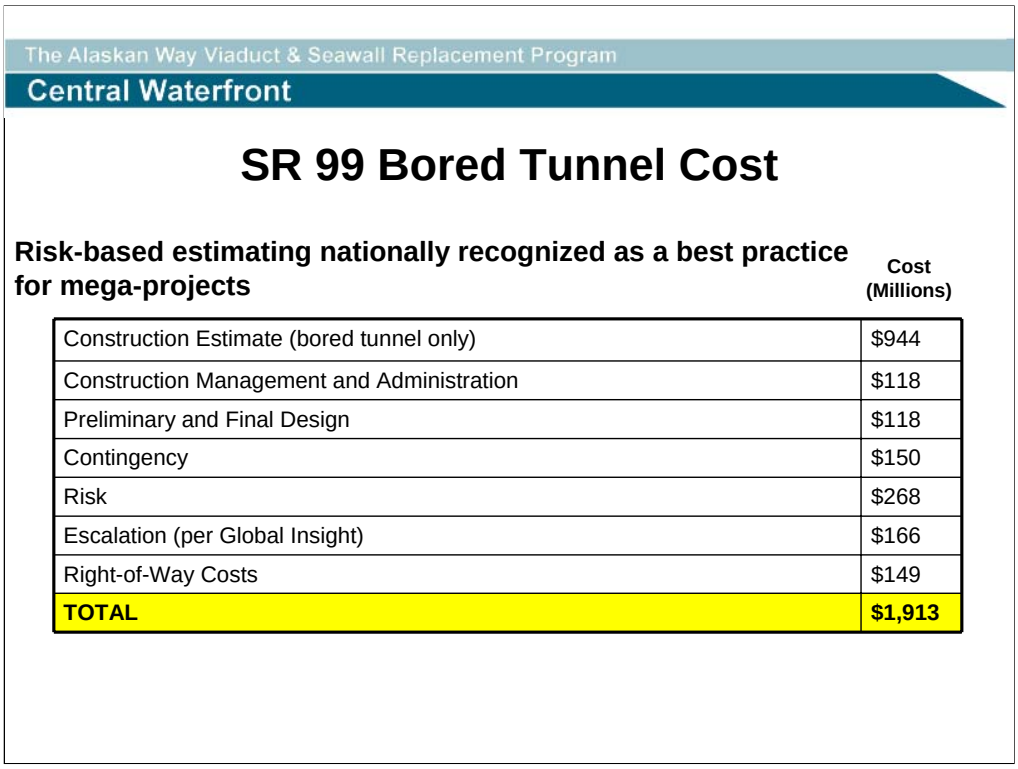
- The tunnel we have proposed would be 54 feet in diameter. If opened today, it would be the biggest bored tunnel in the world.
- However, there are tunnels that have opened that are very close in size, including in Madrid and Shanghai and there is a tunnel in the planning phase in Russia that will be 62 feet.



Speaker

•While the soils along the waterfront are susceptible to liquefaction in an earthquake, the soils elsewhere in Seattle are fine to dig or bore in.

•The Sound Transit Beacon Hill and Denny Way CSO are good examples of soil conditions and success tunneling elsewhere in Seattle.



Speaker

- Estimates on this slide pertain only to the bored tunnel portion of the project.
- You can see that we have conservatively estimated our risk and contingency, which will help us to prevent cost overruns.

Successful Delivery of Bored Tunnel Projects

Examples of Tunnel Excavation in Urban Areas

1. 4th Elbe River, Hamburg: Successfully excavated 1.6 miles at 46.6-ft-diameter.

2. Lefortovo Tunnel, Moscow: Rebuilt Elbe TBM successfully excavated 2 bores each 1.4 miles long at 46.6-ft-diameter. Same machine refurbished for another 2 tunnels in Moscow.

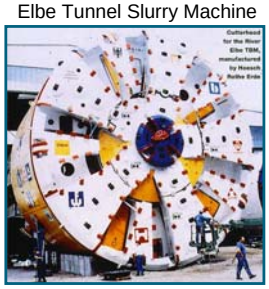
3. Madrid M30 EPB: Successfully excavated 2 bores each 1.3 miles long at 50-ft-diameter by 2 closed-face TBMs built by different manufacturers. M30 diameter was about 10 ft larger than previous TBMs (~50% greater face area).

4. Shanghai Yangtze River Mixshield: Successfully excavated 2 bores each 4.6 miles long at 50.6-ft-diameter. This TBM is the current record holder for diameter. Tunnel completed about a year ahead of original schedule.

Pending Record Holder

Moscow Road/Rail Tunnel: A 62-ft-diameter Mixshield has been ordered. This diameter is 11-ft larger than Shanghai TBM, the current record holder.

Elbe Tunnel Slurry Machine



Madrid Calle M30

Seven tunnel boring machines will be used in the Madrid Calle 30 project

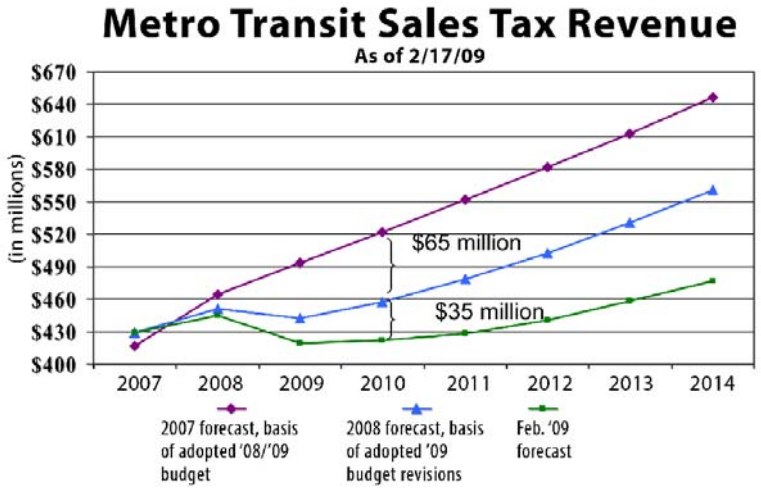
Speaker

•Bored tunnels, while a new technology, have been successfully built throughout the world. This slide provides a few examples of successful projects.

The Alaskan Way Viaduct & Seawall Replacement Program

Central Waterfront

Metro's Funding Gap

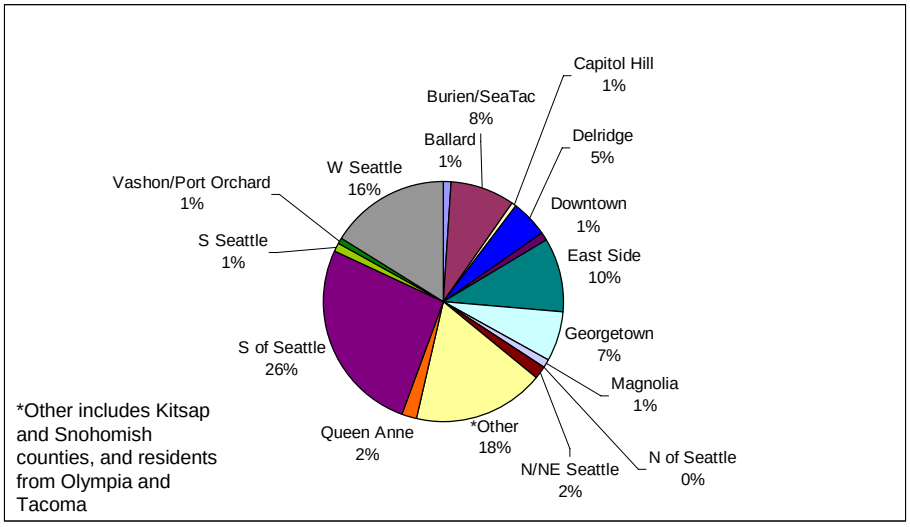


Speaker

The Alaskan Way Viaduct & Seawall Replacement Program

Central Waterfront

Northbound SR 99 Western Off Ramp - AM



Speaker

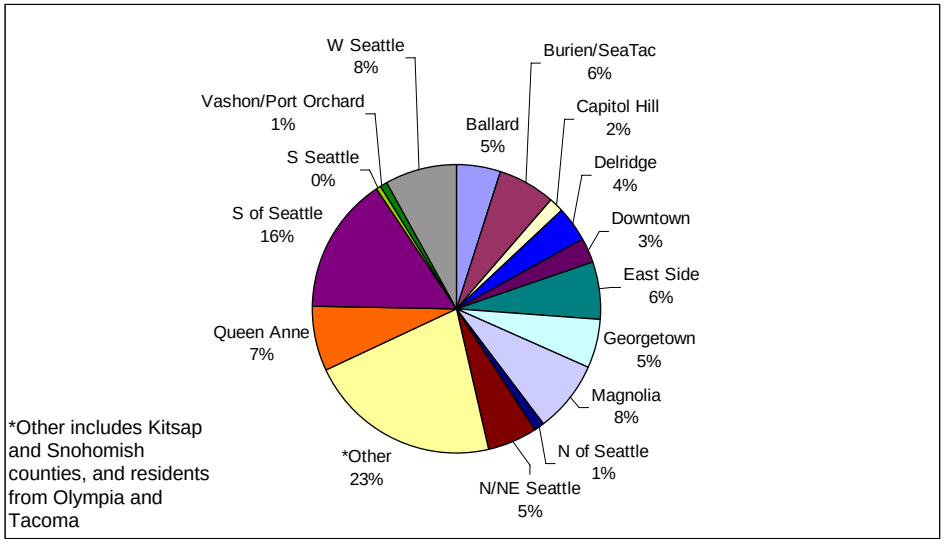
•To help pay for the King County portion of the bored tunnel hybrid, we are proposing a 1% MVET for all motor vehicles in King County, medium to heave duty trucks are exempt.

•We will need legislative authority to impose this tax through a councilmanic action.

The Alaskan Way Viaduct & Seawall Replacement Program

Central Waterfront

Northbound SR 99 Western Off Ramp - Midday

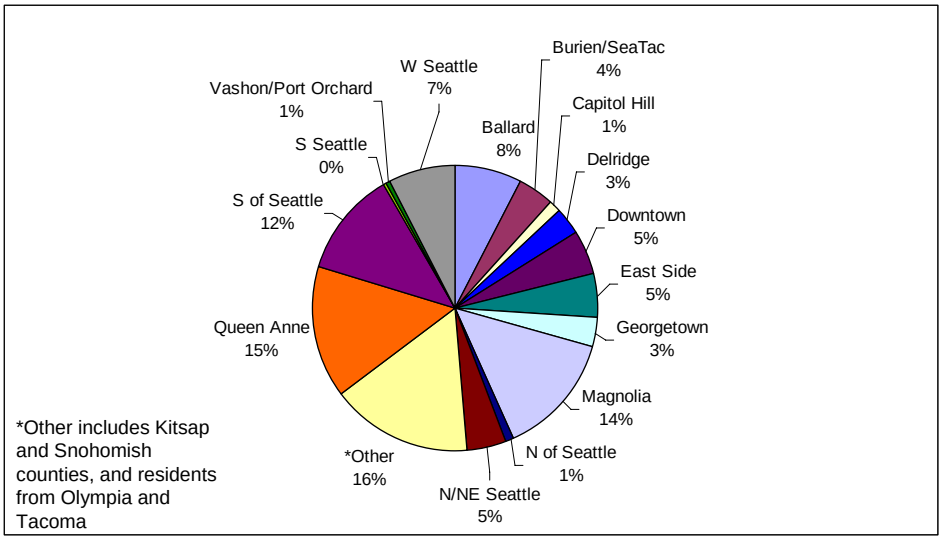


Speaker

The Alaskan Way Viaduct & Seawall Replacement Program

Central Waterfront

Northbound SR 99 Western Off Ramp - PM

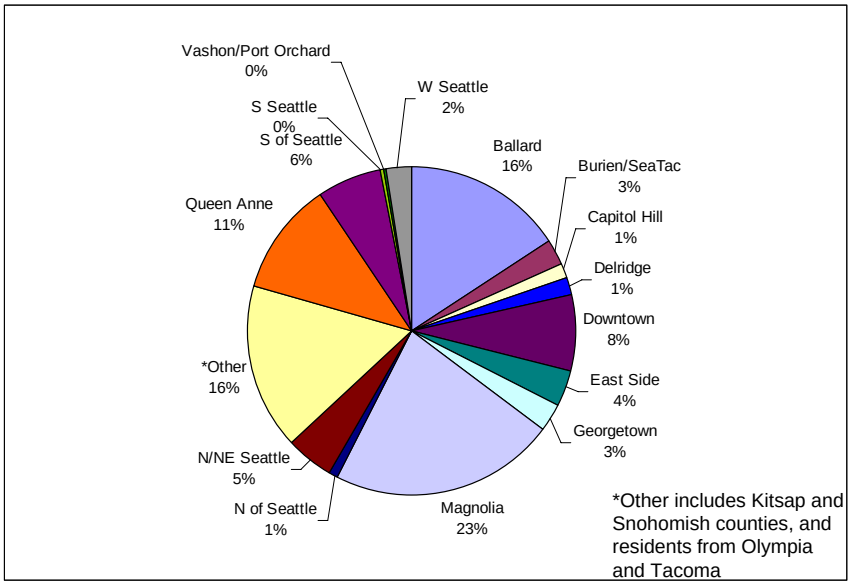


Speaker

The Alaskan Way Viaduct & Seawall Replacement Program

Central Waterfront

Southbound SR 99 Elliott On Ramp - AM

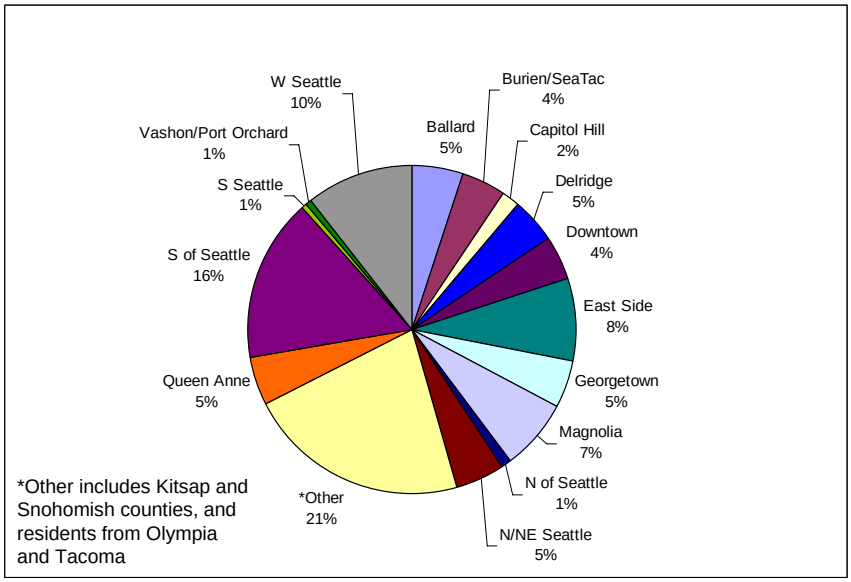


Speaker

The Alaskan Way Viaduct & Seawall Replacement Program

Central Waterfront

Southbound SR 99 Elliott On Ramp - Midday

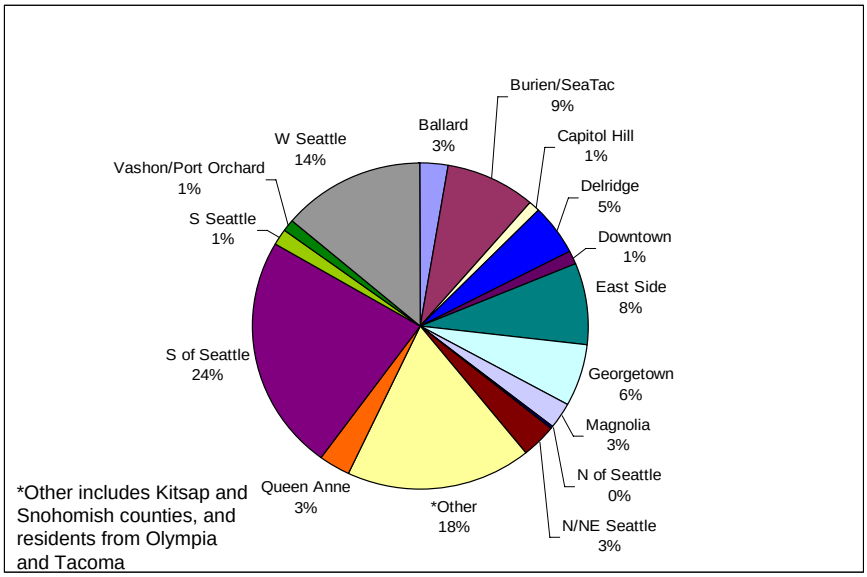


Speaker

The Alaskan Way Viaduct & Seawall Replacement Program

Central Waterfront

Southbound SR 99 Elliott On Ramp - PM



Speaker