

# SR 9/SR 204 Intersection Improvements

Final pre-design report

September 2012



**Washington State  
Department of Transportation**



## Executive Summary

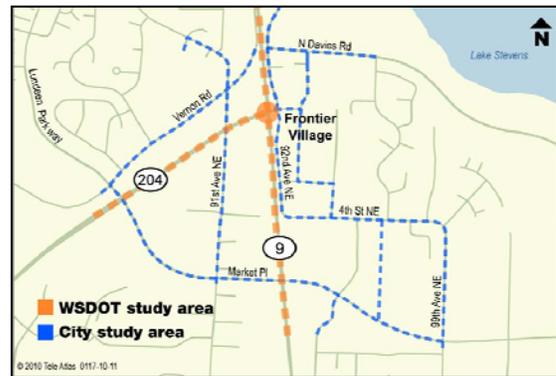
The SR 9/SR 204 intersection is a major chokepoint in the city of Lake Stevens and improvements are needed to relieve congestion and support future economic development in the community. In 2010 the state legislature provided funding for Washington State Department of Transportation (WSDOT) to work with the city of Lake Stevens and community members to identify transportation investments that will improve traffic operations at the intersection of SR 9 and SR 204. This work does not guarantee funding for detailed engineering and construction, but it will guide decision-makers as they seek funding for projects in the future.

A community workshop took place on March 10, 2011, as part of the pre-design effort. The purpose of the workshop was to combine the project team’s technical perspective with a user’s perspective of the problems and ideas for potential improvements at the intersection. All feedback received was submitted to the project team for technical analysis. The workshop was an opportunity to bring community members together to share what they see that we do not – and vice versa. The group discussed potential improvement options:

- Adding lanes
- Diamond interchange with signals or roundabouts
- Single-point urban interchange (SPUI)
- Flyover ramp(s)

### What did we learn?

- The anticipated costs and construction impacts associated with these options are huge.
- All options will affect adjacent property owners.
- Along with improving safety and traffic flow, the final option must consider freight, pedestrian and bicycle traffic.
- The Adding Lanes option is the least expensive, is consistent with state planning policies, is in agreement with Moving Washington principles, matches with the SR 9 Route Development Plan, and included in PSRC’s Transportation 2040 Constrained Plan. However, it does not allow for better connectivity with Vernon Road and Frontier Village.
- The Diamond Interchange with Roundabouts option provides the most congestion reduction and allows for better connectivity with Vernon road and Frontier Village. However, it is not consistent with state planning policies, Moving Washington principles, or PSRC’s Transportation 2040.
- An improvement that elevates one of the highways (for example, brings SR 9 over SR 204) would be beneficial because it removes a great deal of traffic from the congested, complicated intersection. However, there are concerns that this type of improvement, because it provides free flow on one of the highways, may reduce “impulse buying” in this important retail center.
- Better utilization of the local street system—especially Lundeen Parkway and Market Place—would relieve congestion on the state highways.



### What’s next?

WSDOT will use the input as recommendations for improvements to traffic operations at the SR 9/SR 204 intersection. WSDOT will also make this report available to the city and other agencies for use in their planning efforts.

## Table of contents

Executive summary .....	2
Table of contents.....	3
Introduction and schedule .....	4
Project objectives .....	5
Funding.....	8
Existing condition .....	9
Community workshop .....	10
Project risks and opportunities .....	11
What are the proposed improvement options.....	16
Adding Lanes.....	17
Diamond Interchange (with signals or roundabouts).....	18
Single Point Urban Interchange (SPUI) .....	20
Flyover Ramp(s) .....	21
Conclusion .....	22

## Contact information

**Hung Huynh**  
Project Engineer  
Washington State Dept of Transportation  
206.440.4311  
[HuynhH@wsdot.wa.gov](mailto:HuynhH@wsdot.wa.gov)

## Introduction

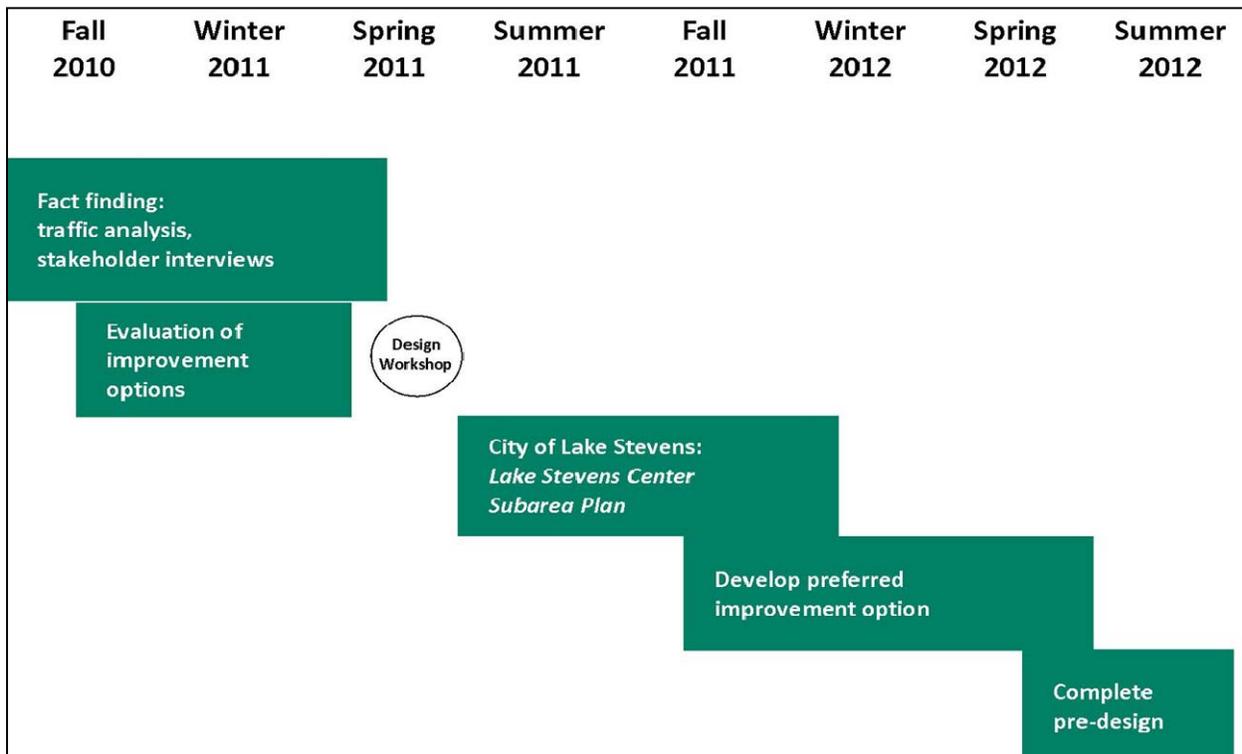
The SR 9/SR 204 intersection is a major chokepoint in the city of Lake Stevens and improvements are needed to relieve congestion and support future economic development in the community. In 2010, through the efforts of Senator Hobbs, Mayor Vern Little, and Councilmember/Chamber President Marcus Tageant, the state legislature provided funding for Washington State Department of Transportation (WSDOT) to work with the City of Lake Stevens and community members to identify transportation investments that will improve traffic operations at the intersection of SR 9 and SR 204. This preliminary engineering work is a critical first step towards advancing this project for consideration of future state and federal funding.

WSDOT’s long-range plan proposes an additional lane in each direction along the congested stretch of SR 9 through Lake Stevens. The city wants to improve shopping center entrances to help local businesses thrive and prepare for future economic development. This early design project will coordinate efforts and recommend improvements for traffic operations at the SR 9/SR 204 intersection.

The final product is a pre-design that includes the following:

- Improvement options that address the needs of the highways and local streets,
- Preliminary cost estimate and footprint,
- Risks and opportunities,
- Documentation of what we know and what we need to learn as part of future detailed engineering.

## Schedule



## Project objectives

This intersection is in the heart of the Lake Stevens business district. A well-functioning transportation system will support existing businesses and future economic development in the community. What are the goals for SR 9 / SR 204 intersection improvements?

- Manage traffic on state highways
- Reduce risk of collisions
- Minimize negative impacts to the community and environment
- Maintain or improve access to the local street network

## State planning goals

There are five goals outlined in RCW 47.04.280 that guide Washington’s planning investment policies:

- *Economic vitality* – To promote and develop transportation systems that stimulate, support, and enhance the movement of people and goods to ensure a prosperous economy,
- *Preservation* – To maintain, preserve, and extend the life and utility of prior investments in transportation systems and services,
- *Safety* – To provide for and improve the safety and security of transportation customers and the transportation system,
- *Mobility* – To improve the predictable movement of goods and people throughout Washington state,
- *Environment* – To enhance Washington’s quality of life through transportation investments that promote energy conservation, enhance healthy communities, and protect the environment
- *Stewardship* – To continuously improve the quality, effectiveness, and efficiency of the transportation system.



## Moving Washington

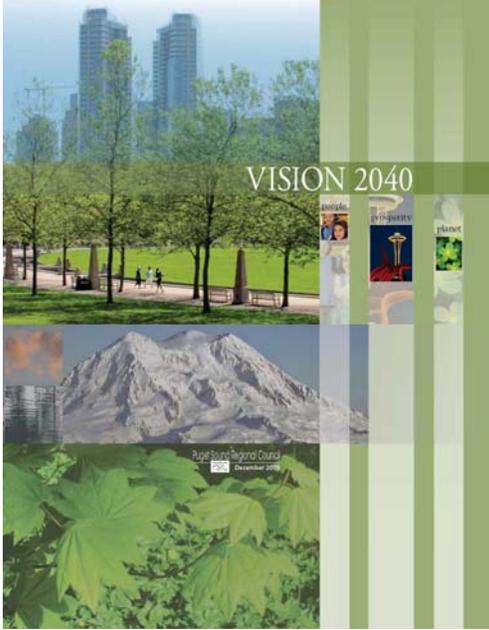
Moving Washington provides WSDOT with the principles for making responsible and sustainable transportation decisions:

***Maintain and keep safe*** – WSDOT’s highest priority is maintaining and preserving the safe and long-lasting performance of existing infrastructure, facilities and services. This is the heart of Moving Washington and the target of WSDOT’s investments.

***Integrate investments for cost-effective solutions*** – Moving Washington combines three essential transportation strategies to achieve and align the objectives of WSDOT and its partners:

- ***Operate Efficiently*** – This approach gets the most out of existing highways by using traffic-management tools to optimize the flow of traffic and maximize available capacity. Strategies include utilizing traffic technologies such as ramp meters and other control strategies to improve traffic flow and reduce collisions, deploying Incident Response to quickly clear collisions, optimizing traffic signal timing to reduce delay, and implementing low-cost/high-value enhancements to address immediate needs.
- ***Manage Demand*** – Whether shifting travel times, using public transportation or reducing the need to travel altogether, managing demand on overburdened routes allows the entire system to function better. Strategies include using variable-rate tolling in ways that reduce traffic during the most congested times and balance capacity between express and regular lanes, improving the viability of alternate modes, and providing traveler information to allow users to move efficiently through the system.
- ***Add Capacity Strategically*** – Targeting the worst traffic hotspots or filling critical system gaps to best serve an entire corridor, community or region means fixing bottlenecks that constrain the flow. Upgrading a failing on-ramp merge or hard-shoulder running during peak periods can free up the flow of traffic through a busy corridor. From improving rail crossings and ferry service to working with transit agencies to connect communities, from building direct-access ramps for carpools and transit to including paths for pedestrians and bicyclists, capacity improvements require strong partnerships with a shared vision for the corridor.





## Puget Sound Regional Council

The Puget Sound Regional Council (PSRC) is an association of cities, towns, counties, ports, and state agencies that serves as a forum for developing policies and making decisions about regional growth management, environmental, economic, and transportation issues in the four-county central Puget Sound region of Washington State.

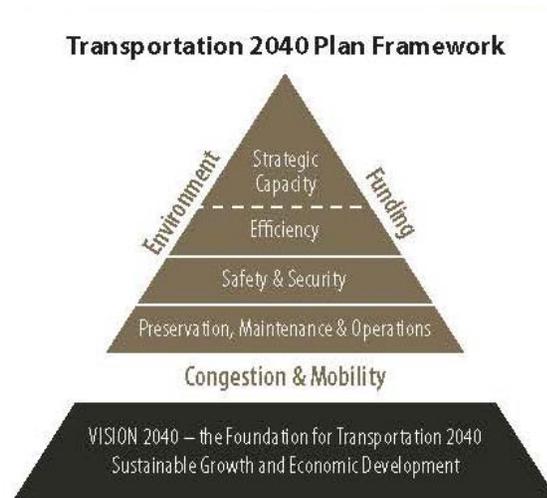
PSRC is designated under federal law as the *Metropolitan Planning Organization* (required for receiving federal transportation funds), and under state law as the *Regional Transportation Planning Organization* for King, Kitsap, Pierce, and Snohomish counties.

PSRC works with local governments, businesses and citizens to build a common vision for the re-

gion’s future, expressed through three connected major activities: VISION 2040, the region’s growth strategy; Transportation 2040, the region’s long-range transportation plan; and Prosperity Partnership, which develops and advances the region’s economic strategy.

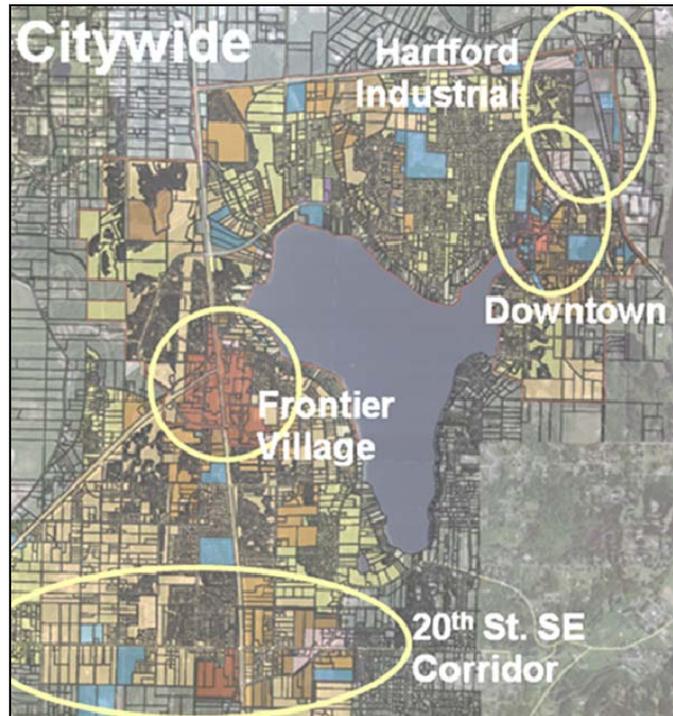
**VISION 2040** is the region’s strategy for addressing anticipated growth of population and employment through 2040. VISION 2040 describes how and where growth can take place while also supporting the well-being of people and communities, economic prosperity and a healthy environment.

**Transportation 2040**, built upon the foundation of VISION 2040, is the region’s long-range transportation plan. The plan outlines a long-term template for how this region should invest in transportation to accommodate rising travel demand, identifies investments to support the expected growth, and lays out a financing plan.



## City goals

- The area surrounding the SR 9 and SR 204 intersection is one of three Community Growth Centers on which the City of Lake Stevens will focus economic development activities. Planned use of the area will allow for high intensity and automobile-oriented commercial uses, as well as dense arrangements of professional offices and retail stores.
- The City of Lake Stevens plans to induce automobile transportation alternatives by encouraging improvements to the public transit system and increasing availability of bicycling and walking facilities. They will also work with Community Transit to develop a public transportation system compatible with the City's center growth strategy.



## Funding

The Washington State Legislature ultimately determines how state highway funds are distributed for projects across the state. Often times, there are federal funds available that get divided: some are dispersed to the state for distribution to projects; some are dispersed to regional planning organizations and distributed as grants for local agencies; and some are reserved for dispersal to specific projects.

As a cabinet agency that reports to the governor, WSDOT identifies projects through the Highway System Plan process and relies on direction from the governor and legislature for allocating state and federal funds. The state prioritizes projects based on the legislature's policy goals of economic vitality, preservation, safety, mobility, environment and stewardship. In managing congestion, the aim is to first maintain, preserve and improve the operating efficiency of the existing highway system before adding capacity.

This study does not guarantee funding for the proposed improvements for SR 9/SR 204. However, the proposed improvements will be considered for state highway funds in accordance with the above described funding processes.

## What are the existing conditions in this corridor?

The project started with a fact-finding phase to assess existing conditions. What are the needs? What issues might present challenges for project delivery? The project team conducted background research and technical analysis and talked with the community.

### Transportation needs:

The SR 9/SR 204 intersection in Lake Stevens is a major bottleneck. There are traffic backups during the morning and afternoon commutes, and it is difficult for drivers to get in and out of nearby shopping centers. These problems are expected to worsen over time as population growth contributes to higher traffic volumes. The city of Lake Stevens anticipates its population to grow from 25,674 in 2010 to 46,000 by 2025. The City also expects to add 800 jobs by 2025.

### Specific transportation needs:



**Mobility:** Drivers currently experience delays at the SR 9 intersection with SR 204. Collisions are consistent with congested conditions, occurring most often at intersections and access points. Traffic conditions are expected to worsen in the future as population grows in Lake Stevens and surrounding communities. Traffic backups will be more severe, and congestion will spread to more hours of the day.

**Large vehicles and freight:** A substantial number of large and oversize vehicles regularly use this designated truck route, including freight, school buses, fire trucks and transit vehicles.

**Access:** Numerous driveways and closely-spaced intersections slow traffic and contribute to conflicts between vehicles.

**Public transportation:** The Lake Stevens Transit Center is located adjacent to the project area and serves three bus routes. Community Transit’s long range plan designates SR 9 as a “transit emphasis corridor”.



**Bicycles and pedestrians:** There are some facilities for bicyclists and pedestrians in the project area, including marked bicycle shoulders on Lundeen Parkway and Market Place, as well as wide shoulders on SR 9 and SR 204. Crosswalks with pedestrian signals are provided at several intersections.

**Local street connections and access to businesses:** The Lake Stevens Center area surrounding the intersection of SR 9 and SR 204 is one of three commercial districts where the city will focus future economic development.



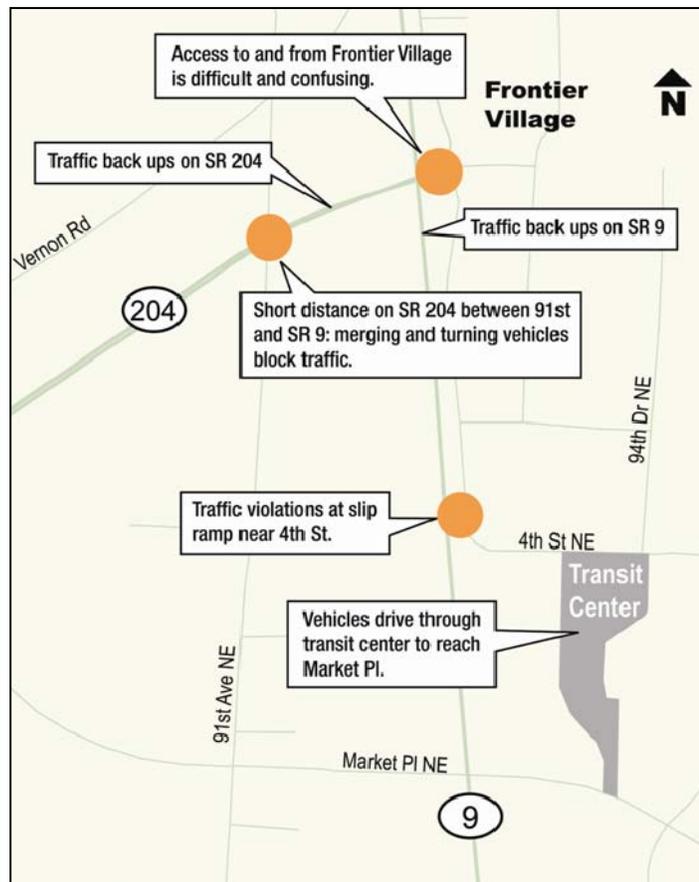
## Community workshop March 2011



A community workshop was held on March 10, 2011 as part of the pre-design effort. The purpose of the workshop was to combine the project team’s technical perspective with the users’ perspective of the problems and ideas for potential improvements at the intersection. The workshop provided a great opportunity to bring community members together to share what they see that project team does not – and vice versa.

### Concerns identified at the workshop:

- Need safe walking facilities to support dense development
- SR 9 is a highway running through a shopping area
- The area is made up of “shopping pockets” without harmony
- People drive through private property, using driveways as thoroughfares.
- City street connections are needed
- Walking through shopping areas has become difficult and unsafe
- It’s important that improvements consider all modes of transportation
- The curbing solution at SR 9/Frontier Village entrance makes problems worse
- There are traffic backups on 91<sup>st</sup> at the SR 204 intersection
- Cannot make a free right on SR 9 to SR 204 due to backups
- Pedestrian access across 9 – signal does not allow enough time to walk across the highway.



## Project risks and opportunities

Potential challenges and opportunities were evaluated in order to identify fatal flaws, determine project constraints, and develop reliable footprints and cost estimates.

Risks are issues that are not yet fully identified but are expected to affect project delivery. Why is it so important to identify risks in a pre-design? The goal is to gather as much information as possible so that more accurate footprint and cost estimates can be established. This reflects commitment to providing accurate information about the real costs of an improvement *before it is funded* so the improvements can be reasonably assured to be delivered on-time and within budget.

Risks will be continually reviewed, refined and updated as recommended improvements progress through detailed design engineering and ultimately construction, in order to avoid surprises and assist with accurate budgeting.

### Opportunities:

- Balancing transportation decisions with the city's plans, as well as those of local business and property owners, may preserve options otherwise unavailable after development/re-development occurs. Knowledge of low-cost improvements up front provides an opportunity for these to be integrated in the planning of a well-connected road network and implemented through the dedication of right-of-way and constructed to support growth as it occurs.
- Working with local partners, such as the city, business community, and county, will allow the pooling of available resources and influences to acquire the necessary funding to complete improvements.



## Risks:

### Environmental sensitive area impacts

#### ***What is the issue?***

Sensitive Areas are locations where regulatory agencies are legally required to protect. Areas identified as sensitive typically have the presence of wetlands, streams/rivers, and often include the presence of threatened or endangered species fish or wildlife.



#### ***How does it affect the project?***

During preliminary engineering, WSDOT will have the entire project area evaluated for the presence of sensitive areas by a biologist, and surveyed to determine their size and boundaries.

Then it is incumbent upon the design team to avoid impacting these areas. If that isn't possible then project is to minimize impacts as much as possible through the use of steeper side slopes, re-alignments, narrowing or constructing walls, and other structures.

When there are unavoidable impacts, the project must provide compensation for the unavoidable impacts through a process known as mitigation. Mitigation is most commonly remedied by creating or enlarging another sensitive area.

#### ***What is the likelihood that it will affect the SR 9/SR 204 project?***

While WSDOT has not yet evaluated the project limits for the presence of sensitive areas, there is a high likelihood that the wooded area located in close proximity to the southwest of the SR9/204 intersection contains a sensitive area. There will likely be impacts to some degree depending on the design alternative, and the project will need to mitigate for the impacts and purchase a site for mitigation purposes.

#### ***How severe a problem could it be for the SR 9/SR 204 project?***

Sensitive area mitigation requires a significant amount of time for design, permitting, locating and purchasing property. In addition to the construction, a ten year monitoring of the site will be required to ensure its success.

### Air quality and noise level impacts

#### ***What is the issue?***

The state is required to evaluate if there will be any adverse affects to air quality and noise levels as a result of a project after it is completed and operational.



## **Air quality and noise level impacts (continued)**

### ***How does it affect the project?***

A field review of the existing air and noise conditions will be included as part of preliminary engineering, and an analysis of the project impacts.

### ***What is the likelihood it will affect the SR 9/SR 204 project?***

The likelihood of needing to construct a noisewall is moderate to low, at this time.

### ***How severe a problem could it be for the SR 9/SR 204 project?***

If a noisewall is required, the current rate of \$53.50 per square foot of exposed wall, not including markups (tax/contingencies/engineering inspection), will be used to estimate a potential cost. A wall 500' long and 10' tall would cost approximately \$525,000 for design and construction.

## **Tribal, archeological or hazardous materials find**

### ***What is the issue?***

The state is required to investigate all project areas involving excavation activities for the potential presence of any archeological or hazardous materials. WSDOT will examine the proposed project site during preliminary engineering in order to eliminate any risk of damaging or disturbing areas of historical or cultural significance and for past commercial use that could contaminate the soil.

### ***How does it affect the project?***

The presence of any tribal, archeological, or hazardous material in the area, would trigger a more significant investigation and potential redesign to avoid the material.

### ***What is the likelihood it will affect the SR 9/SR 204 project?***

Since this area has already undergone significant development, the likelihood of encountering either archeological or hazardous material is very low.

## **Community/business impacts**

### ***What is the issue?***

This project may involve the loss of parking, changed and/or reduced visibility, and accessibility to some properties.

### ***How does this affect the project?***

Regardless of the alternative selected, the roadway footprint will increase, necessitating WSDOT to utilize its existing right of way and purchase additional property. There will be potential impacts to business parking that is adjacent to the roadway and may also require the relocation of businesses. Restriction of access may occur reducing ease of access to businesses from the highway or city streets. Impacts to businesses may require compensation, resulting in an increase to project costs, depending on the severity of the impact.



## Community/business impacts (continued)

### ***What is the likelihood it will affect the SR 9/SR 204 project?***

Currently there is a city street and several businesses with parking located on WSDOT right of way areas that will be impacted. Businesses and property impacts will be a significant part of the funding needed for the project, depending on the project footprint and the severity of the impact.

### ***How severe a problem could it be for the SR 9/SR 204 project?***

If the business impacts are extensive, it could propel the project costs so high that it makes funding difficult to secure for final design and construction.

## Utilities

### ***What is the issue?***

SR9 and SR204 are high traffic corridors occupied by numerous utilities, within and adjacent to, WSDOT right of way. Each alternative involves impacts to existing utilities, requiring them to be relocated.

### ***How does it affect the project?***

Due to the large number of utilities in the area and a need to avoid them where possible, WSDOT would have to provide extensive utility reports to document existing and proposed utility locations prior to design completion.



Once the conflicts are identified, WSDOT will work with the utility owner to relocate in order to avoid the proposed roadway improvements. Depending on property rights, WSDOT may be responsible for the costs of relocations. Either way, it takes advance notification, funding, and work to prepare the site.

### ***What is the likelihood it will affect the SR 9/SR 204 project?***

While WSDOT has not identified the presence of all utilities in the project area, there are known overhead power, underground water, underground sewer, and underground gas. There is a high likelihood that some or all of these utilities will be impacted by the project.

### ***How severe a problem could it be for the SR 9/SR 204 project?***

Having to relocate the numerous high voltage overhead power lines that cross SR 204 west of 91<sup>st</sup> St. will be costly and time consuming. The costs could easily exceed \$1 million depending on the amount of relocation needed. These high voltage lines tend to have property rights that precede the highway resulting in WSDOT being responsible for the relocation cost.

## Stormwater treatment and additional roadside improvements

### ***What is the issue?***

The size and extent of the roadway design may require additional roadside improvements.

### ***How does it affect the project?***

If the amount of additional pavement increases by 40-50 percent, then the project will be required to provide not only stormwater treatment for the new (additional) roadway, but for all existing pavement, as well. Environmental requirements for detaining runoff from the roadway and treating the water before it leaves WSDOT right of way may require an extensive stormwater system and treatment facility (often a multi-pond system). Due to the amount of paved area in the project limits, this may require a very large facility.



### ***What is the likelihood it will affect the SR 9/SR 204 project?***

Impacts are anticipated, but the full extent of those impacts aren't entirely predictable at this time.

### ***How severe a problem could it be for the SR 9/SR 204 project?***

A stormwater treatment facility for a large project is costly for property funding, design, construction, and operation. Right of way purchase for the facility alone could be in the range of \$100,000 to \$600,000. Design costs for stormwater structures could be \$500,000 to \$1 million dollars for walls and a bridge, with construction costs ranging between \$1.5 million to \$4 million.

## Future cost escalation

### ***What is the issue?***

Since this project is in its conceptual phase and funding has not been secured, there are many things that can affect the overall project costs and schedule. Fuel costs, inflation, or changes in regulations affecting permitting, city street improvements, and property values are examples.

### ***How does it affect the project?***

Typically the longer it takes to get a project designed and constructed, the more it is likely to cost.



### ***What is the likelihood it will affect the SR 9/SR 204 project?***

It will impact the project to some degree. However, to what extent isn't entirely predictable yet.

### ***How severe a problem could it be for the SR 9/SR 204 project?***

While current inflation costs are well below 5 percent at this time, this can change quickly. Fuel costs are volatile and regulation compliance requirements are not readily known.

## Proposed improvement options

The project team narrowed the alternatives to four key options based on analysis of current conditions at the intersection:

- Add lanes
- Two variations of a diamond interchange
- Single-point urban interchange (SPUI)
- Flyover ramp

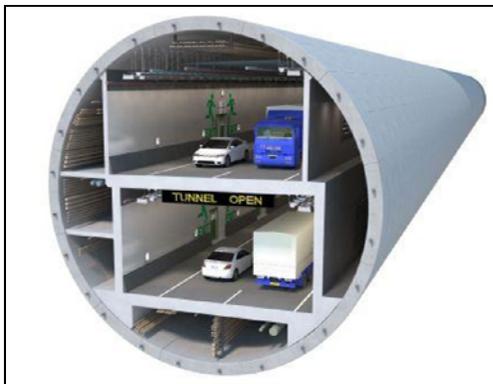
The options had to uphold the state's highest priority, which is maintaining and keeping the highway system safe, while meeting the state's *Moving Washington* principles and the *Puget Sound Regional Council's Vision 2040 and Transportation 2040* plans.



The project team was committed to integrating investments for cost-effective solutions by combining three essential transportation strategies:

- **Operate Efficiently** – Gets the most out of existing highways. Examples include installing ramp meters, deploying incident response team, optimizing traffic signal timing, and other low-cost/high-value enhancements.
- **Manage Demand** – Shifting travel times, using public transportation or reducing the need to travel altogether. Examples include implementing variable-rate tolling, improving the viability of alternate modes, and providing traveler information.
- **Add Capacity Strategically** – Fixing bottlenecks that constrain the flow. Examples include upgrading a failing on-ramp merge and hard-shoulder running during peak periods.

All reasonable options were explored, including the proposal to build a tunnel (either a bored tunnel or cut-and-cover tunnel). The tunnel proposal was found unfeasible, largely because the intersection will have to be closed to traffic for up to three years for a bored tunnel, and up to two years for a cut-and-cover tunnel. The high water table (3 feet) also made this an unsuitable option.



*A bored tunnel would have required a 2,000 foot tunnel, which would require shutting down the intersection for 18 to 36 months.*



*A cut-and-cover tunnel would have required a 1,500 foot excavation and would have shut down the intersection for 12 to 24 months.*

# Proposed improvement options

## Option 1: Add lanes

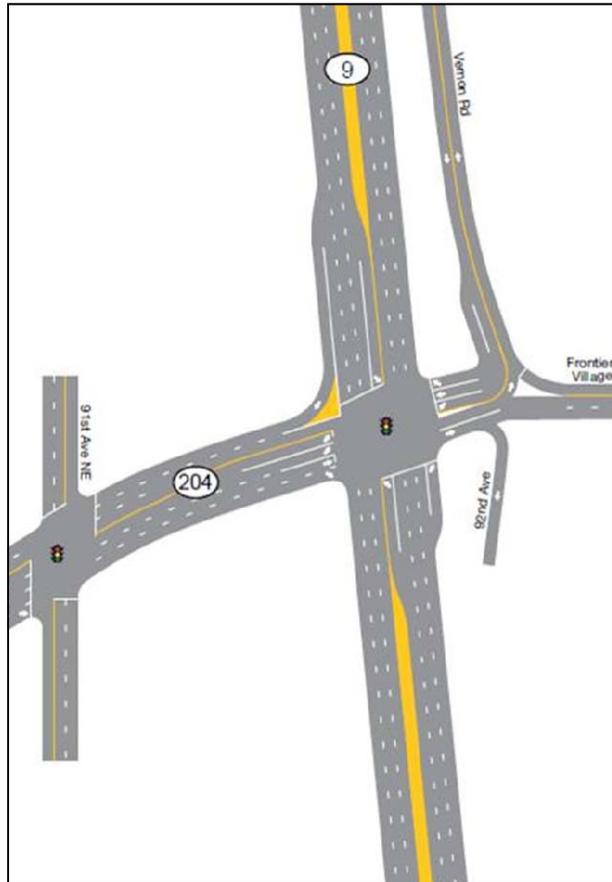
This alternative would add lanes to get more traffic through the signal at the intersection of SR 9 and SR 204. This was the option recommended in WSDOT's 2010 SR 9 Corridor Planning Study.

**Estimated cost (million): \$19—\$23**

**Current**



**Proposed**



### Benefits:

- Reduces congestion.
- Adding one northbound lane and one southbound lane could reduce the average wait time to less than 1.5 minutes during the evening commute in year 2030.
- Adding one northbound lane on SR 9, one southbound lane on SR 9, and one left turn lane on SR 204 could reduce the average wait time to about 1 minute during the evening commute in year 2030.

### Disadvantages:

- Uses valuable commercial space adjacent to the intersection.
- Does not address the difficult and confusing access to and from Frontier Village.
- Vehicles waiting to turn left onto southbound 91<sup>st</sup> may still block traffic and clog up the SR 9/ SR 204 intersection.

## Proposed improvement options (continued)

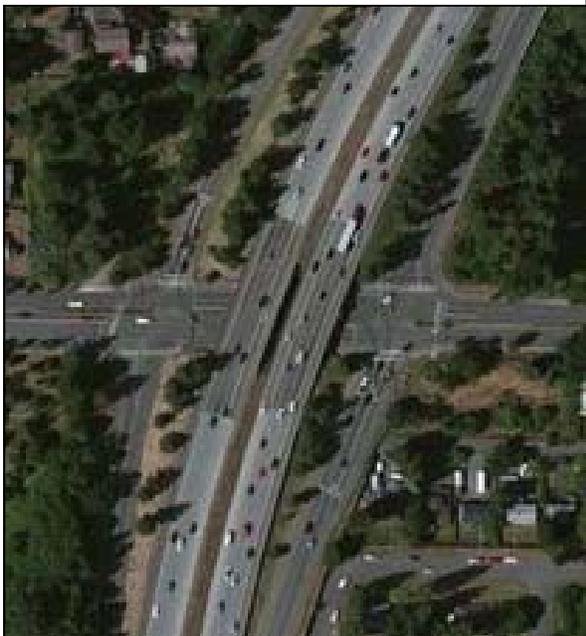
### Option 2A: Diamond interchange with traffic signals

This alternative would elevate SR 9 across the intersection. On-ramps and off-ramps would be provided at the intersection with SR 204. Signals would be installed at the ramp terminals. Improvements at the SR 204/91st Avenue NE intersection will be required.

**Estimated cost (million): \$53—\$64**

#### Benefits:

- Reduces congestion
- Could reduce the average wait time to about 1 minute during the evening commute into year 2030.



#### Disadvantages:

- Takes up valuable commercial space adjacent to the intersection
- Does not address the difficult and confusing access to and from Frontier Village. Might make this access worse.
- Depending on the modification at the SR 204/91st Ave NE intersection, vehicles waiting to turn left onto southbound 91<sup>st</sup> may still block traffic and clog up the SR 9/SR 204 intersection.

## Proposed improvement options (continued)

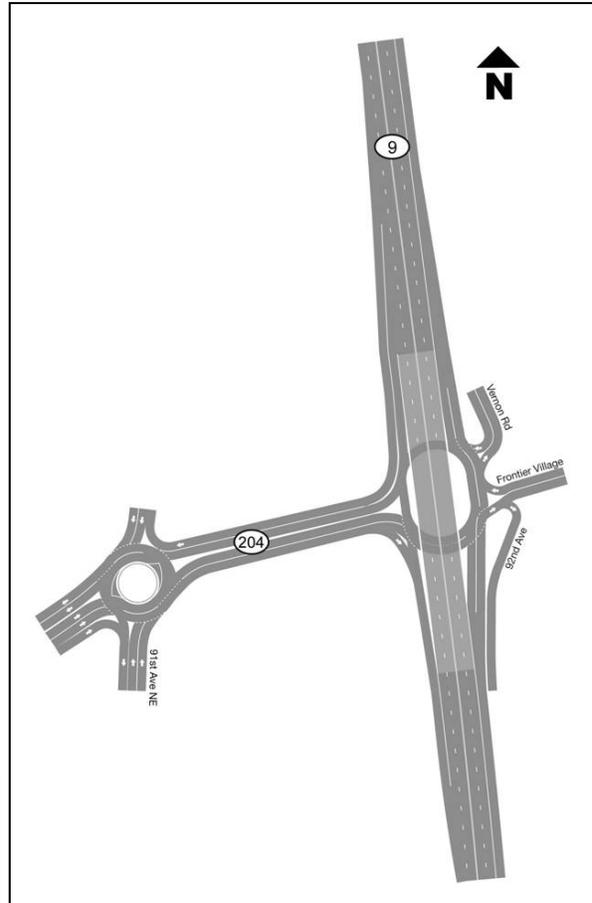
### Option 2B: Diamond interchange with roundabout

This alternative would elevate SR 9 across the intersection. On-ramps and off-ramps would be provided at the intersection with SR 204. Roundabouts would be installed at the ramp terminals and at the SR 204/91st Avenue NE intersection.

**Estimated cost (million): \$58—\$70**

#### Benefits:

- Of all the options presented, this is the most effective at reducing congestion.
- This option could reduce the average wait time to 14 seconds during the evening commute in year 2030.
- This option allows for better connectivity with Vernon Road and Frontier Village.



#### Disadvantages:

- Much like the diamond interchange with signals, this design takes up valuable commercial space adjacent to the intersection.
- Depending on the modification at the SR 204/91st Ave NE intersection, vehicles waiting to turn left onto southbound 91<sup>st</sup> may still block traffic and clog up the SR 9/SR 204 intersection.

## Proposed improvement options (continued)

### Option 3: Single-point urban interchange (SPUI)

This option would elevate SR 9 across the intersection. On- and off-ramps would be provided at the intersection with SR 204. The ramps would come together at one signal in the intersection with SR 204. Improvements at the SR 204/91st Avenue NE intersection will be required.

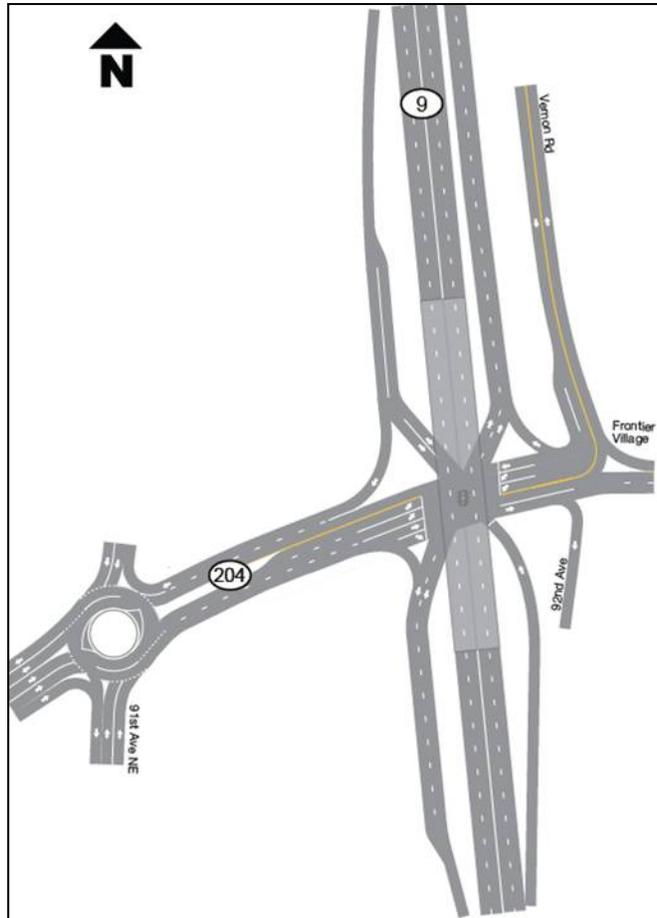
**Estimated cost (million): \$50—\$60**

#### Benefits:

- Reduces congestion
- This option could reduce the average wait time to 1 to 2 minutes during the evening commute in year 2030.

#### Disadvantages:

- A SPUI takes up valuable commercial space adjacent to the intersection.
- This option does not address the difficult and confusing access to and from Frontier Village. Might make this access worse
- Depending on the modification at the SR 204/91st Ave NE intersection, vehicles waiting to turn left onto southbound 91<sup>st</sup> may still block traffic and clog up the SR 9/SR 204 intersection.



## Proposed improvement options (continued)

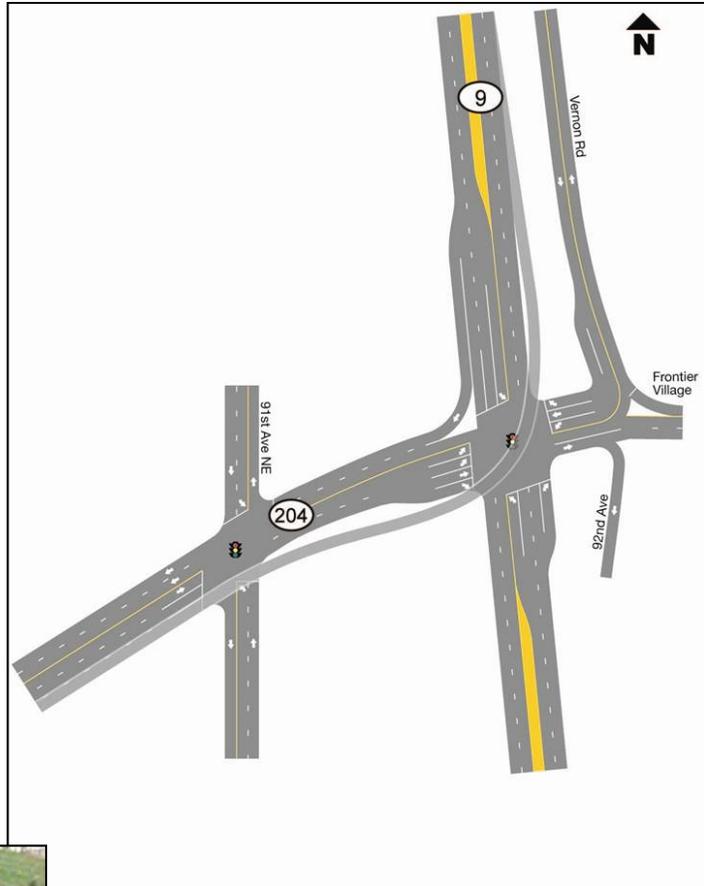
### Option 4: Flyover

This alternative would add one or two flyover ramps at the intersection of SR 9 & SR 204. The option would separate left turns so that, for example, traffic headed to northbound SR 9 from eastbound SR 204 would not have to go through the signal.

**Estimated cost (million): \$52—\$63**

#### Benefits:

- A flyover reduces congestion by removing significant traffic movement (eastbound SR 204 to northbound SR 9) from going through the intersection.
- This option could reduce the average wait time to 1.2 minutes during the evening commute in 2030.
- It still provides options for eastbound SR 204 traffic to access businesses on the east side of SR 9.



#### Disadvantages:

- This option only addresses northbound SR 9 traffic, not the congestion at 91st Ave NE.
- A flyover doesn't fix confusing entrance to businesses on the east side of SR 9.
- Commuters may bypass businesses.
- Seismic safety concerns with long, elevated structures.
- This option doesn't address southbound traffic congestion.

# Conclusion

## Considerations for each option:

	Option 0 No Build	Option 1 Adding Lanes	Option 2A Diamond Interchange w/Signals	Option 2B Diamond Interchange w/Roundabouts	Option 3 Single Point Urban Interchange (SPUI)	Option 4 Flyover Ramp
Estimated Cost (million)	-	\$19 - \$23	\$53 - \$64	\$58 - \$70	\$50 - \$60	\$52 - \$63
Reduce Congestion	No	Yes	Yes	Yes	Yes	Yes
2030 Intersection LOS	F	D	D	B	C	E
Estimated 2030 Average Intersection Wait Time (Evening Commute)	92 sec	55 sec	52 sec	14 sec	31 sec	72 sec
Congestion Reduction	-	40%	43%	85%	66%	22%
Allow For Better Connectivity with Vernon Road and Frontier Village	No	No	No	Yes	No	No
Impact to Adjacent Commercial Properties	None	High	Severely High	Severely High	Severely High	High
Relocate Vernon Road	No	Possibly	Yes	Yes	Yes	Likely
Relocate 92 <sup>nd</sup> Avenue	No	Possibly	Yes	Yes	Yes	No
Part of PSRC's Transportation 2040 Constrained Plan	-	Yes	No	No	No	No

## There are still issues to be worked through with the current options:

- Several options do not reduce confusion at the entrance to Frontier Village or improve access to the shopping area.
- Some options may make it even more difficult for pedestrians and bicyclists to get around.
- It is important that any improvements consider the needs of freight.
- The anticipated costs and construction impacts associated with these options are huge.

## Several ideas for how to move forward:

- Option 1 (Adding Lanes) is the least expensive, is consistent with state planning policies, is in agreement with Moving Washington principles, matches with the SR 9 Route Development Plan, and included in PSRC's Transportation 2040 Constrained Plan. However, it does not allow for better connectivity with Vernon Road and Frontier Village.
- Option 2B (Diamond Interchange with Roundabouts) provides the most congestion reduction and allows for better connectivity with Vernon road and Frontier Village. However, it is not consistent with state planning policies, Moving Washington principles, or PSRC's Transportation 2040.
- An improvement that elevates one of the highways (for example, brings SR 9 over SR 204) would be beneficial because it removes a great deal of traffic from the congested, complicated intersection. However, there are concerns that this type of improvement, because it provides free flow on one of the highways, may reduce "impulse buying" in this important retail center.

- Roundabouts in combination with other improvements should be considered.
- Improvements at the SR 204 intersection with 91st Avenue NE should be considered with all options.
- Better utilize the local street system – especially Lundeen Parkway and Market Place – should be considered to relieve congestion on the state highways.

Participants recognized that funding for highway improvements like this is extremely limited, but it is important to proceed with preliminary design so the necessary information is available when funding opportunities arise. It is important to set a direction for state highway improvements so the city can coordinate improvements to the local street system.