

Chapter 6  
Proposed Strategies,  
Planning Level Cost Estimates and  
Benefit/Cost Analyses

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## Data and Evaluation Tools

For the operational analysis of this corridor, the study utilized the *US-395 – I-82 to I-182 Corridor Study* prepared by the WSDOT South Central Region Traffic Office in February of 2011. This study used 2010 traffic volumes collected for the AM and PM peak hours by WSDOT. These volumes were adjusted for the current year volumes (2012) and the assumed linear growth rate was used to age the volumes to the design year (2032).

It was determined by the counts and the analyses that the highest volume was in the PM peak. For this reason, all analyses made to improve the LOS of a particular intersection or roadway section is for the 2032 PM peak. Synchro 7 was used to evaluate signalized and unsignalized intersections while HCS+ was used for freeway analysis.

## Development of the Proposed Strategies

Once corridor problems were identified, the next step evaluated various options to address them. The analysis produced a wealth of data about each option; screening criteria were used to make sense of the technical information and highlight the benefits and disadvantages of each potential strategy. The criteria allowed a compare and contrast analysis which lead to a rating for each strategy.

## Moving Washington Forward & Building on Existing Investments

Effective transportation is critical to maintaining our economy, environment and quality of life. Moving Washington Forward is WSDOT's vision of investments and priorities for the next 10 years. It integrates new capacity, efficiencies and commute options to address congestion head-on and improve the performance of our state's transportation system including reductions in greenhouse gas emissions (GHG) and vehicle miles traveled (VMT). The program's primary objective is mobility along with preservation, safety, sustainability, and sound stewardship.

The Moving Washington Forward program includes three strategies to address traffic congestion and mobility in our urban corridors and across the state. The three strategies are:

- **Operate efficiently** to get the most out of the existing highways and infrastructure.
- **Manage demand** by offering more traveler options.
- **Add capacity strategically** to best use limited resources by targeting the most congested areas or critical system gaps.

## Screening Criteria

The screening criteria were developed collaboratively with stakeholders to compare and contrast strategies. Once the evaluation of each strategy was complete, the project team reviewed the results to determine if each strategy met the study's objectives. This evaluation is based on the analysis results for 2032 evening peak traffic. The list of stakeholders and scoring of the strategies is in the appendix.

### **Safety**

#### **Highest collision locations – Collision Reduction**

Does the alternative reduce the potential for crashes and reduce the potential of crash severity at locations with known crash history?

### Predicted safety benefits – Collision Prevention

Does the alternative serve to prevent collisions based upon national standards and safety methodology?

### **Design**

#### Geometrics

Does the alternative meet applicable design standards, or correct an existing design deficiency?

(Note: The safety, mobility, access, and modal aspects of design standards are scored separately under those respective sections. However, the design standards associated with the Americans with Disabilities Act are included with this criterion).

### **Mobility**

#### Level of Service (LOS) on US 395

Does the alternative degrade or reduce delay at intersections and/or capacity between intersections?

(Note: Level of Service (LOS) is the generally accepted method of describing traffic conditions. Conditions are divided into six levels, A through F, depending on measurable criteria such as average delay, speed and travel time, maneuverability, and traffic density. The acceptable LOS threshold for US 395 in the study area is LOS D. This criterion measures LOS for each intersection (for all legs including the local roads) and for each highway segment between the intersections.)

#### Travel time for corridor trips

Does the alternative increase or decrease the average travel time on US 395 through Kennewick and Pasco?

(Note: US 395 is classified as a highway of statewide significance and is intended to serve national and international travel as well as local trips. Drivers traveling through the Tri-Cities area via US 395 are considered “corridor trips”).

#### LOS on Local Streets

Does the alternative degrade or reduce delay at intersections and/or capacity between intersections?

(Note: The acceptable LOS threshold for local streets within Kennewick and Pasco is LOS D. This criterion measures the LOS on the local street system away from US 395.)

### **Environment**

#### Natural environment

Does the alternative create a significant adverse impact on the natural environment?

(Note: The natural environment includes the environmental, scenic, aesthetic, and natural resource values of a geographic area.)

#### Built environment

Does the alternative create a significant adverse impact on the built environment?

(Note: The built environment includes man-made buildings and structures, local businesses, noise, land use and socioeconomic factors within a geographic area.)

### **Modal Options**

#### Alternative modes (transit, HOV)

Does the concept enhance or improve the local transit system (including functionality) and/or the ability to use alternative modes?

(Note: Transit is the transportation of passengers by means of a local public transportation system.)

### [Pedestrians and Bicyclists](#)

Does the alternative promote, enhance or improve non-motorist access within the corridor?

#### **Access**

##### [Access to the corridor for adjoining land use](#)

Does the alternative provide access at appropriate locations to serve adjoining land uses?

(Note: US 395 is a limited access facility. Limited access is established to preserve the safety and efficiency of specific state highways and to preserve the public investment. Limited access facilities are not designed for direct access to the highway from adjoining land uses, but provide access for these land uses at intersections. Further, Access to local business is scored separately under impacts to the built environment.)

##### [Access control](#)

Does the alternative adversely impact limited access control along US 395?

(Note: Limited access highways are distinguished as having full, partial, or modified control. The number of access points per mile, spacing of interchanges or intersections, and the location of frontage roads or local road/street connections are determined according to these levels.)

#### **Freight & Economic Vitality**

##### [Predictable freight movement in the corridor](#)

Does the alternative improve the consistency of freight vehicle travel times?

(Note: Predictable freight movement has consistent travel times from day-to-day for a given time of day.)

##### [Economic vitality \(RCW 47.04.280 \(1\)\(a\)\)](#)

Does the alternative promote and develop transportation systems that stimulate, support, and enhance the movement of people and goods to ensure a prosperous economy?

(Note: Impacts to local businesses is scored separately under impacts to the Built Environment, and LOS strategies are under Mobility).

#### **Preservation**

##### [Maintainability of existing infrastructure](#)

Is the alternative relatively inexpensive and easy to maintain?

#### **Compatibility**

##### [Compatible with state system plans](#)

Does the alternative take into consideration state transportation improvement plans?

##### [Compatible with local system plans](#)

Does the alternative take into consideration local transportation improvement plans?

The US 395 Planning Study will include input from local and regional planning organizations.

#### **Implementation**

##### [Construction impacts](#)

During construction, does the alternative allow US 395 and the local street system to continue functioning at an acceptable level, have few or no detours, and can it be constructed in a timely manner?

##### [Improvement can be made incrementally](#)

Can the alternative be increased or decreased in scale as funding, resources, or timelines necessitate?

(Note: An alternative should be able to be implemented or constructed in phases or steps.)

## Conceptual Strategies

US 395 and the local street systems operate as a complementary network serving the Tri-Cities and the greater region. Operational limitations or deficiencies on the local street system can negatively impact the operation of US 395. Therefore, conceptual strategies to improve the operation of US 395 will analyze both US 395 and the local street system strategies.

## Non-Applicable Strategies

The following options were reviewed and determined to not be applicable or did not have a significant mobility or safety benefit. These strategies will not be analyzed any further for the US 395 Planning Study.

### ***Hard shoulder running***

US 395 has shoulders from I-82 to 10<sup>th</sup> Avenue and from the bridge over Canal Drive to I-182. There are curbs from 10<sup>th</sup> Avenue to the bridge over Canal Drive. The shoulders are used for bicyclists and pedestrians. Most of the segments with shoulders do not have mobility issues, and the segments with mobility concerns have insufficient shoulder width to accommodate vehicles and would be moot due to the limited number of lanes on the Columbia River Bridge.

### ***Event management***

The largest event in the corridor is the hydroplane races, which occur outside peak times. Other events are much smaller in scale and located outside the areas of mobility concern. Also, events only occur sporadically in the corridor and so event management would not have a lasting benefit for the mobility of the corridor.

### ***Work zone management***

Work zone management is important during project construction, but it does not have a lasting benefit for the corridor.

### ***Dynamic re-routing***

Dynamic re-routing uses overhead signs, lights and changing lane markings to alert drivers to change their route based on current traffic conditions. There are no alternate routes for drivers to be re-directed to if conditions warrant.

### ***Transit signal priority systems***

The Ben Franklin Transit routes only travel on US 395 for short distances through the signalized portion. Also, interrupting the optimized signal timing would likely create more disruptions to traffic flow than would benefit.

### ***Commercial vehicle information systems (CVIS)***

The CVIS is designed to quickly identify and weigh commercial trucks at weigh stations. There are no weigh stations in this corridor and so this does not apply.

### ***Direct access ramps***

Direct access ramps allow buses, carpools, vanpools, and motorcycles to directly access high occupancy vehicle (HOV) lanes in the center of the freeway. There are no HOV lanes on US 395. Also, the only Ben Franklin Transit route operating in the highway section runs from the Lewis Street Interchange across the Columbia River Bridge to the SR 240 Interchange. Any direct access ramp would be of little effect due to only two lanes in each direction on the Columbia River Bridge.

## Strategies Removed from Consideration

The following concepts were analyzed and are not being considered further due to the reasons stated below.

### ***Restrict 19th and 7th Avenues to right-in right-out movements***

Restricting movements and eliminating signals at these intersections would benefit mobility on US 395; however, 19<sup>th</sup> and 7<sup>th</sup> Avenues do not fall below LOS D in the 20-year horizon. There is no need to restrict these movements as the mobility benefit is minimal.

### ***Variable speed limits***

Variable speed limits are not applicable for the study corridor. Variable speed limits are used in high-speed highway sections with interchanges and typically with speed limits of 60 miles per hour or greater. The US 395 highway section has speeds between 45 and 55 miles per hour and the portion north of Lewis Street has minimal mobility issues. One potential location variable speed limits could be used is on the Columbia River Bridge. The speed limit on the bridge is 55 mph. Southbound motorists may not see slowing or stopped vehicles in SR 240 Interchange vicinity due to the vertical curvature of the bridge. Variable speed limit signs could alert motorists to congestion ahead as they travel over the bridge. The improvements to the SR 240 interchange in 2010 have reduced congestion, so this is not currently an operational concern. If this condition develops again, variable speed limits could be considered for this location.

### ***Restrict left-turns by time of day***

Prohibiting left-turns at signalized intersections during peak times – two hours in the morning and two hours in the afternoon – would significantly improve the mobility on US 395 during the most congested times. It would require US 395 left-turning motorists to take a more circuitous route to get to their destination. The motorist would be required to either alter the route to avoid US 395 altogether, or make a right turn within the system, enter the City street network to ultimately cross US 395. The City of Kennewick does not support this option since there would be increased congestion with more turning movements, longer queues and longer trips on local streets. This alternative is removed from consideration.

### ***Permissive left-turns (flashing yellow arrow)***

Region Traffic personnel recently installed flashing yellow arrow (FYA) left-turn traffic signals at the Clearwater Avenue and Kennewick Avenue intersections. The benefits occur at off peak times when gaps in the traffic are available. The characteristics for implementation to other signalized intersections do not lend themselves to the use of FYAs and are not applicable. This improvement has been completed.

### ***Couplet at Kennewick and Clearwater Avenues***

This concept was analyzed and was shown to provide a significant improvement to the Level of Service on US 395 at a low cost having an LOS C in 2031. The couplet does require substantial physical and operational changes to the local street system designating some streets as one-way streets. The City of Kennewick does not support this option due to the negative business impacts.

### ***Reconfigure channelization of Vista Way***

This alternative would restripe westbound Vista Way from a shared through-left and a shared through-right to a shared through-left and a dedicated right-turn lane. There are more right turning vehicles than left-turning vehicles, but most of the vehicles (75%) are going straight through. Traffic modeling indicates the delay increases for most movements, so this option is not being considered.

***Realign Vista Way at the US 395 intersection***

This proposal would realign Vista Way at the US 395 intersection to more closely line up with Clearwater Avenue. The split signal phasing on the City legs of the intersection would be eliminated. The Clearwater Avenue and Vista Way signal phases would have green lights at the same time improving the intersection operation. The City of Kennewick is not in favor of this proposal, since it would require removal of one or two businesses. Also, the Dennis Street and Bruneau Place intersections with Vista Way would have to be modified and may change the neighborhood traffic flow.

***Acquire additional access rights in the Modified Access Control section***

The vast majority of deeded approaches to US 395 (32 of 40) are in the modified limited access section from 10<sup>th</sup> Avenue to Ely Street/Dennis Street. Acquiring additional access rights would reduce the number of approaches onto US 395.

To acquire all 32 approaches between 10<sup>th</sup> Avenue and Ely Street/Dennis Street would cost approximately \$51,000,000 based on assessed property values in 2013. It may be possible to consolidate approaches during land use redevelopment, or if highway projects require acquisition. However, as these approaches all function with right-in and right-out traffic movements within this established business and commercial corridor, the mobility and safety benefits are not significant.

***Roundabouts at signalized intersections***

Roundabouts were analyzed and found to fail within the 20-year horizon due to high left-turn volumes.

***Construct business access transit (BAT) lanes***

In the modified limited access section of the highway, where numerous commercial approaches exist, added general purpose lanes could be converted to Business Access and Transit (BAT) lanes. The BAT lanes would serve right-turning vehicles and transit only. Vehicles exiting or entering the highway from the right would be kept out of the main traffic stream resulting in reduced congestion and improved safety. At each intersection the lane would “drop”, requiring vehicles to turn right onto the side street rather than continue through the intersection. BAT lanes would not have a significant increase in throughput; therefore, delay would not be significantly reduced at intersections. Further, road approaches in the modified limit access section of this corridor are not major contributors to delay.

***Grade-separate the signalized corridor from I-82 to SR 240***

Remove traffic signals through the corridor and construct grade-separated interchanges at specified locations. This concept has the greatest potential for improving mobility on US 395 requiring only two through lanes in each direction to maintain an acceptable level of service over the 20-year study period. However, it would be very expensive and interchange construction would require right-of-way acquisition and relocation costs. It is not being considered due to the high cost and conflicts with the Moving Washington Forward program indicating other alternatives need to be considered first.

***Construct a new bypass route***

A new bypass route would construct a new highway section on new alignment with full access control around Kennewick and Pasco. The bypass would be the most expensive option. Most of the freight traffic and much of the general traffic have a destination within the Tri-Cities. This option is unaffordable at this time, would likely not divert much to the bypass route, and is not compatible with the Moving Washington Forward program.

## Strategies for Local Streets

Improved north-south traffic flows on local arterials within the City of Kennewick would encourage local trips to use the local street system. This would improve mobility on the highway and is consistent with the Moving Washington Forward program. The following corridors are discussed as locations that could be improved for north-south traffic flows. These options would require the City to make improvements or modifications to their local street system.

### ***Parallel Corridor – Steptoe Street (Principal Arterial)-under construction***

The City of Kennewick has been constructing a new arterial connecting Steptoe Street south to Hildebrand Boulevard, serving the Southridge Sub-Area development. Hildebrand Boulevard has been completed to Sherman Street and Steptoe Street has been extended to Clearwater Avenue. The remaining three mile section is anticipated to be constructed within the next five years.

### ***Parallel Corridor – Olympia Street (Minor Arterial)-under construction***

Olympia Street is a long minor arterial route approximately three and one-half miles long extending from SR 397 at the south end to Kennewick Avenue at the north end. It is a three-lane signalized street located one mile east of US 395.

### ***Connect Olympia Street to Columbia Drive***

Extend Olympia Street north from Kennewick Avenue to Columbia Drive angling it eastward to keep some distance from the SR 240 interchange. This would provide a continuous local north-south arterial from SR 397 to Columbia Drive. The extension would have to cross over the railroad tracks before intersecting Columbia Drive at grade. This would allow local traffic to connect to US 395 at the SR 240/Columbia Drive Interchange. Also, motorists wanting to get to SR 240 could bypass US 395 by using Columbia Drive and the SR 240 Interchange thereby reducing traffic on US 395. Although this option has been considered by the City, the cost of construction was determined to be too high and they no longer consider it a viable option.

### ***Parallel Corridor – Union Street, Volland Street, Southridge Boulevard (Minor Arterial, Collector)***

The Union Street corridor parallels US 395 on the west side of the highway. Three local roads form this corridor. It begins at the south end where Southridge Boulevard intersects Christenson Road. Next, it connects to Union Street at 27<sup>th</sup> Avenue. Lastly, it connects to Volland Street at Clearwater Avenue terminating at Canal Drive on the north end. Southridge Boulevard is generally one-quarter mile from US 395, and Union and Volland Streets are largely one mile west of the highway. Union Street and Volland Streets are minor arterials; Southridge Boulevard is a collector.

## Strategies for Consideration

The following are strategies for further consideration, and are supported by the stakeholders. They address operational issues at identified bottlenecks, chokepoints, and congested areas where the operations currently fail or will soon fail. These strategies will be identified in accordance to the three Moving Washington Forward elements: Operate Efficiently, Manage Demand, and Add Capacity Strategically. Standard WSDOT methodology was used to calculate the costs (usually the Planning Level Costs Estimate (PLCE) program), and the benefits and benefit/cost ratios (usually using the Mobility Project Prioritization Process (MPPP or MP3) Excel spreadsheet). All costs are expressed in 2014 dollars. The Moving Washington Forward strategies being considered are identified below. See Appendix J for benefit-cost analysis worksheets.

However, there are strategies that will require further evaluation and refinement depending on how effective some of the lower cost strategies have improved mobility. Separating out the Planning Level phases of these

strategies will allow us to study and scope them further using Least Cost Planning and Practical Design methods. These Planning Level strategies are identified below:

#### [Study and Scope Complete Roadway from SR 240 to Kennewick Avenue](#)

With the highest traffic volumes in the corridor, this segment will see the most benefit from an additional travel lane in each direction. Additional capacity has been needed for the past two years, and the segment is currently failing. This area of the corridor is also a current barrier to bike and pedestrian movement along the corridor. Appreciable time will be required for study, scoping and design for bridge widening, signal relocation, permitting, potential right-of-way needs, and a possible noise wall, so it is important that this phase begin soon.

#### [Study and Scope Construction of Additional Columbia River Crossing](#)

This strategy is a low cost incremental method to further study whether there is still a need for additional lanes on the US 395 Columbia River Bridge. The existing US 395 Columbia River Bridge is projected to fail by the year 2020. Without additional lanes crossing the Columbia River, the US 395 Columbia River Bridge will increasingly become more and more of a bottleneck for the Tri-Cities and the region. The current bridge is also a barrier to bike and pedestrian movement in the corridor. There is strong interest in the Tri-Cities area for another Columbia River crossing. The Tri-Cities jurisdictions are studying the possibility of constructing an additional crossing of the Columbia River. Depending upon the results of the local study and the actions taken based on the study, the need for additional lanes on the US 395 Columbia River Bridge may be delayed or eliminated.

If it is determined that an additional US 395 Columbia River Bridge is needed, it will require considerable planning, scoping and engineering for implementation, so it is important that this planning phase begin soon. Partial reconfiguration of the US 395/SR 240 and US 395/Lewis Street interchanges will also be required as part of this project.

#### [Study and Scope Complete Roadway from Kennewick Avenue to 10<sup>th</sup> Avenue and 10<sup>th</sup> Avenue to 27<sup>th</sup> Avenue](#)

This is a low cost incremental strategy to further study and scope additional lanes and non-motorized facilities from Kennewick Avenue to 10<sup>th</sup> Avenue and from 10<sup>th</sup> Avenue to 27<sup>th</sup> Avenue. Congestion on these segments is increasing and the highway is projected to fail within the near term. Appreciable time will be required for study, scoping and design for bridge widening, signal relocation, permitting, potential right-of-way needs, and a possible noise wall, so it is important that this phase begin soon. The additional lane and bike / pedestrian facilities in each direction will provide the greatest benefit for much needed mobility.

### ***Operate Efficiently***

The Moving Washington Forward program directs decisions to get the most out of existing highways by using traffic management tools to optimize the flow of traffic and maximize available capacity. Lower-cost Operate Efficiently strategies would be implemented before adding capacity to achieve those objectives. The South Central Region Planning Office staff performed the cost estimates for these strategies unless otherwise stated. The Operate Efficiently strategies are identified below and explained further:

- Meter traffic through the signalized corridor
- Signs identifying alternate routes to the Tri-Cities Airport or Columbia Basin College
- Modify Yelm Street signal timing and add signage identifying alternate routes
- Right-in right-out at Yelm Street and double left-turn lane at Kennewick Avenue
- Double left-turn lane at Yelm Street
- Double left-turn lane at 10<sup>th</sup> Avenue
- Ramp meter on-ramps at Columbia Drive, Lewis Street and Court Street Interchanges

- *Incident Response Team (IRT) for US 395*
- Pedestrian crossing improvements at Kennewick Avenue and Clearwater Avenue
- US 395/Court Street Interchange to I-182 Interchange northbound weave lane
- I-182 Interchange US 395 to 20<sup>th</sup> Avenue eastbound weave lane
- Minor modification of the SR 240/US 395 Interchange

#### Meter traffic through the signalized corridor

In the absence of funding to improve mobility on US 395, signal timing could be modified to meter traffic through the signalized corridor during the morning and afternoon peaks. Traffic from the local street system onto US 395 would be metered to favor mobility for the heavy traffic volumes on the highway. US 395 could function within acceptable levels of service without the need for additional expansion for many years, but the local street system would need to be managed or developed to handle the local traffic. Signal timings for US 395 would be lengthened at the expense of the entering side street traffic. US 395 has significantly higher traffic volumes than the City side streets for most intersections within the signalized corridor. Generally, the ratio of traffic volumes is 2/3 on US 395 to 1/3 on the side street. The existing signal timing programs give the side streets 50-55% of the overall signal cycle length. While this alternative will improve the mobility and Level of Service on US 395, without City improvements to their local system, the side streets will experience more congestion with longer queues, taking two or more cycles to get through an intersection and a lower level of service.

Metering traffic through the signalized corridor only requires the signal timing to be modified. Only staff time is necessary and would cost approximately \$5,000 to implement.

#### Signs identifying alternate routes to the Tri-Cities Airport or Columbia Basin College

The Tri-Cities Airport and Columbia Basin College are two major traffic generators that access from the I-182/20<sup>th</sup> Avenue Interchange. The destinations are signed on northbound US 395 directing motorists to use the I-182 20<sup>th</sup> Avenue exit. However, the weave section from northbound US 395 to the I-182/20<sup>th</sup> Avenue exit is congested. Alternate routes do exist: the I-182/Argent Road exit, the US 395/Lewis Street/Sylvester Street interchange and the US 395/Court Street interchange. Signing alternate routes is a low-cost way to improve the weave congestion. The travel time signs could be either static signs, which are inexpensive, or active traffic management signs, which would provide real time travel times to drivers.

Static signs would cost about \$1,000. There will likely be only a minimal improvement in the US 395 Level of Service.

#### Modify Yelm Street signal timing and add signage identifying alternate routes

The Yelm Street intersection today operates below the acceptable LOS. During the PM peak period, the large number of southbound vehicles turning left onto Yelm Street degrades the overall LOS of the intersection and the mobility for the heavy northbound through movement on the highway. Although 600 feet of left-turn storage exists, the volumes exceed the left turn cycle and left-turning vehicles are stacking beyond the available storage length and into the through lanes. Static signs should be placed in advance of the Columbia Drive interchange encouraging alternate routes to the predominant residential land use south of Yelm Street. The signs, combined with a reduction in green signal time for the left turn movement will help persuade the motorists to seek a different route.

The cost to change the Yelm Street signal timing and add static signs is estimated at \$30,000.

#### Right-in right-out at Yelm Street and double left-turn lane at Kennewick Avenue

This alternative would restrict the intersection to right-in and right-out movements only, remove the existing traffic signal at Yelm Street and install barrier through the median of US 395. All left-turning traffic would be

restricted to using Kennewick's arterial streets, such as Columbia Drive, Vista Way, or Kennewick Avenue. To accommodate the additional left-turning vehicles, a double left-turn lane would be constructed at Kennewick Avenue. While this will resolve the mobility issues at the Yelm Street and Kennewick Avenue intersections, it creates further delay at Clearwater Avenue. This solution continues to operate effectively if a third southbound lane is constructed for mainline traffic. The Planning Level Cost Estimate (PLCE) is \$342,000. The construction of a double left-turn lane at Kennewick Avenue accounts for most of the cost with minimal expense to install barrier and remove the existing traffic signal.

#### Double left-turn lane at Yelm Street

This alternative adds a second southbound US 395 left-turn lane at Yelm Street. The south leg of Yelm Street would be restriped to have two southbound lanes for a distance of about 150 feet. The northbound direction would be restriped to a shared through/left-turn lane, and retain the existing dedicated right-turn lane. Combining these movements to accommodate a second southbound lane significantly improves the overall level of service for the intersection with minimal additional cost. This is expected to keep the left-turning traffic on US 395 from stacking up into the through lanes improving mobility on US 395 and better serving local traffic. When a third southbound lane is constructed for mainline traffic, there is insufficient distance for the weave from SR 240 to the left-turn lanes. Restrictions or alternate solutions will be needed to address the weave.

The cost is estimated at \$768,000. The mobility benefits are \$13.8 million and the safety benefits are \$2.6 million for a total of \$16.4 million. The benefit/cost ratio is extremely high at 23.9.

#### Double left-turn lanes at 10th Avenue

This alternative would add a second southbound and northbound left-turn lane at 10<sup>th</sup> Avenue. No modification to 10<sup>th</sup> Avenue is required as the current configuration has the available receiving lanes. This strategy will prevent left-turning vehicles from backing-up into the mainline through lanes and move more vehicles through the intersection in less time. The additional signal time can then be allocated to other turning movements to further reduce delay at this intersection.

The cost is estimated at \$563,000. The intersection benefits are \$7.6 million and the safety benefits are \$2.0 million for a total of \$9.6 million. The benefit/cost ratio is 18.9.

#### Ramp meter on-ramps at Columbia Drive, Lewis Street and Court Street Interchanges

Metering the northbound Columbia Drive on-ramp, the southbound Lewis Street on-ramp, the northbound Court Street on-ramp, and two southbound Court Street on-ramps during afternoon peak hours will reduce mainline congestion during the shoulders of the peak period by controlling the rate of merging vehicles. Platooning from the ramps during these periods will be eliminated and the mainline mobility will be extended. This will help keep traffic flowing at higher speeds allowing the highway to operate within acceptable LOS standards. The most critical locations to ramp meter are the approaches to the Columbia River Bridge at Columbia Drive and Lewis Street. It is likely ramp meters would be installed at these two locations first.

Ramp metering costs approximately \$200,000 at each location and includes widening for a bus and High Occupancy Vehicle (HOV) bypass lane.

#### Incident Response Team (IRT) for US 395

IRT's help keep traffic flowing by responding to crashes, disabled vehicles, and other non-recurring events that impede highway operations. The 2012 Congestion Report identifies adding an IRT for the Tri-Cities area as a congestion relief project. The IRT's primary purpose would be for the Columbia River Bridge, but would be beneficial elsewhere as well.

The IRT cost is estimated at \$220,000 annually for a cost of \$4,400,000 over 20 years. It includes two part-time crews and two IRT pickup trucks. Each team is composed of two people. Two different teams are needed to cover the morning and afternoon peak hours because the peaks are longer than a normal work day. Each team is only needed for part of a day, so the estimate only funds them at a half-time level. It is likely there will only be a minimal improvement on the US 395 Level of Service, but will reduce congestion impacts from incidents.

#### Pedestrian crossing modifications at Kennewick Avenue and Clearwater Avenue

There are large pedestrian volumes at the Kennewick Avenue and Clearwater Avenue intersections. Pedestrians require a longer time to cross US 395 affecting the traffic signal coordination. There are two identified strategies to improve pedestrian mobility and vehicular traffic. A tunnel was removed from consideration because it is perceived as unsafe from a personal security standpoint.

- A pedestrian bridge could be constructed between Kennewick and Clearwater Avenues to serve pedestrians from both intersections. The streets are 0.19 miles (1,000 feet) apart. Pedestrians would be prohibited from crossing at Clearwater Avenue or Kennewick Avenue. A bridge would require elevators to accommodate the Americans with Disabilities Act (ADA). The cost is estimated at \$2,000,000.
- A median refuge (minimum nine feet in width) could be constructed, so pedestrians would remain in the median refuge between walk signals. This allows the traffic signals to remain coordinated and addresses pedestrian accessibility. There is sufficient right-of-way to construct a median refuge, but would require significant costs for pavement widening and for moving and modifying the traffic signals. The cost is estimated at \$2,000,000.

Neither WSDOT nor the City has identified a preferred strategy at this time. There will be significant benefits to the US 395 mobility because the signal progression through the corridor can be retained and traffic will continue to flow, especially during the afternoon peak.

#### US 395/Court Street Interchange to I-182 Interchange northbound weave lane

This strategy adds a second lane to the northbound US 395 Court Street on-ramp and the northbound US 395 off-ramp to eastbound I-182. Together with the additional lane on the eastbound I-182 collector-distributor (C-D) this strategy will provide a dedicated lane for traffic moving from Court Street to 20<sup>th</sup> Avenue reducing the number of vehicles involved in the weave movement. The strategy will allow the weave to operate within acceptable levels of service during peak hours reducing conflicts and improves safety.

The cost is estimated at \$2.5 million with mobility benefits of \$30.3 million. The benefit/cost ratio is 14.2.

#### I-182 Interchange US 395 to 20<sup>th</sup> Avenue eastbound weave lane

This strategy adds a second lane to the I-182 C-D and 20<sup>th</sup> Avenue off-ramp to the intersection. Together with the additional lane from the northbound Court Street on-ramp to the US 395 off-ramp the second C-D lane will provide a dedicated lane for traffic moving from Court Street to 20<sup>th</sup> Avenue reducing the number of vehicles involved in the weave movement. The strategy will allow the weave to operate within acceptable levels of service during peak hours reducing conflicts and improves safety.

The cost is estimated at \$2.5 million. The mobility benefits are \$136 million with a very high benefit/cost ratio of 64.8.

#### Minor modification of the SR 240/US 395 Interchange

This alternative straightens northbound US 395 through the interchange and reestablishes two northbound through-lanes to the Columbia River Bridge. Results will be reduced congestion at the Columbia Drive northbound on-ramp connection and improved sight distance for the SR 240 northbound on-ramp. The improved sight distance will allow the ramp to change from the current add-lane configuration back to a merge

connection, freeing up a lane on the bridge for a northbound through lane. The radius of the last curve of the ramp will also be increased to allow higher merging speeds with mainline to improve safety and traffic flow at the ramp connection.

The cost is estimated at \$5.9 million. The mobility benefits are \$9.4 million and the safety benefits are \$14.0 million for a total of \$23.4 million. The benefit/cost ratio is 4.7.

### ***Manage Demand***

These Manage Demand strategies use transportation demand management alternatives to maximize the available capacity and optimize traffic flow on US 395. They are useful as low-cost methods to optimize our existing highway system, but alone are expected to have minimal effects on mobility for US 395. The South Central Region Planning Office staff performed the cost estimates for these Manage Demand strategies. The Manage Demand strategies are identified below and explained further:

- Establish Commute Trip Reduction (CTR) Program
- Expand and promote vanpooling
- Expand and promote park-and-ride lots
- Expand and promote transit service
- Add dynamic travel time signs
- Promote existing flow maps
- Construct shared-use path within US 395 right-of-way on both sides from Ridgeline Drive to 27<sup>th</sup> Avenue
- Construct shared-use path within US 395 right-of-way on both sides from 27<sup>th</sup> Avenue to 10<sup>th</sup> Avenue
- Construct shared-use path within US 395 right-of-way on both sides from 10<sup>th</sup> Avenue to Yelm Street
- Construct shared-use path within US 395 right-of-way on both sides from Yelm Street to Sacagawea Heritage Trail Loop
- Construct new separate shared-use pedestrian-bicycle bridge over Columbia River Traffic Management Center (TMC) enhancements to serve the Tri-Cities
- Variable rate tolling

#### ***Establish Commute Trip Reduction (CTR) Program***

The Tri-Cities has qualified for a CTR program for many years, but has not been implemented due to a lack of funding. The program would cost a minimum of \$150,000 for the first year to establish it and a minimum of \$110,000 per year to run it thereafter. In the Seattle area, a strong CTR campaign or program has been found to reduce vehicle miles traveled (VMT) up to five percent. To have a strong program to attain a five percent reduction will cost two to three times the minimums stated above. To attain a five percent reduction goal will require other Manage Demand strategies listed below to be implemented (vanpooling, park-and-ride lot expansion, expanded transit service, and additional bicycle and pedestrian infrastructure). The 20-year cost for a minimum CTR program is estimated at \$2,350,000. To attain a five percent reduction could cost an estimated \$6,750,000, plus \$142,700,000 to have the supporting infrastructure (transit, vanpools, park-and-ride, trails) in place to support a strong CTR program.

#### ***Expand and promote park-and-ride lots***

Ben Franklin Transit has identified this corridor as needing more park-and-ride lot capacity. There is no public land available for this development; therefore, land, likely commercial, will need to be purchased. Property acquisition is estimated to cost \$6,000 per stall and park-and-ride lot construction and site development is estimated to cost an additional \$6,000 per stall.

In order to achieve a 2% reduction in ADT (approximately 854 vehicles per day) along the corridor, approximately 1,206 new park-and-ride spaces are needed at an estimated cost of \$14,471,000. In addition, to effectively reduce demand, a campaign to promote utilization may cost \$250,000 per year, or, \$5,000,000 for 20 years. User benefits are estimated to be \$4,100,000. The total estimated cost for this improvement is \$19,471,000 with a user benefit to cost ratio of 0.21.

#### Expand and promote vanpooling

In the Tri-Cities region, vanpooling (or ridesharing), continues to be an underutilized strategy for reducing congestion. BFCG estimates that currently only seven vans operate within the corridor. The Hanford Site and surrounding vicinity experiences significantly higher vanpool utilization; however, these vanpools cover a vastly larger geographic area than the Tri-Cities metropolitan area and likely originate in areas away from the US 395 corridor. Expanding existing ridesharing within and along the study corridor could potentially reduce the ADT of US 395 by two percent or approximately 854 vehicles per day.

Expanding and promoting a more robust ridesharing program would require an advertising campaign, replacing current aging vans, as well as acquiring a significant number of new vehicles. It is important to note, this expanded fleet would come with an increased maintenance and operations budget and any successful program will require new and expanded park-and-ride-lots-to serve vanpoolers.

The initial cost for new vans was estimated to be \$9,610,000. This includes vehicle acquisition, replacement, and maintenance and operation costs over the next 20 years. The cost of adding 1083 new park-and-ride spaces to serve van pool users may cost up to \$13,566,000. User benefits are estimated to be \$4,800,000. Including \$5,000,000 for a 20-year advertising campaign, this entire program has a total estimated cost of \$28,176,000 and a user benefit to cost ratio of 0.17.

#### Expand and promote transit service

A campaign to reduce VMT by promoting transit would cost a minimum of \$250,000 per year or \$5,000,000 over 20 years. Promotion would be done through road signs, advertising in various media (such as television, radio, newspapers, and social media), displays, staffing community events, etc. To make transit more acceptable to commuters, additional buses will need to be added to reduce headways. The current headway is 30 minutes for both peak commute times and off peak times. The headway during peak times will need to be reduced to 15 minutes at peak commute times on Monday through Friday. The cost to purchase each new bus is \$500,000 plus an average operating cost of \$150 per hour. There are six bus routes that intersect or drive along on US 395. To expand the service for those six routes, 18 additional buses would be needed for a cost of \$9,000,000. The buses would be expected to operate an additional 81 hours per day or \$12,150 per day for operating expenses. The buses would operate 261 days per year (Monday-through-Friday) for a cost of \$3,171,150 per year or \$63,423,000 over 20 years. The total estimated cost for transit expansion and promotion is \$77,423,000. This is estimated to reduce 648 vehicle trips per day (or 1.3%) on US 395 in 2032.

#### Traffic Management Center (TMC) enhancements to serve the Tri-Cities

The TMC in Union Gap would be enhanced to better serve the Tri-Cities area. Intelligent Transportation System (ITS) infrastructure would need to be expanded in the Tri-Cities in order to implement some Manage Demand strategies. These strategies could include more cameras, highway advisory radios (HAR), active traffic management, dynamic travel time signs, changeable message signs, web sites, and flow maps. The TMC would monitor traffic in the Tri-Cities, identify problems, and provide information to travelers to avoid congested locations or allow them to plan for longer trip times. An additional TMC employee may need to be hired. The cost for all these strategies is estimated at \$5,900,000 including \$200,000 per year over 20 years for staffing.

#### Add dynamic travel time signs

Travel time signs would be installed to display estimated travel times for US 395 through the Tri-Cities and for alternatives to US 395. This allows drivers more control over travel plans and can make on-the-road route decisions. Travel time signs would be updated as conditions change throughout the day. ITS infrastructure would need to be installed. It would be coordinated with and monitored by the TMC in Union Gap. The costs for travel time signs are included in the TMC enhancements alternative. WSDOT Congestion Reports have identified traveler information enhancements for the Tri-Cities area as a congestion relief project.

### **Promote existing flow maps**

There are existing flow maps for the Tri-Cities on the WSDOT web site. Flow maps show real-time traffic conditions indicating where traffic is stop-and-go, heavy, moderate, or wide open. An advertising or education campaign could inform people of the availability of flow maps and explain how to use them. Enhancements to the current flow maps may require the TMC in Union Gap to interact with or monitor them. The costs are included in the TMC enhancements alternative.

### **Construct shared-use path within US 395 right-of-way on both sides from Ridgeline Dr to 27<sup>th</sup> Ave**

There is an existing shoulder for pedestrian and bicycle use. A shared-use pedestrian-bicycle path with a buffer would provide a safer and more user-friendly facility. A path would be constructed within US 395 right-of-way in both directions with a minimum of a six-foot buffer between the path and the edge of the shoulder. There is 150 feet to 200 feet of right-of-way. There are some vertical grades on this route, but the paths can be constructed within right-of-way in most locations. Decorative landscaping would be planted between the pathways and the highway main line. Other aesthetic treatments could be added as well. The cost is estimated at \$796,000 with mobility benefits of \$416,520. The benefit/cost ratio is 0.52.

### **Construct shared-use path within US 395 right-of-way on both sides from 27<sup>th</sup> Ave to 10<sup>th</sup> Ave**

There is an existing shoulder for pedestrian and bicycle use. A shared-use pedestrian-bicycle path with a buffer would provide a safer and more user-friendly facility. A path would be constructed within US 395 right-of-way in both directions with a minimum of a six-foot buffer between the path and the edge of the shoulder. There is 150 feet of right-of-way. This segment is relatively flat, so the paths can be constructed within existing right-of-way except for a small corner piece at 19<sup>th</sup> Avenue. Decorative landscaping would be planted between the pathways and the highway main line. Other aesthetic treatments could be added as well. The cost is estimated at \$1,236,000 with mobility benefits of \$530,280. The benefit/cost ratio is 0.43.

### **Construct shared-use path within US 395 right-of-way on both sides from 10<sup>th</sup> Ave to Yelm St**

There is an existing sidewalk located adjacent to the curb and bicyclists are permitted to travel within the highway lanes. A shared-use pedestrian-bicycle path with a buffer would provide a safer and more user-friendly facility for non-motorized users. The sidewalk would be replaced with a shared-use pedestrian-bicycle path in both directions with a minimum of a six-foot buffer between the path and the curb. The existing right-of-way varies from 100 to 150 feet. Additional right-of-way would be required on both sides of US 395 from 10<sup>th</sup> Avenue to Kennewick Avenue. Separate existing pedestrian-bicycle bridges would be built on either side of the 4<sup>th</sup> Avenue Bridge. Decorative landscaping would be planted between the pathways and the highway main line. Other aesthetic treatments could be added as well. The cost is estimated at \$4,441,000 with mobility benefits of \$795,440. The benefit/cost ratio is 0.18.

### **Construct shared-use path within US 395 right-of-way on northbound side only from Yelm St to Sacagawea Heritage Trail Loop**

Pedestrians are prohibited north of the Canal Drive Bridge and bicyclists are prohibited north of the northbound ramp and the shoulders are very narrow over the Canal Drive and UP/BNSF Bridges. A shared-use pedestrian-bicycle path with a buffer would provide a safer and more user-friendly facility for non-motorized users. A path would be constructed within US 395 right-of-way in the northbound direction only, but allow travel in both

directions. A path in the southbound direction would be very problematic due to the noise wall abutting the existing sidewalk and the difficulty of a non-motorized path traversing through the SR 240 Interchange area.

There is 130 to 150 feet of existing right-of-way from Yelm Street to the Canal Drive Bridge. The path will have a minimum of a six-foot buffer between the path and the curb. At the bridges over Canal Drive and the UP and BNSF railroad lines a separate non-motorized bridge would be constructed. The path would exit at the northbound off-ramp to Columbia Drive and follow along the south side of Columbia Drive until Kent Place. It would then cross Columbia Drive and follow along the north side of Columbia Drive until the northbound entrance ramp to US 395. The path would parallel the ramp on the outer edge of the interchange right-of-way until it intersects the Sacagawea Heritage Trail Loop along the Columbia River or connecting to the path which goes to the sidewalk on the Columbia River Bridge.

Decorative landscaping would be planted between the pathways and the highway main line. Other aesthetic treatments could be added as well. The cost is estimated at \$7,275,000 with mobility benefits of \$208,280. The benefit/cost ratio is 0.03.

#### [Construct new separate shared-use pedestrian-bicycle bridge over Columbia River](#)

There is a sidewalk on the Columbia River Bridge, but it is narrow (3.5 to 4 feet wide). Bicyclists are required to dismount and walk their bicycles over the river (about one-half mile). A separate bridge for shared-use pedestrian-bicycle travel would provide a safer feel and allow bicyclists to ride over the Columbia River. A new separate shared-use pedestrian-bicycle bridge would be constructed over the Columbia River parallel to the existing Columbia River Bridge. It would connect the Sacagawea Heritage Loop Trail in Pasco to the segment in Kennewick. The existing sidewalk on the Columbia River Bridge is only 3.5 to 4 feet wide and bicyclists are required to walk their bicycles. The cost is estimated at \$18,880,000 with mobility benefits of \$232,060. The benefit/cost ratio is 0.01.

#### [Variable rate tolling](#)

Variable rate tolling adjusts the toll rate to reduce traffic during congested times. Rates can be adjusted dynamically based on real-time traffic conditions or day of the week and time of day. When traffic is heavy, the toll price increases, and when it is light, the price decreases. Variable rate tolling can be implemented to improve traffic flow.

In the US 395 study corridor, the most likely location for variable rate tolling is the Columbia River Bridge. Tolling will be used to help pay for the addition of a second Columbia River bridge. Tolling may begin prior to bridge expansion or once it is constructed. It could also possibly be used to reduce congestion in other locations within the corridor. The cost to institute variable rate tolling is estimated at \$20 million including marketing and startup costs in an area where no current tolling exists.

### ***Add Capacity Strategically***

After other applicable Moving Washington Forward strategies have been applied, the worst traffic bottlenecks are targeted to add capacity strategically. The cost estimates are from the Planning Level Cost Estimate (PLCE) software unless otherwise stated. The Add Capacity Strategically strategies are identified below and explained further:

- Ridgeline Drive – grade-separated crossing
- Add general purpose lanes from SR 240 to Kennewick Avenue (segment 1)
- Add general purpose lanes from Kennewick Avenue to 10<sup>th</sup> Avenue (segment 2)
- Add general purpose lanes from 10<sup>th</sup> Avenue to 27<sup>th</sup> Avenue (segment 3)
- Add general purpose lanes from 27<sup>th</sup> Avenue to I-82 (segment 4)
- Construct additional Columbia River crossing

- Re-construct Lewis Street/Sylvester Street Interchange

#### Construct Interchange at Ridgeline Drive

The City of Kennewick and WSDOT have coordinated improvement options at this location for several years. After two Value Engineering (VE) studies, it has been determined an interchange is the solution for this area. Today, Ridgeline Drive has restricted traffic movements (right-in or right-out only) which has little delay and few crashes. The existing intersection is unsuitable for signalization or a roundabout due to the steep grade, high speeds in connection with the close proximity to the interstate, and the heavy truck volumes.

Grade separation would allow for all movements. Because there is little delay and few existing collisions, the calculated benefits are relatively small. However, this strategy is very important to the City of Kennewick to serve the development plans for the Southridge Subarea. The cost is estimated at \$20 million based on a VE Study performed by WSDOT with the City of Kennewick in December, 2014. There are \$3.9 million in benefits for a benefit/cost ratio of 0.20.

#### Add general purpose lanes from I-82 to Columbia River

Additional lanes between I-82 and the Columbia River will have the greatest benefit for capacity within the corridor during the 20-year study period. South of the river, the current four-lane configuration creates long queues at signals and requires increasingly more signal time for the through movements. Heavy left-turning traffic takes time away from the US 395 through movements. Additional north and southbound lanes along US 395 will reduce queue lengths and allow more vehicles to move through the intersection in less time. The existing cycle length could be retained sustaining mobility within the corridor.

General purpose lanes can be phased and constructed between intersections with the highest need. For cost and benefit estimating, widening US 395 was divided into four segments. Traffic volumes, year of failure, project phasing, highway classification and character, speed limit, and access classification contributed to developing these segments. North of the Columbia River, additional capacity is not needed due to the free-flow condition of US 395.

#### SR 240 to Kennewick Avenue (segment 1)

Segment 1 has the highest traffic volumes and thus the highest need for additional lanes. This alternative provides an additional travel lane in each direction. Four bridges must be widened and additional right-of-way may be required along Falls Avenue, southeast of the Yelm Street intersection. The partial acquisition of Falls Avenue could result in a cul-de-sac being constructed approximately mid-point along the road. To the northwest of the Yelm Street intersection, a noise wall may be needed to mitigate increased traffic noise. This wall is anticipated to begin at Ely Street and follow along the highway up to Yelm Street. The signals at Yelm Street, Clearwater Avenue and Kennewick Avenue must be reconstructed to accommodate the increased width.

The estimated cost for this segment is \$13.7 million, which includes \$3.7 million for bridge widening. The mobility benefits are \$30 million and the safety benefits are \$31.8 million for a total of \$61.8million. The benefit/cost ratio is 5.6.

#### Kennewick Avenue to 10<sup>th</sup> Avenue (segment 2)

This alternative provides an additional travel lane in each direction. One bridge must be widened and right-of-way acquisition is needed. As part of this project, the Kennewick Avenue intersection will be expanded with double left-turn lanes.

The estimated cost for this segment is \$13 million, which includes \$3.5 million for right-of-way acquisition. The mobility benefits are \$4 million and the safety benefits are \$8.3million for a total of \$12.3 million. The benefit/cost ratio of this project is 1.23.

### **10<sup>th</sup> Avenue to 27<sup>th</sup> Avenue (segment 3)**

This alternative provides an additional travel lane in each direction. There are no bridges within this segment and it is anticipated no additional right-of-way is required. A noise wall may be needed to mitigate increased traffic noise between 19<sup>th</sup> and 10<sup>th</sup> Avenues west of US 395.

The estimated cost is \$8.6 million for this segment. The mobility benefits are \$1.7 million and the safety benefits are \$6.3 million for a total of \$8.0 million. The benefit/cost ratio is 1.08.

### **27<sup>th</sup> Avenue to I-82 (segment 4)**

This alternative provides an additional travel lane in each direction. There are no bridges within this segment and it is anticipated no additional right-of-way is required.

The estimated cost is \$13.4 million for this segment. The mobility benefits are \$3.3 million and the safety benefits are \$6.1 million for a total of \$9.4 million. The benefit/cost ratio of this project is 0.83.

### **Construct additional Columbia River crossing**

The Columbia River Bridge is currently at capacity and projected to fail by the year 2020. Currently, there is no flexibility to allow for lane modifications and non-motorized traffic is severely restricted; widening this particular bridge is not possible.

This strategy will add capacity via an additional three-lane bridge immediately west of the existing bridge to carry southbound traffic. The existing bridge would be restriped to three lanes and handle northbound traffic only. To enhance non-motorized connectivity through the corridor, a shared-use path for pedestrians and bicycles will be provided.

With a new southbound bridge, the Lewis Street on-ramp could remain as a left side connection but change from a merge to an add-lane configuration over the bridge. This would provide free-flow movement between the interchanges on either end of the bridge and eliminate traffic conflicts associated with the existing ramp merge. The left and center lanes would continue as through lanes to Kennewick and the outside lane would be a drop lane to SR 240.

Restriping the existing bridge to three northbound lanes between the SR 240 on-ramp and the Lewis Street off-ramp would allow free-flow movement between the two interchanges. Both ramps could remain left side connections. Congestion currently associated with the ramps would be reduced, increasing speeds and capacity during the peak hours.

While costs for this strategy are high, this improvement is the most important for long term mobility needs in the corridor, and, without a new river crossing, benefits from other mobility strategies cannot be fully realized.

The estimated cost is \$114.6 million. The mobility benefits are \$6.2 million with safety benefits of \$29.3 million for a total of \$35.5 million. The benefit/cost ratio is 0.4.

### **Re-construct Lewis Street/Sylvester Street Interchange**

This strategy reconstructs the existing interchange to provide full service to Lewis Street and Sylvester Street for both northbound and southbound movements. A standard diamond or diverging diamond configuration could be used. The existing non-standard left side Lewis Street ramps would be moved to right side connections

reducing conflicts at the ramp connections. The strategy would improve the safety and operational efficiency of US 395. Acquisition of right-of-way is required.

The estimated cost is \$45.0 million with safety benefits of \$9.0 million. The benefit/cost ratio is 0.2.

The new crossing over the Columbia River will influence the interchange configuration. The estimated cost for a new bridge is \$114.6 million. At this time, it is recommended that reconstruction of the interchange be addressed when a new bridge is built.

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