

Minimizing cost for materials, equipment, labor, and long-term maintenance



WSDOT reconfigured the Valley Mall Boulevard interchange to provide better, more direct access to and from Interstate 82, and access to North Rudkin Road with im-

proved connectivity. The project was designed to accommodate the size of vehicles that currently use the intersection. This helped WSDOT avoid over-building the intersection, and develop a solution that required less real estate. A frontage road serving trucking and commercial businesses was realigned to provide better access. Improved connections to I-82 will encourage economic growth and development for both Union Gap and Yakima. The roundabout designs also reduce long-term maintenance costs. The practical design solution reduced annual maintenance costs by \$12,500 with the elimination of the stop-lights. The final roundabout design avoided costs of up to \$24 million compared to other alternatives.

For more information

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Designing for target speed – ensuring design speed is same as posted speed



State Route 302 is a winding two lane highway on the Key Peninsula in Pierce County. After considering different solutions, WSDOT proceeded with a series of improvements at the intersection of 118th Avenue Northwest. Crews installed new guardrail and

new emergency vehicle pullouts. At the same time, WSDOT conducted an in-depth review to consider how speeding was increasing run off the road crashes in the area. The review determined tree removal could actually result in a more “open feel” to the roadway and increase speeding. In lieu of tree removal, the following measures are being put into place:

- Wider pavement striping to help drivers focus on the road and provide the appearance of a narrow road. Studies show the appearance of a narrow road slows speeds.
- Additional reflective centerline raised pavement markings.
- Additional guideposts at close spacing to improve nighttime visibility.

The change in approach saved an estimated \$50,000. In addition, designing for target speed, enabled WSDOT to save hundreds of trees along this corridor.

WSDOT Finding Practical Solutions

KEY TAKEAWAYS

- WSDOT is finding “Practical Solutions” across the state and in all areas of our business.
- Using creativity and innovation, WSDOT is developing a safer and better transportation system while making our funding go further and accomplish more.
- Fundamental to “Practical Solutions” is community engagement and focusing on clearly defined needs and outcomes in each and every project.

Transportation agencies across the country are being challenged with an increasing need for system improvements and a growing backlog of maintenance needs to be accomplished with declining gas tax revenues. This is driving innovation to seek new ways of collaborating with public and private partners and increasing the importance of community engagement in transportation decision-making processes.

WSDOT and several other states are implementing a new approach that ties project planning and design to core transportation needs. WSDOT is applying a Practical Solutions approach that targets transportation solutions for the lowest cost, and, engages local stakeholders on defining scope to ensure their input is given at the right stage of project design.

Practical Solutions implementation steps underway at WSDOT include:

- Supporting decisions that will focus on the need for the project
- Moving from standards-based to performance-based designs
- Empowering engineers to make decisions

- Providing tools that support decision making
- Supporting innovative solutions through training and development

It starts with least cost planning

Least cost planning is a process of comparing direct and indirect costs of transportation demand and supply options to meet transportation needs and identify the most cost effective solution.

To support least cost planning and expand community and economic development, WSDOT has identified state highways that serve community centers; this includes approximately 500 miles of state highway, or 10 percent of the system. These sections of state highway serve regional travel needs and provide access to many important economic centers of cities and towns across the



SR 203 Carnation — Visualization, SVR Design

state. WSDOT design manuals are being revised to provide flexibility in design and WSDOT has also endorsed the National Association of City Transportation Officials (NACTO) Urban Streets Guide to help support these project development efforts at the earliest stages.

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Practical Design – ensuring the purpose and expected outcome for the project is clear

WSDOT is revising manuals and implementing training across the state. Additional guidance for WSDOT staff is expected to be published before year's end, and a cross-functional team has reviewed unfunded priorities, looking for opportunities to achieve the same function more cost effectively. Many WSDOT project offices are leading this change by example. The fundamental steps of WSDOT's Practical Solutions, including the reform of our project development processes, are apparent in a number of recent projects as highlighted below.

Focusing on project need and how will it help meet core transportation needs

Washington State Ferries recently re-evaluated their plans for **Southworth Ferry Terminal** improvements by revisiting the purpose and need for this project. The revised project meets the original goals of improving seismic safety with cost-cutting measures, including a smaller trestle for loading and unloading only and moving the terminal off of the trestle to an inland location. The cost avoidance is over \$1 million in reduced construction time, and less construction in and over water.

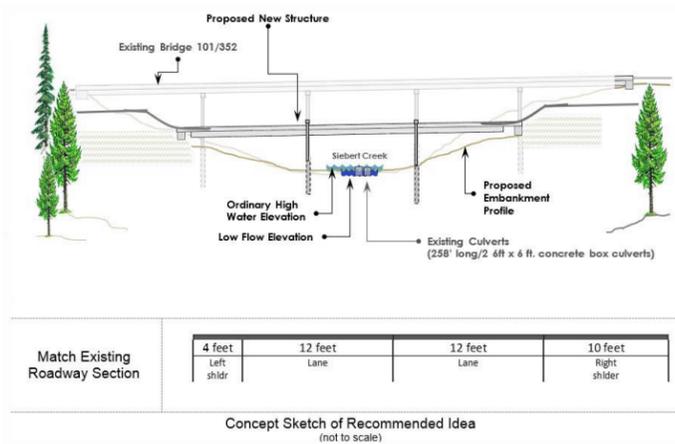
Implementing incremental solutions without compromising safety

On the US 101 Siebert Creek Fish Passage

project near Port Angeles, the existing structure is a fish passage barrier due to velocity, profile drop and debris accumulation.

After evaluating the project, WSDOT

will lower construction costs and still achieve safety goals by building a new bridge for the westbound lanes on the existing grade and remove the fish barrier to provide full bank width. By building fewer spans, the potential cost avoidance may reach over \$8 million and reduce construction duration by three months.



Reducing or eliminating the need for additional right-of-way

The recently completed **State Route 235 George Sellar Bridge** project avoided additional right-of-way purchases by increasing the capacity of the intersections on streets leading to the west end of the bridge. By limiting turning movements at intersections and adding Intelligent Transportation Systems elements, this project accommodates current and future higher traffic flows across the George Sellar Bridge. By changing the design, right-of-way costs were avoided. The practical design solution resulted in a total cost avoidance of \$2.8 million, reducing the overall cost from \$20.8 million to \$18 million.



Avoiding or eliminating the impacts to utilities



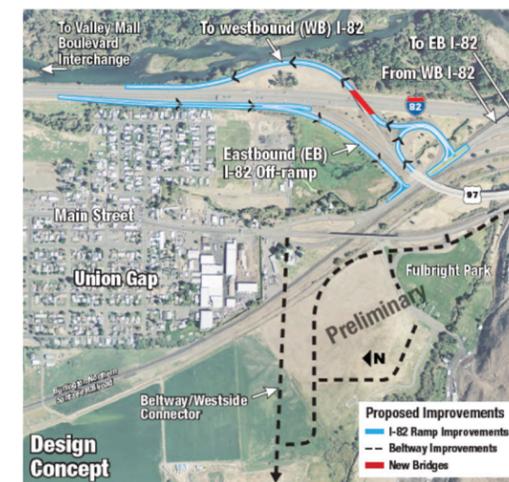
WSDOT currently spends approximately \$7.8 million per biennium on power usage for illumination purposes. In keeping with our continuous improvement goal, WSDOT is continually looking for ways to be more efficient.

In April 2013, WSDOT began a pilot project to test the first light-emitting diode (LED) lighting system on a state highway. The agency installed new light fixtures with adaptive lighting, a system that allows crews to remotely adjust the light

levels. The adaptive lighting pilot project at US 101 and Black Lake Boulevard interchange in Olympia was a success saving more than \$75,000 in maintenance and operations costs in comparison to replacing the system with standard High Pressure Sodium lighting, and reduce energy usage by more than 1.7 million kilowatt-hours of electricity. As a result, WSDOT is applying the LED adaptive lighting and illumination reform across the state.

Minimizing impacts to the built environment

Currently, the **South Union Gap interchange** lacks full connections to Interstate 82 and US 97 and is forcing additional traffic to use the Valley Mall Boulevard interchange in the city's major retail center. Improving capacity for the interchange and providing more efficient connections to the local road system will improve traffic flow, lessen conflicts, and improve safety for this busy area.



WSDOT established an interdisciplinary team composed of local agency and WSDOT representatives, permitting agencies, community leaders and local business owners. This enabled the permitting agencies to communicate directly with each other and incorporate input from the community to develop cost-effective alternatives that minimized impacts to the environment and community. The results addressed more critical and current needs, allowed for a new design concept

that utilized much of the existing infrastructure, and added the missing interchange connections and a connection to Main Street with a new intersection.

The improvements planned for the South Union Gap Interchange links directly to the proposed Beltway project, which will provide direct access to I-82 from West Valley area of Yakima. This project is endorsed by a coalition of Yakima area elected officials, business and community leaders, TRANS-Action, the Yakima Valley Conference of Governments and WSDOT. Improved connections to I-82 will promote economic growth.

The estimated project cost for this concept is \$34.4 million, a cost avoidance of over \$38 million compared to the original design cost estimate of \$73.2 million.

Minimizing impacts to the natural environment

A recent preservation project replaced an old bridge on **US 2 just above Tumwater Canyon**, 10 miles west of Leavenworth in Chelan County. The new structure includes two, 12 foot lanes with 8 foot shoulders. The new bridge spans Chiwaukum Creek, 300 feet south of the current US 2 alignment, and required constructing one mile of new roadway to connect with the existing roadway. This reduced impacts to the environmentally sensitive section of the stream where the current bridge is located. The design of the new bridge also reduced the need to clear debris (logs jams, etc.) from the bridge footings, and eliminates bridge piers being undermined due to scour from high water events. With the highway on a new alignment, WSDOT was able to construct the two largest bridges during a single stage. Single-stage construction reduced contract expenditures by condensing construction time and minimizing the amount of temporary materials used to construct each bridge. The practical design solution resulted in a cost avoidance of almost \$4 million, the total project cost decreasing from \$17 million to \$13.3 million.

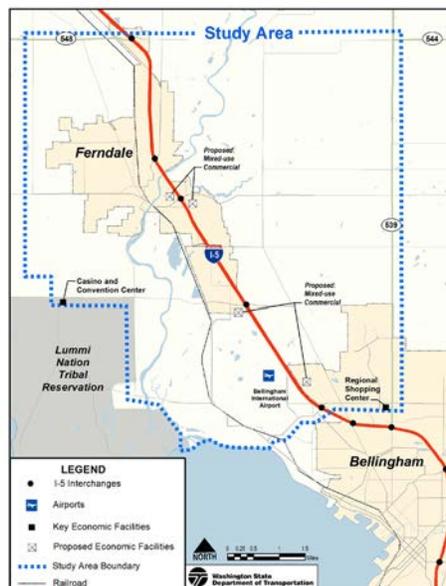
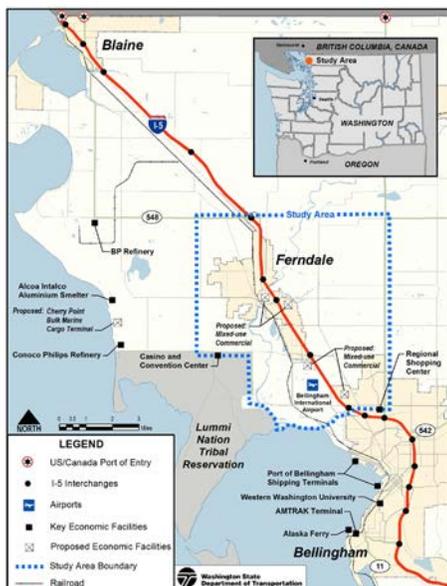


Least Cost Planning in Action Bakerview to Grandview

Fifty years ago, the direction for transportation investment was clear: build highways. However, this approach is no longer affordable or sustainable. To meet current and future demands on Washington state's transportation system, the Washington State Department of Transportation (WSDOT) is implementing a new reform that uses least cost planning for efficient, sustainable, innovative, and generally low cost, high benefit improvement solutions.

Least Cost Planning:

- Uses cost-benefit analysis to evaluate and prioritize a broad range of policy options and transportation improvements
- Increases transportation network efficiency by giving full consideration to alternative modes of transportation
- Provides greater consumer choices
- Uses strategies that can facilitate federal and state requirements for a comprehensive and balanced evaluation of transportation policies and community objectives
- Facilitates a comprehensive and balanced evaluation of transportation policies and community objectives for better collaboration on project solutions across the transportation network



Using the least cost approach, regional stakeholders including WSDOT Northwest Region are conducting an analysis of the Bakerview to Grandview Study Area in Whatcom County. This study area is growing quickly due to increases in population, employment and growth in commercial development. In addition, local land use forecasts show that this trend is likely to continue in the future. To meet these new transportation demands, the least cost planning approach will focus on maximizing the efficiency of existing transportation facilities and services, and adding capacity strategically where needed to enhance efficiency.

What is the area of the study?

The analysis will examine the state and regional transportation system from northern Bellingham to northern Ferndale in Whatcom County. This effort will identify present and future state and regional transportation system needs, support community comprehensive plans, and identify cost effective strategies and improvements that will keep people and goods moving to support a healthy economy, environment, and communities.

What organizations will be involved with the study and what are the expected outcomes?

The analysis will help inform local, regional, state, and federal transportation agencies and the public about current and future transportation conditions, needs, and potential improvement strategies. The outputs of the analysis will provide information for local comprehensive plan updates, and capital facilities plans. The analysis will also calculate and measure the relative benefit of improvement strategies and alternatives. Following the adoption of local comprehensive plans, local and regional stakeholders will develop an implementation plan that helps prioritize improvements and identifies funding resources, thereby allowing jurisdictions to share scarce resources, collaborate, and scale appropriate projects.

Will the focus of the study only include the state transportation system?

Like most least cost planning efforts, the study is to be inclusive of network improvements beyond the state system. This means identified solutions will help improve the function of the entire transportation system, by considering:

- Projects scaled to realistic funding levels
- Meeting community needs
- Support growth as it occurs
- Implementation with multiple partner participation
- Cross-jurisdictional investments in transportation improvements that benefit the regional system

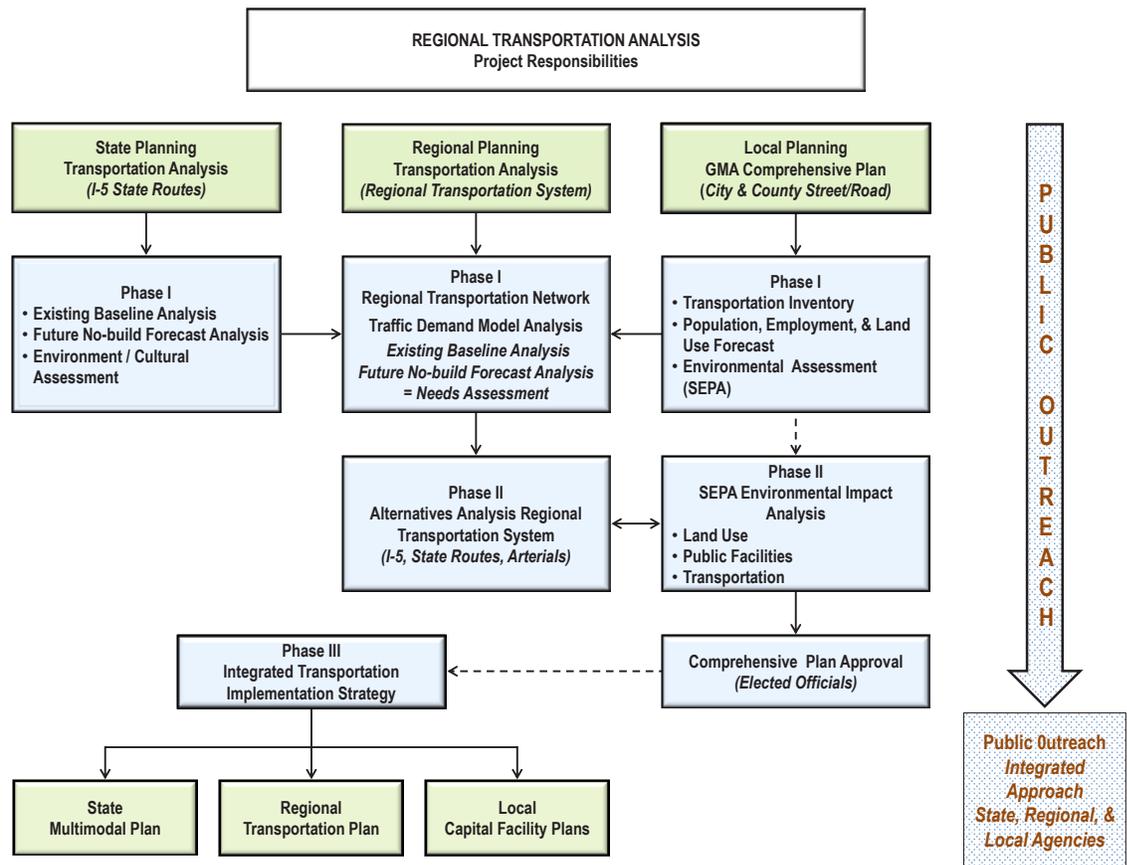
Why are you doing the study now when there is no identified funding to implement identified solutions?

At present, there is no identified funding but this system-wide effort will help identify

and prioritize improvement strategies, and implementation roles and responsibilities that could assist in securing funding in the future.

Is any of the information and analysis from the study usable now?

Currently, 900,000 square feet of retail and office space is either under review or in development. There is also another proposed two million square feet of development in the study area. Completing the analysis now is vital to the evaluation of transportation impacts of current and future development proposals.



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Least Cost Planning in Action I-205 Corridor Study

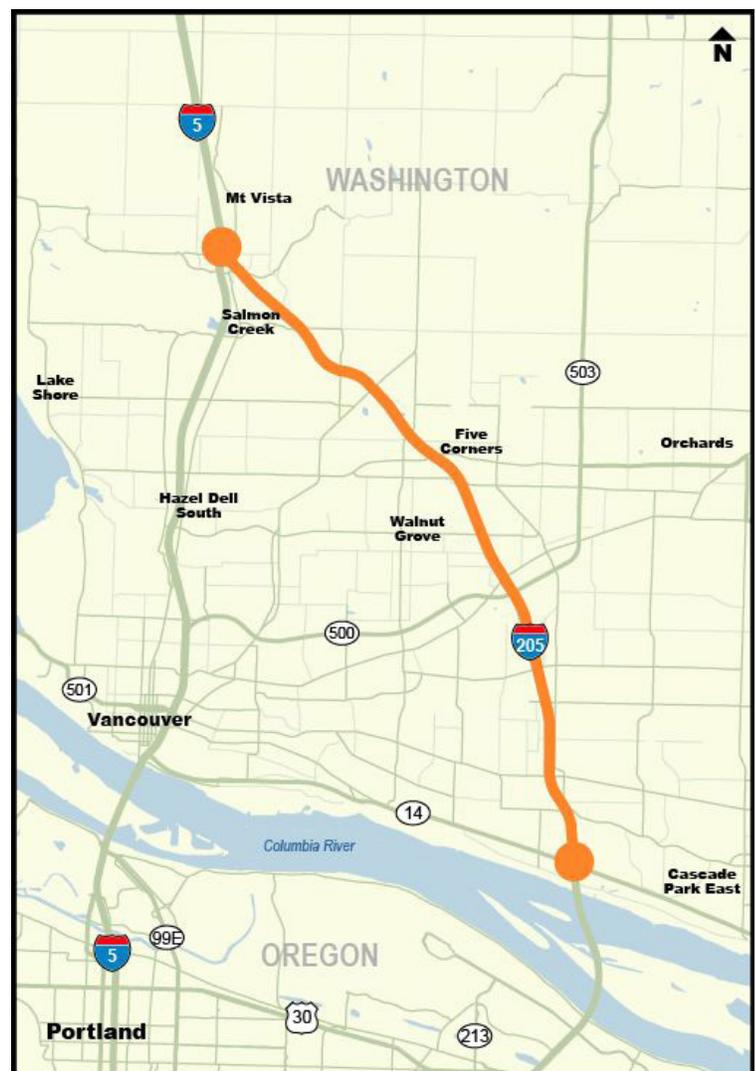
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Why did WSDOT use least cost planning for the I-205 corridor study?

Completed in February 2002, the I-205 Strategic Corridor Pre-Design Study included what was at the time a comprehensive list of capital improvement projects from the SR 14 Interchange through the Padden Parkway Interchange. The Nickel and Transportation Partnership Account (TPA) funded the most critical projects, Mill Plain/112th Connector and Mill Plain to 18th. The Pre-Design Study's remaining project recommendations totaled \$484 million. Over time, the priorities for the corridor have evolved.

Initiated in 2012, the I-205 corridor study looked to reprioritize the list of Regional Transportation Plan (RTP) capital projects in the I-205 corridor. The plan was to develop a list of core capital projects within the corridor that were critical to the long-term growth within the region. The Southwest Washington Regional Transportation Council (RTC) put together a Transportation Advisory and Modeling Team to participate in the study. WSDOT, city of Vancouver, Clark County, and CTRAN made up the Transportation Advisory Team (TAT). Phase 1 of the study's purpose was to ensure the recommendations for transportation investments in the RTP, the 20-year plan for the region, provided the best combination of capital improvement projects in the corridor at the least cost. Using the RTC's regional demand model, an evaluation and recommendation of which capital projects should remain in the RTP was determined. The result of this analysis was the removal of nearly \$363 million in projects from the 2014 RTP update.

With the recognition that even the projects recommended in Phase 1 would be difficult to fund in the next 20-years, WSDOT advocated for a second phase of the study to identify some low cost operational improvements. The goal was to recommend some operational improvements that would serve to make the transportation system operate more efficiently and predictably thereby supplementing or delaying the need for capital roadway expansion on I-205.



What were the operational strategies and factors in the corridor assessment?

Some of the operational strategies identified in Phase 2 of the study were:

- Smoothing merging conditions at high volume on ramps by managing and breaking-up vehicle platoons entering I-205
- Modifying the geometry at interchanges to improve the safety and operational efficiency for traffic merging onto the corridor
- Adding an HOV and/or bus bypass lane at the 18th Street on ramp
- Adding intelligent transportation system features to improve the efficiency of the existing transportation network
- Allowing transit to travel on the shoulder during periods of high congestion

Factors considered during the evaluation of these operational strategies were:

- Impact on safety
- Cost of improvement
- Life of improvement
- Effectiveness of operational improvement
- Potential conflicts with capital improvement projects recommended in Phase 1 of the study



What were the key short- and long-term corridor strategies?

For evaluating short-term strategies, a detailed analysis of travel in the corridor was developed by WSDOT to evaluate various low cost operational (least cost planning strategies) improvements. A list of potential low cost operational improvements, intelligent transportation system features, and travel demand strategies developed by the TAT and with WSDOT playing a major role in the development of a list of the operational improvements. WSDOT's evaluation of the list of operational improvements, as well as discussions with FHWA, narrowed the list. Operational improvements included:

- Ramp metering
- Lane and ramp reconfiguration to improve the safety and efficiency of traffic merging into the corridor

Discussions of transportation demand management strategies by the TAT included:

- The evaluation of the geometry and pavement structure for the southbound 18th Street on ramp to allow the possibility of a future HOV and/or bus bypass lane onto I-205
- A recommendation to evaluate the potential for allowing transit to drive on the shoulder during hours of congestion

Phase 1 of the study developed a list of core capital projects that included a Park & Ride Lot at 18th Street to be included in the RTP update, which represented the most critical set of improvements necessary to ensure a reasonable long-term level of operation in the corridor.

How did WSDOT work with other agencies to identify and implement least cost planning strategies to improve the corridor?

WSDOT worked closely with the RTC, local jurisdictions, and CTRAN to identify the highest priority capital projects within the corridor. There was a presentation of the Phase 1 study results to the Regional Transportation Advisory Committee (RTAC) and the RTC Board. There have also been a couple of presentations to the RTAC and the RTC on some potential operational improvements. The RTC Board meetings are open to the public and taped for viewing by the public.



Least Cost Planning in Action I-5 Joint Base Lewis-McChord Corridor

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Why is WSDOT using least cost planning for the Joint Base Lewis-McChord (JBLM) area?

Planning work is on-going to identify operational improvements in the corridor. There is also a joint I-5 study involving WSDOT, JBLM, the Federal Highway Administration (FHWA), and local jurisdictions to evaluate the best way to alleviate congestion and improve transportation along the I-5 corridor through the JBLM vicinity. This included:

- Non-interstate and local roadway improvements that identified program needs for an efficient multimodal corridor, e.g., managed lanes, local street access to improve connectivity with local communities, and transportation demand management
- Alternative travel modes to reduce travel demand, e.g., transit priority options and enhanced service opportunities along I-5 and to/from JBLM, functional design elements to improve efficiency with the potential to reduce serious and fatal collisions, flexibility to consider other alternatives



What are the performance goals for the JBLM study?

- Relieve congestion on I-5
- Improve system efficiency
- Enhance mobility
- Improve safety and operations

What is Least Cost Planning?

Least cost planning is an approach to making planning decisions that considers a variety of conceptual solutions to achieve the desired system performance targets for the least cost. Central to least cost planning is a process that engages the public, applies methods to evaluate planning options, and how to select options.

What is WSDOT's Least Cost Planning Approach?

- Work with individual jurisdictions, agencies, and businesses to identify and support the vision, mission, values, and goals in strategy building.
- Identify performance targets.
- Determine data collection needs and analysis.
- Identify deficiencies but look beyond the roadway.
- Consider demand management, land use, multimodal network, near/long term implementation, off-system investing, and operational and policy strategies for either programmatic or corridor level analysis.

How is WSDOT working with other agencies to identify and implement strategies to reduce traffic congestion near JBLM?

WSDOT is working closely with numerous agencies to identify and implement least cost planning strategies that can reduce traffic congestion in the corridor. The organizations below championed effective solutions that are consistent with the least cost planning approach:

- JBLM—Contributed staff, funding, base access, information, and a positive working relationship
- Pierce County—Contributed a host of resources and some funding to implement congestion-relief traffic measures
- City of DuPont—Provided knowledgeable resources regarding the impacts operations have on neighboring communities
- City of Lakewood—Provided expertise in the form of traffic studies, reports, advocacy for funding, and grant applications
- Washington State Patrol—Provided first-hand knowledge of traffic circulation patterns and was key in changing operational hours at the northbound weigh station to reduce truck impacts
- FHWA—Provided expertise and guidance in allowing flexibility to consider creative solutions



Changing Demands and a New Paradigm:

- **Current demographic and economic trends are changing transportation demands in ways that affect how WSDOT evaluates traffic congestion. Vehicle travel is peaking and trends (aging population, rising fuel prices, increased health and environmental concerns, and changing consumer preferences) are increasing demand for walking, cycling, and public transportation.**
- **Transportation planning is now experiencing a change in the way WSDOT defines problems and the way WSDOT evaluates solutions.**

What types of approaches will least cost planning identify for future consideration?

WSDOT identified some frequently overlooked and misunderstood strategies. In the past, there was a bias toward conventional evaluation that tended to exaggerate congestion costs and roadway expansion benefits, but undervalued other congestion solutions. Road expansions may provide short-term congestion reductions, but those decline within a few years due to generated traffic. Least cost planning strategies provide small short-run congestion reductions that increase over time and provide more benefits. It is clear that conventional evaluation practices overlook or undervalue many transportation solutions while least cost planning opens up more transportation options for a lesser cost. Some of the congestion strategies that will be considered during the JBLM least cost planning process include:

- Transportation options (walking, cycling, public transit, carpooling)
- Accessibility (helping people reach their desired destination)
- Multimodal improvements (transportation demand management and smart growth policies)
- Evaluation of local roads to carry more of the demand

Least Cost Planning in Action

US 2 Corridor Study

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What were some of the strategies for the US 2 corridor?

In 2011, the North Wenatchee Transportation Master Plan, prepared for the Wenatchee Valley Transportation Council by Transpo Group, identified multimodal strategies that addressed transportation safety and mobility in the North Wenatchee vicinity.

One of the projects identified in the plan recommended construction of an interchange at the junction of US 2/97 and Easy Street that included:

- Provisions for direct east and westbound traffic on US 2/97
- Construction of a US 2/97 overcrossing to provide local northbound and southbound access to Easy Street
- Incorporation of new local circulation roads and ramps that create interconnectivity between the Sunnyslope residential subarea and Olds Station commercial development (this was decided, in part, due to the substantial growth potential in the Sunnyslope area north of US 2/97 and commercial development south of US 2/97 in Olds Station)

Least Cost Planning Approach:

- Application of benefit-cost techniques to the evaluation of alternative transportation
- Consideration of policies and investments to reduce demand for transportation facilities on equal footing with those that increase the supply of those facilities
- Evaluation of the uncertainties in forecasts of future travel demand and the performance of different alternatives
- Coordination among different agencies and jurisdictions of a system-wide planning effort that regularly updates plans to reflect new information about those measures that are most cost-effective

What was the plan's recommended alternative?

Initially, a grade separated interchange was the selected alternative to address traffic congestion and unfamiliar driver confusion with east/west through traffic. Pedestrian and bicycle traffic frequent this intersection to travel to and from the Sunnyslope Subarea to the Olds Station commercial/retail area. A traffic signal currently controls traffic at the intersection; some peak hour traffic and particularly through the summer months, significant westbound vehicle stacking occurs. Due to the prohibitively high cost of an interchange, WSDOT's North Central Region determined that further evaluation of lower cost options would be prudent.



A Value Engineering Study prepared in 2012, demonstrated that a

roundabout at the existing signal location might function effectively and be an adequate interim solution.

What active least cost planning options will WSDOT's North Central Region consider?

From a Least Cost Planning perspective the North Central Region will focus on maximizing the efficiency of the existing facility and strategic capacity improvements through multimodal system enhancements and effective directional signage. The region intends to further the analysis and initiate community engagement in order to better inform and gain valuable insight of community needs and expectations. WSDOT will begin with lobbying support from the Wenatchee Valley Transportation Council, and solicit feedback from Chelan County, and City of Wenatchee, as well as neighboring residents and businesses regarding existing and future transportation issues, needs, and potential improvement options.

The multimodal element will enhance and improve crossings on Easy Street and across US 2/97 and the further extension of a multiuse path could provide connection to the existing Apple Capital Loop Trail system.

The roundabout option generates a "Gateway" effect into the Wenatchee Valley that contributes to building a sense of place. More convenient access to commercial and retail development increases future development potential and generates economic growth in the valley. A roundabout will calm traffic, reduce congestion, and environmental impacts. Improved navigability increases operational efficiency of the transportation system.

Least Cost Planning Actions:

- Identification of goals, objectives, and targets
- Identification of various strategies that help achieve the objectives and targets
- Evaluation of costs and benefits of each strategy and rank them according to cost-effective or benefit ratios
- Implementation of the most cost-effective strategies as needed to achieve the stated targets
- After implementation, evaluation of the strategies with regard to various performance measures to ensure effectiveness
- Evaluation of overall results with regard to targets to determine if implementation of additional strategies is necessary

Least Cost Planning in Action

US 195 Corridor Collision Analysis

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Why did WSDOT use least cost planning for the US 195 corridor collision analysis?

To identify and evaluate collision trends on the US 195 corridor and to enable better decision-making when preparing and planning potential targets and low cost solutions WSDOT developed:

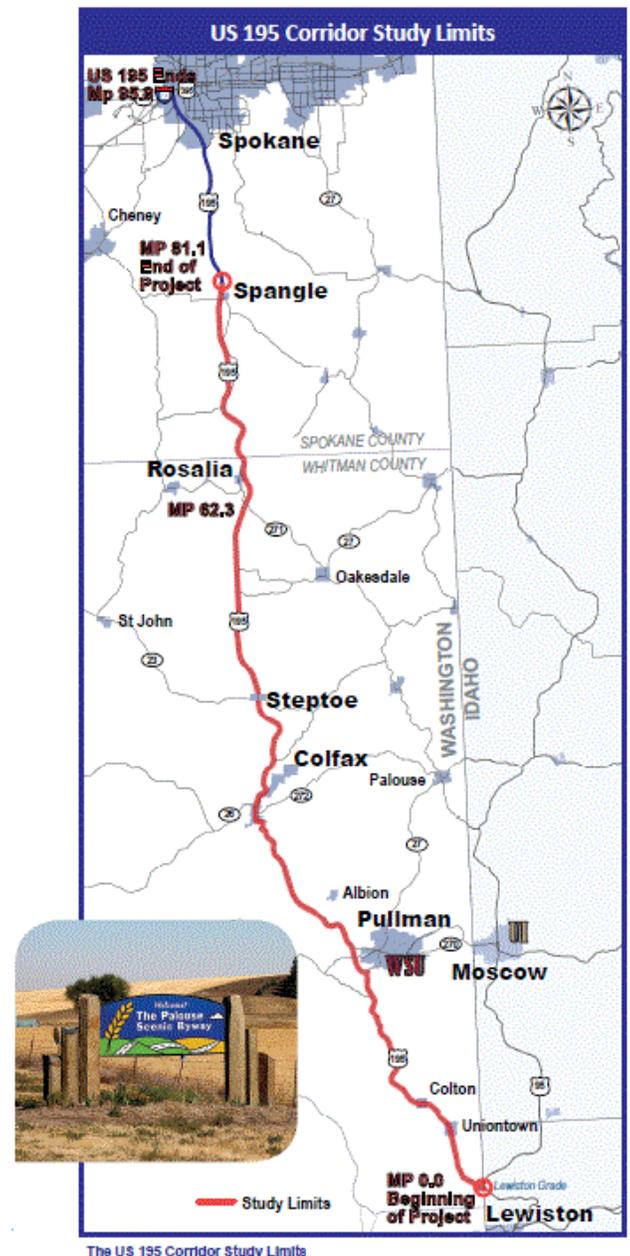
- Locally-driven and coordinated solutions that reduce the probability of serious injury and fatality collisions in the corridor.
- Low cost, high benefit improvement solutions that offer a greater benefit per dollar invested when compared to high cost highway expansion projects, i.e., divided highway with interchanges.

What did stakeholders and the public want WSDOT to consider?

Findings indicated collisions along the corridor were attributed more to driver behavior than roadway design. However, to find solutions that worked for both behavior and design, the four E's (enforcement, engineering, emergency medical services, and education) of the Washington State Strategic Highway Safety Plan "[Target Zero](#)" (pdf 11.9 mb) became part of the evaluation process.

Enforcement

- Opportunities to increase enforcement and media campaigns that focus on drivers that are impaired, distracted, drowsy, aggressive, and/or exceed reasonable speed.
- Implement an on-going corridor safety evaluation process to identify priorities, strategies, countermeasures, establish reduction goals and periodically reevaluate the same.
- Use of mobile speed trailers and static radar feedback signs to alert drivers of their actual speed and the posted speed.



Engineering

- Explore opportunities to improve roadway delineation by widening the standard four-inch lane edge striping to six to eight inch widths at select locations.
- Install shoulder rumble strips where justified.
- Provide increased passing opportunities along the corridor.
- Plan and incrementally develop an intelligent transportation corridor that communicates real-time conditions and driver behavior.

Emergency Medical Services

- Increase the number of volunteers along the corridor that are certified as an emergency management technician (EMT)–intermediate level, particularly in areas with increased emergency medical service (EMS) demands.
- Explore opportunities to assist with continuing education, certification, and/or recertification.

Education

- Create a community based task force.
- Establish an annual “US-195 Safe Driving Week” to provide local communities the opportunity to emphasize the unique challenges associated with this rural highway.
- Look for opportunities to increase parental involvement in driver education.
- Promote “Pledge Not to Text & Drive” programs.
- Encourage public education and outreach programs; addressing what to do if you are involved in a traffic accident, or are passing through an accident scene.

How did WSDOT work with other agencies to identify strategies to improve driver behavior and road design?

WSDOT established a Technical Advisory Committee (TAC) that consisted of various representatives of the “Four E” disciplines. The TAC included representatives from Whitman County, Spokane County, Washington State University, University of Idaho, Washington State Patrol, Colfax Sheriffs, Pullman EMS, and transit service providers. Most of the representatives were regular users of the US-195 corridor and their familiarity with the highway and their professional experience provided insight into the development and success of proposed countermeasures.

What is WSDOT’s next step in the least cost planning process?

WSDOT will help facilitate the creation of a “grass roots” community based task force to:

- Collaborate with other task forces to gain knowledge from their experience.
- Determine feasible flexible countermeasures that match available funding and collaborative resources, with a prominent focus on identified undesirable driver behaviors.
- Establish collaborative “grass roots” enhancement, development, and/or implementation programs, services, and countermeasures, which target: engineering, education, enforcement, and emergency medical services needs and challenges.
- Obtain funding from available grants to fund the prioritized countermeasures.

Implemented and suggested least cost planning solutions for US 195:

- Upgrade or install guardrail to reduce the potential for, and the severity of, accidents involving vehicles that run off the road
- Add rumble strips to prevent serious injuries by alerting drivers that they are leaving the driving lane
- Improve highway signing
- Upgrade pavement markers
- Install intersection lighting
- Improve intelligent transportation system



Before: Non-standard guardrail.



After: Upgraded guardrail.

Least Cost Planning in Action

US 395 – I-82 to I-182 Corridor Planning Study

Fifty years ago, the direction for transportation investment was clear: build highways. However, this approach is no longer affordable or sustainable. To meet current and future demands on Washington state's transportation system, the Washington State Department of Transportation (WSDOT) is implementing a new reform that uses least cost planning for efficient, sustainable, innovative, and generally low cost, high benefit improvement solutions.

Why is WSDOT incorporating least cost planning into the US 395 Corridor Planning Study?

WSDOT used least cost planning principles to identify and analyze collision and congestion trends, as well as economic development on US 395 through Kennewick and Pasco. Specific goals for the corridor included:

- Maintaining safe and efficient operation in the urban area of US 395 over the next 20 years
- Providing good freight mobility through the corridor
- Retaining or strengthening the limited access rights throughout the corridor
- Retaining the direct connection between I-82 and I-182
- Retaining the high-speed nature of the corridor
- Coordinating potential solutions with local communities—specifically non-motorized travel and aesthetics within the US 395 rights of way



Least Cost Planning is an approach that:

- Considers demand management solutions equally with strategies to increase capacity
- Looks at all significant impacts (costs and benefits), including non-market impacts
- Involves the public in developing and evaluating alternatives
- Applies to many different types of problems (safety, improved mobility options for non-drivers, reduced air pollution emissions, etc.)
- Allows contingency-based planning that addresses uncertainty by deploying solutions on an as-needed basis
- Does not favor capital expenditures over maintenance and operations and highway over transit or transportation demand management strategies

What are some of the identified issues in the Corridor Planning Study?

Existing congestion and large areas of developable land in the southern part of the corridor has created the need to address mobility on this corridor. Forecasted growth for the area will add more vehicles to the roadway, worsening the current safety and congestion issues.

What organizations were involved with the study and what were the identified strategies?

WSDOT partnered with Benton-Franklin Council of Governments, the cities and ports of Kennewick and Pasco, and Benton Franklin Transit. The least cost planning strategies developed collaboratively with these stakeholders included:

- Looking at safety issues (collision prevention and reduced crash severity)
- Considering any adverse impacts on the natural and built environment
- Considering changes/additions to the local transit system
- Promoting or enhancing non-motorized modes (pedestrians and bicyclists)
- Stimulating, supporting, and enhancing the movement of people and goods to ensure a prosperous economy
- Determining if identified strategies were inexpensive and easy to maintain

Did the focus of the study only include the state transportation system?

Like most least cost planning efforts, the study is to be inclusive of network solutions beyond the state system. For example, US 395 operates as a City of Kennewick north-south expressway for lack of other north-south arterials in the vicinity of the corridor. The study looked at solutions to move people more efficiently on the city system to relieve congestion/pressure on the state system.

US 395 in Pasco is a freeway and the City of Pasco has a good network to move people on their own system. The study looked at solutions to better move people to/from the state system to the local system.

US 395 has bicycle access (roadway shoulder) for the section south of SR 240 and bicycle and pedestrians are restricted north of SR 240. The study evaluated the best and safest way to move bicycles and pedestrians across US 395 and north-south through the corridor on the local system

What are the benefits of the corridor study?

The corridor study identifies the best way to meet the corridor's current and future (20-year vision) travel needs. This includes a cost benefits analysis that puts least cost planning solutions, such as mobility for commuters, pedestrians, and bicyclists, on equal terms with capacity expansion, thereby improving the transportation system overall.



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