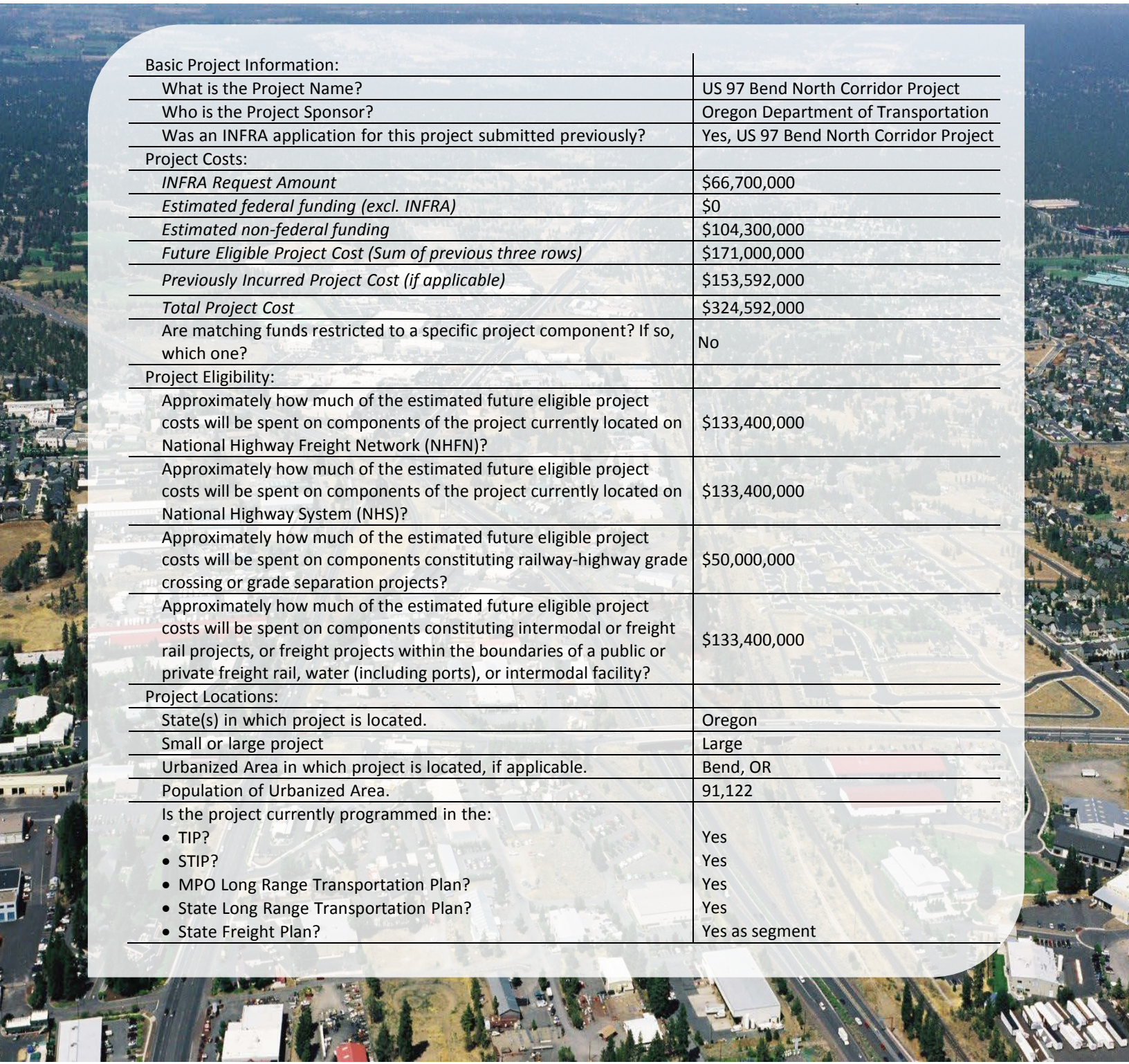
U.S. Department of Transportation, Office of the Secretary of Transportation

Nationally Significant Freight and Highway Projects
FY 2019 (INFRA) Grant Application

US 97 Bend North Corridor Project

Completing the US 97 Bend Parkway



Basic Project Information:	
What is the Project Name?	US 97 Bend North Corridor Project
Who is the Project Sponsor?	Oregon Department of Transportation
Was an INFRA application for this project submitted previously?	Yes, US 97 Bend North Corridor Project
Project Costs:	
INFRA Request Amount	$66,700,000
Estimated federal funding (excl. INFRA)	$0
Estimated non-federal funding	$104,300,000
Future Eligible Project Cost (Sum of previous three rows)	$171,000,000
Previously Incurred Project Cost (if applicable)	$153,592,000
Total Project Cost	$324,592,000
Are matching funds restricted to a specific project component? If so, which one?	No
Project Eligibility:	
Approximately how much of the estimated future eligible project costs will be spent on components of the project currently located on National Highway Freight Network (NHFN)?	$133,400,000
Approximately how much of the estimated future eligible project costs will be spent on components of the project currently located on National Highway System (NHS)?	$133,400,000
Approximately how much of the estimated future eligible project costs will be spent on components constituting railway-highway grade crossing or grade separation projects?	$50,000,000
Approximately how much of the estimated future eligible project costs will be spent on components constituting intermodal or freight rail projects, or freight projects within the boundaries of a public or private freight rail, water (including ports), or intermodal facility?	$133,400,000
Project Locations:	
State(s) in which project is located.	Oregon
Small or large project	Large
Urbanized Area in which project is located, if applicable.	Bend, OR
Population of Urbanized Area.	91,122
Is the project currently programmed in the: • TIP? • STIP? • MPO Long Range Transportation Plan? • State Long Range Transportation Plan? • State Freight Plan?	 Yes Yes Yes Yes Yes as segment

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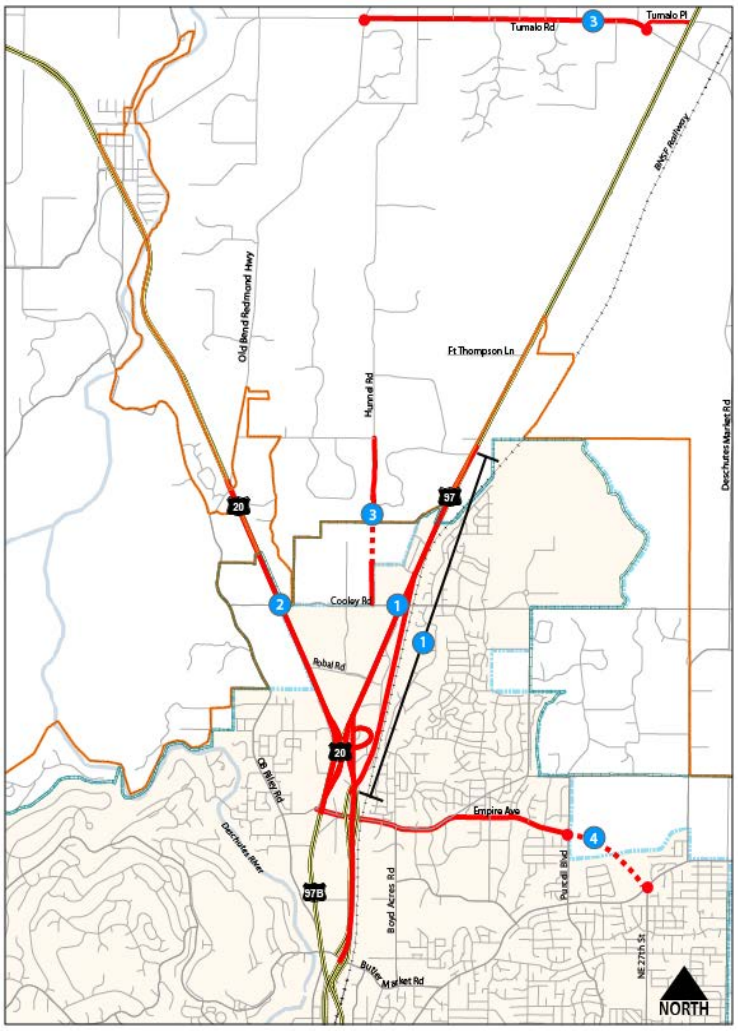
I. Project Summary

The Oregon Department of Transportation (ODOT), in partnership with the city of Bend and Deschutes County, seeks $66.7 million in INFRA grant funds to complete the last segment of the US 97 Bend Parkway. This segment, referred to as the US 97 Bend North Corridor project, will improve safety and mobility for all modes of travel on two National Highway System (NHS) routes classified as critical urban freight corridors.

The US 97 Bend North Corridor project meets the requirements for a **large, rural project** under the INFRA guidelines. The project is located in Deschutes County, Oregon in the city of Bend. State, local, and private funds will match the grant with $104.3 million, comprising 61 percent of project costs.

The project will improve an approximate 6-mile corridor of US 97 and add essential upgrades to US 20 and local routes. The US 97 Bend North Corridor project includes a new travel corridor for US 97, improved intersections, ramps, auxiliary lanes, grade-separations, and pedestrian and bicycle facilities to aid with congestion and improve safety for all modes of travel.



Project Elements

1	**US 97 Corridor** ▪ Realign US 97 to the east of its existing location and convert existing US 97 into a business route. ▪ Improve and grade separate Cooley Road from US 97 and BNSF Railway.
2	**US 20 Corridor** ▪ Construct a roundabout at the intersection of US 20 and Cooley Road.
3	**County Alternate Route Improvements** ▪ Extend and improve Hunnell Road. ▪ Construct two roundabouts on Tumalo Road at Tumalo Place and Old Bend Redmond Highway.
4	**City Improvements** ▪ Extend and improve Empire Avenue with roundabout connections at Purcell Blvd. and 27th Street.

Figure 1: Project location and elements

This project will build on improvements to US 97 through Bend that have been ongoing since 1993. The US 97 Bend Parkway, an expressway through the city core, was completed between 1993 and 2015. This effort did not include the north end of the Parkway due to insufficient funding. The US 97 Bend North Corridor project will complete the last 1.75-mile segment of the Parkway, in addition to other improvements along the project corridor, completing an investment of $251.1 million in state, local and private funds and $72.9 million in federal contributions to date (Table 3, pg. 11). The US 97 Bend North Corridor, as the final phase of the Parkway, and the associated improvements to US 20 and local routes, are crucial for the economic viability of Bend, central Oregon communities and the state of Oregon as a whole.

Transportation Challenges

US 97 is a vital north-south route through central Oregon that complements the Interstate 5 corridor to connect Oregon to California and Washington. US 20 acts as the major east-west highway in central and eastern Oregon and connects central Oregon to both Interstate 5 and Interstate 84. US 97 and US 20 are designated as statewide facilities and freight routes on the National Highway System and classified as Expressways, serving as critical links in moving goods and people within and through Oregon. US 97 is one of the state's most important corridors for agriculture, forestry, fishing, food, manufacturing and other industries.

In the project area, **US 97 carries an average of $54.3 million of freight value per day, and US 20 carries an average of $21 million per day**[1]. Both highways are designated Critical Urban Freight Corridors on the National Highway Freight Network[2] [3] within the project area (Figure 2). US 97 also acts as a parallel relief highway in case of incidents on Interstate 5, the state's most heavily traveled Primary Highway Freight System route, and is considered a seismic resiliency[4] and regional lifeline route.

Locally, US 97 and US 20 are the predominant transportation choices in Bend and connect various rural and urban communities throughout central Oregon, in addition to serving regional, statewide and national needs. Both highways are currently at capacity. The current transportation system lacks amenities to accommodate all the area transportation modes leading to serious safety, mobility and reliability issues.

Figure 2: 2040 truck flow map. US 97 is located on a prime route for Oregon's truck infrastructure and is a critcal link to regional and national destinations.

Freight movement. The US 97 corridor is critical for moving freight, both by truck and rail, carrying the fourth highest volumes of freight in the state. The current transportation network in the project area makes the efficient movement of freight difficult. In fact, the US 97/US 20 corridor in Bend is classified as one of nine bottleneck corridors with multiple or long delay areas in Oregon[5] and the state's only long delay bottleneck corridor outside of the populous Willamette Valley. Congestion and delays disrupt traffic flow on US 97, resulting in increased costs as goods fail to reach markets in a timely manner. Additionally, the at-grade railroad crossing and associated operation with the nearby signal on Cooley Road compounds freight movement and vehicle traffic delays while posing serious safety exposures. This crossing has been identified for a grade-separated crossing in the US 97 Central Oregon Rail Plan[6]. Furthermore, freight traffic is anticipated to increase in the project area over the next twenty years[7] compounding these issues.

Economic vitality. Deschutes County is the most populated county outside of Oregon's Willamette Valley and is the business and cultural center for central Oregon. The city of

[1] http://www.oregon.gov/ODOT/Regions/Documents/Region4/BendCommodityFlowsDrft2.pdf
[2] http://www.oregon.gov/ODOT/Planning/Documents/OHP.pdf
[3] http://www.oregon.gov/ODOT/Planning/Documents/OFP-Draft-Amendment-Ch9-Appendices-G-J.pdf
[4] http://www.oregon.gov/oem/Documents/Oregon_Resilience_Plan_Final.pdf
[5] http://www.oregon.gov/ODOT/Planning/Documents/FHBL_Final-Report.pdf
[6] https://digital.osl.state.or.us/islandora/object/osl%3A36275/datastream/OBJ/view
[7] https://www.bts.gov/topics/freight-transportation

Bend and Deschutes County have experienced a population growth rate of over 18 percent in less than a decade.

The city has identified the land between US 97 and US 20 as an important component to its current and future economic base. Economic development in the area is projected to create 5,100 jobs, increasing private sector employment and local, state and federal tax revenue. However the existing transportation infrastructure will not support expected growth and development in this area. This growth is contingent on improvements to US 97 and US 20 in Bend's north corridor.

Safety. The number of severe injury or fatal crashes within the project area far exceeds similar facilities in Oregon. Specifically, the intersections of US 97/Cooley Road and Robal Road are listed in the top five percent of ODOT's 2010 Safety Priority Index System, which represents locations in the state with the highest collision history as well as ODOT's highest priorities for safety improvements. The existing public road approaches and private driveways along US 97 are also spaced substantially closer than current design standards recommend, further contributing to the increased risk of crashes. Data collected by ODOT shows that the severity of crashes is increasing over time within the project corridor as traffic volumes increase on US 97 and US 20 (Figure 3).

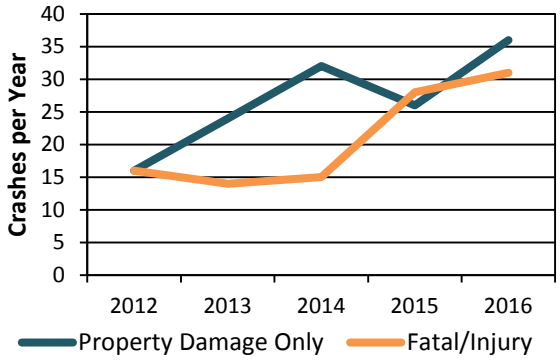


Figure 3: Crashes by severity within Project corridor (2012 - 2016).

Congestion at approaches. Peak hour traffic volumes on US 97 within the project area are at or exceed the capacity of the current highway facility. The US 97 Bend North Corridor is the last stretch of the US 97 Bend Parkway within the Bend city limits that has not been improved to grade-separate it from the local transportation network and services. Volume data indicates that US 97 is congested over 45 percent of the time within the project area (Robal Road and Cooley Road) (Figure 4). If nothing is done, by 2035 US 97 and the surrounding roadway systems will experience severe congestion at public road approaches and private driveways during peak travel hours, annually resulting in over 4,700 hours of network delays[8] and an increase in conflict points and potential for crashes and associated injuries. These issues are compounded by the BNSF at-grade rail crossing located within 200 ft. of the intersection.

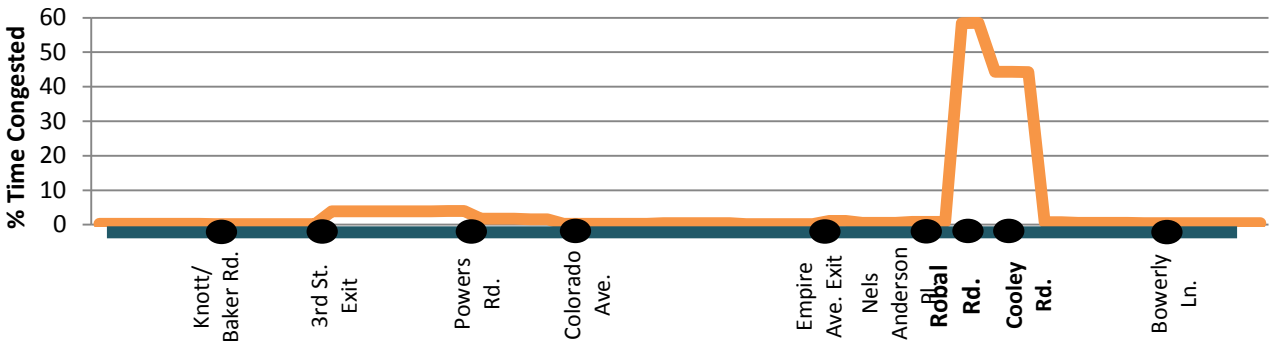


Figure 4: Percent time congested through the US 97 Bend Parkway.

[8] http://www.oregon.gov/ODOT/Projects/Project%20Documents/BendNorthCorridorus97bnc_feis_main_body_and_section_4f_evaluation.pdf

Traffic flow within the corridor. Traffic flow on US 97 is inconsistent, especially during peak hours. Non-reoccurring events exacerbate traffic flow inconsistencies, resulting in unreliable performance of the facility. Delays on the highway, as defined by the Federal Highway Administration (FHWA), are caused by a number of factors prevalent within the project area (Figure 5). US 97 experiences all of these issues leading to inconsistent speed/travel time and more frequent and longer delays. By 2040, average daily traffic is estimated to grow by over 50 percent. **If no improvements are made**, traffic on US 97 will continue to experience more extensive delays and queuing; travel time will increase substantially; and **average travel speeds will be reduced to less than five miles per hour during the most congested times.**

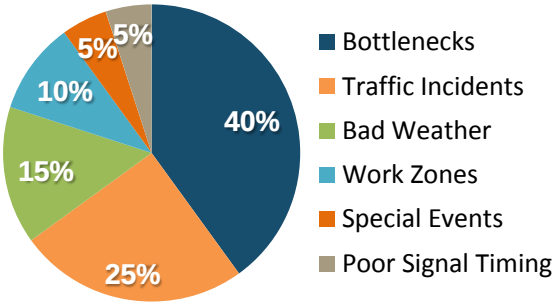


Figure 5: Cause of delays on roadways and intersections within project area.

How ODOT Proposes to Solve these Challenges

ODOT proposes to complete the last segment of the US 97 Bend Parkway to enhance freight movement, provide reliable travel times, reduce crashes and make the best use of the region's existing infrastructure for all modes. The US 97 Bend North Corridor project includes:

US 97 Corridor Improvements

Reroute US 97. The project will build a new alignment of US 97 between Empire Avenue and the northern city limits (Figure 6). **A new alignment of US 97 will improve mobility on the highway by allowing continuous through movement for vehicles traveling north/south and by eliminating the only long delay bottleneck for freight outside the Willamette Valley**. It will improve safety by eliminating two signalized intersections (Cooley Road and Robal Road) and four at-grade, two-way stop-controlled intersections (Nels Anderson Road, Cascade Village Mall entrance, Grandview Drive, and Clausen Drive) from US 97. Access to and from the highway will be controlled and connected to the local system at the Bend north city limits and at the existing Butler Market Road and Empire Avenue interchanges.

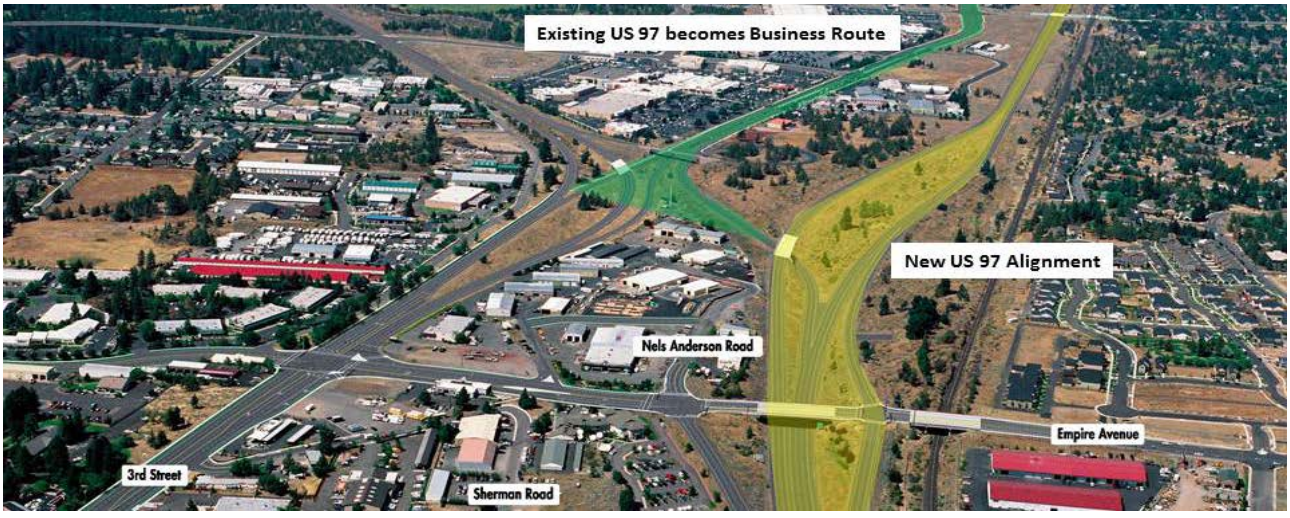


Figure 6: US 97 reroute will be built to the east of the existing highway. The current alignment will become a local route (3rd Street).

Convert existing US 97 into a local route. The existing US 97 alignment will be converted into a local, business route (3rd Street) to serve local and intermodal needs, connecting drivers to local shopping, dining and businesses (Figure 6). The local route will aid with traffic flow by separating local from regional traffic and providing drivers with an alternative route to US 97. The local route will connect the existing US 20/3rd Street commercial core to development on the north end of Bend. The local route will connect to the US 97 state highway route at a "T" intersection with a signal (Figure 7) at the north end of the project corridor. Multimodal investments in this local route will better accommodate bicycle, pedestrian, and transit modes.

Figure 7: Existing US 97 will be converted into a business route for local traffic, connecting to the new alignment of US 97 north of Bend.

Improve and grade-separate Cooley Road. Cooley Road will be grade-separated from the new alignment of US 97 and the BNSF Railway rail corridor. Cooley Road will be improved as a local route for residents traveling between home, work and local businesses. Additionally, the upgraded Cooley Road will connect US 20 to the local system at 3rd Street, the former alignment of US 97 (Figure 8), allowing for better local circulation.

Figure 8: Cooley Road grade separated from US 97 and BNSF Railway.

Active traffic management. ODOT will improve freight connections, provide reliable travel times and reduce crashes by building and improving the region's existing infrastructure. Proposed improvements will use public/private partnerships to install and integrate new technologies, including:

- *Travel time* – ODOT's travel time system will estimate travel durations using real-time traffic monitoring technologies.
- *Truck/transit signal priority* – Signal priority will be provided to trucks or buses by extending a current green phase or holding a red to assist trucks and buses safely through an intersection, minimizing the need for other motorists to slam on brakes.
- *Red-light extension/gap dependent flashing yellow arrow* – This feature will be used to adjust the signals all-red time when a vehicle is anticipated to be in the intersection at the same time as an opposing movement. Similarly, a flashing yellow arrow will only come up when a gap is detected.
- *Traveler information* – Notification of crashes or other events will occur via variable message signs, ODOT's TripCheck website, and other publicly available feeds.
- *Upgraded communication systems* – Reliable communication systems between field devices such as signs and traveler information as well as communications back to operation centers will be installed and/or improved. Along the project corridor, communications will be upgraded to high bandwidth reliable fiber optic cable with many of the locations added to the existing shared regional central traffic signal system.
- *CCTV cameras* – The corridor will be outfitted with closed circuit television (CCTV) cameras at key locations to allow remote network monitoring from ODOT traffic operations centers. Live streaming feeds will be available to emergency services and third parties like the media. Camera images will also be provided to the public through ODOT's TripCheck traveler information system[9].

Bicycle and pedestrian improvements. The project will expand bicycle and pedestrian facilities in Bend and Deschutes County with grade-separated bike and pedestrian crossings on the new US 97 alignment at Cooley Road and Nels Anderson Road; new sidewalks from Cooley Road north to the new intersection of 3rd Street and US 97; pedestrian and bike crossings at the newly created north intersection; and a multi-use path along US 97. The multi-use path will connect underserved low-income and minority residential areas to essential city services.

US 20 Corridor Improvements

US 20 and Robal Road/Britta Street intersection improvements. Britta Street will be extended to connect to US 20 at the US 20/Robal Road intersection. A new signal will be installed at the intersection of US 20 and Robal Road/Britta Street to facilitate the new intersection configuration.

US 20 and Cooley Road intersection improvements. A roundabout will be constructed at the intersection of US 20 and Cooley Road, currently an uncontrolled intersection, to add capacity to the highway and aid in traffic mobility and safety entering the US 20 north corridor of Bend. The roundabout will help manage increased traffic due to the planned development in the area and improve connectivity to local routes. The roundabout will be dual lane, providing two lanes in each direction on US 20, and will be designed to accommodate freight vehicles to proceed

[9] https://tripcheck.com/Pages/RCMap.asp#

through the roundabout simultaneously in each direction. The roundabout will also help facilitate connections to US 97.

FHWA has identified modern roundabout intersections as a proven life-saving roadway safety strategy. Modern roundabouts are not only safer than traditional signalized and stop-controlled intersections, and "where appropriate and properly designed, roundabouts operate more efficiently, often have lower life cycle costs, and result in increased fuel efficiency"[10].

County Alternate Route Improvements

Hunnell Road extension. Hunnell Road will be extended and reconstructed in partnership with Deschutes County to connect Cooley Road to Tumalo Road. The extension of Hunnell Road will allow three local roads and multiple driveways to be rerouted from US 97 to Hunnell Road. Hunnell Road is a critical county collector that will provide alternative access to properties impacted by the project as well as secondary access to adjacent commercial development. Hunnell Road will also serve as a parallel north-south route to US 97, offering an alternative through-road for traffic.

Tumalo Road improvements. Two roundabouts will be constructed on Tumalo Road at its intersections with Tumalo Place (Figure 9) and Old Bend Redmond Highway. These roundabouts will improve safety and provide intersection capacity on a main county arterial which also serves as the parallel route to US 97. These improvements are essential should traffic on US 97 need to be rerouted due to a crash or other incident.

Figure 9: Roundabout at Tumalo Road and Tumalo Place.

City Improvements

Empire Avenue is a main east/west arterial in Bend serving local traffic connecting to residential and commercial areas to the north and east of the city. Empire Avenue will be improved and extended by the city of Bend between Purcell Boulevard and 27th Street with roundabouts at both ends of the extension. Additionally, the US 20/3rd Street and Empire Avenue intersection will be reconstructed, as the intersection functions as the main connection from US 20 to US 97. The extension of Empire Avenue will also offer alternative connections to and from US 97 and US 20 within the city.

Project History

Beginning in 1993, ODOT initiated planning and construction of 6.5-miles of the US 97 Bend Parkway, an expressway through the city core. The US 97 Bend Parkway separated the US 97 facility through Bend allowing for enhanced mobility and improved safety. The US 97 Bend Parkway project totaled $146.8 million in state and federal funds. At the time the Bend Parkway was built, there was insufficient funding to complete the last 1.75-mile segment at the north end of the project, the US 97 Bend North Corridor project.

In the fall of 2004, ODOT began the refinement planning process to develop conceptual solutions to current and projected transportation challenges on the north end of the Parkway. Traffic analysis indicated that US 97 is highly congested in the north end of Bend, especially at

[10] https://safety.fhwa.dot.gov/intersection/innovative/roundabouts/fhwasa10023/transcript/audio_with_speaker/

the intersections of US 97 and Cooley Road and US 97 and Robal Road. This planning process culminated with the US 97 and US 20 Refinement Plan Final Report[11], which documented the development, evaluation, and narrowing of a range of system concepts. Two concepts were forwarded for further alternatives analysis that would comply with the National Environmental Policy Act (NEPA) and other environmental regulations.

In 2011, a Draft Environmental Impact Statement (EIS) was published to document all alternatives considered during the development and narrowing of alternatives for the US 97 highway corridor. The Draft EIS was circulated for public comment, including a public hearing, which in turn contributed to recommending the Preferred Alternative. A Final EIS was prepared in 2014 to document the Preferred Alternative recommendation as well as responses to public and agency comments. A Record of Decision was issued in 2014 completing the NEPA process for the US 97 Bend North Corridor project. Table 1 presents a breakdown of previously incurred project expenses. See Appendix C for a full breakdown of previously incurred project expenses.

Table 1. Previously Incurred Project Expenses (rounded)

Year	Deliverable	State Funds	Federal Funds	Total Expended
1993 – 2016	US 97 Bend Parkway Improvements	$146,700,000	$92,000	$146,792,000
2005 – 2007	US 97 & US 20 Refinement Plan	$50,000	$450,000	$500,000
2007 – 2014	US 97 Bend North Corridor EIS, Record of Decision, and adoption into state and local Transportation System Planning documents	$630,000	$5,670,000	$6,300,000
Totals		**$147,380,000**	**$6,212,000**	**$153,592,000**

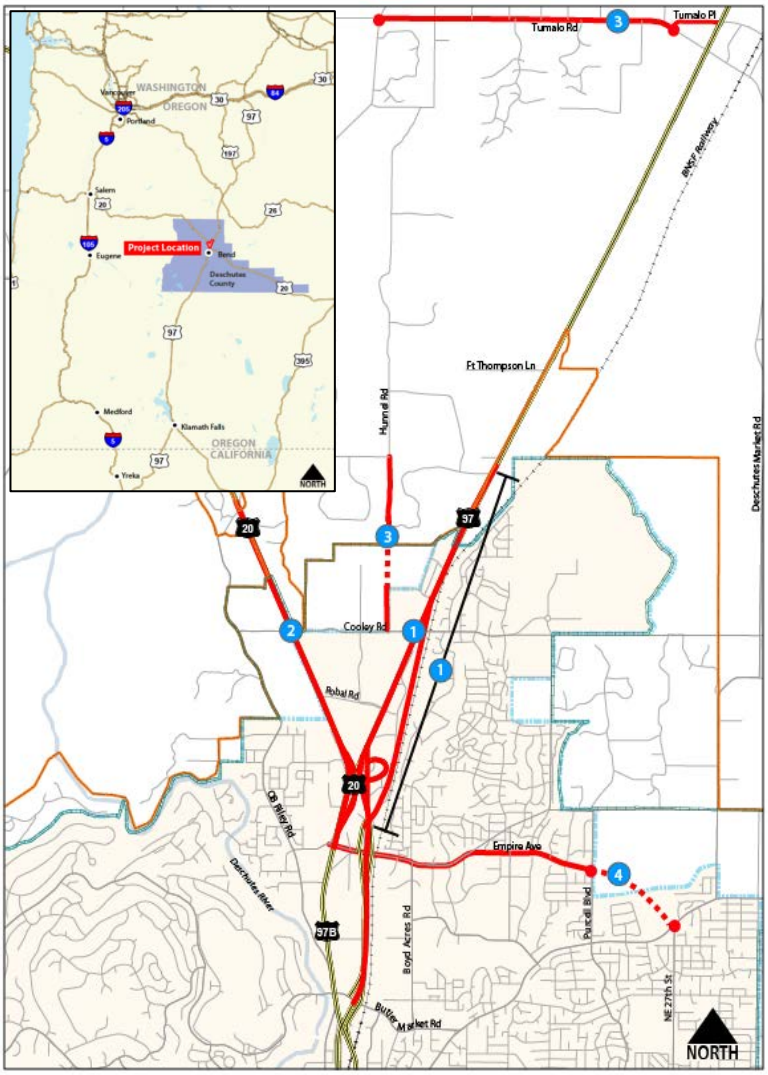
II. Project Location

- **Highway:** US 97, US 20 and local routes
- **Milepost:** 153.0 to 159.2
- **County:** Deschutes County
- **Census-Designated Urbanized Area:** Bend, OR
- **Oregon Congressional District:** 2nd District
- **Latitude/Longitude:** 44°05'52.4"N 121°18'06.8"W
- **Geospatial Data:** Hwy 004, Dalles-California Hwy; Hwy 017, McKenzie-Bend Hwy

The US 97 Bend North Corridor project is located in Deschutes County, Oregon at the north end of Bend. The project corridor extends on US 97 from Deschutes Market Road/Tumalo Junction interchange to the Empire Avenue interchange; the US 20 and Cooley Road intersection to the west; and Empire Avenue to the east (Figure 10).

US 97 and US 20 connect at the north end of the city and are used as routes for local residents to travel to and from home and work, and as connections to area businesses, schools, recreation and central Oregon's rural communities. **US 97 is the only north-south highway route through central Oregon, connecting the neighboring states of California and Washington and serving as critical links to the I-84 corridor, Portland metropolitan region, and Oregon's international ports and airport.** US 20 also provides a vital connection between Idaho and Oregon's Willamette Valley. Both routes are critical routes for freight.

[11] http://www.oregon.gov/ODOT/Projects/Project%20Documents/BendNorthCorridorUS97_US20_Final_Refinement_Plan_2007.pdf



Bend is the largest city in Oregon east of the Cascade Mountains and functions as the Deschutes County seat. Bend is uniquely situated geographically with Bureau of Land Management lands to the east, a National Forest to the west, and a National Monument to the south. Given this location, the primary areas for growth and new economic development are to the north of the city.

Bend's primary industry is tourism serving 4.5 million overnight travelers annually[12]. This tourism is due largely to its proximity to federal lands for outdoor recreation. Beyond tourism, growing industries include manufacturing of recreational equipment, medical devices, food/alcohol products and research and software development. Principal industries in Deschutes County are lumber, ranching and agriculture.

Bend has a population of approximately 90,000 with 160,000 in the Metropolitan Statistical Area (MSA). **Between July 2016 and July 2017, Bend was the fourth-fastest growing metropolitan area in the United States**[13]. Bend's population has more than quadrupled over the past two decades, as the city had just over 20,000 residents in 1990 at the beginning of the US 97 Bend Parkway project. In response to this growth, the Oregon Department of Land Conservation and Development approved the UGB expansion plan for Bend. The expansion added 2,380 acres of land for housing and employment to the UGB[14], primarily to the north and southwest of the city. Expansion to the north includes land for industrial, commercial and housing and will be essential to future employment growth in Bend.

Bend's population growth, in combination with US 97 and US 20 also serving as the sole regional facilities to move freight and vehicular traffic, has led to an increase in traffic congestion and delay, disruptions in traffic flow, and an increase in the severity of vehicular crashes. This project will solve these problems.

[12] http://17zwmn1d6kbc3wps8j554x0y.wpengine.netdna-cdn.com/wp-content/uploads/2017/08/2016-Economic-Impact-Report.pdf
[13] https://www.census.gov/newsroom/press-releases/2018/popest-metro-county.html
[14] https://www.bendoregon.gov/government/departments/growth-management/urban-growth-boundary-remand

III. Project Parties

ODOT is the lead applicant for this project in partnership with Deschutes County and the city of Bend. ODOT will work together with public and private parties to deliver the project including procuring final design and construction services and providing project oversight. The highway design and construction portion of the project will be bid through ODOT's Office of Project Letting. Local road construction will be completed by Deschutes County and the city of Bend.

Oregon Department of Transportation manages the state highway systems and works to provide a safe, efficient transportation system that supports economic opportunity and livable communities in Oregon. ODOT develops programs related to Oregon's system of highways, roads and bridges; railways, public transportation services; transportation safety programs; and motor carrier regulation. The vast majority of federal transportation funding expended in Oregon is administered by ODOT. ODOT will be responsible for administering any funding received under the INFRA program.

Deschutes County is the political and economic hub of central Oregon, ranking seventh in population statewide, and is Oregon's fastest growing county. The Deschutes County Road Department is committed to ensuring the safety of all roadway users and to operating the county roadway system in a cost-effective and environmentally responsible manner. The department works in coordination with city, regional and state government partners to provide a wide range of transportation planning, permitting, engineering and road maintenance services.

The city of Bend is the commercial, recreation, employment and cultural center of the central Oregon region and is the county seat of Deschutes County. Over the past decade, Bend has been one of the fastest-growing metropolitan areas in the United States. Bend has a strong history of implementing transportation projects and infrastructure projects. The city is responsible for roadways, a municipal airport, bicycle and pedestrian systems, and other municipal systems.

Other key project partners

The project is strongly supported by elected officials and other stakeholders across Oregon (see Appendix B). A list of those who support this grant application is included in Table 2.

Table 2: Project Partnership from Across the State

Statewide and Local Support			
Congress			
Greg Walden, US Representative, 2nd District of Oregon		Ron Wyden & Jeff Merkley, US Senators	
City of Bend, City Council			
Sally Russell, Mayor	Bruce Abernathy	Gena Goodman-Campbell	Barb Campbell
Justin Livingston	Bill Moseley	Chris Piper	
Deschutes County Board of Commissioners			
Phil Henderson, Chair	Anthony Debone, Commissioner	Patti Adair, Commissioner	
Other Supporters			
Oregon Transportation Commission	Bend Metropolitan Planning Organization	Oregon Freight Advisory Committee	
Central Oregon Area Commission on Transportation	Economic Development for Central Oregon	Coalition for America's Gateway and Trade Corridors	
Golden Area Triangle Consortium	Farm Bureau	Bend Chamber of Commerce	

IV. Grant Funds, Sources and Uses of Project Funds

The grant will complete the $171 million in funding needed to design and construct the US 97 Bend North Corridor project, the last segment of the US 97 Bend parkway (Table 3). State, local and private sources have invested $251.1 million in spent and committed costs to the US 97 Bend Parkway, totaling 77 percent of overall project costs. This INFRA grant seeks to leverage committed and expended local and federal investments to complete the US 97 Bend Parkway.

Table 3: US 97 Bend Parkway Project Costs (including the US 97 Bend North Corridor)

Funds	US 97 Bend North Corridor	US 97 Bend Parkway	US 97 & US 20 Refinement Plan	US 97 Bend North Corridor EIS	Total Project	Percentage
State, local & private	$104,300,000	$146,700,000	$50,000	$630,000	$251,141,000	**77%**
Federal	$66,700,000	$92,000	$450,000	$5,670,000	$72,912,000	**23%**
Totals	**$171,000,000**	**$146,792,000**	**$500,000**	**$6,300,000**	**$324,053,000**	**100%**

US 97 Bend North Corridor Segment

ODOT is requesting $66.7 million in INFRA funding (39 percent of the project cost for this segment) to leverage the $104.3 million in committed funding from state and local partners (Figure 11) for the US 97 Bend North Corridor, a segment of the larger US 97 Bend Parkway project (Table 4).

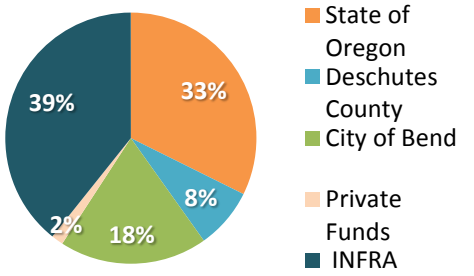


Figure 11: Project fund sources by percentage

This project has strong commitment from partners, as evidenced by the extent and type of funding sources. ODOT has committed $57.5 million (33 percent of the project cost) in State Highway Fund dollars. State dollars are generated from a variety of sources including the state gas tax, driver and motor vehicle fees, and weight mile tax for heavy commercial trucks. ODOT's match includes $50 million, which was programmed after the Oregon State Legislature passed House Bill 2017 (see section V.b.).

The city of Bend has committed $30.4 million (18 percent of the project cost) in funds including $5 million for improvements to the US 97 and US 20 corridors and $25.4 million programmed in Bend's Capital Improvement Program for Empire Avenue. These funds are largely derived from System Development Charges[15]. Deschutes County has also committed $13.8 million (8 percent of the project cost) through a Board of Commissioners letter of support for county system and US 97 improvements, and private parties including local developers have committed $2.7 million (2 percent of the project cost). **Appendix B includes signed letters of financial support and commitment**.

None of the non-federal funds dedicated to project components is subject to conditions that limit their use in completing construction activities. Similarly, none of the non-federal funds is subject to a deadline for expenditure.

Table 5 also shows a breakdown of project costs by major construction activity split between the project corridors by funding source.

[15] https://www.bendoregon.gov/government/departments/community-development/system-development-charges

Table 4: Project Funding by Source

Funding Allocations	Project Corridors				Total Project	Percent
	US97 Corridor	US20 Corridor	County Alternate Routes	Empire Ave		
State of Oregon	$52,400,000	$1,600,000		$3,500,000	$57,500,000	33%
Deschutes County	$5,000,000		$8,750,000		$13,750,000	8%
City of Bend	$ 2,500,000	$2,500,000		$25,350,000	$30,350,000	18%
Private Funds		$2,700,000			$2,700,000	2%
Total State, County, City & Private (non-Federal)	**$59,900,000**	**$6,800,000**	**$8,750,000**	**$28,850,000**	**$104,300,000**	**61%**
INFRA	**$59,100,000**	**$7,600,000**			**$66,700,000**	**39%**
Total Cost	**$119,000,000**	**$14,400,000**	**$8,750,000**	**$28,850,000**	**$171,000,000**	**100%**

Table 5: Project Budget by Major Construction Activity

Construction Activity	Funding Source	Project Corridor				Total	Percent
		US97 Corridor	US20 Corridor	County Alternate Routes	Empire Ave		
New Construction	**Federal**	$0	$0	$0	$0	$0	0%
Reconstruction Rehabilitation		$0	$0	$0	$0	$0	0%
Property or Equipment Acquisition		$0	$0	$0	$0	$0	0%
Environmental Mitigation		$0	$0	$0	$0	$0	0%
Operational Improvements		$0	$0	$0	$0	$0	0%
Contingencies		$0	$0	$0	$0	$0	0%
Total Federal		**$0**	**$0**	**$0**	**$0**	**$0**	**0%**
New Construction	**Non-Federal**	$48,075,000	$5,550,000	$7,200,000	$20,000,000	$80,825,000	77%
Reconstruction Rehabilitation		$1,500,000	$300,000	$1,000,000	$5,000,000	$7,800,000	7%
Property or Equipment		$2,700,000	$50,000	$0	$500,000	$3,250,000	3%
Environmental Mitigation		$375,000	$50,000	$50,000	$250,000	$725,000	1%
Operational Improvements		$1,250,000	$150,000	$0	$1,000,000	$2,400,000	2%
Contingencies		$6,000,000	$700,000	$500,000	$2,100,000	$9,300,000	9%
Total Non-Federal		**$59,900,000**	**$6,800,000**	**$8,750,000**	**$28,850,000**	**$104,300,000**	**100%**
New Construction	**INFRA**	$47,275,000	$6,350,000	$0	$0	$53,625,000	80%
Reconstruction Rehabilitation		$1,500,000	$300,000	$0	$0	$1,800,000	3%
Property or Equipment Acquisition		$2,700,000	$50,000	$0	$0	$2,750,000	4%
Environmental Mitigation		$375,000	$50,000	$0	$0	$425,000	1%

Table 5: Project Budget by Major Construction Activity

Construction Activity	Funding Source	Project Corridor				Total	Percent
		US97 Corridor	US20 Corridor	County Alternate Routes	Empire Ave		
Operational Improvements		$1,250,000	$150,000	$0	$0	$1,400,000	2%
Contingencies		$6,000,000	$700,000	$0	$0	$6,700,000	10%
Total INFRA		**$59,100,000**	**$7,600,000**	**$0**	**$0**	**$66,700,000**	**100%**
New Construction	Total	$95,350,000	$11,900,000	$7,200,000	$20,000,000	$134,450,000	79%
Reconstruction Rehabilitation		$3,000,000	$600,000	$1,000,000	$5,000,000	$9,600,000	6%
Property or Equipment Acquisition		$5,400,000	$100,000	$0	$500,000	$6,000,000	4%
Environmental Mitigation		$750,000	$100,000	$50,000	$250,000	$1,150,000	1%
Operational Improvements		$2,500,000	$300,000	$0	$1,000,000	$3,800,000	2%
Contingencies		$12,000,000	$1,400,000	$500,000	$2,100,000	$16,000,000	9%
Total Project		**$119,000,000**	**$14,400,000**	**$8,750,000**	**$28,850,000**	**$171,000,000**	**100%**
Total Percent of Project Costs		**70%**	**8%**	**5%**	**17%**	**100%**	

Contingency Costs

Construction costs include a 10 percent contingency (less than the standard contingency applied to projects at this level of development) to account for unforeseen circumstances and costs.

Federal Funding and INFRA Grant Request

A priority of the INFRA program is to increase the total resources available for infrastructure investments by leveraging provided federal funding. **The total Federal share for the complete US97 Bend Parkway Project (including the US 97 Bend North Corridor) is 23 percent (see Table 3)**. The INFRA request alone equals 39 percent of the proposed project costs and is considerably less than the allowable 60 percent maximum. The INFRA funds requested total $66.7 million, with 61 percent coming from investments provided by state, county, city and private partners (see Table 4). While the possibility exists to phase or reduce project improvements, should the project not receive the requested amount of INFRA funds, anticipated benefits will not be fully realized. Completing the project begun in 1993 will be further delayed.

V. Merit Criteria

The US 97 Bend North Corridor project meets all merit criteria including support for national and economic vitality, leveraging of federal funding, potential for innovation and performance and accountability.

a. *Support for National or Regional Economic Vitality*

A focus of the INFRA program is providing federal funding for infrastructure projects that support "national or regional economic vitality". **The US97 Bend North Corridor project supports both national and regional economic vitality**. **It addresses Oregon's only freight long delay bottleneck corridor that is outside the populous Willamette Valley**. Eliminating this bottleneck provides travel time savings for north-south movement of freight and motorists

on US 97 and east-west movement of freight and motorist on US 20. This benefit is particularly valuable for industries that depend on reliable and cost-effective travel routes, such as agriculture, wood products, manufacturing and tourism, industries that are the mainstay of central and eastern Oregon. While western Oregon and isolated central Oregon areas such as Deschutes County and Bend have prospered, much of central and eastern Oregon have not been so fortunate. Completion of the proposed project will better position these areas to achieve and enjoy growth rates demonstrated by other parts of the state.

Together components of the US97 Bend North Corridor project achieve and sustain a significant reduction in roadway accidents and serious injuries. They ensure the good condition of infrastructure that supports reliable and cost effective freight movement and economic growth. Components of the project, such as Parallel Route Improvement and Empire Avenue focus on reducing congestion and improving interaction between roadway users and reducing barriers separating employees for existing and future employment centers.

Other Economic Benefits

The project will construct and improve a vital freight corridor and add capacity to important local connections in Bend. These corridors will improve access and transportation options to the Juniper Ridge employment area, the areas recently added to the Bend UGB on the north end of Bend (the North Triangle and the OB Riley areas) (Figure 12), and businesses north of Empire Avenue. Future employment growth for the greater Bend area will be focused in Juniper Ridge, the North Triangle and OB Riley areas, and is contingent on transportation system improvements. The lack of transportation system capacity is hindering current development opportunities within the area. The US 97 Bend North Corridor project will address that capacity shortage.

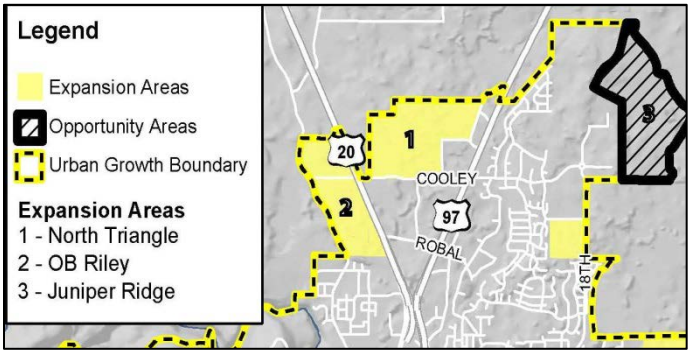


Figure 12: Expansion and opportunity areas in the Project area.

Current development in Juniper Ridge consists of industrial facilities including Les Schwab Tires, nation's largest independent commercial/retail tire dealer[16], on a total of 20 acres, employing more than 400 people at wages significantly above the local average. Providing the transportation improvements through the US 97 Bend North Corridor will potentially allow for the remaining 480 acres to develop and create an estimated 3,270 additional jobs, including 1,400 light industrial jobs, at an estimated payroll of $206.7 million annually. The created economic growth would equate to potential annual state tax revenue of $18.6 million and annual federal tax revenue of $31.0 million.

According to Bend's UGB expansion scenarios[17], the OB Riley and North Triangle expansion areas contain 197 acres of additional employment lands and once developed will potentially create an additional 1,825 jobs in the area at an estimated payroll of $85.3 million. The created economic growth would equate to potential annual state tax revenue of $7.7 million and annual

[16] https://www.moderntiredealer.com/research/730843/2018-modern-tire-dealer-100

[17] https://www.deschutes.org/sites/default/files/fileattachments/community_development/meeting/2321/bend_ugb_project_update.pdf

federal tax revenue of $12.8 million, in addition to $31 million for infrastructure from assessed fees and development charges.

Furthermore, this project will add connectivity to the businesses north of Empire Avenue which is important for continued development in this area. This area has seen significant growth over the past five years. There are more than 50 businesses and manufacturing facilities in the area that constitute a significant component of the city's employment base. Many of these businesses have located there because of the proximity to US 97.

The US 97 Bend North Corridor project, in addition to enabling economic development in the area, will support additional economic benefit and jobs during the construction of the project. The FHWA estimates that for every $1.0 million spent on highway construction, 13 jobs are supported[18]. Using the Oregon Legislature approved estimate of 9.15 jobs for every $1.0 million spent[19], this $170.6 million project would support an estimated 1,560 jobs.

Results of Benefit-Cost Analysis

This $171 million capital project (in year of expenditure dollars) discounted at a seven percent rate has a net present value of **$244 million** and a **benefit/cost ratio of 2.89** (Table 6).

The key project benefits identified include state of good repair, economic competitiveness, quality of life, environmental sustainability and safety. The vast majority of benefits come from economic competitiveness and safety benefits.

The US 97 Bend North Corridor project benefit-cost analysis is segmented into five separate components with a benefit/cost analysis developed for each component. The benefits of each are based on reduction in travel time delay and the reduction in crashes/injuries with the associated benefits of improved reliability, vehicle fuel savings, and emissions. The factors used to make the benefit-cost calculations are provided in Appendix D. The full benefit-cost analysis (BCA) spreadsheet (Appendix E) shows results using discount rates of both seven and three percent as noted in the *2018Benefit-Cost Analysis Guidance for Discretionary Grant Programs*.

Table 6. Benefit/Cost Analysis Summary Discounted at 7%

Corridor	Present Value of Capital Costs	Benefits Total	Net Present Value	Benefit/Cost Ratio
US 97 Corridor	($87,430,298)	$324,707,768	$237,277,470	3.71
US 20 Corridor	($10,067,474)	$27,606,902	$17,539,429	2.74
County Alternate Routes	($7,220,503)	$14,022,498	$6,801,995	1.94
Empire Avenue	($24,567,882)	$6,685,125	($17,882,757)	0.27
Total Project	($129,286,157)	$373,022,294	$244,021,289	2.89

b. *Leveraging of Federal Funding*

This INFRA grant application seeks to leverage federal funding with state, local and private resources that total 61 percent of total project costs (Table 4). The US 97 Bend North Corridor project will complete the last segment of the US 97 Bend Parkway, which has already invested $153.6 million in state and federal funds (Table 1). **If completed as proposed, every federal dollar invested in the US 97 Bend Parkway will have leveraged nearly four dollars of state,**

[18] https://www.fhwa.dot.gov/policy/otps/pubs/impacts/
[19] https://www.oregon.gov/ODOT/Regions/Documents/Region4/KPM%20Rollup.pdf

local and private funds. In effect reversing the traditional 80/20 Federal share ratio to 20 percent federal and 80 percent non-federal.

The future growth and development of Bend is contingent on future development in Bend's north corridor and improving the state and local transportation network. In 2005, Bend established an Urban Renewal District in the north end of Bend within the project area to capture private funding from adjacent developments to support investments in transportation. At that time, the Urban Renewal Plan[20] identified transportation improvements at US 97 and Cooley Road to accommodate future growth, but growth has provided little revenue to the fund due to other transportation deficiencies in the area. A plan is currently being updated to capture future development in the recent UGB expansion and identify additional state highway improvements that could use the funds. This is a source funding this project and will become a substantial revenue source for future transportation infrastructure in the area.

ODOT and the city partnered on an Intergovernmental Agreement in 2010 for the Juniper Ridge development area to mitigate traffic impacts from development. The trigger for investments in transportation is tied to new trips generated from the development. This agreement will also provide funding for future transportation infrastructure.

The city of Bend passed a Council Resolution to commit the funds to this project including $5 million for improvements to US 97 and US 20 and programmed $25.4 million in Bend's Capital Improvement Program for Empire Avenue. The Deschutes County Board of Commissioners has also pledged to deliver funding obligations to construct $13.8 million in parallel route improvements.

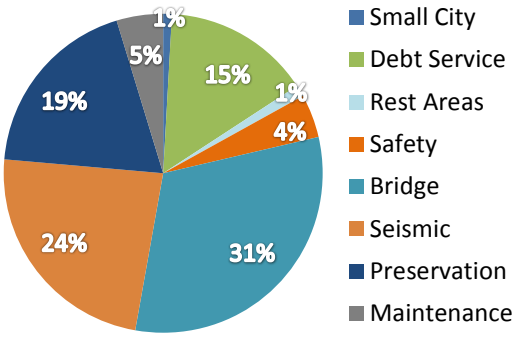
Private partners, in conjunction with the city and ODOT, have issued a Letter of Intent to partner on the US 97 and US 20 corridor improvement committing additional funds. There is also a substantial private contribution from local developers to build out the city street network and transit infrastructure in the area to increase local connectivity, however the value of the street network and property dedication have not been monetized as part of this application. ODOT has worked with private sector entities in the area to gain support for the transportation improvements including the Golden Triangle Area Consortium (Appendix B). These costs are not included in this application but are anticipated at nearly $15 million, dedicated entirely to the state transportation system.

In addition, BNSF is prepared to make the required financial contribution towards appropriate grade separation costs to eliminate the at-grade crossing at Cooley Road as defined in CFR 646.210.

Operations and Maintenance Funding Commitments

ODOT, under the direction of the Oregon Transportation Commission, prioritizes funding to keep Oregon's transportation system in a state of good repair. The recently enacted Oregon House Bill 2017 directed additional investments into the maintenance and preservation of the transportation system (Figure 13), with an estimated 85 percent of STIP funding dedicated to future fix-it projects. A provision of bill requires projects costing more than $15 million to conduct a comprehensive benefit-cost analysis and to consider the future costs to preserve and maintain the project, discounted to present value.

[20] https://www.bendoregon.gov/home/showdocument?id=28677



Historic and increased funding allocations prioritized towards pavement preservation and safety will be used to maintain this infrastructure once constructed. The city of Bend and Deschutes County will also see an increased funding allocation for preservation of their system through House Bill 2017.The city has conducted a life-cycle cost analysis of its roundabouts and streets on similar projects and plans to construct city streets with concrete to minimize life-cycle costs of the city street system.

Figure 13: Investments made by category through Oregon House Bill 2017.

c. *Potential for Innovation*

ODOT will utilize innovations and enhanced business processes promoted through FHWA's Every Day Counts Initiative (ECD-4 2017 – 2018)[21] to shorten the project delivery process, enhance roadway safety, reduce congestion and improve environmental sustainability. Specific EDC-4 innovations included e-Construction and Partnering and Automated Traffic Signal Performance Measures.

Technology and Broadband

This project will optimize technology to improve Transportation Systems Management and Operations by measuring performance, actively managing the multimodal transportation network, and delivering positive safety and mobility outcomes to the travelling public. Active Traffic Management and Intelligent Transportation System technology will be used to enhance operational performance of the transportation system.

These new technologies will build on existing infrastructure and will improve the way ODOT manages signal maintenance and operations by enhancing capacity to collect and analyze data. Utilizing these technologies will allow ODOT to stay ahead of innovative solutions and will aid in areas such as decision making, increasing transportation efficiencies, identifying future system needs, and enhancing partnerships with outside sources.

Traffic Signals. ODOT will employ Advanced Traffic Controller operations at signalized intersections within the project area. These programs will give ODOT the ability to optimize performance across the transportation system in Bend's North Corridor. Advanced Traffic Controller technologies will build onto existing traffic signal infrastructure to improve signal maintenance and operations by enhancing ODOT's capacity to collect and analyze data, including historical and real-time performance at signalized intersections.

Advanced Traffic Controller technologies will also enable ODOT to customize operations for varying users including freight, vehicles, transit, pedestrians and bicycles. These technologies are also forward compatible with connected vehicles and are integrated into platforms like the Personal Signal Assistant available in some modern personal vehicles. Ultimately this technology will allow ODOT to evaluate and optimize mobility, reduce congestion and crashes, save time and fuel, and improve safety.

[21] https://www.fhwa.dot.gov/innovation/everydaycounts/edc_4/

Roadside Devices. Roadside devices including cameras, remotely programmable Variable Message Systems, Bluetooth readers, Wavetronix radar detection devices and Dedicated Short Range Communications devices will be installed at key locations throughout the project area.

These devices generate real time traveler information and will convey travel times, delays, operational/weather-related messages and routing information (Figure 14) for US 97 in Bend and alternate routes. These innovative technologies, specifically Dedicated Short Range Communications devices, also have a direct connection to transit providers. ODOT plans to partner with Cascades East Transit, the region's sole transit provider, to install these devices on transit vehicles to equip them with real time route information. Finally, these devices will directly feed ODOT's TripCheck traveler information system creating a more robust dataset.

Figure 14: Transportation System Management and Operation tools.

Public & Private Partnership Data Aggregating Tools. Data collected by technologies utilized in the US 97 Bend North Corridor project will be integrated into open source traveler information platforms allowing greater partnership between the public and private sector. The data can be programmed to interfaces and dashboards such as iPeMS by Iteris, a travel time data dashboard; HERE Map Data, a geospatial data map and traffic services aggregator; Waze, a crowd source traveler information interface; and TripCheck, the traveler information website published by ODOT. This will allow for greater innovation and sharing with the private sector advancing future vehicle and infrastructure connectivity technologies.

Broadband. ODOT is also in negotiations with an international private entity to place fiber optic cable in the state highway right-of-way in exchange for access to fiber for ODOT use within the project limits. ODOT is pursuing this opportunity to improve its broadband communications and help meet ODOT's connectivity goals.

As transportation system users and infrastructure become more connected, building digital infrastructure grows in importance. This opportunity has the potential to lower operating costs, improve reliability, and improve bandwidth availability for broadband communications without requiring the investment of capital costs for construction while serving as a statewide model.

Project Delivery

ODOT plans to streamline project delivery and take advantage of advanced project delivery methods by employing an alternative contracting method: design- build contracting with confidential alternative technical concepts (ATCs). Design-Build with confidential ATCs is approved under FHWA's Special Experimental Project-14 (SEP-14)[22].

Transportation agencies are increasingly allowing design and construction contractors to incorporate alternative technical concepts into their proposals for highway projects. There are numerous documented case studies with successful project outcomes using the Design-Build with confidential ATCs project delivery method[23]. The alternative technical concepts approach

[22] https://www.fhwa.dot.gov/programadmin/contracts/sep_a.cfm
[23] http://www.trb.org/Main/Blurbs/170465.aspx

allows proposers to suggest modifications to a contract requirement that would improve a project technically or reduce costs. The US 97 Bend North Corridor project would be the first to incorporate this method in the design-build contracting process in Oregon. Pursuing alternative technical concepts will allow ODOT to gain efficiencies and allow for innovation in design, construction and traffic management while gaining benefits from partnering with the design and construction industry. This method will also reduce the risks of schedule delays because the design and construction funds would be obligated when the agency and industry agree to the concepts and begin the design and construction process. This method will also substantially accelerate the pace of the project delivery process.

Additionally, ODOT proposes to use the e-construction and partnering methods on the US 20 and Cooley Road intersection portion of this project, providing electronic plan sets to contractors.

EXAMPLES OF DESIGN-BUILD CONFIDENTIAL ATCS

I-15 Mesquite Overpass Project
Description. The ATC proposed an on-site construction method as opposed to the new interchange being built in a different location than the existing interchange.

Value Added.
Engineer's estimate: $28 million
Contract award with ATCs: $15 million

This innovative project delivery not only cut the anticipated cost nearly in half, but also shaved six months off the required schedule while only closing I-15 for two 56-hour periods.

d. Performance and Accountability

Performance metrics and accountability are an integral part of the funding identified in House Bill 2017 and will be enacted as part of the implementation of the funds obtained for the projects. In addition to the performance metrics and accountability outlined in the bill, ODOT has identified performance metrics (Table 7) to measure the short and long term performance directly related to the construction project elements and the innovations implemented on the project with the goals of improving safety and system reliability and reducing congestion.

Table 7. Performance Metrics

Performance Objectives	Metrics
Reduce crashes	Number and severity of crashes in the project area Number and severity of bicycle and pedestrian related crashes in the project area
Reduce truck-related crashes at intersections	Number and severity of truck-related crashes at intersections in the project area
On-time transit arrivals	Bus schedule reliability- On time bus arrivals
Diversion of traffic to less congested roadways	Traffic diversion rates
Reduce congestion on US 97	AM peak hour travel time PM peak hour travel time Percent of arrivals on green light
Facilitate mode shift	Improve multimodal level of traffic stress in the project area
Increase reliability and traveler information	Improved free flow traffic conditions

Project success will be determined by meeting the following key milestones and accountability measures (Table 8) as outlined in the project schedule. **Accountability measures will center around travel time reduction on mainline US 97 within project area based on the assumptions in the BCA.** Data will be used to compare US 97 travel times prior to construction to the newly constructed corridor with the expectation that the new US 97 travel corridor will

meet or exceed travel time performance targets, to be measured within 12 months of project completion.

Table 8. Milestones and Accountability Measures

Milestone	Measure	Deadline
Obtain approval for innovative contracting: Design- Build with ATCs	Design-build contract ATC process approved	August 30, 2019
Establish baseline conditions for safety and mobility performance metrics	Baseline report for safety and mobility on US 97 in Bend	July 26, 2019
Develop performance targets for performance metrics in Table 7	Documented performance targets for safety and mobility on US 97 in Bend	September 30, 2019
Life cycle cost analysis	Reduce life cycle costs	September 30, 2019

VI. Project Readiness

The project has obtained local match funding support, but requires INFRA funds to complete design and construction. INFRA funds will be used for the US 97 Bend North Corridor segment of the US 97 Bend Parkway, rerouting US 97 and constructing grade-separated improvements at the US 97 and Cooley Road intersection. **The proposed project schedule obligates all federal funds by September 30, 2021 and initiates construction for the US 97 corridor segment of this project by October 1, 2021**.

a. *Technical Feasibility*

The preliminary design (15 percent design level) and requirements of the NEPA (Final EIS and Record of Decision[24]) for the project were completed in 2014. All portions of this project have been adopted into state and local transportation system plans including the Bend Transportation System Plan[25], the Bend MPO Metropolitan Transportation Plan[26], the Deschutes County Transportation System Plan[27], and the Oregon STIP[28]. The NEPA and planning processes allowed for meaningful input from the public and stakeholders. The project is ready to move forward with right of way, final design and construction. A 10 percent contingency is included in the project budget. For detailed scope of work see Section I.

The delivery of the project will occur with three different contracting methods to ensure all federal funds are obligated prior to September 30, 2021. The major portion of the project, the US 97 Reroute and US 97 and Cooley Road intersection, will be delivered using a Design–Build ATC contracting method (see Section V.c.) to take advantage of private innovations for this significant part of the project and to ensure obligation of the funds for construction. The US 20 and Cooley Road intersection portion of the project will be designed under public-private partnership to ODOT standards and will be bid through the ODOT Office of Pre-Letting using the e-construction innovation, providing electronic plan sets to contractors. ODOT has demonstrated the ability to deliver projects similar to this and has already heavily invested in and constructed the US 97 Bend Parkway between 1993 and 2016. The local road improvements including the extension of Hunnell Road and Empire Avenue will be constructed by the Deschutes County and Bend. The following section depicts the anticipated project schedule.

[24] http://www.oregon.gov/odot/projects/pages/project-details.aspx?project=14020
[25] http://www.bendoregon.gov/home/showdocument?id=4091
[26] http://www.bendoregon.gov/home/showdocument?id=18128
[27] https://www.deschutes.org/sites/default/files/fileattachments/community_development/page/738/transportation_plan_table_of_contents.pdf
[28] http://www.oregon.gov/ODOT/STIP/Pages/Current-Future-STIP.aspx

b. *Project Schedule*

The project schedule (Figure 15) includes the major project milestones for engineering, right-of-way and construction. This schedule takes into account procurement and review timelines. Major deliverables for agency review during the final engineering will occur at 30, 60, 90, and 100 percent and will follow the ODOT Contract Plans and Development Guide. Final plans, specification and estimate (PS&E) review will follow the ODOT's PS&E Delivery Manual, which provides guidelines for FHWA review on projects with federal funding. ODOT typically works with the FHWA throughout PS&E development and then provides them with a final review cycle prior to bid advertisement. This schedule also depicts the timelines for the Design-Build contracting process and local agency projects. A full project schedule, including all project components, can be found in Appendix A.

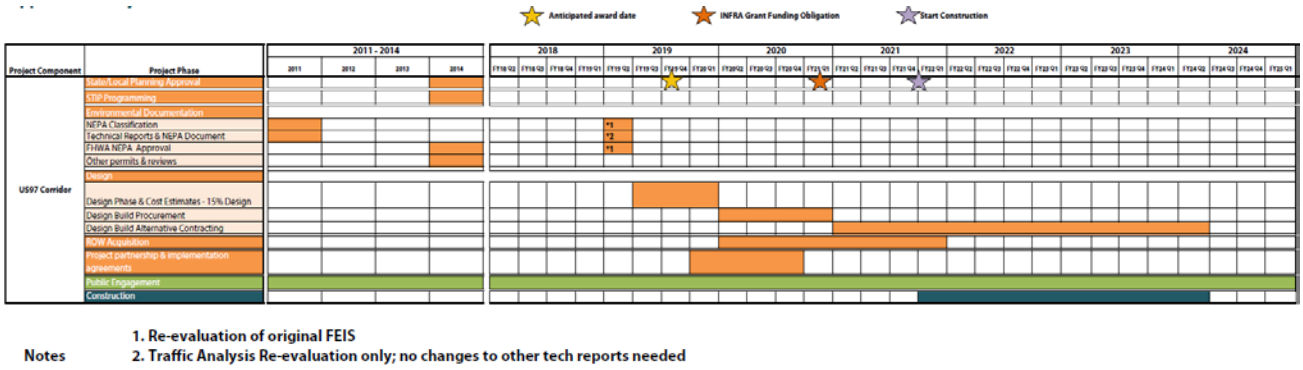


Figure 15: US 97 Corridor Project Schedule

Financial Feasibility

The implementation of the proposed US 97 Bend North Corridor project is financially feasible through a reliable source of non-federal dollars in addition to the INFRA Grant funds requested. ODOT has the authority to program state and local funds to the project, and is providing $6.9 million in state funds in addition to $50 million in state dollars earmarked from HB 2017. Local Agencies and private parties have committed to fund an additional $46.8 million of the non-federal portion of the project, resulting in a total $104.3 million of state, local, and private funding.

c. *Required Approvals*

Environmental Permits & Reviews. The NEPA requirements for this project are complete. ODOT completed a Final EIS Final Section 4(f) Evaluation in July 2014. A Record of Decision was issued by the FHWA in September 2014. These documents can be viewed and downloaded from the document library on the project webpage[25]. Extensive public engagement occurred during the NEPA process. Given the lapse of time since the Final EIS, ODOT is currently completing a written re-evaluation of the EIS that will include updated traffic data. ODOT anticipates the written re-evaluation will be complete and approved by FHWA in April 2019 (see project schedule for full details).

Federal Permits	Approving Agency
Endangered Species Act	US Fish and Wildlife Service

State and Local Approvals. Project corridor and design elements are consistent with numerous statewide, regional and local plans, policies and permits, including:

Statewide and Local Plans	
Oregon Transportation Plan[29]	Oregon Freight Plan[3]
2018 – 2021 Oregon STIP	2021 – 2024 STIP[29] (under development)
2014 – 2040 Bend MPO Metropolitan Transportation Plan[30]	Bend Urban Area Transportation System Plan
Transportation or capital improvement programs for the city of Bend, Deschutes County[31], Bend MPO and ODOT	Oregon Bicycle and Pedestrian Plan[32]
Oregon Public Transportation Plan[33].	Bend Metropolitan Transportation Plan
Central Oregon Rail Plan6	Oregon State Rail Plan[34]
State & Local Permits	**Approving Agency**
Section 106 Clearance (archeology and historic)	State Historic Preservation Office
Noise Variance	Deschutes County

d. *Assessment of Project Risks and Mitigation Strategies*

The risks for building this project are relatively low based on ODOT's, the city of Bend's, and Deschutes County's experience with projects of this type in the central Oregon area. An extensive public outreach process and environmental analysis was conducted through the NEPA EIS to ensure that the solution solved the problem and had broad-based support. Risks and the associated mitigation measures are identified in Table 9. A project Risk Management Plan will be developed and managed throughout the project development process.

Risk	Probability/Impact	Mitigation Measures
Cost- Right of Way and Construction Materials Cost increases	Probability **Moderate** Impact **Moderate**	If project costs increase, there are three mitigation strategies for this risk. (a) The project could be scaled to fit within the funding available. (b) Other sources of funds could be identified during the project development process. (c) A value engineering study could reduce project costs.
Project schedule-delays in the schedule such that the federal funds cannot be obligated for construction by September 30, 2021	Probability **Low** Impact **High**	Adequate time is built into the project schedule for the US 97 reroute and US 97 and Cooley Road intersection portions of the project. A design-build contracting method will be used to expedite project delivery and construction. The federal INFRA funds will be exclusively used for the US 97 reroute and the US 97 and Cooley Road portions utilizing this contracting method. The local road portions of the project would be constructed with local and state funds to avoid local political uncertainties that might impact local project schedules.
Permits and approvals- Interagency Agreement with the city and county	Probability **Low** Impact	City of Bend, Deschutes County and ODOT are partners and have adopted resolutions for funding. If there is a delay in the Intergovernmental Agreement

[29] http://www.oregon.gov/ODOT/Planning/Documents/OTP_Volume_I.pdf
[30] https://www.bendoregon.gov/government/departments/growth-management/bend-mpo/plans-and-programs/metropolitan-transportation-plan
[31] https://www.deschutes.org/road/page/capital-improvement-plan-and-sdcs
[32] http://www.oregon.gov/ODOT/Planning/Documents/OBPP.pdf
[33] http://www.oregon.gov/ODOT/Planning/Pages/OPTP.aspx
[34] http://www.oregon.gov/ODOT/Planning/Documents/OSRP.pdf

Risk	Probability/Impact	Mitigation Measures
	Low	process, the project will be modified to eliminate the need for an Intergovernmental Agreement.
Permits and Approvals – Development agreement and city council approval for the US 20 and Cooley Road intersection	Probability **Low** Impact **Low**	If approvals are unable to be obtained, the US 20 and Cooley Road intersection improvements would be dropped from the project, as it is funded entirely with state, local and private funds.
ODOT unable to obtain approval for the Design-Build confidential ATC contracting method	Probability **Moderate** Impact **Low**	If the innovative contracting process approvals cannot be obtained for confidential alternative concepts, ODOT will use the standard design- build approved process and still achieve an accelerated project delivery process.

VII. Large/Small Project Requirements

The US 97 Bend North Corridor project meets all requirements for a **large, rural** project per 23 USC 177 (g).

Table 9. Large Project Requirements

Large project determination	Guidance
1. Does the project generate national or regional economic, mobility, safety benefits?	**See Sections V.a. and V.b.** This project will complete the US 97 Bend Parkway, totaling $153.6 million in expended state and federal funding. Bend is the fourth fastest growing metropolitan area in the nation. Improvements to US 97 are vital to the continued growth and expansion of Bend, the region, and state of Oregon. The project will allow for 680 acres to be developed within the recently expanded city UGB, creating an estimated 5,100 additional jobs, with potential annual state tax revenue of $26.3 million and annual federal tax revenue of $43.8 million while simultaneously increasing the safety of US 97 and improving freight mobility.
2. Is the project cost effective?	**See Section V.a.** This $171 million capital project (in year of expenditure dollars) discounted at a seven percent rate has a net present value of $244 million and a benefit/cost ratio of 2.89.
3. Does the project contribute to one or more of the Goals listed under 23 U.S.C. 150 (and shown below)? b. National Goals.—It is in the interest of the United States to focus the Federal-aid highway program on the following national goals: (1) Safety.—To achieve a significant reduction in traffic fatalities and serious injuries on all public roads. (2) Infrastructure condition.—To maintain the highway infrastructure asset system in a state of good repair. (3) Congestion reduction.—To	**See Sections I and V.b.** (1) Safety – This project implements design features to improve the safety of the US 97 and US 20 corridors including: removing signalized and at grade intersections from the highway; eliminating an at grade railroad crossing; constructing roundabouts on US 20 and local arterials; grade separating US 97 for regional through traffic; and grade-separated bike and pedestrian facilities. (2) Infrastructure condition – Historic and increased funding allocations through House Bill 2017 prioritized towards pavement and bridge preservation will be used to maintain this infrastructure. ODOT plans to conduct a life-cycle cost analysis during the design of this project to identify construction techniques and materials that produce the best value. Bend and Deschutes County also have increased funding

Table 9. Large Project Requirements

Large project determination	Guidance
achieve a significant reduction in congestion on the National Highway System. (4) System reliability.—To improve the efficiency of the surface transportation system. (5) Freight movement and economic vitality.—To improve the national freight network, strengthen the ability of rural communities to access national and international trade markets, and support regional economic development. (6) Environmental sustainability.—To enhance the performance of the transportation system while protecting and enhancing the natural environment. (7) Reduced project delivery delays.—To reduce project costs, promote jobs and the economy, and expedite the movement of people and goods by accelerating project completion through eliminating delays in the project development and delivery process, including reducing regulatory burdens and improving agencies' work practices.	allocations for preservation of their system through House Bill 2017. The city has conducted a life-cycle cost analysis of their roundabouts and plans to construct city streets with concrete to minimize life-cycle costs of the city street system. (3) Congestion reduction - Peak hour traffic volumes on US 97 in the project area are at or exceed capacity of the current highway facility. The project will complete that is the last 1.75-mile stretch of US 97 within the Bend city limits that has not been improved. The project will reduce congestion by removing and grade separating key intersections from the state highway system and allowing for better traffic flow by realigning US 97 to the east. (4) System reliability – See Section I and V.c. ODOT will employ Active Traffic Management solutions throughout the corridor to improve freight connections, provide reliable travel times and reduce crashes. (5) Freight movement and economic vitality – See Section V.a. The US 97 corridor is critical for moving freight, both by truck and rail. The project will improve freight movement by reducing traffic congestion and delays. Removing the at-grade railroad crossing on Cooley Road will reduce vehicle traffic delays and improve safety. This project will allow for anticipated increases in freight over the next twenty years. Bend has identified the land between US 97 and US 20 as an important component to its current and future economic base. Land identified for development is located near the project area and within the city's UGB. This project will allow for future economic development in the project area projected to create 5,100 jobs, thereby increasing private sector employment and local, state, and federal tax revenue. (6) Environmental sustainability – This project completed a comprehensive NEPA EIS in 2014 which considered multiple alternatives, adverse and beneficial impacts, environmental consequences, and avoidance, minimization and mitigation measures. This project was identified as the Preferred Alternative in the EIS and attempts to balance and mitigate environmental considerations for greater sustainability. Environmental conditions have remained unchanged since 2014 though a written re-evaluation of the EIS is underway. (7) Reduced project delivery delays – See Section V.c. ODOT plans to use a design-build contract with confidential alternative technical concepts to award this project. Pursuing alternative technical concepts will allow ODOT to gain efficiencies and allow for innovation in design, construction and traffic management while partnering with the design and construction industry. This method will also reduce the risks of schedule delays, because design and construction funds would be obligated when the agency and industry agree to the concepts and begin the design

Table 9. Large Project Requirements

Large project determination	Guidance
	and construction process. This method will also substantially accelerate the pace of the project delivery process.
4. Is the project based on the results of preliminary engineering?	**See Section VI.a.** Yes, this project completed preliminary engineering to a 15 percent design level during the US97 Bend North Corridor EIS.
5a. With respect to non-Federal financial commitments, does the project have one or more stable and dependable funding or financing sources to construct, maintain, and operate the project?	**See Section VI.** The implementation of the project is financially feasible through a reliable source of non-Federal dollars in addition to INFRA Grant funds. ODOT has the authority to program additional state and local funds to the project. The project has broad scale local support and $50.0 million in State dollars was earmarked towards the project with Oregon House Bill 2017 and ODOT is providing an additional $7.3 million in state funds. Local agencies and private parties have committed to fund an additional $46.8 million, resulting in a total $104.3 million of state, local, and private funding.
5b. Are contingency amounts available to cover unanticipated cost increases?	**See Section IV.** A 10% contingency amount is included in the cost estimates for this project.
6. Is it the case that the project cannot be easily and efficiently completed without other Federal funding or financial assistance available to the project sponsor?	**See Sections I and V.b.** ODOT is requesting $66.7 million in INFRA funding (39 percent of the project cost) to leverage the $104.3 million in state, local, and private funds in addition to $153.6 million already invested in the US 97 Bend Parkway. This project has strong commitment from partners, as evidenced by the range and type of funding sources, however two key segments of project, the US 97 reroute and US 97 and Cooley Road intersection improvements would not be possible without Federal funding. These segments are essential to expansion and improvement of the corridor to accommodate growth needs.
7. Is the project reasonably expected to begin construction not later than 18 months after the date of obligation of funds for the project?	**See Section V.d. and VI.** ODOT proposes to obligate funding by September 30, 2021. Construction is expected to commence within 120 days of obligation. ODOT has extensive experience delivering large, federally funded highway projects (both by formula and discretionary grant) in an efficient manner.

Supporting Documentation and Web Links

Below is a list of all the references cited throughout the US 97 Bend North Corridor project INFRA grant application.

1. Freight Commodity Flows. http://www.oregon.gov/ODOT/Regions/Documents/Region4/BendCommodityFlowsDrft2.pdf
2. Oregon Highway Plan. http://www.oregon.gov/ODOT/Planning/Documents/OHP.pdf
3. Oregon Freight Plan. http://www.oregon.gov/ODOT/Planning/Documents/OFP-Draft-Amendment-Ch9-Appendices-G-J.pdf
4. Oregon Seismic Resiliency Plan. http://www.oregon.gov/oem/Documents/Oregon_Resilience_Plan_Final.pdf
5. Oregon Freight Highway Bottleneck Project Freight Plan. http://www.oregon.gov/ODOT/Planning/Documents/FHBL_Final-Report.pdf
6. Central Oregon Rail Plan. https://digital.osl.state.or.us/islandora/object/osl%3A36275/datastream/OBJ/view
7. FHWA Freight Projects. https://www.bts.gov/topics/freight-transportation
8. US 97: Bend North Corridor Final Environmental Impact Statement. http://www.oregon.gov/ODOT/Projects/Project%20Documents/BendNorthCorridorus97bnc_feis_main_body_and_section_4f_evaluation.pdf
9. ODOT TripCheck Traveler Information. https://tripcheck.com/Pages/RCMap.asp#
10. FHWA Intersection Safety. https://safety.fhwa.dot.gov/intersection/innovative/roundabouts/fhwasa10023/transcript/audio_with_speaker/
11. US 97 and US 20 Final Refinement Plan. http://www.oregon.gov/ODOT/Projects/Project%20Documents/BendNorthCorridorUS97_US20_Final_Refinement_Plan_2007.pdf
12. 2016 Central Oregon Visitor Economic Impact Report. http://17zwmn1d6kbc3wps8j554x0y.wpengine.netdna-cdn.com/wp-content/uploads/2017/08/2016-Economic-Impact-Report.pdf
13. US Census Bureau Population Estimates. https://www.census.gov/newsroom/press-releases/2018/popest-metro-county.html
14. Bend Urban Growth Boundary. https://www.bendoregon.gov/government/departments/growth-management/urban-growth-boundary-remand
15. Oregon House Bill 2017. https://olis.leg.state.or.us/liz/2017R1/Downloads/MeasureDocument/HB2017
16. Modern Tire Dealer. https://www.moderntiredealer.com/research/730843/2018-modern-tire-dealer-100
17. City of Bend System Development Charges. https://www.bendoregon.gov/government/departments/community-development/system-development-charges
18. FHWA Employment Impacts of Highway Infrastructure Investment. https://www.fhwa.dot.gov/policy/otps/pubs/impacts/

19. AASHTO NCHRP 08-36, Task 103. http://onlinepubs.trb.org/onlinepubs/nchrp/docs/NCHRP08-36(103)_FR.pdf
20. ODOT Key Performance Measures. https://www.oregon.gov/ODOT/Regions/Documents/Region4/KPM%20Rollup.pdf
21. Juniper Ridge Urban Renewal Plan. https://www.bendoregon.gov/home/showdocument?id=28677
22. Oregon House Bill 2017. https://olis.leg.state.or.us/liz/2017R1/Downloads/MeasureDocument/HB2017
23. FHWA Every Day County Initiative 4. https://www.fhwa.dot.gov/innovation/everydaycounts/edc_4/
24. FHWA Special Experimental Projects No. 4. –Alternative Contracting https://www.fhwa.dot.gov/programadmin/contracts/sep_a.cfm
25. Transportation Research Board, Alternative Technical Concepts for Contract Delivery Methods. http://www.trb.org/Main/Blurbs/170465.aspx
26. ODOT US 97 Bend North Corridor. http://www.oregon.gov/odot/projects/pages/project-details.aspx?project=14020
27. Bend Urban Area Transportation System Plan. http://www.bendoregon.gov/home/showdocument?id=4091
28. Bend MPO Metropolitan Transportation Plan. http://www.bendoregon.gov/home/showdocument?id=18128
29. Deschutes County Transportation System Plan. https://www.deschutes.org/sites/default/files/fileattachments/community_development/page/738/transportation_plan_table_of_contents.pdf
30. Oregon STIP. http://www.oregon.gov/ODOT/STIP/Pages/Current-Future-STIP.aspx
31. Oregon Transportation System Plan. http://www.oregon.gov/ODOT/Planning/Documents/OTP_Volume_I.pdf
32. Bend MPO Transportation Improvement Program. https://www.bendoregon.gov/government/departments/growth-management/bend-mpo/plans-and-programs/mtip-and-annual-project-report
33. Deschutes County Capital Improvement Program https://www.deschutes.org/road/page/capital-improvement-plan-and-sdcs
34. Oregon Bicycle and Pedestrian Plan. http://www.oregon.gov/ODOT/Planning/Documents/OBPP.pdf
35. Oregon Public Transportation Plan. http://www.oregon.gov/ODOT/Planning/Pages/OPTP.aspx
36. Oregon State Rail Plan. http://www.oregon.gov/ODOT/Planning/Documents/OSRP.pdf