



I-5: Aurora-Donald Interchange Improvement Project

Multipurpose Discretionary Grant Program (MPDG)



Basic Project Information	
What is the Project Name?	I-5: Aurora – Donald Interchange Improvement Project
Who is the Project Sponsor?	Oregon Department of Transportation (ODOT)
Was an application for USDOT discretionary grant funding for this project submitted previously?	Yes. The I-5: Aurora Donald Interchange Improvement Project was submitted to USDOT's BUILD program in 2020 and to the INFRA program in 2020 and 2021.
A project will be evaluated for eligibility for consideration for all three programs, unless the applicant wishes to opt-out of being evaluated for one or more of the grant programs.	<input checked="" type="checkbox"/> Opt-out of Mega? <input type="checkbox"/> Opt-out of INFRA? <input type="checkbox"/> Opt-out of Rural?
Project Costs	
MPDG Request Amount	\$36,188,507
Estimated Other Federal funding (excl. MPDG)	\$12,062,836
Estimated Other Federal Funding (excl. MPDG) further detail	Other Federal funding from Federal Formula Dollars: \$12,062,836 Other Federal funding being requested from other USDOT grant opportunities?: \$0
Estimated non-Federal funding	\$12,062,836
Future Eligible Project Cost (Sum of previous three rows)	\$60,314,179
Previously incurred project costs (if applicable)	\$34,394,145
Total Project Cost (Sum of 'previous incurred' and 'future eligible')	\$94,708,324
INFRA: Amount of Future Eligible Costs by Project Type	1) A highway freight project on the National Highway Freight Network: \$36,791,649 2) A highway or bridge project on the National Highway System: \$60,314,179 3) A freight intermodal, freight rail, or freight project within the boundaries of a public or private freight rail, water (including ports), or intermodal facility and that is a surface transportation infrastructure project necessary to facilitate direct intermodal interchange, transfer, or access into or out of the facility: \$0 4) A highway-railway grade crossing or grade separation project: \$0 5) A wildlife crossing project: \$0 6) A surface transportation project within the boundaries or functionally connected to an international border crossing that improves a facility owned by fed/state/local government and increases throughput efficiency: \$0

	<p>7) A project for a marine highway corridor that is functionally connected to the NHFN and is likely to reduce road mobile source emissions: \$0</p> <p>8) A highway, bridge, or freight project on the National Multimodal Freight Network: \$60,314,179</p>
Rural: Amount of Future Eligible Costs by Project Type	<p>1) A highway, bridge, or tunnel project eligible under National Highway Performance Program: \$36,791,649</p> <p>2) A highway, bridge, or tunnel project eligible under Surface Transportation Block Grant: \$60,314,179</p> <p>3) A highway, bridge, or tunnel project eligible under Tribal Transportation Program: \$0</p> <p>4) A highway freight project eligible under National Highway Freight Program: \$60,314,179</p> <p>5) A highway safety improvement project, including a project to improve a high risk rural road as defined by the Highway Safety Improvement Program: \$60,314,179</p> <p>6) A project on a publicly-owned highway or bridge that provides or increases access to an agricultural, commercial, energy, or intermodal facility that supports the economy of a rural area: \$60,314,179</p> <p>7) A project to develop, establish, or maintain an integrated mobility management system, a transportation demand management system, or on-demand mobility services: \$0</p>

Project Location	
State(s) in which project is located	Oregon
INFRA: Small or Large Project	Large
Urbanized Area in which project is located	N/A
Population of Urbanized Area	N/A
Is the project located (entirely or partially) in Are of Persistent Poverty or Historically Disadvantaged Community?	The Project is located in Census Tracts 102.01 and 102.02, dissected by I-5. Census Tract 102.02 is a Historically Disadvantage Community.
Is the project located (entirely or partially) in Federal or USDOT designated areas	No
Is the project currently programmed in the: TIP, STIP, MPO Long Range Transportation Plan, State Long Range Transportation Plan, State Freight Plan	Yes. The project is programmed in the following 2021-2024 STIP, Marion County RSTP, Mid-Willamette Valley Area Transportation Commission Biennial Report, Oregon Freight Plan.

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I. PROJECT DESCRIPTION

The Oregon Department of Transportation (ODOT) is requesting \$36,188,507 from the Multimodal Project Discretionary Grant Program (MPDG) to complete construction of the I-5: Aurora-Donald Interchange Improvement Project (Project). This rural application will leverage over \$12 million in non-federal funding for interchange improvements critical to supporting freight and vehicular mobility, public safety, modal shift, and regional economic growth. MPDG funds will permit the completion of an innovative Diverging Diamond Interchange (DDI) that will address key deficiencies while greatly exceeding ODOT mobility standards well beyond ODOT's standard design life of 20 years. The project will enhance safety and ensure long-term efficiency of freight and passenger mobility through this rural section of Interstate 5 (I-5), the most important north-south transportation facility for Oregon and the entire West Coast.

The Project was submitted to the U.S. Department of Transportation's (USDOT) BUILD grant program in May 2020 and to the INFRA discretionary grant program in 2020 and 2021. Since the 2021 INFRA application, ODOT has initiated an \$11.5 million Phase 1A of the project. Phase 1A is under construction and will be complete in Q4 2022. Primary components of Phase 1A include lengthening and widening the northbound I-5 exit ramp, building a sound wall to benefit nearby residents, and realigning and signalizing Bents Road leading up to the interchange. Due to funding constraints, without MPDG funding ODOT will be forced to proceed with Phase 1B and delay full build out of the DDI (Phase 2) until funding can be secured.



SB Exit Ramp: Vehicles form two lanes, driving on shoulder of single lane exit ramp.

With Phase 1A underway, there have been changes to the project scope and Benefit Cost Analysis (BCA). Since last year's submission, all values have been updated to reflect the current BCA Guidance for Discretionary Grant Programs (March 2022). Construction has begun on Phase 1A, and the costs have been updated accordingly with incurred expenditures and the new full Project. Finally, crashes have been increasing in the project area, and new crash data from 2018-2020 was included to update the annual averages which are used as a starting point for calculating benefits from crash reductions to more current estimates.

Project Need

The Aurora-Donald Interchange is the primary access point to I-5 for a vast rural area of northern Marion County. The Interchange is charged with facilitating travel between I-5 – the primary West Coast freight corridor and access route to Portland – and Ehlen Road and Bents Road, major county crossroads serving area farms and industry. As part of the nation's network of designated major freight corridors, this segment of I-5 carries at least 8,500 trucks each day and more than

50 million tons of freight each year. The Interchange supports local access for businesses and agricultural operations in Marion, Yamhill and Clackamas Counties, while supporting high levels of freight and passenger travel along I-5. Each day, 97,600 vehicles pass over the Interchange on I-5 and 32,000 vehicles use the Interchange.

Unfortunately, the existing configuration cannot accommodate current or future travel demands. Built during the construction of I-5 approximately 60 years ago for a much lower traffic volume, the Interchange has been over capacity for years. Both off-ramps frequently experience long vehicle queues throughout the day that back up into the high-speed freeway mainline. Queued traffic in the right lane and shoulder of the six-lane interstate poses a significant risk to traveler safety. During peak periods, vehicles traveling high speeds northbound (NB) and southbound (SB) on I-5 often confront this stopped traffic with very little time to react.

The combination of several truck stops, the largest number of truck parking spaces along I-5 in Oregon, and high levels of freight traffic on Ehlen Road at this Interchange severely inhibits freight and passenger vehicle mobility. In addition, the volume of traffic, proximity of connecting roads and access points, and poor visibility cause congestion and safety concerns around the Interchange and contribute to its characterization as the worst unsignalized interchange on I-5.¹

The I-5 NB ramp terminal with Ehlen Road currently fails to meet ODOT's adopted mobility target and is very congested with traffic demand nearly exceeding the capacity of the intersection. At this intersection, the stop-controlled NB left turn experiences the most delay. Other turning movement also fail or nearly fail ODOT's mobility limit. The primary causes of congestion and long off-ramp queues at the Interchange are:

- High volumes of large, heavy trucks move more slowly and require more space than automobiles.
- Obstructed sight lines caused by the underpass structure and curved Ehlen Road alignment make turning left from the ramp terminals difficult.
- The proximity of the connection of Bents Road to the I-5 southbound ramp terminal intersection creates confusion and unexpected conflicts.
- No left-turn lanes on Ehlen Road at the I-5 ramp terminals causes delay and safety problems.

Proposed Project

MPDG funds will be used to complete the total reconstruction of the Interchange, resulting in a Diverging Diamond Interchange and intersection improvements that would meet ODOT mobility standards and standard design life for over two decades. ODOT identified the improvements outlined in this application through a comprehensive alternatives analysis involving more than 25 stakeholder groups and more than 50 Project development team members. This solution was found to be the least cost alternative, while successfully addressing all key Interchange deficiencies. Specifically, the DDI design achieves three key results:

1. **Safety:** Eliminates the two leading causes of vehicle crashes at this Interchange with an average rated crash reduction factor of 58 percent.

¹ Mid-Willamette Valley Area Commission on Transportation's 2019 Biennial Report

2. Mobility: The results of the DDI design will greatly exceed all ODOT mobility standards.
3. Durability: Mobility performance extends for decades, far beyond ODOT's standard design life for interchanges.

The State of Oregon, recognizing the immediate need to address deficiencies at the Interchange, committed a significant down payment of over \$34 million. However, a \$36 million funding gap remains to complete the full project. A source for this sizeable funding gap has not been identified. Without an MPDG award, ODOT will proceed with its phased approach that would fail to address mobility and safety deficiencies, require approximately \$5 million in added temporary construction costs, and add at least a decade to the full project timeline.

Absent funding to complete the total reconstruction of the Interchange, ODOT created Phase 1A and Phase 1B (Phase 1) projects in the [Statewide Transportation Improvement Program \(STIP\)](#) which focuses the limited financial resources on the freeway infrastructure. In ODOT's Phase 1 project, the I-5 bridges spanning Ehlen Road would be replaced to accommodate future reconfiguration of Ehlen Road and build-out of the DDI in a possible Phase 2 project. If ODOT proceeds with a phased approach, the Interchange will operate as a conventional signalized diamond interchange until funding can be secured for future construction of the DDI.

The cost of a future Phase 2 to complete the DDI is well beyond existing and anticipated resources. Based on projections of future state and county transportation funding it will be 10 years or more before Phase 2 funding can be secured. This delay would significantly increase the cost of Phase 2 and the prolonged disruption and construction impacts will negatively impact the utility of the Interchange for travelers and quality of life for nearby communities. However, \$36 million in MPDG funding is sufficient to expand the scope of ODOT's Phase 1B project to complete the Diverging Diamond Interchange and realize the benefits described in this proposal.

ODOT has already expended over \$20 million for planning, preliminary engineering, and right-of-way acquisition for this Project and \$11.5 million for construction of Phase 1A. As a result, the entire project is nearly shovel ready and the MPDG timeline is compatible with ODOT's Project schedule. ODOT is developing the Project to remain fully eligible to receive federal funding. No delays, rework or added costs will occur from the integration of MPDG grant funds into the existing phased Project. Construction can begin in 2023 and be completed in 2026.

Project Features

MPDG funding will eliminate the need to phase the project further and allow the simultaneous completion of both Phase 1B and Phase 2, resulting in immediate construction of the Preferred Alternative DDI. Improvements to interstate highway and county road infrastructure include:

- Replace the I-5 bridges over Ehlen Road.
- Reconstruct the I-5 travel lanes to match the new I-5 bridge.
- Construct the diverging diamond alignment, signals, and guide signage on Ehlen Road.
- Lengthen and widen the SB exit ramp, SB entrance ramp, and NB entrance ramp, completely upgrading all freeway ramps.
- Construct separated bike and pedestrian facilities along Ehlen Road.

- Relocate the Ehlen Road / Dolores Way intersection to the east and realign Dolores Way.

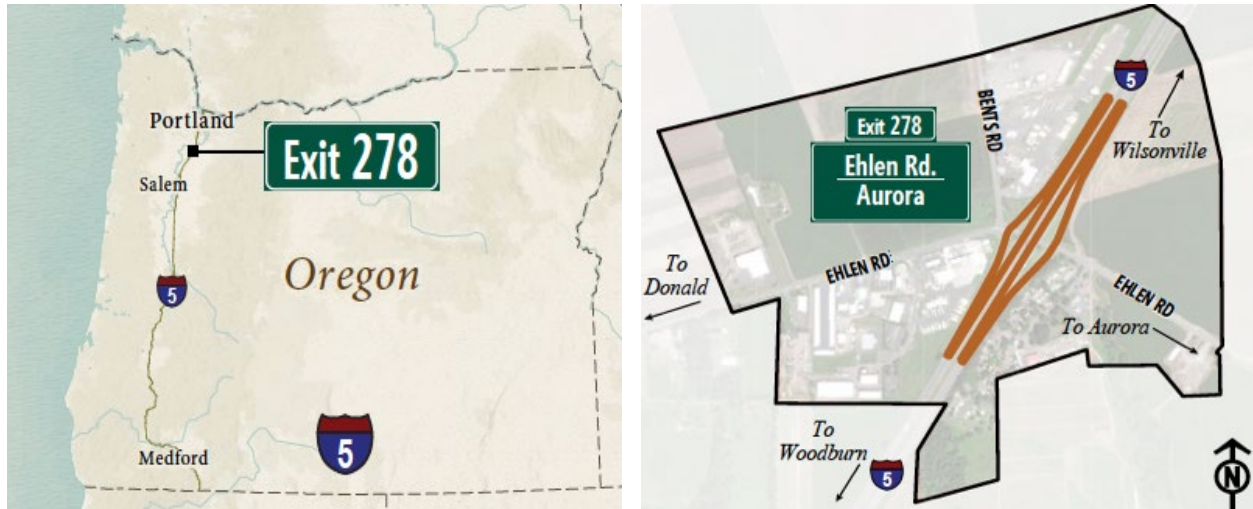
ODOT's transportation analysis projects the DDI results in a mobility level well below ODOT's mobility target of 0.60 v/c at both ramp terminals in 2042. It would improve safety and lower the cost of time and fuel to travel through the area, benefiting regional and state mobility, as well as interstate and international mobility along I-5.



II. PROJECT LOCATION

The Aurora-Donald Interchange is located on I-5 at Exit 278. The project limits will extend from I-5 Mile Post (M.P.) 278.21 at the south end to I-5 M.P. 279.06 at the north. It is situated in Marion County, Oregon, in the northern end of the Willamette Valley, approximately one mile northeast of the incorporated city of Donald and approximately three miles west of the incorporated city

of Aurora. The Interchange lies in between the cities of Portland and Salem, Oregon's largest and third largest communities and metropolitan planning areas, approximately seven miles north of the Woodburn Interchange, four miles south of the Charbonneau Interchange, and six miles southwest of Wilsonville.



The Project Location is rural, outside of the boundary of any 2010 Census-designated urbanized area. The Project is located in two Marion County Census Tracts (102.01 and 102.02), dissected by I-5. Census Tract 102.02 is a Historically Disadvantage Community. While the Project borders Opportunity Zones 41047010305 and 41047010303, the proposed improvements are not located in a designated Opportunity Zone or an Area of Persistent Poverty.

III. PROJECT PARTIES

ODOT is the applicant and will be responsible for all aspects of the Project. ODOT originated in 1913 when the Oregon Legislature created the Oregon Highway Commission. ODOT is responsible for Oregon's system of highways, roads, and bridges; railways; public transportation services; transportation safety programs; driver and vehicle licensing; and motor carrier regulation. As such, ODOT has a long, successful history of receipt and timely expenditure of Federal transportation funds. In FY 2021, ODOT oversaw \$547 million in Federal-aid Highway Program apportionments. In recent years, ODOT has successfully delivered several major projects funded by federal discretionary grant programs, such as TIGER, CRISI, ATCMTD, and STSFA.

This Project will be carried out in coordination with Marion County. Both ODOT and Marion County are public road authorities within the State of Oregon, and Marion County is [certified to self-perform federal-aid projects](#) under ODOT's oversight. The Project has been a high priority of both entities for over a decade and enjoys broad support. Other parties that have participated and will be participating in the completion of the project are the Mid-Willamette Valley Area Commission on Transportation, the Aurora City Council, and the Donald City Council.

IV. GRANT FUNDS, SOURCES AND USES OF ALL PROJECT FUNDING

Based on a comprehensive construction cost estimate, the future eligible costs for the I-5: Aurora-Donald Interchange Improvement Project is \$60,314,179, including all Planning, Preliminary Engineering, Right-of-Way (ROW), Construction, and contingencies. This estimate

was updated in April 2022 and is based on ODOT's 50 percent Phase 2 Design Acceptance Package level of design completion and includes an appropriate construction contingency of 20 percent and an inflation/escalation allowance of 3 percent. MPDG funds, if awarded, will be used to complete construction of the DDI within ODOT's existing STIP Phase 1B project for obligation in fiscal year 2023. The DDI will be completed as a single project without phasing or separate project components. No requested MPDG funds are subject to the limit on freight rail, port, and intermodal infrastructure.

MPDG funding will be the final dollars needed to complete full build-out of the DDI and ODOT will not solicit funding from other USDOT programs. The Project does not rely on any private, speculative, or conditional funding. All Federal and non-Federal matching funds detailed below have already been allocated to this project and programmed into the 2021–2024 STIP. Primary local funding for the project is derived from House Bill 2017 (HB2017), which was passed by the Oregon Legislature in 2017 to fund critical infrastructure needs. HB2017 allocated \$34.3 million in state gas tax dollars to the project. Additional Project funding includes apportioned federal formula dollars.

SUMMARY OF INCURRED EXPENSES AND FUTURE ELIGIBLE COSTS

Project Phase	Incurred Expenses ¹	Future Eligible Costs ²	Total Project Costs ³
Planning	\$811,998		\$811,998
Preliminary Engineering	\$17,783,147	\$2,061,732	\$19,844,879
Right-of-Way	\$5,200,000	\$1,400,000	\$6,600,000
Construction	\$10,599,000	\$56,852,447	\$67,451,447
	\$34,394,145	\$60,314,179	\$94,708,324

¹This includes construction costs for Phase 1A. Although not all of these funds have been expended, construction is underway, so they are counted as incurred expenses for simplicity.

^{2,3}Refer to ODOT's [Cost Estimate](#) for a summary of all eligible construction costs, including contingencies, construction engineering costs, and other eligible costs.

EXISTING PROJECT FUNDING SOURCES

Funding Sources ¹	MPDG	Other Federal	Non-Federal ³	Total
Keep Oregon Moving (HB2017) ² Discretionary Program / State Highway Fund			\$12,062,836	\$12,062,836
Federal Formula Funds		\$12,062,836		\$12,062,836
2022 MPDG Grant Funds	\$36,188,507			\$36,188,507
TOTALS	\$36,188,507	\$12,062,836	\$12,062,836	\$60,314,179

¹Refer to [Oregon 2021-2024 STIP](#) for further information.

²[House Bill 2017](#) is a new statewide gas tax revenue source enacted by the Oregon Legislature in 2017.

³All Non-Federal funding sources for this project are from the State Highway Fund.

TOTAL ELIGIBLE PROJECT COSTS AND SOURCES

Project Phase	Non-Federal	MPDG	Other Federal
Preliminary Engineering	\$2,061,732		
Right-of-Way	\$1,400,000		
Construction	\$8,601,104	\$36,188,507	\$12,062,836
Total	\$12,062,836	\$36,188,507	\$12,062,836
Funding %	20%	60%	20%

V. PROJECT OUTCOME CRITERIA

This Project will advance the fundamental objectives of the MPDG program, as illustrated by its clear alignment with all six of the program's Project Outcome Criteria.

Criterion #1: Safety

Inefficient, unsignalized interchange intersections, combined with abbreviated off-ramps, frequently contribute to queuing and backups onto I-5. Stalled traffic in the right lane and shoulder of the six-lane interstate poses a significant risk to safety. During peak periods, vehicles traveling high speeds on I-5 often confront this stopped traffic with very little time to react.



Visible queuing on I-5 mainline at SB exit ramp

From 2012 to 2016 (the latest available pre-pandemic data), there were 241 crashes in the Project area including the I-5 mainline within one mile north and south of the Interchange. Of these, 93 occurred at ramp terminal intersections. The Interchange has an average of 48 reported crashes each year, which is more than twice the average for rural, unsignalized intersections in Oregon. One fatal collision [occurred in 2013](#) immediately upstream of the SB off-ramp when a heavy vehicle traveling too fast struck a passenger vehicle stopped in traffic. Two crashes occurred on the I-5 NB on-ramp, one of which resulted in a fatality and four serious injuries

Field observations and discussions with area business owners confirm the most significant safety issue is caused by long off-ramp queues that frequently back up onto the freeway mainline. This is routinely observed at both off-ramps during weekdays and weekends. Another is caused by trucks merging onto I-5 NB at low speeds because the uphill grade of the on-ramp limits acceleration. Lastly, the large turning radius of the southwest corner of the I-5 SB/Ehlen Road ramp terminal combined with the grades and super-elevation at the entrance to the on-ramp can

cause trucks making the eastbound to southbound right turn roll over or lose loads. This occurred on November 9, 2019, when a truck rolled onto its side and spilled fuel.

“[the] Aurora-Donald Interchange’s outdated design and heavy freight volumes create safety issues with all vehicles entering/exiting I-5 and increases the potential for all vehicles to backup onto I-5” – Oregon Freight Plan

The Interchange is expected to experience traffic volumes over double its capacity by 2042 if no action is taken. As traffic increases and the congestion problems worsen, ODOT projections indicate crashes in the Project area would increase under both a No Build Scenario and Phase 1 only project. The off-ramps are projected to be very congested and experience queues on the freeway mainline more often. Also, with high levels of congestion projected for the ramp terminal intersections, drivers may attempt to turn onto Ehlen Road into smaller gaps in traffic than they would typically accept. This increased risk-taking with limited sight distance and unexpected conflicts from the five-legged Ehlen Rd/Bents Rd/I-5 SB intersection may lead to more crashes.

The DDI design addresses these issues by better accommodating large truck movements and allowing for free left turns on and off I-5. Both exit ramps will be extended to the project limits on I-5 to provide deceleration length and 2-lane sections, which provide turn lane storage in advance of the ramp terminal curves. More than 1,300’ of 2-lane storage will be included for the NB exit ramp and 1,000’ for the SB exit ramp. Deceleration length of 730’ will be available for highway vehicles to a potential stop condition at the end of the vehicle queues on both ramps.

New traffic signals will be installed at the intersections of Ehlen Road and both I-5 ramp terminals. ODOT standard pushbuttons with countdown pedestrian signal heads will be used for all signalized crosswalks. The crosswalk along the west leg of the Ehlen Road/I-5 SB ramp will be closed due the high volume of right turning vehicles and potential for conflicts. Closing this crosswalk will improve the safety and operations at this intersection associated with the dual right turns. Supplemental signal heads will be installed at the Ehlen Road/I-5 SB ramp terminal for the eastbound and westbound travel directions.

Crash reduction factors (CRF) were obtained for only those elements of the projects for which reliable CRFs were available. Weighted average CRFs for each scenario were calculated by identifying where crashes have historically occurred along Ehlen Road and applying CRFs where appropriate. The table below shows the weighted average CRFs for the Phase 1 only and MPDG proposal scenarios, as well as the resulting crash reductions based on crash data from 2013-2017.

Scenario	Weighted Average CRF	Crashes Before	Crashes After	Crashes Reduced	Crashes Reduced Per Year
Phase 1 Only	41%	115.0	68.4	46.6	9.3
Incremental change from Full Build	29%	68.4	48.8	19.6	3.9
MPDG Proposal	58%	115.0	48.8	66.2	13.2

No serious or fatal crashes have occurred at Oregon's other DDI ([Fern Valley Interchange Southern Oregon](#)) since it went into service in 2016. ODOT's traffic analysis confirms that the project will eliminate traffic backups onto I-5 and conflicting left-turn crossing movements on Ehlen Road, which are the two leading sources of crashes at this Interchange. All told, completion of this MPDG Project is expected to generate over \$44 million in safety benefits over 20 years.

Criterion #2: State of Good Repair

The existing Interchange network is aging and obsolete. It was built during the construction of I-5 in the 1960s. Since then, design criteria for the interstate, bridges, and on- and off-ramps have changed significantly with higher typical travel speeds and increased traffic volumes. In the [Mid-Willamette Valley Area Commission on Transportation's 2019 Biennial Report](#), this location was characterized as the worst unsignalized interchange on I-5, both geometrically and operationally.

In addition to its age and outdated design, the Interchange's functional performance is substandard. ODOT measures highway mobility using the volume-to-capacity (v/c) ratio. Higher v/c ratios indicate greater levels of congestion. The Oregon Highway Plan (OHP) mobility target for I-5 interchange ramp terminals is 0.85 v/c. As the v/c ratio approaches 1.0, traffic flow may become unstable, and delay and queuing conditions may occur. Level of Service (LOS) is another commonly used performance measure which utilizes Highway Capacity Manual methodologies. It is a rating of the level of mobility on a scale of A-F. LOS F represents conditions where average vehicle delay has become excessive, and demand has exceeded capacity.

In its current configuration, the I-5 NB ramp terminal with Ehlen Road operates at a Level of Service F (Failure) and a v/c ratio of 0.96. The I-5 SB ramp operates at a Level of Service C and a v/c ratio of 0.73. Vehicle delays average 19 and 15 seconds, respectively. With interchange traffic projected to increase over 36 percent by 2042, the current mobility issues will significantly worsen if left unimproved. Moreover, without an MPDG award this year, ODOT will be forced to proceed with limited improvements included in Phase 1B. The combined Phase 1A and Phase 1B improvements would fall well short of the mid- and long-term needs of the Interchange, undermining the long-term cost structure by increasing project costs by tens of millions of dollars.

Phase 1-only improvements will produce v/c ratios at both the NB and SB ramp terminals that negatively exceed the state's mobility standards. The v/c ratio for the NB ramp terminal is projected to be 0.93 after completion of Phase 1 and increase to 1.1 in 2030. The v/c ratio for the SB ramp terminal is projected to be 0.82 after completion of Phase 1 and increase to 0.98 in 2030. In contrast, this proposal to complete both Phase 1B and Phase 2 of this project simultaneously, resulting in a fully functional DDI, will achieve excellent traffic performance with no further interchange modifications required for well beyond 20 years. The transportation analysis shows that the DDI results in a mobility target well below the required 0.85 v/c at both ramp terminals. The v/c ratio for the NB and SB ramp terminals is projected to be less than 0.40 in 2042.

The Project is consistent with all relevant State and local plans to maintain transportation in a state of good repair and address vulnerabilities, including the [2021-2024 STIP](#), the [Oregon Freight Plan](#), the [Aurora Donald] [Interchange Area Management Plan](#), and [Marion County Rural](#)

[Transportation System Plan](#). ODOT is the applicant and will be responsible for all aspects of the Project and has a long history of successfully completing and maintaining federally funded transportation projects. ODOT maintains 8,000 miles of highway, ranging from six-lane, limited-access freeways with metered entrances in Portland and Eugene, to a graveled state highway in central Oregon. State highways comprise a little more than 11 percent of total road miles in Oregon but carry 58 percent of the traffic and more than 20.7 billion vehicle miles per year.

Maximizing the value from transportation investments is one of ODOT's fundamental priorities. ODOT integrates lifecycle cost management practices that maximize the efficiency of transportation revenue and minimize the need for costly replacement of infrastructure assets. ODOT's [Fix-it](#) and [Maintenance](#) Programs provide dedicated, steady funding to preserve and maintain assets. Lifecycle cost considerations included in BCA calculations reflect practices and values presented in the [Oregon Transportation Asset Management Plan](#) and [2020 Pavement Condition Report](#). Together they support achievement of ODOT's targets for the performance and condition of Oregon pavements. The state's [performance measure target](#) of 0.5 percent of interstate pavement in poor condition is the third most aggressive target in the nation.

ODOT maintains the public infrastructure within the I-5 ROW. ODOT's Delivery and Operations Division maintains and repairs the state's existing highways to keep them safe and usable and supports the design and construction of projects, as well as the operation of the highway system and ODOT's Pavement Preservation Program (PPP). The goal of the PPP is to keep highways in the best condition possible, at the lowest cost, by taking a preventive approach to maintenance. Thanks to ODOT's asset management and investment strategies, pavement condition over the last few years has ranged between 85 and 90 percent "fair" or better. ODOT's pavement strategy is focused on preserving the interstate first, and nearly 100 percent of Oregon's interstate highway miles are in fair or better condition. Out of 1457.78 miles, just 1.06 is in poor condition.

Marion County maintains the surface road infrastructure surrounding the Interchange. Both ODOT and Marion County have the capacity and financial resources to maintain the infrastructure constructed under this grant in sound working order for not less than 20 years. ODOT has completed thorough analysis to ensure that all additional funding needed to complete this project has been secured and appropriately capitalized for responsible, long-term investment into the expanded infrastructure. Furthermore, ODOT will fund maintenance of the project under its jurisdiction by utilizing state gas tax dollars. ODOT's Highway Division operates a \$2.7 billion bi-annual budget and Marion County maintains an annual road maintenance budget of approximately \$27 million for this purpose. No private or speculative funding sources will be used for this project or project maintenance.

[Criterion #3: Economic Impacts, Freight Movement, and Job Creation](#)

The Project will serve the movement of freight and goods by eliminating a notorious bottleneck that has stifled economic development in the region for decades. Completion of this Project is critical to the region's agricultural and transportation sectors and will conservatively produce almost \$17 million in economic benefits over its life cycle.

Northern Marion County, situated in the heart of Oregon's Willamette Valley, is the agricultural hub of the state. Each year, the county's 288,671 acres of farm operations produce over \$700 million in commodity sales, generating \$119 million in net farm income. As of 2017, its 864 farms employed over 13,516 people. The Willamette Valley is home to over two-thirds of Oregon's wineries and produces 44 percent of the state's \$5 billion agricultural products sold each year.² Efficient freight movement is critical to the region's economic vitality. This significant amount of agricultural production and economic activity requires safe, efficient access to I-5.

I-5 provides statewide and national mobility for travelers and freight and is the most important north-south transportation facility for the entire West Coast. The Aurora-Donald Interchange provides a major access point to I-5 in northern Marion County. The Interchange serves roadways having the highest functional classifications in the [Oregon Highway Plan \(OHP\)](#) and the [Marion County Rural Transportation System Plan \(TSP\)](#).

The two travel service centers and the largest number of truck parking spaces along I-5 in Oregon draw a high volume of large trucks to the Interchange. Their slow acceleration and turning movements affect county roads and I-5. Travel Centers of America operates a truck stop in the northwest quadrant of the Interchange that includes two truck service bays, truck maintenance services, and 275 truck parking spaces. Flying J operates a truck stop in the southwest quadrant of the Interchange that has 105 parking spaces. Both have a gas station and amenities for long-haul truckers and the traveling public.

The 9-acre, 130-space Aurora Acres RV Resort is in the southwest quadrant and uses Dolores Way for access. Western Mountain Transport, south of the RV park, provides trucking services for heavy equipment, oversized hauling, less-than-truckload, and general commodities. Jubitz operates a fueling station east of the RV park. Other businesses in the immediate vicinity of the Interchange include: truck services such as truck washing, repair, and tire maintenance; RV storage; screen printing; custom home developers; auto parts retail; concrete accessories and supplies; countertop manufacturers; and agricultural supplies.

The Interchange is also the nearest direct access from I-5 to Aurora State Airport (KUAO), located approximately 3 miles from the Interchange. Aurora State is the third-busiest airport in Oregon, just behind Portland International and Portland-Hillsboro. It is the largest State-owned airport and accommodates a significant amount of business jet, air ambulance, and training activity. Major area employers include Mentor Graphics, Convergys, Xerox Corporation, Sysco Food Services, and Rockwell Collins. The Airport is home base to approximately 346 private and corporate aircraft and accommodates 94,655 annual flight operations.

The Airport is also in the process of re-zoning 16.5 acres of existing farmland on the east edge of the airport to public use. This re-zone will support airport-related commercial or warehouse uses and additional hangar space. A [traffic impact study](#) submitted to the County estimates 1,251 net new average daily trips on surrounding roads, including Ehlen Road leading to the Interchange.

² U.S Department of Agriculture's [2017 Census of Agriculture](#)

Without improvements, the Interchange will continue to limit freight movement in this agricultural center of the state. Each day, 97,600 vehicles pass over the Interchange on I-5. Marion County’s 2019 traffic count for Ehlen Road shows an Average Daily Traffic volume of 16,100 with a truck volume of 3,482 (21.6 percent). Although not a designated Truck Route, Ehlen Road functions as a major freight corridor in Marion County, carrying an estimated agricultural freight tonnage of 111,400 tons per day.³ ODOT’s existing traffic conditions analysis reports a total average current delay of 20 seconds per vehicle on Ehlen Road. With Interchange traffic projected to increase over 36 percent by 2042, the current mobility and safety issues will worsen if left unimproved, increasing costs for local industry and regional transportation.⁴

ODOT’s transportation analysis of this Project confirms it will achieve excellent traffic performance with no further interchange modifications required for more than 20 years. The DDI achieves mobility well below the target of 0.85 v/c at both ramp terminals, eliminating more than 19.3 hours of cumulative truck delays every day and increasing the freight capacity of the Interchange by about 11 percent. The v/c ratio for the NB and SB ramp terminals are projected to be less than 0.40 in 2042. It will mitigate delay for trucks accessing the freeway at Ehlen Road, eliminating more than 19.3 hours of cumulative truck delays every day and increasing the freight capacity of the Interchange by about 11 percent. Complete operational results for both ramp terminals are shown in the table below.

Condition	Ramp Terminal	Vehicle/capacity (v/c) rating	Delay during peak hour (hrs)
Roadway at capacity		1.0	
Oregon Highway Plan Minimum Standard		0.85	
2018 Existing	NB	0.96	
	SB	0.73	
2022 No Build	NB	1.03	10.7
	SB	0.76	9.1
2042 No Build	NB	2.77	67.3
	SB	1.79	96.5
Oregon Highway Design Manual Mobility Target		0.60	
2042 Phase 1 Only	NB	1.43	78.6
	SB	0.97	41.1
MPDG Proposal (2042)	NB	0.27	7.2
	SB	0.35	11.4

Notes: The [Oregon Highway Plan \(OHP\)](#) and [Highway Design Manual \(HDM\)](#) mobility standards are applicable to the Interchange.

Routes Initiative

The Project is located entirely within a rural area. Its rural location represents a unique opportunity for USDOT’s investment to directly benefit rural communities. Consistent with USDOT’s ROUTES Initiative, this project will significantly improve safety, infrastructure condition, and passenger and freight usage in this rural transportation network.

³ Estimated using measured truck volume conservatively assuming each truck carries 32 tons of freight.

⁴ Existing and Future No-Build Traffic Conditions Technical Memorandum, December 2019

Marion County is the top county in Oregon for agricultural production. The ROUTES Initiative recognizes that transportation networks are critical for domestic production and export of agricultural commodities. Ehlen Road provides the only direct connection between more than 135 square miles of highly productive agricultural lands in Marion and Yamhill counties and the interstate highway system. All other freeway connections to these agricultural lands are located in urbanized areas. *The Project's benefits to mitigating freight and passenger mobility restrictions and delays is discussed in more detail earlier in this Section and in Criterion #4 below.*

Criterion #4: Climate Change, Resiliency, and the Environment

Climate Change

This Project incorporates ODOT's ongoing efforts to reduce greenhouse gas (GHG) emissions and achieve environmental justice (EJ). ODOT's [2021-23 Strategic Action Plan \(SAP\)](#) identifies 10 strategic outcomes. Among the agency's highest priorities is to reduce its carbon footprint by selecting and building cleaner projects. Oregon's climate is drastically changing with more frequent and severe wildfires, flooding, and landslides. These events can lead to road closures that impact freight, the economy, and people's ability to obtain critical services.

The [Oregon Statewide Transportation Strategy: A 2050 Vision for GHG Reduction](#) is ODOT's roadmap for reducing carbon emissions from transportation. Key actions include cleaner vehicles and fuels, low carbon modes, proximity of housing to jobs, and pricing and demand management strategies. It is ODOT's policy to pursue efforts within each of these categories statewide, and several are incorporated into the planning and project delivery of this proposal.

Cars, trucks, and other transportation sources significantly contribute to air pollution and are the largest source of GHG emissions in Oregon, constituting 40 percent of the total. This is exacerbated by queuing and congestion. As described in Section V Criterion #3, over 16,000 vehicles (21.6 percent trucks) per day traverse the Interchange with an average delay of 20 seconds per vehicle. Both of the off-ramps frequently experience long vehicle queues throughout the day that back up to the high-speed freeway mainline.

Compared to both the No Build and Phase 1 Only Alternatives, the project will significantly reduce congestion and related emissions. The BCA anticipates \$586,411 in environmental benefits (\$1,948,767 compared to Phase 1 Only), eliminating more than 19 hours of daily truck delay and associated diesel emissions. Decreased travel time will improve air quality, save 1.9 million gallons of fuel and reduce GHG emissions by reducing NOx by 37.5 tons; VOCs by 18.5 tons; PM2.5 by 3.2 tons; SOx by 2.3 tons; and CO2 by 23,038 tons.

VEHICLE HOURS OF DELAY (DAILY)

Intersection	Year 2022			Year 2042		
	No-Build	Phase 1	MPDG Proposal	No-Build	Phase 1	MPDG Proposal
Old Ehlen Rd /New Ehlen Rd	-	-	0.2	-	-	1.7
Ehlen Rd / Bents Ct	20.7	-	-	48.0	-	-
Ehlen Rd / Bents Rd / Bents Ct	-	814.0	217.3	-	2,041.7	438.7

Old Ehlen Rd / Bents Ct	-	-	5.9	-	-	8.3
Ehlen Rd / I-5 SB Ramp	108.8	192.7	67.5	1,161.1	493.7	136.9
Ehlen Rd / I-5 NB Ramp	128.9	421.5	46.5	808.9	944.8	86.1
Ehlen Rd / Dolores Wy	19.0	33.1	16.8	82.7	184.5	85.0
Total (rounded)	277	1,461	354	2,101	3,665	757

In addition to ODOT's GHG-related congestion mitigation efforts, the agency also supports Transportation Options (TO) programs aimed at reducing single occupancy vehicle trips and corresponding fuel usage and emissions. Once the Project is complete, ODOT will promote the [Get There](#) online tool for carpool matching and the [Ride Board](#) for one-time trip matching, as well as safety outreach and education for people walking and bicycling. Materials will be provided in both English and Spanish and include radio ads, social media targeted at relevant zip codes, and consideration of a direct mail piece.

The Project will also construct storm water treatment facilities to remove pollutants from both the new impervious surface and the existing impervious surface. The Project will construct seven water quality swales, several thousand linear feet of bioslopes, and five detention ponds which will substantially reduce the total pollutant load emanating from the highway system. The Project involves a total of 32.8 acres of impervious surface, all of which will be treated.

The Project will not be constructed in an environmentally sensitive area and there are no Federal Emergency Management Agency (FEMA)-mapped floodplains within the Project area. It has been strategically designed to avoid any habitat areas and will be constructed in full compliance of best practices to avoid any detrimental impact. The full Project is a Class 2 Action: Categorical Exclusion (CE) because of its minor right-of way and natural resources impacts, and lack of public controversy.

Oregon has a long history of considering climate impacts through encouraging multimodal projects. While ODOT's recent SAP and Statewide Transportation Strategy establish a modern framework for incorporating climate change considerations into our projects and prioritizing lower carbon modes, the Bike Bill of 1971 and ODOT's current [Bike/Ped Implementation Plan](#) already laid the groundwork for modal shifts and reducing vehicle miles traveled. This Project will achieve both the policies and goals established in these guiding documents. It will create a low stress, multimodal connection across the freeway where one does not exist today – connecting low-income residents on the east side of the highway to jobs and amenities on the west side – as well as connecting rural communities.

Mobility and safety benefits of the project will encourage modal shift by significantly improving non-vehicular facilities. As described in Section V Criterion #5, the Project will produce a lower-stress connection for residents off of Dolores Way to retail and employment destinations on the west side of the freeway. In addition, these improvements will serve cyclists traveling from communities east of the freeway to destinations like Champoeg State Park, a 622-acre state park approximately 4 miles west of I-5. Each year, Champoeg attracts over 520,000 visitors.

Environmental Justice

The NEPA [Categorical Exclusion Closeout Document](#) for this project determined it will not cause disproportionately high and adverse effects on any minority or low-income populations. The Environmental Protection Agency's EJScreen was applied in project planning and to inform the NEPA process. A review of census data through EJScreen did not identify any concentrations of low income or minority populations; however, the extensive public outreach process identified that a majority of the occupants of the Aurora Acres RV Resort – located in the southeast quadrant of the Interchange – are multi-year occupants and should be considered permanent residents rather than vacationers. People living in RVs are very likely to be low-income; therefore, this population was determined by ODOT to be a low-income resident population.

A significant effort was made to mitigate impacts to these long-term residents. Initial plans called for extensive ROW acquisition within the RV resort, but the project team avoided all but a minor temporary construction easement from the property and no RV spaces or other amenities will be removed. Further, residents will benefit from the project in three significant ways. First, noise abatement underway in Phase 1A will ensure all receivers within the resort would realize a net noise reduction of at least 5 dBA compared to existing conditions. Second, separate multimodal facilities will substantially improve bicycle and pedestrian access to the property with ADA accessibility. Third, the safety and operational improvements at the Interchange will reduce congestion and delay for local residents in addition to the greater traveling public.

Criterion #5: Equity, Multimodal Options, and Quality of Life

While the Project's utility for I-5 will produce significant regional and national benefits, its rural location represents a unique opportunity for USDOT to directly benefit rural and Historically Disadvantage Communities as well. The Project is located in two Census Tracts (102.01 and 102.02), dissected by I-5. Census Tract 102.02 is a designated Historically Disadvantage Community. The population estimate of the area within a 3-mile radius of the Interchange is approximately 6,750. The closest neighboring incorporated communities of Donald (979), Aurora (918), and Hubbard (3,501), have a combined 2010 census population of 5,398.

Since initiating the Project in 2018, ODOT has prioritized a robust community engagement process to ensure active participation by those affected by the project. In January 2019, ODOT and Marion County developed a [public involvement and communications plan](#) to provide a framework for building awareness about the project, gathering public feedback at key milestones, and supporting the Interchange Area Management Plan process. The Project team formed a 54-member Stakeholders Engagement Group of property owners, Interchange business representatives, other business and industry representatives, a City Councilor, and city staff members. The Group serves as a sounding board to ensure the Project team is aware of and considering a variety of issues during design and in preparation for construction. In addition, more than [20 meetings](#) were held with constituent groups. The Project team also established a [Project website](#), sends postcard mailings and emails to interested parties, shares information via local agency social media, and published an article in the Statesman Journal newspaper.

The main concerns expressed by local stakeholders were: ensuring safety on area county roads; maintaining shortest access for trucking-related commercial businesses; preventing the inducement of more traffic onto local county roads; mitigating the effect of Dolores Way realignment on potential redevelopment; and ensuring that farm equipment would have similar access in the future. The DDI design accommodates all of these stakeholder requests.

The Project team incorporated public comments and concerns by adjusting the design to accommodate the realignment of Bents Rd near the Travel Centers of America, which stakeholders had requested. The realignment eliminated the need for a new internal circulation plan on the site. The Jubitz fuel station near Aurora Acres RV park and adjacent property owners are supportive of a solution that serves all properties when Dolores Way is realigned. In addition, Flying J requested that its right-out only access be maintained until the full project is in place.

The Project will directly support ODOT's Strategic Action Plan which describes ODOT's priorities, goals and outcomes for the next three years. It has three main priorities, the first of which is prioritizing diversity, equity and inclusion by identifying and addressing systemic barriers to ensure all Oregonians benefit from transportation services and investments. ODOT is committed to serving all Oregonians equitably. The agency looks beyond merely improving the system to improving the quality of life of every Oregonian. ODOT is mindful of the benefits and burdens created by its work and ensures they are distributed equitably. Equity goals focus ODOT on workforce diversity and opportunities for advancement, expanding economic opportunities for minority groups, climate equity, and creating more representative public engagement processes.

Specifically, the Project would achieve these goals by supporting transportation and economic opportunity for underserved, minority populations. ODOT recently completed a statewide Transportation Disadvantaged Community Index (TDI) to help prioritize improvements on highway segments that serve areas with high numbers of transportation disadvantaged residents and EJ communities that have been historically underserved. It considers the following populations: elderly, youth, non-white and Hispanic, low-income (less than 200 percent of the poverty level as determined by the census), limited English proficiency, households without access to a vehicle, people with a disability, and crowded households.

In Oregon, the index ranges from 0-3.22, and most areas have scores between 1-1.5. A score greater than one means that the average population in an area meets more than one of the criteria included in the index. The TDI score for the Project area census block is in the 1.41-2.63 range – the top quintile and some of the highest scores in this part of the state. As such, any improvements to the transportation system in this area, especially those as significant as the proposed Project, will benefit transportation disadvantaged communities.

The Project will also enhance mobility to the North Marion School District offices and Pre-K-12th grade campus, which is approximately three miles away from the Interchange. The North Marion School District 15 serves over 2,000 students from a vast rural area. The District has a diverse population including approximately 40 percent of Hispanic origin. During peak times, students, staff, and parents are forced to navigate the unsafe bottleneck at the current Interchange.

Immediately adjacent to the project site is an RV Park on Dolores Way, just east of several retail/employment destinations on the west side of the Interchange. Residents on the east side currently do not have a safe biking or walking connection to the amenities just west of them and likely choose to drive this short and often congested route. Regular congestion and lack of transportation choices limit access and connectivity to essential services, hinder economic development and private investment, and contribute to a reduction in the standard of living for rural residents and travelers.

Bicycle and Pedestrian Level of Traffic Stress (LTS) assessments were completed for the study area to characterize the quality of the pedestrian and bicycle environment. The entire study area was rated as having Medium to High stress pedestrian environments with the exception of the east side of Dolores Way, where sidewalks are present on this low-speed street. High stress environments are present where no sidewalks exist or where sidewalks are curb-tight with no buffer from high-speed traffic. In general, Ehlen and Bents Roads are the most stressful (LTS high), due to their lack of separated pedestrian facilities or sidewalks immediately adjacent to high-speed roadways. Ehlen and Bents Roads also have the highest bicycle LTS due to the speed of adjacent traffic (35 MPH+).



Pedestrian crossing at stop-controlled ramp with no pedestrian facilities.

This Project will significantly improve (lower) the bicycle and pedestrian LTS in the area. Sidewalks, widened shoulders, and a separated bicycle and pedestrian path will be constructed resulting in a lower-stress connection for residents off Dolores Way to the east of I-5 to retail and employment destinations to the west of I-5. Phase 1 of the project would begin to address this gap, but the biking and walking gaps would not be completely closed. This proposal, however, would complete a lower-stress facility from the RV Park to local retail establishments, amenities, and employment destinations.

These active transportation benefits of the Project will significantly improve vehicular and non-vehicular access to the area's schools and parks and recreation attractions. Quantifiable, conservative quality of life benefits, primarily from reduced fuel use and vehicle maintenance costs, total more than \$563,596 for the full project, and more than \$2.1 million compared to completing Phase 1 by itself.

Criterion #6: Innovation Areas

The Project will incorporate innovative strategies in all three MPDG-identified innovation categories. The project also applies innovation in design by implementing a DDI. Crossover intersections are what makes DDIs unique and intuitive. The crossovers gently transition—or diverge—traffic from the right side of the road to the left side of the road and then back again.

Because traffic is on the left side between the crossovers, all left turns occur without crossing opposing traffic. ODOT has experience implementing this type of interchange, as shown by [this video](#) of the Fern Valley DDI in Southern Oregon. This innovative design alternative has the following benefits compared to a traditional interchange:

1. **Signalization:** The DDI requires fewer signal phases than a conventional interchange.
2. **Traffic Flow:** The DDI design allows for free left turns on and off of I-5, thus reducing backups and queuing. The DDI design accommodates the large truck movements that are prevalent at this interchange.
3. **Safety:** The DDI reduces vehicle-to-vehicle conflict points by nearly 50 percent and eliminates many of the most severe crash types.
4. **Cost Savings:** This design requires less ROW and fewer lanes than a traditional interchange design, yielding a substantial savings compared to the cost of traditional intersections.

The Project utilizes most [EDC Innovation Techniques](#) identified by the FHWA Center for Accelerated Innovation. The EDC Innovation Techniques associated with each innovation category are identified below.

Innovative Technology

The Project incorporates innovative technology guided by the following EDC Innovation Techniques: [Using Data to Improve Traffic Incident Management](#); [Intersection and Interchange Geometrics](#); and [Data-Driven Safety Analysis](#).

While the DDI concept is an innovative solution in itself, the Project will incorporate innovative technologies to include Intelligent Transportation Systems (ITS) features such as conflict detection and mitigation, and dynamic signaling to enhance safety and reduce congestion. New traffic signals will be installed at the intersections of Ehlen Road and both I-5 ramp terminals, and at the realigned Ehlen and Bents Road intersection. The new signals will employ conflict detection and mitigation technologies. All new signals will use Advanced Transportation Controllers (ATCs), which are capable of many ITS functions, and radar for both stop bar and advance detection.

A 50-foot camera pole will be installed at the Interchange with two fixed-view traffic cameras. One camera will be pointed at the I-5 SB exit ramp, and the other will be pointed at the NB exit ramp. These cameras will capture still images and remotely monitor operations and queuing to improve safety. These monitoring capabilities will enable ODOT to provide advance messaging on an existing variable message sign located two miles south of the Interchange on I-5. In support of this technology, the Project will also add traffic signal interconnect in a new underground conduit along Ehlen Road between Bents Road and the I-5 NB ramp. It will connect to each of the new traffic signal controllers and will accommodate changes in signal timing and viewing of CCTV camera images. The new signal/ITS software will modify signal phasing by time of day and even by gap dependency to maximize freight mobility efficiency in real time. The fiber optic signal interconnect system will be designed per current ODOT practices and standards and coordinated with ODOT ITS Engineers.

Innovative Project Delivery

The Project utilizes innovative project delivery methods guided by the following EDC Innovation Techniques: [Programmatic Agreements](#); [Implementing Quality Environmental Documentation](#); [Planning and Environmental Linkages](#); [Clarifying the Scope of Preliminary Design](#); and [Flexibilities in Utility Accommodation and Relocation](#).

ODOT pioneered the use of DOT-funded Permitting/Authorization Agency Liaisons to promote interagency cooperation, improve permit compliance, and make the permitting timelines of federal-aid projects more reliable. ODOT is using this approach to permit the Project, along with existing agreements for ESA consultation to streamline the processes. Oregon's [Federal-aid Highway Program programmatic agreement](#) covers most federally funded transportation projects that affect ESA Section 7 consultation and Magnuson-Stevens Act consultation with the National Marine Fisheries Service for federal threatened and endangered aquatic species, and terrestrial and aquatic species administered by the U.S. Fish and Wildlife Service.

ODOT has defined the Area of Potential Impact (API) and prepared the permitting documents (see the [Interchange Area Inventory Technical Memorandum](#)) to include full build-out in order to ensure that the project is positioned to incorporate MPDG funding with no delay. Early coordination with area utilities, including Bonneville Power Administration (BPA), is already underway to assess and minimize utility impacts.

Discussion of environmentally friendly and safety-oriented design components can be found in Section V Criterion #4 and #1, respectively.

Innovative Financing

The Project utilizes innovative financing methods guided by the [Project Bundling](#) EDC Innovation Technique. The expansion of ODOT's existing project to complete the construction of the Diverging Diamond Interchange using MPDG funds will have the same effect as other forms of project bundling, because the project will complete the work that otherwise would be slated for two separate projects at a greatly accelerated schedule and lower total cost.

Non-federal funding is provided by HB2017, a robust, innovative transportation funding package that: (1) provides new funding for projects such as the I-5 Aurora-Donald Interchange, (2) dedicates specific proportions of new funding to the preservation and maintenance Oregon's highways and bridges, (3) includes incremental tax increases of \$0.02 per gallon every two years, and (4) requires road authorities across the state to demonstrate beneficial use of the funding by meeting expenditure targets every two years as a prerequisite for the next incremental tax increase. HB2017 allocated \$34.3 million in state gas tax dollars to the project.

VI. BENEFIT COST ANALYSIS

ODOT's Benefit Cost Summary and Analysis was prepared in accordance with the NOFO. The analysis yields and overall benefit: cost ratio (BCR) of 1.63 for the overall project, and an incremental BCR of 6.37 for the Project scope required to take the Project from ODOT's current

Phase 1 project scope to full build-out of the Diverging Diamond Interchange; the scope directly associated with this MPDG grant application. The incremental project yields a Net Present Value of \$66,644,657. *Please refer to the Benefit-Cost [Summary](#) and [Analysis](#) for a comprehensive summary of assumptions, methodology, source data, and value of key parameters used.*

VII. Project Readiness and Environmental Risk

(a) Technical Feasibility

ODOT has completed the following milestones:

- [Value Engineering Study, 2019](#)
- [50 percent Design Acceptance Package for Phase 1, 2020](#)
- [90 percent Final Plans, Specifications, and Estimate for Phase 1](#)
- [50 percent Design Acceptance Package for Phase 2, 2020](#)

These studies confirm the project's technical feasibility within the proposed budget and timeline. The budget assumes a total future project cost of \$60,314,179. The project has \$24,125,672 from other federal and non-federal sources and if awarded \$36 million MPDG grant funds, it would be constructed to full DDI design at once rather than phasing the improvements over time. This will eliminate more than \$5 million in temporary construction costs and at least a decade of delay.

ODOT complies with Title VI and other federal nondiscrimination authorities which prohibit discrimination based on race, color, national origin, age, disability, sex, income level, or Limited English Proficiency in ODOT's programs, activities, services, operation, delivery of benefits, or opportunities to participate. More information on ODOT's compliance with Title VI, including ODOT's Title VI Implementation Plan, can be found [here](#).

(b) Project Schedule

ODOT has positioned the Project to make immediate use of MPDG funds. The Project will begin and complete construction in a timely manner. All necessary activities will be complete in advance of the September 30, 2025 statutory deadline for the obligation of funds. Not only will construction funds be obligated by the obligation deadline, but construction work will also be more than 50 percent complete by that date.

The project will be located primarily within project parties' ROW, and FHWA has approved a National Environmental Policy Act (NEPA) Categorical Exclusion finding for the project. ODOT is currently in construction of Phase 1A and has already completed the following Preliminary Engineering activities, studies and reports for Phase 2:

- [Alternatives Analysis](#)
- [Value Engineering Study](#)
- [Public Outreach Plan](#)
- [Preliminary Construction Schedule](#)
- [50 percent Design Acceptance Package for full build-out of the DDI](#)
- [Final Interchange Area Management Plan](#)

Project Phase	2022				2023				2024				2025				2026			
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
Preliminary Plans																				
Advance Plans																				
Final Plans																				
PS&E																				
Right-of-Way																				
Bid Period																				
Construction																				

(c) Required Approvals

(1) Environmental Permits and Reviews

NEPA Status

The project is a [Class 2 Action: Categorical Exclusion](#) (CE) because of its minor ROW and natural resources impacts, and lack of public controversy. The CE Closeout was approved by FHWA on June 15, 2020. This covers both the Phase 1 project and the full build-out MPDG Project.

Reviews, Approvals, and Permits by Other Agencies and Environmental Studies

The proposed Project does not require further review by other Federal or State agencies. As part of the preparation of the CE and Interchange Area Management Plan, the Project also completed resource reports, inventories and a [NEPA status report](#) in May 2019.

Public Engagement

To solicit public input, ODOT's project team formed a 54-member Stakeholders Engagement Group and held over 20 meetings with constituent groups to solicit feedback and complete a comprehensive alternatives analysis that has been incorporated into the design. The analysis determined the preferred alternative for this project to be the proposed DDI. *Please refer to Section V Criterion #5 for a more thorough description of this process.*

(2) State and Local Approvals

The Project has the broad and enthusiastic support of state and local officials, agencies, and stakeholders. The Mid-Willamette Valley Area Transportation Commission, which is chartered by the Oregon Transportation Commission (OTC), identified this project as their highest priority project. The [Project website](#) includes additional letters of support from federal, state and local officials and agencies, businesses, property owners, and stakeholder groups.

The Phase 1A and Phase 1B projects are identified in the 2021-2024 STIP as Key Numbers 19062 and 22505. This Project will be completed within the existing STIP Phase 1B. The Oregon Freight Plan in Appendix I, Highway Inventories of Need, identifies I-5 from M.P. 263.2 to M.P. 282.3 (this Project is at M.P. 278.70) in Marion County as having "unreliability on I-5 south of Wilsonville." And in Table 9-11, Freight Impacts on Highway, it identifies "Aurora Donald Interchange design and heavy freight volumes create safety issues with all vehicles entering/exiting I-5 and increases the potential for all vehicles to back up onto I-5." Table 9-9, Phase 1 and 2 Seismic Bridges, lists the bridges spanning over Ehlen Road as needing seismic retrofit.

An Interchange Area Management Plan (ODOT’s long-term [20+ years] transportation facility plan) is an agreement with local government on transportation solutions or land use/policy actions needed in an interchange area, and how best to balance and manage transportation and land use issues over time. The Aurora-Donald IAMP has been completed, and the OTC adopted and amended it into the Oregon Highway Plan in December 2020. Marion County adopted it in October 2020 as a refinement plan to its Rural Transportation System Plan (TSP).

The [Marion County Rural TSP](#), in Table 8-19, State Highway Safety Needs, recommends improving or redesigning the Interchange to address “accidents; poor alignment between Interchange and Bents Rd; turns from ramps with low capacity and high delay.” Table 8-26, County Roads Restricted by State Highway Structures, identifies I-5 on Ehlen Road as a height restricted overcrossing and recommends improvements. The realignment of Bents Road at Ehlen Road is in the 2013 Marion County Rural TSP as a 20-year funded project, Prioritization Number 32, with an associated cost of \$1.1 million. The realignment of Bents Court has been included in the Rural TSP for many years. Regarding local land use permits for the county roadway improvements, the Marion County Department of Public Works issued a memorandum on July 11, 2019, that outlines the process for permitting relocation of an existing roadway in a resource zone.

(3) Federal Transportation Requirements Affecting State and Local Planning

- This is not a port, rail, or intermodal project, and it is not located at an airport facility.
- The project is included in all relevant state and local planning documents, as detailed in the “State and Local Approvals” section.
- This project supports freight movement at the Interchange and is included in the Oregon Freight Plan, as detailed and linked in the “State and Local Approvals” section above.
- This project does not involve other modal administrations beside FHWA.

(d) Assessment of Project Risks and Mitigation Strategies

A June 2019 [Value Engineering Study](#) for the Project included a project risk register. Based on that study and project resource reports, the project team has identified four potential material risks since June 2019. None are anticipated to delay the project, because all have been or can reasonably be mitigated. The Project team has reduced the likelihood of environmental uncertainties by preparing reconnaissance-level reports. The non-Federal local match is committed, and construction of the full project will follow if allocated MPDG funding. The project is programmed in state and local transportation plans, as described above. The following sections discuss the identified project risks and mitigation measures implemented by the Project team.

Bonneville Power Administration (BPA) Facilities and Easement

BPA has two transmission line easements from the original property owners in the area that create a 125-foot-wide easement parallel to I-5. Through an agreement, BPA grants the State of Oregon use of the land. The agreement adjusted and modified the respective ROW lines “to permit the crossing of the Government’s easement and ROW with a minimum of conflict.” Currently, there is a power transmission line and a tower adjacent to the west side of I-5 that are not planned to be relocated as part of this Project. The Project includes a new I-5 bridge; new

traffic structures including traffic signal poles, illumination poles, and cantilever signs; and demolition of existing infrastructure. Some of these activities will be under or close enough to the overhead transmission lines to require monitoring during construction. The Project has started utility coordination with BPA, and secured approval of the Land Use Agreement for Phase 1A construction. For Phase 2, one of the new retaining walls associated with the Interchange would be close to one of the existing towers. The Project design will place the wall as far as possible from the tower. BPA will review the Project plans to ensure that the retaining wall will not interfere with the tower. This risk has been mitigated through ongoing design work.

Utilities

Several utility transmission lines cross the Interchange area. The project will minimize impacts to utility facilities through design and construction avoidance measures. Coordination with utility providers has occurred at various points in design development and will continue through construction, as necessary. Anticipated utility impacts include:

- Impacts are anticipated to the Northwest Natural Gas line for work along Ehlen Road.
- Portland General Electric (PGE) has aerial facilities within the project area. Poles will be affected by the widening of Ehlen Road and bridge construction where the lines cross I-5.
- CenturyLink has four conduits: two separate underground conduits that cross I-5 and two underground conduits in the north shoulder of Ehlen Road heading west from I-5. These latter two also run above ground and are attached to the PGE poles. CenturyLink's facilities will be affected by road widening and the realignment of Bents Road. Bridge construction will affect CenturyLink's two underground crossings at I-5.
- Wave Broadband aerial facilities will be affected by road widening and the realignment of Bents Road. Bridge construction will affect Wave's underground crossing at I-5.
- The Project is not anticipated to impact Fargo Interchange Service District's sanitary facilities except for the need to adjust manhole lids to accommodate minor grade changes along Ehlen Road.

Cable Barrier

An existing 3-strand highway cable barrier separates I-5 NB and SB traffic in the project area. Construction will disturb the cable barrier and anchor points. Phase 2 will replace it with a 4-strand highway cable barrier which is included in the construction budget.

Right-of-Way Acquisition

The Project Team has completed 100 percent of the ROW process for Phase 1 and 15 percent for Phase 2. ODOT anticipates ROW acquisition to be completed within one year of the MPDG award. The project requires a total of fourteen files, including 7 in-fee acquisitions totaling 20.9 acres for both phases of which 12.5 acres has been acquired. Permanent Easements require 0.65 acres of which none have been acquired. Temporary easements include 0.98 acres on 10 ownerships. No residential or business displacements are proposed. Major improvements to be impacted include one farm irrigation well for the farm property located in the northeast quadrant of the Interchange will be relocated, and two signs on the property located at 21690 Dolores Way NE will be compensated for. No outbuildings or similar structures will be removed.

VIII. Project Requirements

After a comprehensive alternatives analysis involving more than 25 stakeholder groups and more than 50 Project development team members, the DDI was found to be simultaneously the lowest cost of the nine interchange alternatives studied by ODOT and the interchange configuration with the most durable mobility and safety performance over the design life of the Project. ODOT's BCA analysis further confirms the Project's cost effectiveness. The Project yields a 1.63 BCR for the overall project, and an incremental BCR of 6.37 for the Project scope required to take the Project from ODOT's current Phase 1 project scope to full build-out scope directly associated with this MPDG grant application. The incremental Project yields a Net Present Value of \$66.6 million. The Project is a truly cost-effective solution that will transform freight mobility and commuter transportation in north Marion County. *Please see [Section V Criterion #3](#) a detailed analysis of the project's effect on mobility in the state and region and its cost effectiveness.*

The I-5: Aurora-Donald Interchange Project satisfies all seven Statutory Project Requirements for the INFRA MPDG program and all five Statutory Project Requirements for the Rural MPDG program, as detailed in the table below.

Statutory Selection Requirement	Project
1. The project will generate national, or regional economic, mobility, or safety benefits.	I-5 provides statewide and national mobility for travelers and freight and is the most important north-south transportation facility for the entire West Coast, including Oregon. Section V Criterion #3 provides data on the state and regional importance of the project to the critical agricultural and transportation sectors and describes the safety benefits of the project.
2. The project will be cost effective.	The project is the lowest cost alternative and yields an overall project BCR of 1.63 and incremental BCR of 6.37.
3. The project will contribute to 1 or more of the national goals described under Section 150.	<p>Section I and Section V detail how the Project contributes to the following Goals:</p> <ul style="list-style-type: none"> • Safety: Reduction in traffic fatalities and serious injuries. The project eliminates the two leading causes of crashes at this Interchange. • Infrastructure Condition: Mobility performance of the DDI exceeds all v/c standards for the design life of the Project. • Congestion Reduction: Project eliminates backups onto I-5 and more than 19 hours of truck delay each day. • System Reliability: Project significantly improves the freight mobility and efficiency of the primary freeway connection in north Marion County. • Freight Movement and Economic Vitality: Project restores easy, rural access to the interstate highway system for more than 135 square miles of prime Willamette Valley agricultural lands • Environmental Sustainability – Project eliminates more than 19 hours of truck delay each day, along with associated emissions. • Reduced Project Delivery Delays – Project design and permitting has already achieved the 50 percent Design Acceptance Package level of design. Furthermore, ODOT is using expedited project delivery methods to achieve the expenditure goals of HB2017 funding.

4. The project is based on the results of preliminary engineering.	Yes. Please refer to Section VII for a summary of planning and engineering milestones completed to date.
5. With respect to non-Federal financial commitments, 1 or more stable and dependable sources of funding and financing are available to construct, maintain, and operate the project, and contingency amounts are available to cover unanticipated cost increases.	The Project is in the 2021–2024 STIP. Section IV demonstrates that non-federal and other federal funding is committed and Section V Criterion #2 outlines maintenance and operation capabilities. ODOT's 50 percent Design Acceptance Package includes an appropriate construction contingency of 20 percent and an inflation/escalation allowance of 3 percent.
6. The project cannot be easily and efficiently completed without other Federal funding or financial assistance available to the project sponsor.	As described in Section I, Project Description, due to funding constraints, the project has been divided into three phases. The purpose of this MPDG grant proposal is to provide funding to construct the Phase 1B county infrastructure improvements concurrent with the Phase 2 interstate highway improvements, as one project. This approach achieves the functional operation, mobility, and traffic safety improvements of the DDI and significantly reduces the total project cost by eliminating the short-term signals, pavements, and bike/pedestrian facilities associated with phased construction; it also provides significant benefits to the traveling public in the form of reduced construction delay and dramatically improved mobility for freight, bike/pedestrian, and vehicular traffic.
7. The project is reasonably expected to begin construction not later than 18 months after the date of obligation of funds for the project.	Yes. Section VII includes the Project Schedule.