JOINT TRANSPORTATION COMMITTEE

Statewide Transportation Needs Assessment

July 2020 Phase I Report

BERK
STRATEGY ANALYSIS COMMUNICATIONS
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Lean Ideas for Government
PERTEET

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Founded in 1988, we are an interdisciplinary strategy and analysis firm providing integrated, creative and analytically rigorous approaches to complex policy and planning decisions. Our team of strategic planners, policy and financial analysts, economists, cartographers, information designers and facilitators work together to bring new ideas, clarity, and robust frameworks to the development of analytically-based and action-oriented plans.

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Executive Summary: Phase I Report

STUDY PURPOSE AND PROCESS

In 2019, the Washington State Legislature requested a study to assess statewide transportation needs and priorities from 2022-2031 and to identify existing and potential transportation funding mechanisms to address those needs and priorities. The study team, which consisted of BERK Consulting, Performance Plane LLC, and Perteet, relied on analysis of data, review of existing reports and studies, consultation with agency staff, and guidance from a Staff Workgroup to produce a needs assessment, a funding options model, and economic impact case studies. For the funding options model, the consulting team worked with a Technical Team, including representatives from the Transportation Revenue Forecast Council and local government agencies.

This Phase I report includes three pieces of the study:

- Ten-Year Transportation Needs Assessment by Jurisdiction and by Mode.
- Menu of Funding Options.
- Economic Impacts of Transportation Investments: Case Studies.

Following this report, an Advisory Panel appointed by the Joint Transportation Committee (JTC) Executive Committee will review Phase I findings and provide directional guidance to the Legislature for consideration during the 2021 legislative session.

Since the start of this study in mid-2019, significant changes have taken place that will affect state and local funding for transportation.

- **Initiative 976** (I-976) was passed during the November 2019 election. The fiscal impact statement for I-976 indicated that it would result in a revenue loss of $1.9 billion to the State and $2.3 billion to local governments over six years.[1] Estimates from legislative committee staff in 2019 suggest revenue impacts of $3.5 billion to the State and $581 million to local governments over 10 years.[2] At the time of this June 2020 report, the injunction is currently stayed, pending State Supreme Court decision.
- The **ongoing COVID-19 pandemic** impacts all public sector revenue streams, including statewide transportation funding. The June 2020 forecasts from the Transportation Revenue Forecast Council suggest that estimated revenue loss in the 2019-21 biennium from COVID-19 shutdowns and lower economic variable will be $469 million, down 9.2% in FY 2020 and down 6.8% in FY 2021.[3]

[1] Office of Financial Management, Fiscal Impact Statement for Initiative 976, 2019. https://ofm.wa.gov/sites/default/files/public/budget/ballot/2019/FiscalImpactStatementInitiative976-093019.pdf
[2] Senate Committee Service Staff, Estimated Revenue Impacts of Initiative 976, 11/8/2019.
[3] Transportation Revenue Forecast Council, Volume 1, June 2020.

STATEWIDE TRANSPORTATION CONTEXT

Washington State's transportation system is a decentralized and interconnected network of roadway, rail, air, port, and transit infrastructure. As shown in Exhibit 1, most modes of transportation are owned, operated, or managed by different types of jurisdictions, including the State, Tribal Nations, counties, cities, port districts, and public transit agencies. This network relies on a blend of funding mechanisms, including federal, state, regional, and local sources, and different jurisdictions share responsibilities for delivering transportation facilities and systems. Statewide, the entire system relies on coordination of these activities to function efficiently and effectively.

Exhibit 1. Types of Jurisdiction and Modes of Transport

Jurisdiction Type	Modes of Transport/Type of Investment
Tribal Nations	Active Transport. · Ferries · Bus · Roads
State	Active Transport. · Airports · Ferries · Highways · Rail
Counties	Active Transport. · Airports · Bus · Ferries · Rail · Roads
Cities	Active Transport. · Airports · Bus · Rail · Streets
Port Districts	Active Transport. · Airports · Ferries · Marine Ports · Rail · Roads
Public Transit Agencies	Active Transport. · Bus · Ferries · Rail

Source: BERK, 2020

Jurisdictions across the state face some known transportation funding challenges that were illuminated by this study's summary of statewide needs, consideration of revenue options, and exploration of select case studies:

- **There is not enough money to adequately fund the current transportation system.** Most jurisdictions, including the State, manage a gap between needs and sources. Managing shortfalls means that jurisdictions may need additional time and resources to complete projects. Opportunities for efficiencies are often out of scale with challenges, resulting in compromises.
- **Preservation competes with other capital system improvements.** This competition leads to deferred maintenance, higher lifecycle costs, and a patchwork of system improvements.
- **There is often no clear path for major project funding.** Jurisdictions assemble major project funding from a patchwork of sources including unique, non-repeating sources and competitive grants, and expend additional time and resources to coordinate different funding schedules and requirements.

When federal dollars are held up due to political changes or roadblocks, state projects may borrow dollars from other state projects, while other jurisdictions may have less ability to do so. Sometimes, projects may fail to reach construction, even after substantial investment.

- **There is no easy revenue solution.** Implementing new revenue options for the State or local jurisdictions must come with consideration of the magnitude of potential revenue that could be raised, applicability of those revenues to different expenditure or jurisdiction types, equity of who pays and who benefits, practicality of implementation, and other factors.

SUMMARY OF FINDINGS: TEN-YEAR TRANSPORTATION NEEDS ASSESSMENT

We present a 10-year needs assessment with categorical estimates of 10-year funding needs. **For the purposes of this study, we define "need" as total need, both funded and unfunded. We also include an estimate of unfunded need in this report.**

Estimating 10-year needs is challenging, and we integrate several analytic components, including data sources, per-mile cost estimates, capital plans, and existing studies and reports. **Appendix A: Technical Methodology for Needs Estimation**, presents our detailed needs estimation methodology.

CHALLENGES AND DATA LIMITATIONS

Calculating 10-year cost estimates is challenging, because it requires a summary of information that does not readily exist.

- Fiscally constrained lists or historical spending may **underestimate** needs, while fiscally unconstrained lists may **overestimate** needs.
- There is **no statewide categorization** of expenditures across all modes and jurisdictions.
- There is **no consistent statewide approach** to improvement plans or standards for levels of service.

We organize categorical needs by type of jurisdiction, mode of transport/type of investment, expenditure category, and State Transportation Policy Goal. Jurisdictions and modes are summarized in Exhibit 1. Expenditures categories are organized by **programmatic needs (administration, operations, and maintenance) and capital needs** (preservation and system improvement).

Additional Investments

Due to the challenges of calculating 10-year needs and limitations in our ability to disaggregate specific costs by jurisdiction, **some investment needs are treated separately in our quantified 10-year categorical needs estimates:**

- **ADA investments.** The investment required to fully implement ADA Transition Plans may include costs other than transportation, such as access to government buildings and services.
- **Pedestrian and bicycle infrastructure.** Although some local jurisdictions include this infrastructure in some projects, our estimates are likely incomplete.
- **Safety.** While baseline engineering for safety is included in many preservation or system improvement costs, some projects that would enhance safety are no doubt missing from our estimates.
- **Fish passage barrier removal.** These costs are an indeterminate mix of preservation, system improvement, and bridge costs. The State responsibility for fish passage barrier removal under court

order is included in this study as an Anchor Investment (these are discrete, significant, high-cost, high-impact projects selected by the JTC Executive Committee as described below).

- **Deferred maintenance.** No statewide data exists, making this need difficult to evaluate. Individual infrastructure holders often have difficulty estimating total needs that have been deferred over time.

Summary of Ten-Year Categorical Needs

We present all needs estimates in millions of 2019 dollars, and as ranges to account for the level of uncertainty inherent in this estimation effort.

Exhibit 2 shows 10-year categorical needs organized by type of jurisdiction, and Exhibit 3 shows 10-year categorical needs organized by mode or infrastructure.

As noted above, what is sometimes referred to as the "state transportation system" is actually a decentralized network managed by a variety of jurisdictions, including the State, Tribal Nations, counties, cities, port districts, and public transit authorities. The State is not responsible for funding all of the needs inventoried in this comprehensive needs assessment and summarized below.

Exhibit 2. Ten-Year Cost Estimates from 2022-2031, by Type of Jurisdiction (2019$)

Type of Jurisdiction	Modes/ Infrastructure	Programmatic Needs (in Millions)		Capital Needs (in Millions)		Total Costs (in Millions)
		Administration & Operations	Maintenance	System Preservation	System Improvement	
State	*Highways, Bridges, Ferry, Airports, Rail, Active Transportation* [2]	$5,600-$6,900	$3,100-$3,800	$31,000-$44,000	$22,000-$27,000	**$61,000-$82,000**
Tribal Nations	*Roads, Bridges, Bus, Ferry*	$150-$190	$95-$120	$150-$170	$37-$45	**$440-$520**
Counties	*Roads, Bridges, Ferry, Airports*	$3,300-$4,000	$3,400-$4,200	$8,500-$12,000	$1,100-$1,500	**$16,000-$21,000**
Cities	*Streets, Bridges, Bus, Airports*	$3,300-$4,000	$5,900-$7,200	$7,300-$12,000	$3,100-$4,100	**$20,000-$28,000**
Port Districts	*Airports, Marine Ports, Rail*	$5,600-$8,400	$1,400-$2,200	$6,200–$9,300		**$13,000-$20,000**
Public Transit Authority[1]	*Bus, Rail, Ferry*	$9,400-$11,000	$2,700-$3,300	$5,800–$7,100		**$18,000-$22,000**

[1] Sound Transit not included due to voter approval for ST3 and ST3 being beyond the 10-year time frame of the study.

[2] Active Transportation estimates in 2020$ based on WSDOT's Draft 2020 Active Transportation Plan. Funding for Safe Routes to School and Pedestrian & Bicycle Programs ($1.1B) serves local agencies, schools, OSPI, and WSDOT regions.

Source: BERK, 2020

Exhibit 3. Ten-Year Cost Estimates from 2022-2031 by Transportation Mode/Infrastructure (2019$)

Mode/ Infrastructure	Jurisdictions	Programmatic Needs (in Millions)		Capital Needs (in Millions)		Total Costs (in Millions)
		Administration & Operations	Maintenance	System Preservation	System Improvement	
Highways	*State*	$3,300-$4,000	$2,500-$3,100	$11,000-$14,000	$10,000-$12,000	**$27,000-$33,000**
Streets and Roads	*Tribal Nations, County, City*	$5,500-$6,700	$9,200-$11,000	$7,900-$12,000	$3,600-$4,800	**$26,000-$35,000**
Airports	*State, County, City, Port Districts*	$3,700-$5,600	$780-$1,200	$4,200-$6,300		**$8,700-$13,000**
Marine Ports	*Port Districts*	$2,700-$4,100	$690-$1,000	$2,300-$3,400		**$5,700-$8,600**
Ferries	*State, County, Public Transit Authority*	$2,100-$2,600	$510-$620	$1,600-$2,000	$2,000-$2,500	**$6,200-$7,600**
Bus[1]	*Tribal Nations, County, City, Public Transit Authority*	$9,500-$12,000	$2,700-$3,300	$5,800-$7,100		**$18,000-$22,000**
Rail[1]	*State, Port Districts, Public Transit Authority*	$620-$750		$1,100–$1,400		**$1,700-$2,100**
Bridges	*State, County, City, Port Districts*	Included in Highways, Streets, and Roads		$26,000-$41,000	$1,700-$2,100	**$27,000-$43,000**
Active Transportation	*State*[2]	$4.5-$5.5	$130-$150	$7,000-$8,600		**$7,200-$8,700**

[1] Sound Transit not included due to voter approval for ST3 and ST3 being beyond the 10-year time frame of the study.

[2] Active Transportation estimates in 2020$ based on WSDOT's Draft 2020 Active Transportation Plan. Funding for Safe Routes to School and Pedestrian & Bicycle Programs ($1.1B) serves local agencies, schools, OSPI, and WSDOT regions.

Source: BERK, 2020

Anchor Investments

Part of this study's charge was to include a limited number of discrete, significant, high-cost, high-impact projects. **The JTC Executive Committee selected a short list of Anchor Investments**, shown in Exhibit 4 and defined as investments that:

- Require State participation due to extraordinary scale, scope, and/or cost.
- Are difficult for local agencies or regional entities to address with available resources.
- Are important to achieving Statewide Transportation Policy Goals.

The only Anchor Investment not embedded in the 10-year categorical needs estimate is watershed fish passage barrier replacements, which is an indeterminate mix of bridge, preservation, and system improvement costs and will likely receive its own funding identifier once fully funded.

Exhibit 4. Anchor Investments

INVESTMENT	ESTIMATED COSTS
I-5 Columbia River Bridge and/or alternative crossing (Hood River & White Salmon)	$344 Million – $2.6 Billion[1]
I-5 carpool lane extension to JBLM (38th St. to Mounts Road)	$1.56 Billion[2]
SR 18 widening – Issaquah-Hobart Road to Raging River	$260 Million[3]
US 2 trestle	$1.4 Billion[3]
Washington State Ferries vessel replacements	$2.4 Billion[3]
Watershed fish passage barrier replacements (State responsibility; does not include additional investment by local jurisdictions)	$3.1 Billion[3]

1 WSDOT Draft Unfunded Needs List, 4/17/2020; LEAP List 2020 NL-1, 2/5/2020.
2 In 2017 dollars; WSDOT HOV Feasibility Study I-5: JBLM to S. 38th St, WSP/Parson Brinkerhoff Study, January 2017. While the cited study presumes general purpose lanes to Mounts Road, the incremental cost of making the lanes HOV is presumed to be negligible.
3 WSDOT Draft Unfunded Needs List, 4/17/2020.

Source: BERK, 2020

Estimated Funding Gap

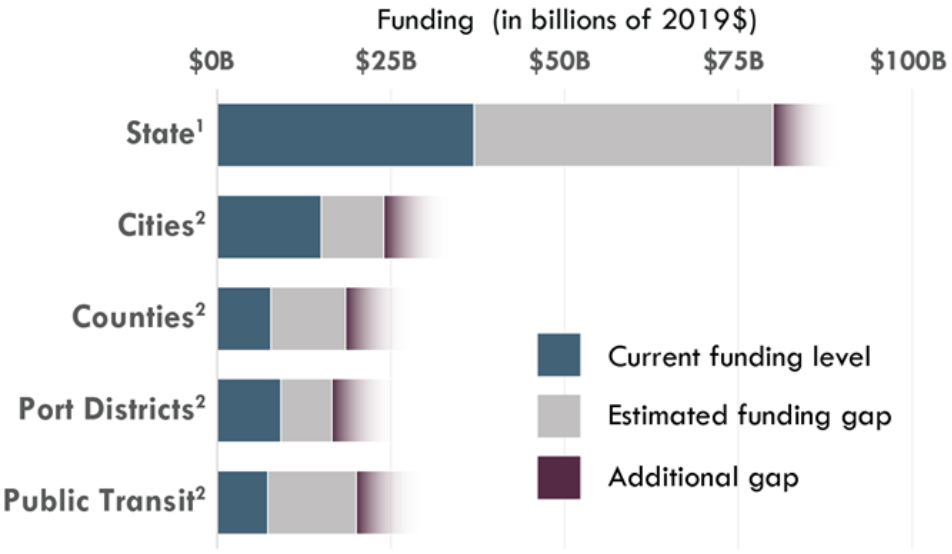
A key question for policy decisions is what gap exists between current funding levels and total need. In this study, we provide an estimated funding gap between needed and actual investments for each jurisdiction type. However, there are several limitations to calculating this funding gap, including data availability, differences in reporting, and changing costs. We summarize this funding gap at an order-of-magnitude in Exhibit 5.

Despite limitations in calculating this funding gap, we conclude that **current funding for each jurisdiction type is less than half of what is needed, without considering catching up on deferred maintenance and preservation.**

LIMITATIONS TO CALCULATING FUNDING GAP

- Costs to address deferred maintenance and preservation may **change over time.**
- Estimates of certain types of transportation costs are high level and **may not reflect all requirements.**
- A high-level analysis does not provide a detailed financial assessment **by individual jurisdiction.**
- Some jurisdictions have **limited high-level data** available to calculate funding gaps.
- Estimates in this study **may undercount elements** of the transportation system where available information is limited, such as deferred maintenance and preservation.

Exhibit 5. Estimated Ten-Year Funding Gaps by Jurisdiction Type



[1] *State estimates include consideration of active transportation, safety, and fish passage barriers as well as categorical estimates from Exhibit 32. Calculations do not include deferred maintenance and preservation, and other departments with funding from the transportation budget.*

[2] *These calculated gaps do not include costs to address deferred maintenance and preservation or full local costs to address fish passage barrier removal, safety, active transportation, and ADA compliance.*

[3] *Note: Each Tribal Nation has distinctly different needs and resources; we were unable to compile internal budget and financial data to assess funding gaps within the scope of this study. Estimates may undercount actual needs.*

Sources: WSDOT, 2020; SAO, 2020; BERK, 2020.

SUMMARY OF FINDINGS: MENU OF FUNDING OPTIONS

Out study team created a dynamic funding model in Excel that provides an order-of-magnitude estimate of 67 existing and potential new revenue options for the State and local jurisdictions. **The model helps decisionmakers weigh tradeoffs among revenue options by showing how potential revenues respond to underlying assumptions.** We model these revenues from:

- Changes to rates for **existing sources.**
- **New sources** identified from proposed bills, study efforts, and input from the Technical Team and Staff Workgroup.

We evaluated a shorter list of revenue options, selected from legislative proposals, legislative estimates, and past study efforts, on the following criteria:

- **Order of Magnitude:** What is the fundraising strength of this revenue option?
- **Applicability:** How widely applicable is this option, considering current restrictions on eligible expenditures and jurisdictions that may use this?
- **Equity:** How much does the revenue option align the burden of who pays the tax/fee/charge with who potentially benefits?

- **Ease of Implementation:** How operationally/administratively feasible is the option? To what extent are revenues reduced by collection/administrative costs?
- **Legislative History:** Has this revenue option been proposed in the Legislature in past or current sessions?
- **Resource Efficiency:** Does this option incentivize energy efficiency or fuel efficiency?
- **18th Amendment:** Is this revenue option restricted by the 18th Amendment for "highway purposes"?

Appendix B: Evaluation of Potential Funding Options, includes a detailed description of these options and their legislative history, potential benefits, and potential drawbacks. In this Executive Summary, we highlight key potential new State revenue sources, potential modifications to State revenue sources, and potential modifications to local revenue sources.

Potential New State Revenue Options

Among the new potential State revenue options that we modeled, the following could generate the greatest magnitude of funding:

- A **carbon pollution fee** could generate $8.7 billion over 10 years and encourages fuel efficiency by discouraging the use of fossil fuels.
- An **employee payroll tax** could generate $830 million over 10 years and would be relatively simple to administer from an operational perspective as it is similar to existing programs.
- A **road usage charge (RUC)** could generate $2.5 billion over 10 years. This could be a more stable source of transportation funding than the current gas tax as vehicles become more fuel efficient.[4]

The following existing State revenue sources are not currently used for transportation investments, but could be relatively easy to apply to transportation purposes:

- An **auto parts sales and use tax**, levied on owners of personal vehicles, could encourage the use of public transportation. A 1% rate increase dedicated to transportation could generate $270 million over 10 years.
- A **bicycle sales and use tax** would introduce a mechanism for a new group of users, who currently do not pay fuel taxes or registration fees, to contribute to funding the State transportation system. A 1% rate increase dedicated to transportation could generate $10 million over 10 years.

The **air quality surcharge, cap and trade revenues**, and **electric vehicle fuel economy rating tax** are other options that will encourage fuel efficiency.

Exhibit 6 shows an evaluation of a short list of these new revenue sources, which we selected based on revenue options from legislative proposals, past study efforts, fundraising magnitude, and input from the Staff Workgroup and Technical Team.

[4] We assume that a road usage charge would replace the existing motor vehicle fuel tax and is not an additional charge.

Potential Adjustments to Existing State Revenue Options

We also modeled rate adjustments for existing State revenue sources that are currently used for transportation purposes. These options would be relatively easy to implement given that they are existing sources with administrative structures in place to collect revenues. **The following options, some of which are mutually exclusive, have the highest relative fundraising potential based on the rates modeled:**

- **An increase in the fuel tax**, which the State currently collects at a rate of $0.494 per gallon, generating over $3 billion in revenue per biennium. Under the Forward Washington, SB 5971 funding proposal, the State would impose either an additional $0.06 or an additional $0.08 per gallon beginning in July 2020. A $0.06 rate adjustment would generate an additional $2.3 billion over 10 years.
- **An indexed fuel tax** is the only option in this section based on a new revenue collection structure that would require the State to monitor inflation and prices and adjust the tax rate in response. A fuel tax indexed to inflation and fuel consumption could generate $1.3 billion over 10 years.
- **Passenger vehicle weight fees** would be paid by owners of passenger vehicles, motor homes, and other vehicle types as part of annual vehicle registration. Raising the $35-$82 fees by $10 would generate an additional $613 million over 10 years.

Exhibit 7 shows an evaluation of a short list of these sources, which we selected based on legislative proposals, past study efforts, fundraising magnitude, and input from the Staff Workgroup and Technical Team. The 2019 legislative package Forward Washington proposed the adjustments to all the options shown in Exhibit 7 except for the indexed fuel tax.

Potential Local Revenue Options

Local jurisdictions could benefit from the potential adjustments to State revenue options listed above as the Legislature could allocate some or all of these revenues to local jurisdictions. **The creation of new options for local governments to generate revenue would require State legislative action.**

We evaluated some new local transportation revenue sources, as well as adjustments to existing local transportation revenue sources that would require State legislative action. These recommendations draw from the *2019 JTC City Transportation Funding Study, 2019 JTC Transit Capital Needs Study*, and input from local government representatives. **The model reveals that the following recommendations from the 2019 study could have the greatest impact:**[5]

- Multiple **Transportation Benefit District (TBD) options** would use existing revenue authorities while increasing the revenue-generating potential of an existing revenue source.
    - We estimate that a **TBD transportation utility tax** could generate approximately $1.6 billion over 10 years.
    - By doubling the **TBD sales tax** rate, doubling the duration of the tax, and allowing the tax to be imposed by councilmanic action (and therefore assuming it would be used by more jurisdictions), we estimate this could generate an additional $704 million over 10 years.

[5] JTC Assessment of City Transportation Funding Needs, June 2019. http://leg.wa.gov/JTC/Documents/Studies/Final_CityFundingReport.pdf

- The **local motor vehicle fuel tax** is an existing option that has not been enacted by any county. By enacting recommended changes designed to increase public understanding and use of the tax by jurisdictions, we estimate this could generate an additional $470 million over 10 years. This assumes 50% of counties will successfully impose a 5% tax rate.
- The **household excise tax** option would be a relatively stable revenue option, since the tax is based on number of household units, but it requires a new administrative structure and could potentially be considered regressive since lower-income households would pay a higher proportion of their income. We estimate that a $1.50 per unit household excise tax could generate approximately $135 million over 10 years.
- Our model also considers **local option tolls** by estimating revenues for the one city in the state where such an option might be feasible. The City of Seattle could generate $1.4 billion over 10 years if it implemented a local option toll at rate of $130 million each year (2019$).

Exhibit 8 shows a summary of potential local revenue options, which we selected based on revenue options from legislative proposals, past study efforts, fundraising magnitude, and input from the Staff Workgroup and Technical Team.

Exhibit 6. Evaluation of Potential New State Transportation Revenue Sources

Order of Magnitude	What is the fundraising strength of this revenue option?
Applicability	How widely applicable is this option, considering current restrictions on eligible expenditures and jurisdictions that may use this?
Equity	How much does the revenue option align the burden of who pays the tax/fee/charge with who potentially benefits?
Ease of Implementation	How operationally/administratively feasible is the option? To what extent are revenues reduced by collection/administrative costs?
Legislative History	Has this revenue option been proposed in the Legislature in past or current sessions?
Resource Efficiency	Does this option incentivize energy efficiency or fuel efficiency?
18th Amendment	Is this revenue option restricted by 18th Amendment for "highway purposes"?

Revenue Sources	Fundraising Order of Magnitude *(scale below)*	Applicability	Equity	Ease of Implementation	Legislative History	Resource Efficiency	18th Amendment Restriction
New State Transportation Revenue Sources *(new sources + sources not currently used for transportation)*							
Air Quality Surcharge	$$$	●	●	●	✎	🍃	
Auto Parts Sales and Use Tax**	$$	●	●	●	✎	🍃	
Bicycle Sales and Use Tax**	$	●	●	●	✎		
Cap and Trade Revenues	$$$	●	●	●	✎	🍃	
Carbon Pollution Fee	$$$$	●	●	●	✎	🍃	
Electric Vehicle Fuel Economy Rating Tax	$$$	●	●	●		🍃	
Employee Payroll Tax	$$$$	●	●	●			
For Hire and TNC Fees	$$	●	●	●	✎		
Road Usage Charge*	$$$$	●	●	●	✎		
Statewide Special Transportation Benefit Assessment	$$$	●	●	●			

Legend

Magnitude over 10 Years		Applicability	Equity, Ease of Implementation	
$	<$50 M	Applicable to nearly all jurisdiction types/expenditures	●	High
$$	$50 M - $500 M	Applicable to some jurisdiction types/expenditures	●	Medium
$$$	$500 M - $5 B	Applicable to limited jurisdiction types/expenditures	●	Low
$$$$	>$5 B			

**Assuming a road usage charge would replace the motor vehicle fuel tax and is not an additional charge. WSTC recommended that expenditures of RUC revenue should be subject to 18th Amendment.*

***Existing state revenue that is not currently used for transportation*

Note: 18th Amendment restriction reflects current law.

Source: BERK, 2020.

Exhibit 7. Evaluation of Adjustments to Existing State Transportation Revenue Sources

Revenue Sources	Fundraising Order of Magnitude *(scale below)*	Applicability	Equity	Ease of Implementation	Legislative History	Resource Efficiency	18th Amendment Restriction
Existing State Transportation Revenue Sources *(Rate Adjustments)*							
Capital Vessel Surcharge: *rate increase*	$$	🔴	🟡	🟢	✎		⚠
Electric Hybrid Vehicle Fee: *rate increase*	$$	🟡	🟡	🟢	✎		⚠ *in part*
Enhanced Driver's Licenses/Identicards: *rate increase*	$$	🟡	🟡	🟢	✎		
Freight Project Fees: *rate increase*	$$	🟡	🟡	🟢	✎		⚠
Fuel Tax: *rate increase*	$$$	🟢	🟡	🟢	✎	🍃	⚠
HOV Lane Violations: *rate increase*	$	🔴	🔴	🟢	✎		
Indexed Fuel Tax	$$$	🟢	🔴	🟡	✎	🍃	⚠
Int'l Fuel Tax Agreement (IFTA) Decals: *rate increase*	$	🟡	🟡	🟢	✎		⚠
Light Duty Truck License Fee: *rate increase*	$$	🟡	🟡	🟢	✎		⚠
Passenger Vehicle Weight Fees: *rate increase*	$$$	🟡	🟡	🟢	✎		
Rental Car Tax: *rate increase*	$$	🟡	🟢	🟢	✎		
Trip Permit Fees (3-day): *rate increase*	$$	🟡	🟡	🟢	✎		⚠ *in part*
Vehicle Registration Fees: *rate increase*	$$	🟢	🟡	🟢	✎		⚠

Legend				
Magnitude over 10 Years		**Applicability**	**Equity, Ease of Implementation**	
$	<$50 M	Applicable to nearly all jurisdiction types/expenditures	🟢	High
$$	$50 M - $500 M	Applicable to some jurisdiction types/expenditures	🟡	Medium
$$$	$500 M - $5 B	Applicable to limited jurisdiction types/expenditures	🔴	Low
$$$$	>$5 B			

Note: 18th Amendment restriction reflects current law.

Source: BERK, 2020

Exhibit 8. Evaluation of Adjustments to Local Transportation Revenue Sources

Revenue Sources	Fundraising Order of Magnitude (scale below)	Applicability	Equity	Ease of Implementation	Legislative History	Resource Efficiency	18th Amendment Restriction
Local Transportation Revenue Sources *(Require State legislative action/statutory change)*							
Communities Facilities District	N/A						
Household Excise Tax	$$						
Lift the 1% Property Tax Cap	N/A						
Local Rental Car Sales Tax	$$						
Local Option Tolls	$$$						
Local Motor Vehicle Fuel Tax Adjustment	$$						
Local Tax or Fee for Truck/Delivery Vehicle/Large Vehicles and/or Businesses Usina Them	N/A						
Street Utility*/Road Benefit Charge	N/A						
Transportation Benefit District Sales Tax Adjustment	$$$						
Transportation Benefit District Utility Tax Option	$$$						

Legend				
Magnitude over 10 Years		**Applicability**	**Equity, Ease of Implementation**	
$	<$50 M	Applicable to nearly all jurisdiction types/expenditures		High
$$	$50 M - $500 M	Applicable to some jurisdiction types/expenditures		Medium
$$$	$500 M - $5 B	Applicable to limited jurisdiction types/expenditures		Low
$$$$	>$5 B			

**Previously found unconstitutional*

Note: 18th Amendment restriction reflects current law.

Note: N/A indicates that BERK did not or estimate the fundraising magnitude of this revenue option.
Source: BERK, 2020.

SUMMARY OF FINDINGS: ECONOMIC IMPACTS OF TRANSPORTATION INVESTMENTS: CASE STUDIES

The body of the report presents 12 case studies that tell stories of challenges and benefits associated with transportation investments across the state. Case studies represent different investment types, locations within the state, modes of transportation, orders of magnitude of cost, and lead jurisdiction types, as shown in Exhibit 9.

Exhibit 9. Economic Impact Case Studies

Source: BERK, 2020

Transportation investments may benefit communities at the local, regional, or state level in the following categories:

Transportation benefits, including improvements to safety; improvements to mobility, including increased capacity, connectivity, and reliability; and improvements to multimodal transportation or pedestrian infrastructure.

Economic benefits, ranging from job creation to improved freight mobility for the state, regional, and local economies. Many case study projects also broadly support economic activity, including increasing foot traffic for local businesses and providing transportation access to major economic drivers such as private industry or a port with statewide economic impact.

Fiscal benefits, primarily by reducing ongoing operating and maintenance costs, offsetting the need for separate capital investments, creating one-time construction-based tax revenues, or generating ongoing tax revenues through increased economic activity.

Community benefits, including substantial environmental benefits such as remediating contaminated soil or improving water or air quality; improved access to recreation; or improved opportunities for non-motorized modes of transportation.

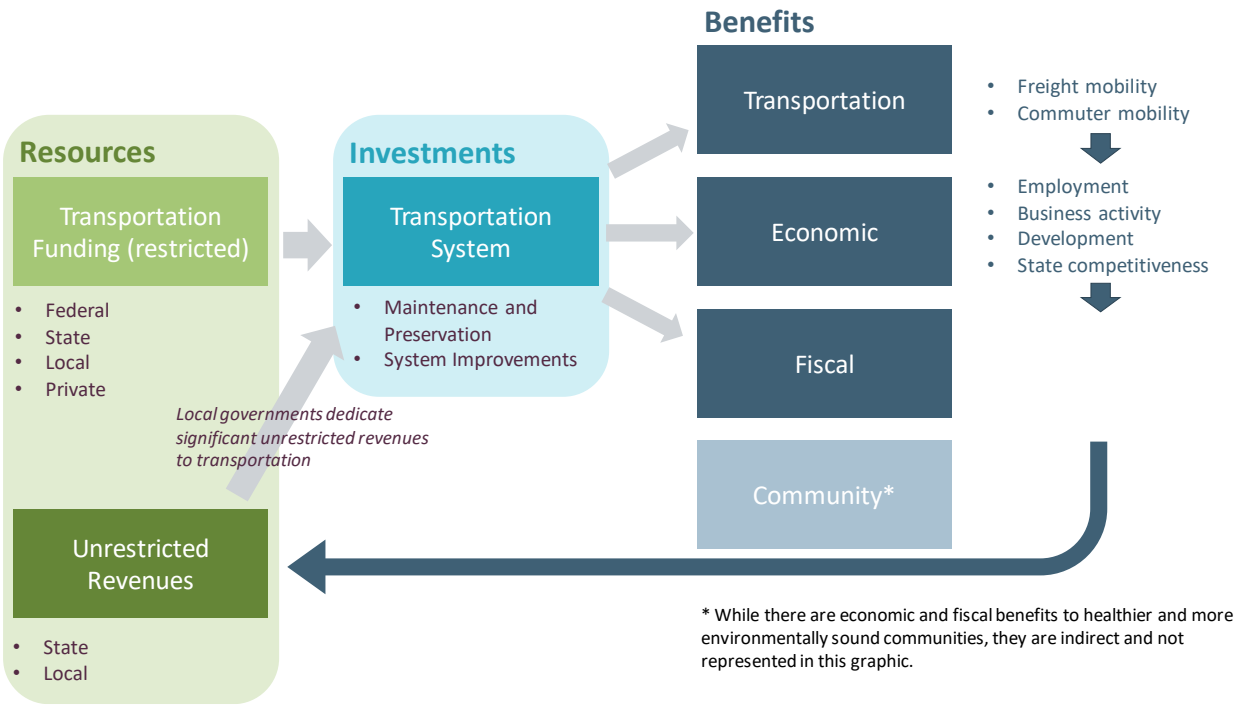
Case Study Findings

Nearly all lead jurisdictions of case study projects struggled to assemble adequate project funding because no singular source could provide sufficient resources to fund the entire project. Lead jurisdictions typically piecemealed funding from multiple sources to complete their projects – ranging up to **as many as 21 distinct funding sources** for one project. Most projects received both direct budgeting and revolving sources, and in some cases also one-time, unique funding such as private contributions. This effort to assemble funding required additional time and dollars, including a higher level of effort to coordinate requirements and timelines, as well as the threat of loss of funds due to "timeout" provisions, or potential stalls partway through completion.

Case study projects reveal two key processes that result in a cycle of investments and benefits to the State and local and regional jurisdictions:

1. **Benefits of transportation projects compound.** As shown in Exhibit 10, transportation benefits create economic benefits that in turn create fiscal benefits. Many transportation benefits create economic benefits by improving functions essential to trade or improving the state's competitiveness for key industries. Many economic benefits then lead to fiscal benefits for the State and local jurisdictions either by creating net new taxable activity or by sustaining taxable activity that would have ceased without the project. Community benefits more indirectly play into this cycle, and we do not discuss this pattern in the report.
2. **Jurisdictions may receive a financial return on investment.** As a result of the compounding benefits that lead to fiscal benefits, tax receipts accrue and may offset, or even exceed, an individual jurisdiction's investment in the project.

Exhibit 10. Interrelated Nature of Benefits Categories



Source: BERK, 2020

Contents

Exhibits

1.0. Introduction

1.1. STUDY PURPOSE

Washington State's transportation system is an interconnected network of roadway, rail, air, port, and transit infrastructure. These transportation assets are owned, managed, and operated by the State, Tribal Nations, counties, cities, port districts, and public transit agencies. Different jurisdictions share responsibilities for delivering transportation facilities and systems, and these activities need to work well together for the entire transportation system to function efficiently and effectively.

This decentralized network relies on a blend of federal, state, regional, and local funding mechanisms. Jurisdictions face increasing demands on their systems and are challenged by maintenance and preservation backlogs. Transportation revenues have not kept up with needs, despite the Legislature passing three State revenue and investment packages since 2003 providing an estimated $27 billion.[6]

Existing reports, studies, and statewide datasets each capture a portion of statewide transportation needs, but none are sufficient to provide a comprehensive understanding of the investment needs and scale of revenue options available.

In 2019, the Washington State Legislature requested this assessment of statewide transportation needs and priorities over the 10-year timeframe of 2022-2031 across all jurisdiction types and modes. The purpose of this study is to assess statewide transportation needs and priorities and to identify existing and potential transportation funding mechanisms.

This Phase I report includes three pieces of the study:

- Statewide Transportation Needs Assessment.
- Menu of Funding Options.
- Economic Impact Case Studies.

In Phase II of the study, an appointed Advisory Panel will consider these findings and make directional recommendations to the Legislature to consider when budgeting and setting transportation funding policies. The Advisory Panel is slated to conduct its work in the second half of 2020, with a final Phase II report due to the Legislature in December.

In the 2020 legislative session, the Supplemental Transportation Budget added a provision to this study, asking for "*recommendations on whether a revision to the statewide transportation policy goals in RCW 47.04.280 is warranted.*"[7] The Advisory Panel convened in the second half of this year will be charged with providing a response to this question.

[6] 2003 Nickel Package: $3.9 billion investment; 2005 Transportation Partnership Program: $7.1 billion investment; 2015 Connecting Washington: $16 billion investment.
[7] Engrossed Substitute House Bill 2322.

1.2. STUDY PROCESS

The study team, which consisted of BERK Consulting, Performance Plane LLC, and Perteet, relied on analysis of data, review of existing reports and studies, consultation with agency staff, and guidance from a Staff Workgroup to produce a needs assessment, a funding options model, and economic impact case studies.

The **Staff Workgroup** met three times between October and June 2020 to provide feedback to the consultant team. The group included legislative staff and state and local agency staff as shown at right.

For the needs assessment, the study team:

- **Leveraged data** from sources including the Washington State Auditor's Office, Washington State Department of Transportation, Federal Transit Administration, and Federal Highway Administration.
- **Consulted staff** at state agencies and associations of local and Tribal governments, representing various jurisdictions and modes of transport and infrastructure investments.
- **Obtained Regional Transportation Improvement Plans** from Regional Transportation Planning Organizations. While these lists are fiscally constrained, they provided a starting basis to assess needs, and this information was integrated with other data.
- **Estimated future roadway investment needs** by determining general street and road preservation costs and optimal pavement management cycles; and estimating bridge maintenance, replacement, and deferred bridge replacement costs.

For the funding options model, the consulting team worked with a **Technical Team** (members listed in Section 3.0. including representatives from the Transportation Revenue Forecast Council and local government agencies.

To describe how transportation investments benefit communities, the team selected **12 case studies** in collaboration with the Staff Workgroup.

Staff Workgroup Members

- Joint Transportation Committee: David Ward and Dave Catterson
- House Transportation Committee: Amy Skei
- Senate Transportation Committee: Hayley Gamble
- Washington State Department of Transportation: Allison Dane Camden
- Office of Financial Management: Erik Hansen
- Washington State Transportation Commission: Reema Griffith
- Washington Traffic Safety Commission: Shelly Baldwin
- Department of Licensing: Beau Perschbacher
- Thurston Regional Planning Commission: Marc Daily
- Puyallup Tribe of Indians: Andrew Strobel
- Washington State Transit Association: Justin Leighton
- Transportation Improvement Board: Ashley Probart
- County Road Administration Board: John Koster
- Association of Washington Cities: Logan Bahr
- Washington State Association of County Engineers: Jane Wall
- Freight Mobility Strategic Investment Board: Brian Ziegler
- Washington Public Ports Association: Chris Herman
- Washington State Patrol: Captain Neil Weaver
- House Republican Caucus: Dana Quam
- House Democratic Caucus: David Bremer
- Senate Democratic Caucus: Hannah McCarty
- Senate Republican Caucus: Martin Presley

1.3. ORGANIZATION OF THIS REPORT

The remainder of this report is organized as follows:

Chapter 2. **Ten-Year Transportation Needs Assessment.** We describe our analytic framework and methodology for estimating statewide transportation needs over the 10-year timeframe of 2022-2031, including:

- Quantifiable needs estimate.
- Consideration of additional investment needs.
- Anchor investments (discrete, significant, high-cost, high-impact projects selected by the Joint Transportation Committee Executive Committee).

Chapter 3. **Menu of Funding Options.** We describe our revenue model to estimate transportation funding options, and we evaluate state and local transportation funding options.

Chapter 4. **Economic Impacts of Transportation Investments.** We provide 12 case studies that tell stories of how transportation investments impact the State and communities across Washington.

These are followed by Appendices:

Appendix A. **Technical Methodology for Needs Estimation.** Detailed technical methodology of 10-year categorical needs estimation.

Appendix B. **Evaluation of Potential Revenue Sources**. Detailed description, legislative history, and discussion of tradeoffs for potential transportation revenue options.

Appendix C. **Case Study Interview Protocol.** Interview guide for our 12 case studies.

LIST OF TERMS AND ABBREVIATIONS

- AWC – Association of Washington Cities
- BIA – Bureau of Indian Affairs
- CRAB – County Road Administration Board
- DOL – Washington State Department of Licensing
- FHWA – Federal Highway Administration
- FMSIB – Freight Mobility Strategic Investment Board
- FTA – Federal Transit Administration
- HPMS – Highway Performance Monitoring System
- JTC – Joint Transportation Committee
- OFM – Washington State Office of Financial Management
- RTIP – Regional Transportation Improvement Program
- RTPO – Regional Transportation Planning Organization
- MPO – Metropolitan Planning Organization
- NBI – National Bridge Inventory
- PTBA – Public transportation benefit area
- SAO – State Auditor's Office
- STIP – State Transportation Improvement Program
- TIB – Transportation Improvement Board
- WPPA – Washington Public Ports Association
- WSAC – Washington State Association of Counties
- WSACE – Washington State Association of County Engineers
- WSDOT – Washington State Department of Transportation
- WSF – Washington State Ferries
- WSP – Washington State Patrol
- WSTA – Washington State Transit Association
- WSTC – Washington State Transportation Commission
- WTSC – Washington Traffic Safety Commission

2.0. Ten-Year Transportation Needs Assessment

2.1. ANALYTIC FRAMEWORK

This needs assessment presents categorical estimates of 10-year funding needs and potential gaps, organized by:

- **Type of Jurisdiction:** WSDOT, WSF, cities, counties, Tribal Nations, port districts, public transit agencies.
- **Mode of Transport/Type of Investment:** highways/roads/streets, bridges, bus, rail, airport, marine port, ferries.
- **Expenditure Category:** administration and operations, maintenance, preservation, system improvement.

In addition, we consider how **State Transportation Policy Goals** are addressed in quantitative and qualitative summaries of identified needs.

This study's cost assessment relies on a mix of datasets, reports, strategies, and interviews with agency staff. We begin with historical expenditure data, but since historical data does not reflect all lifecycle costs or the accumulating costs of deferred maintenance and needed system improvements, we integrate other pieces of information to reflect a more accurate estimate.

2.1.1. Types of Jurisdictions and Modes of Transport or Investment

For the purposes of this study, we define the **type of jurisdiction** as the public entity that owns or operates a transportation infrastructure and would be responsible for investments in the system. We define **mode of transport** or **type of investment** as the transportation infrastructure or service provided.

There is not a one-to-one match between jurisdictions and modes of transportation in Washington. Most modes of transportation are owned, operated, or managed by different types of jurisdictions across the state as shown in Exhibit 11.

Exhibit 11. Types of Jurisdiction and Modes of Transport

Jurisdiction Type	Modes of Transport/Type of Investment
Tribal Nations	Active Transport., Ferries, Bus, Roads
State	Active Transport., Airports, Ferries, Highways, Rail
Counties	Active Transport., Airports, Bus, Ferries, Rail, Roads
Cities	Active Transport., Airports, Bus, Rail, Streets
Port Districts	Active Transport., Airports, Ferries, Marine Ports, Rail, Roads
Public Transit Agencies	Active Transport., Bus, Ferries, Rail

Source: BERK, 2020.

2.1.2. Expenditure Categories

For the purposes of this study, we review transportation expenditures by the following categories. Different jurisdictions define and categorize their transportation expenditures differently, and there are nuances in how each agency may approach and report this data.

- **Programmatic** expenditures are the regular, ongoing expenses needed to run transportation agencies and provide their base functions and services to the community. These include:
  - **Administration and Operations** expenses that are involved with the day-to-day costs of running transportation systems and programs, including goods and services, staff costs, and other programs.
  - **Maintenance** costs involve regular work performed to maintain the condition of a transportation system over time, including both routine and preventative maintenance.

MAINTENANCE VS. PRESERVATION

Maintenance and preservation both involve keeping transportation assets in good condition to support their ongoing function in the system.

Maintenance refers to more routine, regular activities to keep a system in a state of good repair, such as spot fixes of pavement, preventative maintenance on rolling stock (e.g., oil changes), or replacing damaged signage.

Preservation includes activities that support the long-term condition of transportation assets and ensure ongoing maintenance costs are minimized over asset lifecycles. This includes regular seal coats for pavement or replacement of rolling stock past its operational lifetime.

- **Capital** expenditures are the costs necessary to purchase or construct transportation-related assets and prevent their depreciation over time. We divide this between two categories in this analysis:
  - **Preservation** investments are needed to follow asset management practices, keep infrastructure at a state of good repair, minimize lifecycle costs, and optimize investments over the full lifecycle.
  - **System Improvement** investments enhance the existing system through new construction or purchases and are coordinated to meet concurrency requirements, address insufficient levels of service, enhance other functions of the system, or otherwise improve the ability for the system to meet needs and policy goals.
- **Deferred maintenance** includes the investments needed to bring elements of the system up to a state of good repair when desired maintenance or preservation investments have not been made.

2.1.3. State Transportation System Policy Goals

The Washington State Legislature has established six Transportation Policy Goals, which outline the long-term vision for the development of the statewide transportation system. In Section 2.4.6, we clarify the degree to which advancement of these policy goals are included in our quantitative needs assessment and when they are described in qualitative terms.

RCW 47.04.280

(1) It is the intent of the legislature to establish policy goals for the planning, operation, performance of, and investment in, the state's transportation system. The policy goals established under this section are deemed consistent with the benchmark categories adopted by the state's blue ribbon commission on transportation on November 30, 2000. Public investments in transportation should support achievement of these policy goals:

(a) Economic vitality: *To promote and develop transportation systems that stimulate, support, and enhance the movement of people and goods to ensure a prosperous economy;*

(b) Preservation: *To maintain, preserve, and extend the life and utility of prior investments in transportation systems and services;*

(c) Safety: *To provide for and improve the safety and security of transportation customers and the transportation system;*

(d) Mobility: *To improve the predictable movement of goods and people throughout Washington State, including congestion relief and improved freight mobility;*

(e) Environment: *To enhance Washington's quality of life through transportation investments that promote energy conservation, enhance healthy communities, and protect the environment; and*

(f) Stewardship: *To continuously improve the quality, effectiveness, and efficiency of the transportation system.*

2.2. TYPES OF JURISDICTIONS IN STATE TRANSPORTATION NETWORK

This section describes the role of each jurisdiction that contributes to the statewide transportation system. We show historical investment levels when data allows, and we cite recent studies, plans, or strategies that articulate areas of emphasis and investment needs.

2.2.1. State

Washington's state-owned transportation systems include state and interstate highways and bridges, state airports, a state ferry system, and state rail lines. The **Washington State Department of Transportation** (WSDOT) is the primary state agency responsible for managing the State's transportation system. WSDOT's Aviation, State Ferries, and Rail divisions are responsible for managing state-owned airports, ferries, and rail lines, respectively.

The State plays a central role in collecting transportation revenues and distributing them among other jurisdictions. The State's two largest own-source transportation funding mechanisms are the motor vehicle fuel tax and vehicle licenses, fees, and permits. The State collected $3.6 billion and $1.5 billion from these sources, respectively, in the 2017-2019 biennium. Other contributors to state transportation revenues include toll revenue, ferry fares, driver fees, and excise taxes. Of all state-collected transportation revenues, the State distributed $194 million to cities and $314 million to counties in 2017-2019.[8]

Washington State receives substantial transportation funding from two federal agencies—the **Federal Highway Administration** (FHWA) and **Federal Transit Administration** (FTA). Federal funds typically have made up around a quarter of the State's highway budget. The Fixing America's Surface Transportation Act (FAST) Act provides most federal highway funds to states through apportionment to core programs, and federal fuel taxes are a major source of income into this revenue. The State's expected apportionment of federal highway funds across federal fiscal years 2019 and 2020 is $1.5 billion.[9] While most FTA funds that flow to Washington are distributed directly to local governments, the State does receive FTA funds for **Washington State Ferries** (WSF). In federal fiscal years 2019 and 2020, these are anticipated to total $26.5 million. [10]

Distributing Federal Funds

The State is responsible for distributing federal aid highway funds to local jurisdictions and projects. The State allocated these funds via programs authorized by the FAST Act, including:

- Congestion Mitigation and Air Quality Improvement Program (CMAQ)
- Highway Safety Improvement Program (HSIP)
- National Highway Freight Program (NHFP)
- National Highway Performance Program (NHPP)
- Surface Transportation Block Grant Program (STBGP)

[8] OFM, *Transportation Revenue Forecast Council: February 2020 Transportation Economic and Revenue Forecasts: Volume I: Summary*, 2020.
[9] JTC, *Transportation Resource Manual 2019*, 2019.
[10] *ibid.*

State Grant Programs

The State administers grant programs that distribute funds to local jurisdiction transportation projects on competitive and formulaic bases. These include the following three entities.

- **County Road Administration Board** (CRAB) administers three programs for county transportation systems—the Rural Arterial Program (RAP), the County Arterial Preservation Program (CAPP), and the County Ferry Capital Improvement Program (CFCIP). RAP funds are awarded to counties on a competitive basis within five state regions. CAPP funds are apportioned to counties based on their shares of arterial lane miles. CFCIP funds are appropriated to the four county ferry systems for capital improvements.[11] In 2017-2019, CRAB distributed **$70 million** to local jurisdictions.[12]
- **Freight Mobility Strategic Investment Board** (FMSIB) identifies and funds high-priority projects to improve the movement of freight throughout the state and to mitigate the impacts of freight transportation on local communities. FMSIB received an appropriation of **$51.4 million** to distribute to cities, counties, and ports in the 2017-2019 biennium.[13]
- **Transportation Improvement Board** (TIB) awards state funds to local jurisdictions for high-priority transportation improvement projects. These include projects to improve urban arterial streets, city sidewalks, multimodal infrastructure, and street lighting. In 2017-2019, TIB distributed **$208 million** for local projects.[14]

Safety

The State has key roles supporting the safe use of the statewide transportation network. The **Washington Traffic Safety Commission** (WTSC) is responsible for addressing traffic safety issues, coordinating programs to reduce traffic accidents and fatalities, and promoting enforcement of traffic safety laws. As part of the *Cooper Jones Act* of 1998, this effort was expanded to explicitly consider the safety of pedestrians and cyclists and reduction of traffic accidents involving these users. Agencies represented on the Commission include the Department of Health, the State **Department of Licensing** (DOL), Department of Social and Health Services, Office of Superintendent of Public Instruction, **Washington State Patrol** (WSP), and WSDOT.

In addition to State departments charged with managing transportation infrastructure and services, certain agencies have responsibilities specifically focused on safety on state transportation systems. In addition to its broader law enforcement functions, the Washington State Patrol (WSP) provides services for traffic law enforcement, accident response and investigation, commercial vehicle regulations, impaired driving testing, and transportation security. DOL supports the licensing of drivers, including both standard and commercial drivers, and oversees personal and commercial vehicle registration. DOL is also the primary revenue collector of state transportation revenues. DOL and WSP are described further in **Section 2.4.4.**

The main guiding document in the State for safety is the **Strategic Highway Safety Plan** (SHSP), which is

[11] JTC, *Transportation Resource Manual 2019*, 2019.
[12] OFM, *Transportation Revenue Forecast Council: February 2020 Transportation Economic and Revenue Forecasts: Volume I: Summary,* 2020.
[13] JTC, *Transportation Resource Manual 2019*, 2019.
[14] OFM, *Transportation Revenue Forecast Council: February 2020 Transportation Economic and Revenue Forecasts: Volume I: Summary*, 2020.

part of the Target Zero program to eliminate traffic fatalities and serious injuries in Washington State by 2030. The SHSP highlighted that traffic fatalities are falling in Washington State, but are not on track to reach zero by 2030.[15] The report recommended legislation to further reduce fatalities, including allowing DUI checkpoints, developing a DUI court program, establishing 24/7 sobriety programs for DUI offenders, and implementing automated speed enforcement.

State Highways

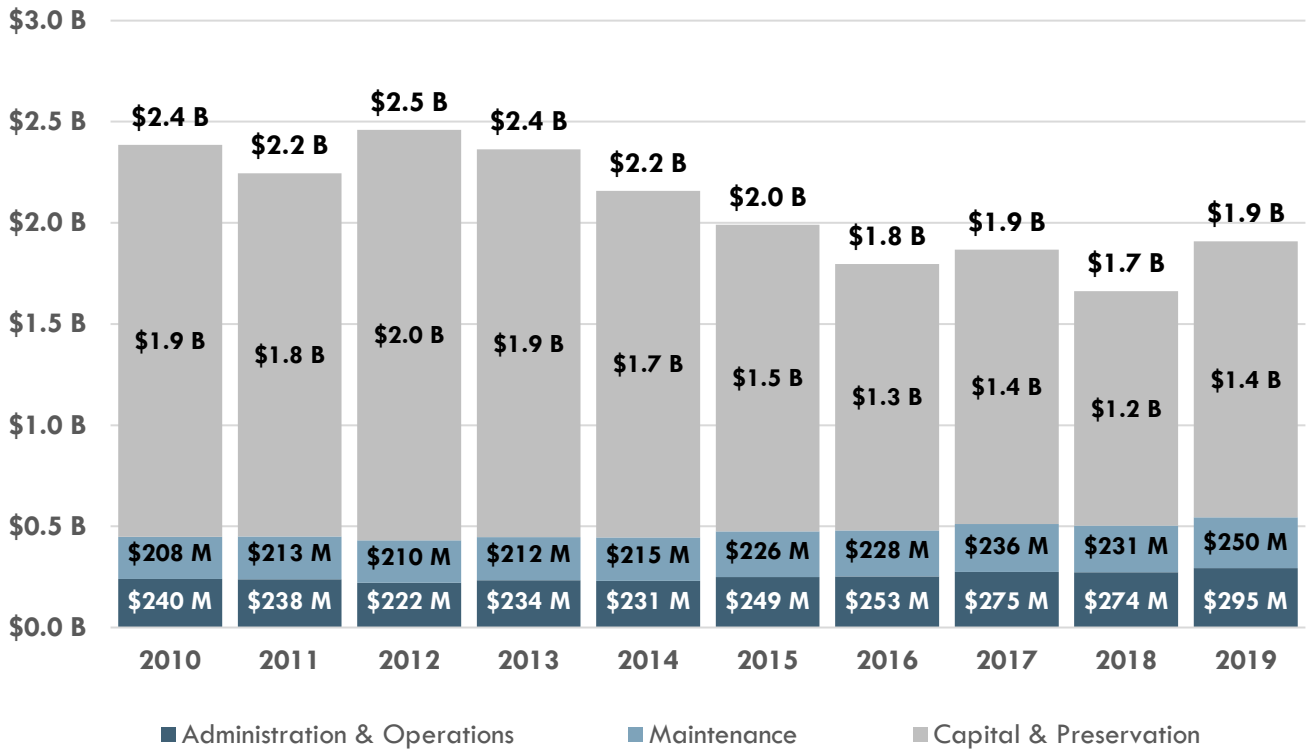
The State's roadway system includes 6,300 centerline miles of state highways and 800 centerline miles of interstate highways.[16] The State is responsible for construction, preservation, maintenance, and improvements of state highways; and for preservation, maintenance, and improvements of federal interstate highways within Washington.[17]

As part of the development of the **Washington State Highway System Plan (HSP)**, WSDOT is engaged in long-term planning on policy, infrastructure, and safety for the State's highway systems. In 2021, WSDOT will issue an updated HSP as part of the Washington Transportation Plan. The HSP, which was most recently updated in 2007, sets system-wide priorities for state highway infrastructure investments.[18]

Exhibit 12 summarizes historical expenditures for State highways over the last 10 years.

[15] WTSC, *Strategic Highway Safety Plan, 2016*.
[16] Highway Performance Monitoring System (HPMS), "Mileage for Washington State Public Roads," 2018.
[17] JTC, *Transportation Resource Manual 2019*, 2019.
[18] WSDOT, *Washington State Highway Plan,* 2007.

Exhibit 12. Historical Expenditures for State Highways, 2019$



Note: Funding for these expenditures comes from all sources.
Sources: WSDOT, 2010-2019; BERK, 2020.

State Ferries

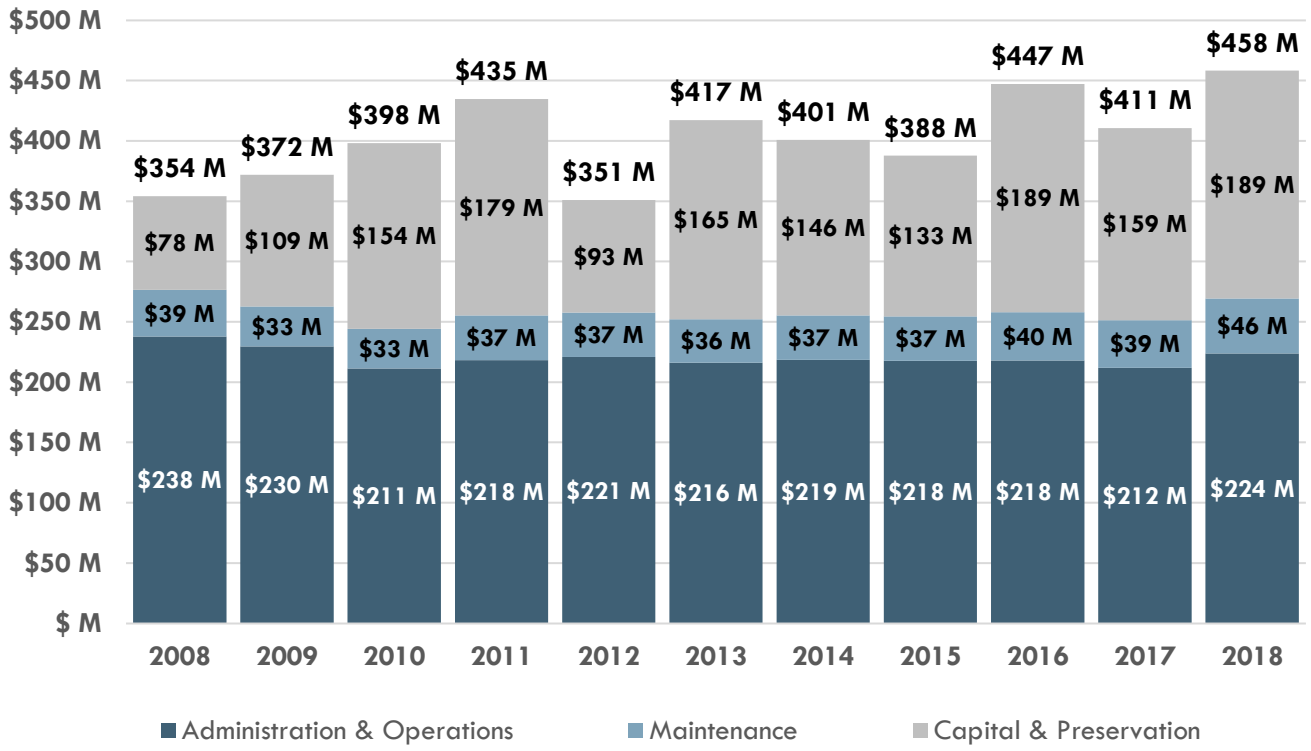
The State's public ferry system, WSF, is the country's largest ferry system, with 23 vessels, 20 terminals, 10 routes, and 24 million annual riders.[19] The State operates ferry service; and constructs, preserves, and maintains ferry vessels and docks.[20]

2040 Long Range Plan. In 2019, WSF issued its *2040 Long Range Plan*, which highlighted that WSF will need to replace more than half of its current vessel fleet by 2040 and add more vessels to the fleet.[21] WSF is anticipating system growth and planning for added service hours, increased passenger capacity, and increased vehicle capacity across its routes.

Exhibit 13 summarizes historical expenditures for State ferries over the last 10 years. State ferry expenditures have increased over the past several years, mostly driven by an increase in capital and preservation expenditures. Programmatic expenditures have remained relatively stable.

[19] WSF, *Asset Management Plan*, 2018; WSF, "Traffic Statistics Rider Report," 2019.
[20] JTC, *Transportation Resource Manual 2019*, 2019.
[21] WSF, *2040 Long Range Plan,* 2019.

Exhibit 13. Historical Expenditures for State Ferries, 2019$



Note: Funding for these expenditures comes from all sources.
Sources: FTA National Transit Database, 2008-2018; BERK, 2020.

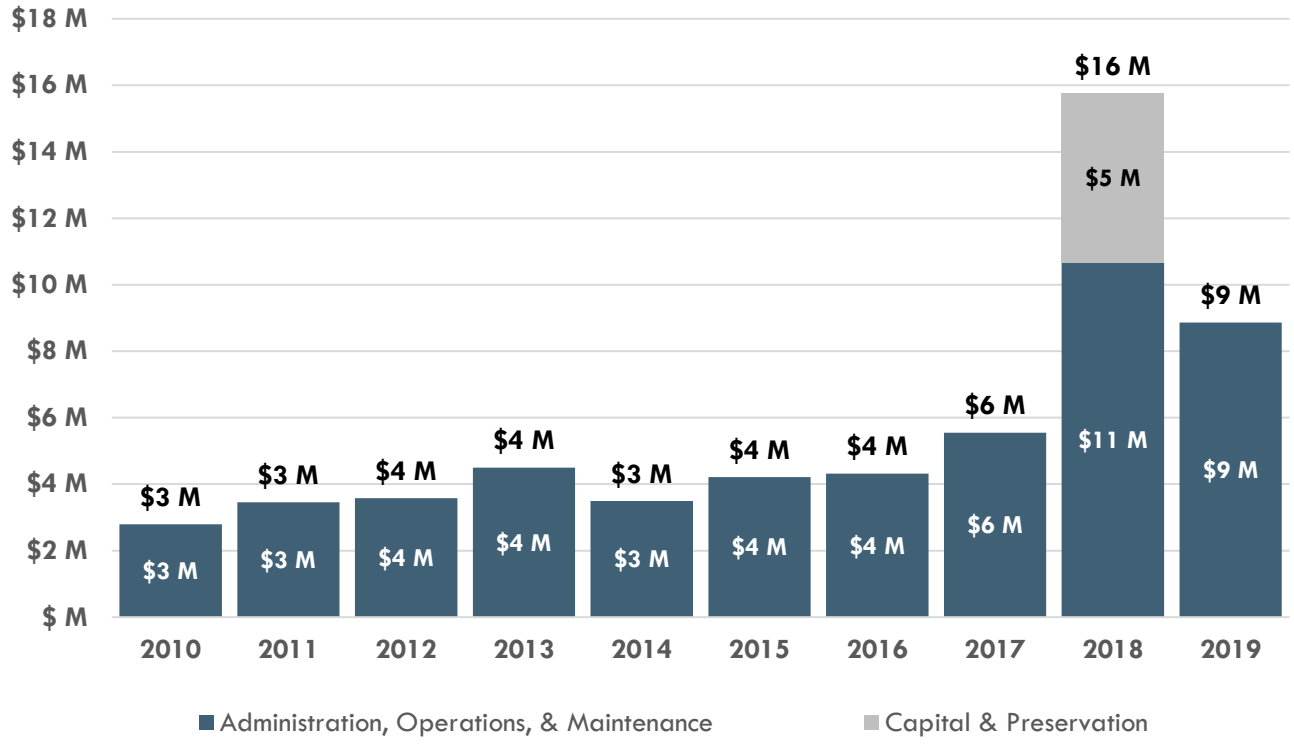
State Airports

WSDOT owns nine public airports and manages a further seven airports, primarily in smaller rural communities.[22] Many are used to support emergency operations, such as wildland firefighting and emergency medical services. WSDOT's Aviation Division is responsible for preserving and maintaining these facilities, along with managing airport operations.[23] WSDOT Aviation also sets state rules governing aviation and non-federal airports, and has conducted statewide aviation planning projects, including the State's airport capacity assessment, airport facilities assessment, facilities market analysis, and statewide aviation plan.[24]

Exhibit 14 summarizes historical expenditures for State airports over the last 10 years. In 2018, WSDOT Aviation established the Community Aviation Revitalization Loan Program, a revolving loan program for revenue-producing capital projects that help public-use general aviation airports become more sustainable. This was funded initially with $5 million, resulting in the increase of $5 million in state airport capital spending shown in 2018.

22 WSDOT, "WSDOT-Managed Airports," 2020. https://www.wsdot.wa.gov/aviation/Airports/default.htm
23 WSDOT, *State-Managed Airport Handbook*, February 2011.
https://www.wsdot.wa.gov/publications/manuals/fulltext/M3072/AirportHandbook.pdf
24 RCW 47.68.120; RCW 46.68.390; RCW 47.06.060.

Exhibit 14. Historical Expenditures for State Airports, 2019$



Notes: Funding for these expenditures comes from all sources.
Airport capital did not appear in WSDOT historical budgets prior to 2018. In 2018, WSDOT Aviation established the Community Aviation Revitalization Loan Program, funded with $5 million.
Sources: WSDOT, 2010-2019; BERK, 2020.

WSDOT Aviation has completed several studies examining needs and impacts for statewide airports.

Economic Impact Study. WSDOT completed an *Aviation Economic Impact Study* in 2020 to assess the impact of aviation on Washington's economy. The study found that Washington's 134 public-use airports support 407,042 jobs, generate $26.8 billion in labor income, and contribute $107 billion in business revenues to the State's economy.[25] These figures include direct impacts (on-airport activity and visitor spending), indirect impacts (supplier sales), and induced impacts (re-spending of worker income).

Airport Investment Study. The *2014 Airport Investment Study* estimates that the State's 134 public-use airports will need $3.6 billion in projects over the next 20 years. The State's share of this need is estimated at $241 million; this data point is incorporated in this current study's needs estimates.[26]

Pavement Condition Study. Every five years, WSDOT Aviation conducts a system-wide pavement study to assess pavement condition and identify system pavement needs. Pavement condition is a critical measure of airport performance and safety, and ongoing pavement maintenance is critical since the cost of repairs grows as condition deteriorates.

WSDOT's *2018 Pavement Condition Study* found that the pavement condition index (PCI) of the pavement system across statewide airports, excluding Seattle-Tacoma International Airport (SEA), Spokane

[25] WSDOT Aviation Economic Impact Study Executive Summary, April 2020.
[26] WSDOT, *Washington Airport Investment Study Executive Summary*, 2014.
https://www.wsdot.wa.gov/sites/default/files/2013/03/25/aviation-ais-solutions.pdf

International Airport (GEG), and Tri-Cities Airport (PSC) has been decreasing since 2005. In 2005, the area-weighted PCI was 78. In 2012, the area-weighted PCI dropped to 75, and in 2018, the area-weighted PCI dropped further to 73.[27]

Exhibit 15. Statewide Overall Aviation Pavement Condition: 2005, 2012, 2018

Source: WSDOT Airport Pavement Condition Study Executive Summary, 2018.

The study found that airports statewide (excluding SEA, GEG, and PSC) need approximately $395.4 million over the next seven years to fund all recommended pavement maintenance and rehabilitation projects. This can be further broken down into $371.5 million for National Plan of Integrated Airport Systems (NPIAS) airports and $23.9 million for non-NPIAS airports.

The study suggests that if airports (excluding SEA, GEG, and PSC) spend a $4.5 million annual budget over the next seven years, the State would face a backlog of $474.1 million in pavement projects, and the area-weighted PCI would drop to 66 by 2025.[28] PCI ranges from 100 (perfect) to 0 (failed). A pavement with a PCI of approximately 85 benefits from preventive maintenance; a pavement with PCI around 55 may require major rehabilitation; a pavement with PCI below 40 may deteriorate to the point where reconstruction is the only option to restore safe operating conditions.

State Rail

The State owns the Palouse River and Coulee City rail system in Eastern Washington, which consists of three interconnected short lines totaling 300 miles in track length.[29] The State also administers a grant program—the Freight Rail Assistance Program (FRAP)—and a loan program—the Freight Rail Investment Bank (FRIB)—to support development of rail capital facilities by local governments and private companies. WSDOT's Freight Rail Division manages the Washington Grain Train, a cooperative that provide grain growers with a mechanism for transporting their crop to deep water ports.[30]

WSDOT also oversees management of the Amtrak Cascades passenger rail service in Washington State. This line runs between Vancouver, British Columbia and Eugene, Oregon, with the Washington portion running on 300 miles of BNSF-owned tracks from the Canadian border to Vancouver, Washington. WSDOT funds the program in Washington and contracts with Amtrak to provide service on the route.[31]

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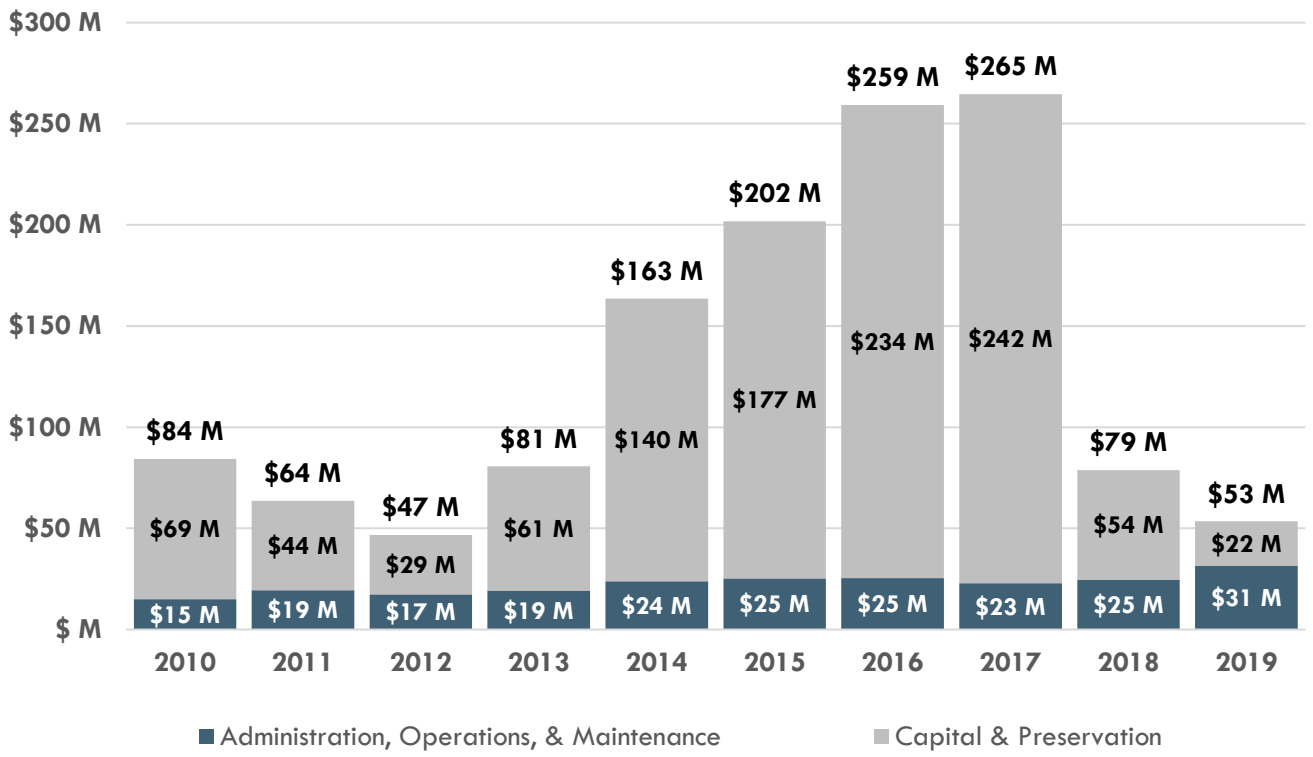
[27] *Ibid.*
[28] *Ibid.*
[29] WSDOT, *Washington State Rail Plan*, 2019-2040, 2019.
[30] WSDOT, *2017-2027 Grain Train Strategic Plan*, November 2017.
[31] WSDOT, "Amtrak Cascades," 2020. https://www.wsdot.wa.gov/rail/manage-trains

State Rail System Plan. In December 2019, WSDOT issued a draft *2019 Rail System Plan,* highlighting current and anticipated future demand for freight and passenger rail transport in Washington, as well as challenges for the statewide rail system. The largest anticipated challenge for the freight system is deferred maintenance of capital facilities, while improving on-time performance, replacing aging rolling stock, and meeting growing demand are areas of concern for the passenger rail system.

Freight System Plan. In 2017, WSDOT issued the *Freight System Plan,* which identified current capacity and future growth in Washington's multimodal freight transportation system. The plan highlights that Washington's rail freight volume is predicted to grow by 19% between 2015 and 2035.[32] To meet this demand and address existing rail system concerns, the plan recommends implementing freight performance measures, addressing deferred maintenance on freight tracks, and investing in capital projects that reduce collisions at road-rail crossings.

Exhibit 16 summarizes historical expenditures for State rail over the last 10 years.

Exhibit 16. Historical Expenditures for State Rail, 2019$



Note: Funding for these expenditures comes from all sources.
Sources: WSDOT, 2010-2019; BERK, 2020.

State Active Transportation

Active Transportation refers to movement by walking, biking, or other forms of non-motorized transport. The State and many local jurisdictions are placing an increasing emphasis on active transportation to promote health, increase capacity, diversify mobility options, and reduce environmental impacts associated with transportation.

[32] WSDOT, *Freight System Plan,* 2017.

The focus of State active transportation activities can be divided between funding support to other jurisdictions and the coordination of State infrastructure and active transportation networks. WSDOT manages programs devoted to providing funding support to Tribal Nations, cities, counties, and other public agencies and nonprofits to support active transportation. Programs with a focus on active transportation include the Safe Routes to Schools Program (funded by federal and State resources) and the Pedestrian and Bicyclist Program (entirely State-funded).

WSDOT expects to release a statewide **Active Transportation Plan** in 2020 to provide details about priorities in developing and maintaining active transportation infrastructure across state facilities. As part of this Plan, WSDOT is working to coordinate future pedestrian and cycling infrastructure along State routes in urban and rural areas, especially for routes that operate as Main Streets in communities. Additionally, the Plan will evaluate how addressing infrastructure gaps along these routes can help address safety concerns and support completion of local active transportation networks. It will also provide estimated investments needed over the next 20 years to address active transportation needs over the entire state right-of-way. WSDOT released a Draft Plan in April 2020.

2.2.2. Tribal Nations

There are 29 federally recognized Tribal Nations in Washington State that manage road systems and operate transit services on tribal lands. There are 6,000 miles of roads on Tribal lands, including tribal roads and Bureau of Indian Affairs (BIA) roads outside reservations that provide access to tribal communities. Ownership of these roads is divided among Tribal Nations, BIA, the State, counties, and cities.

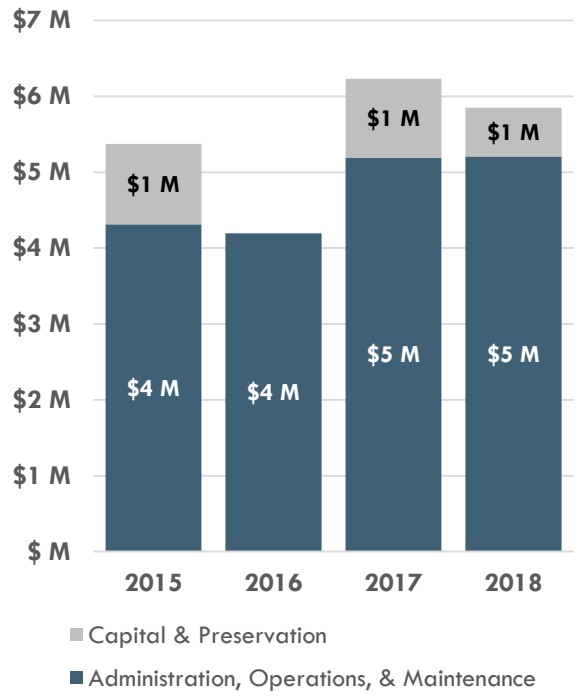
Eighteen Tribal Nations in Washington operate their own public transportation system or contract with other agencies to do so. One Tribal Nation, the Confederated Tribes of the Colville Reservation, operates a ferry service across the Columbia River between Inchelium and Gifford.[33]

Tribal Nations fund transportation operations via general purpose tribal revenues, federal sources, and State sources. Of external funds, 59% come from the federal government via the BIA and the FTA. The remaining 41% of funds come from State-issued fuel tax refunds.

Exhibit 17 shows historical expenditures for transit and ferry systems that Tribal Nations own or operate. Though historical expenditure information for Tribal Nations transit is somewhat limited, over the past several years, Tribal Nations transit expenditures have remained relatively stable. The bulk of Tribal Nations transit expenditures are with programmatic expenditures such as administration, operations, and maintenance.

[33] Confederated Tribes of the Colville Nation, "Transit & Inchelium Ferry," 2020. https://www.colvilletribes.com/transit-inchelium-ferry

Exhibit 17. Historical Expenditures for Tribal Nations Transit/Ferry, 2019$



Note: Funding for these expenditures comes from all sources.
FTA National Transit Database (NTD) only started collecting Tribal Nations transit expenditures in 2015 and only collects total operating and capital expenditures.
Sources: FTA NTD, 2015-2018; BERK, 2020.

BERK was not able to collect historical expenditure information for Tribal Nations roads and bridges. We estimated these needs using the methodology outlined in **Appendix A: Technical Methodology for Needs Estimation.**

2.2.3. Counties

Washington State has 39 counties. Counties are responsible for managing transportation infrastructure and transit systems outside of incorporated areas, except for those expressly under federal, State, or special district management. County transportation operations and facilities include roadways, airports, ferry systems, public transportation, and rail lines.

The largest category of transportation revenues for counties is the county road fund property tax. This dedicated, non-voted property tax revenue source is unique to counties. Across all counties, road fund revenues totaled nearly $494 million in 2018. Counties also receive significant funding from federal grants ($249 million in 2018), distributions of the State gas tax ($154.4 million in 2018), and the real estate excise tax ($123.4 million in 2018). Other State distributions to counties, including competitive grants and multimodal funds, totaled more than $107.3 million in 2018. [34]

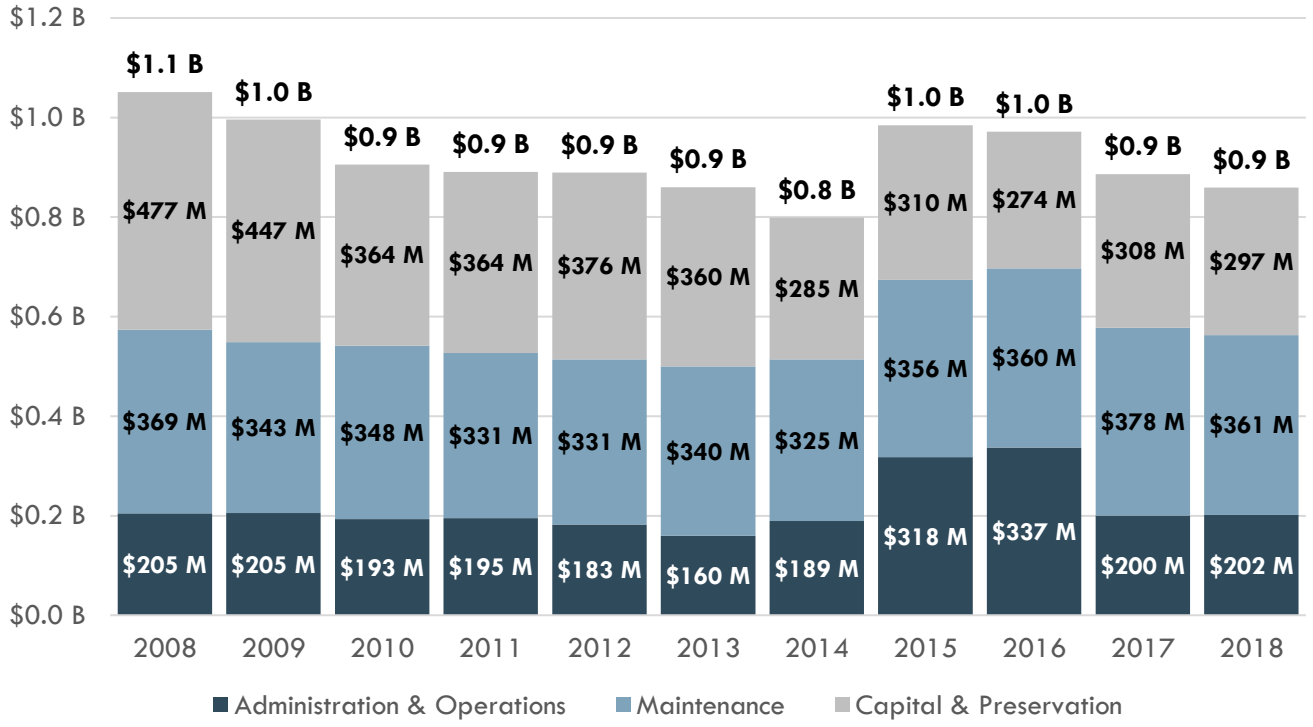
[34] SAO, "Financial Intelligence Tool," 2018.

County Roads

All 39 counties manage construction, maintenance, and preservation of county roads and bridges. County road systems range in size from 138 centerline miles (Wahkiakum County) to 2,529 miles (Spokane County). The number of county-owned bridges ranges from zero (Island County) to 310 (Yakima County).[35]

Exhibit 18 summarizes historical expenditures for county roads over the last 10 years, as reported to the State Auditor's Office. County road historical expenditures have slightly decreased over the last several years, largely driven by a decrease in capital and preservation expenditures while programmatic expenditures have largely remained stable. On average, programmatic expenditures have comprised around 62% of county road historical expenditures compared with capital and preservation expenditures at 38%.

Exhibit 18. Historical Expenditures for County Roads, 2019$



Note: Funding for these expenditures comes from all sources.
Sources: SAO Financial Intelligence Tool, 2008-2018; BERK, 2020.

County Ferries

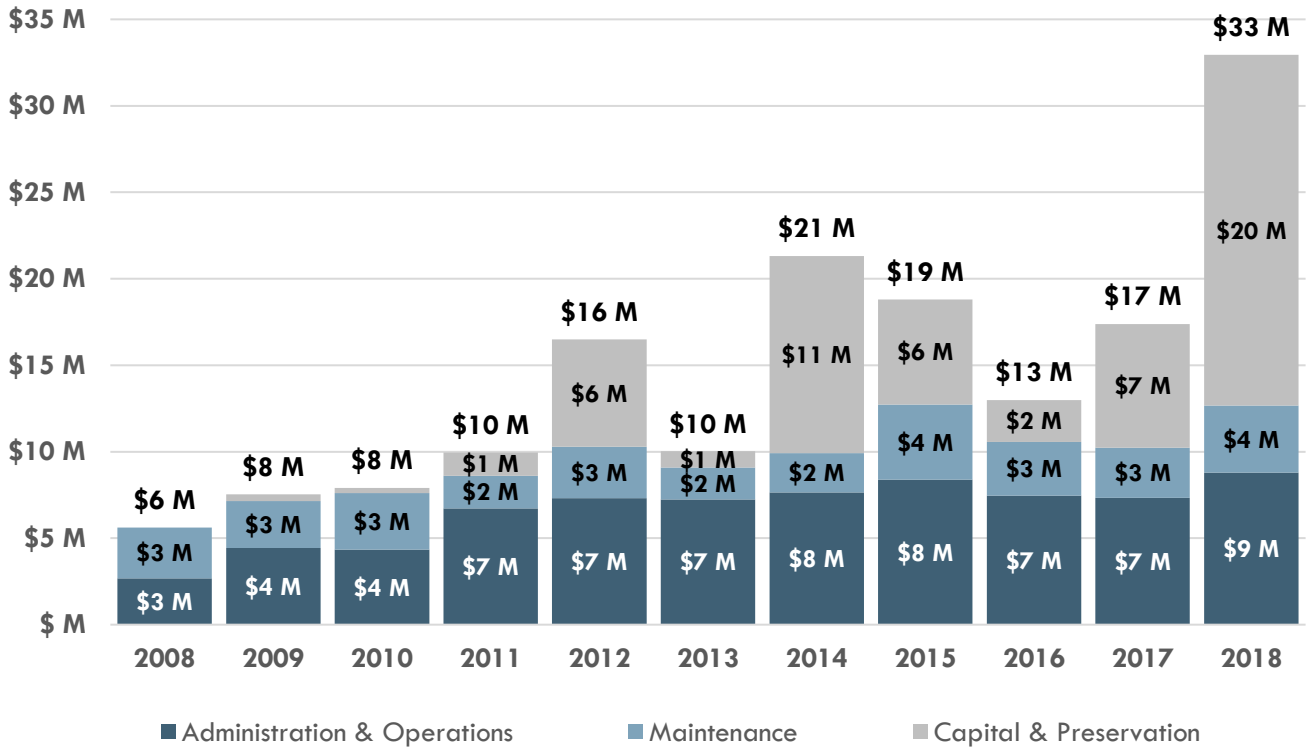
Four counties—Pierce, Skagit, Wahkiakum, and Whatcom—operate county ferry systems. King County operates ferry service via a county ferry district, while Kitsap County operates service via a countywide public transportation benefit area (PTBA). Skagit, Pierce, Wahkiakum, and Whatcom Counties each operate one ferry route—including both vehicle and passenger ferriage—with a single vessel. King and Kitsap Counties each operate multiple routes of passenger-only ferry service.

[35] CRAB, *2019 Annual Report*, 2020.

County responsibilities for ferry service include procurement, maintenance, and preservation of ferry vessels and docks, as well as operation of ferry services.

Exhibit 19 shows historical expenditures for county ferries as reported by the FTA. County ferry historical expenditures have been volatile, with a significant increase over the past several years largely driven by service expansions and system capacity improvements from King County and Pierce County ferries. 2018 saw a large increase in capital and preservation expenditures, a significant portion of which can be attributed to the construction of a new passenger ferry terminal at Pier 50 for the King County Water Taxi.

Exhibit 19. Historical Expenditures for County Ferries, 2019$



Note: Funding for these expenditures comes from all sources.
Sources: FTA National Transit Database, 2008-2018; BERK, 2020.

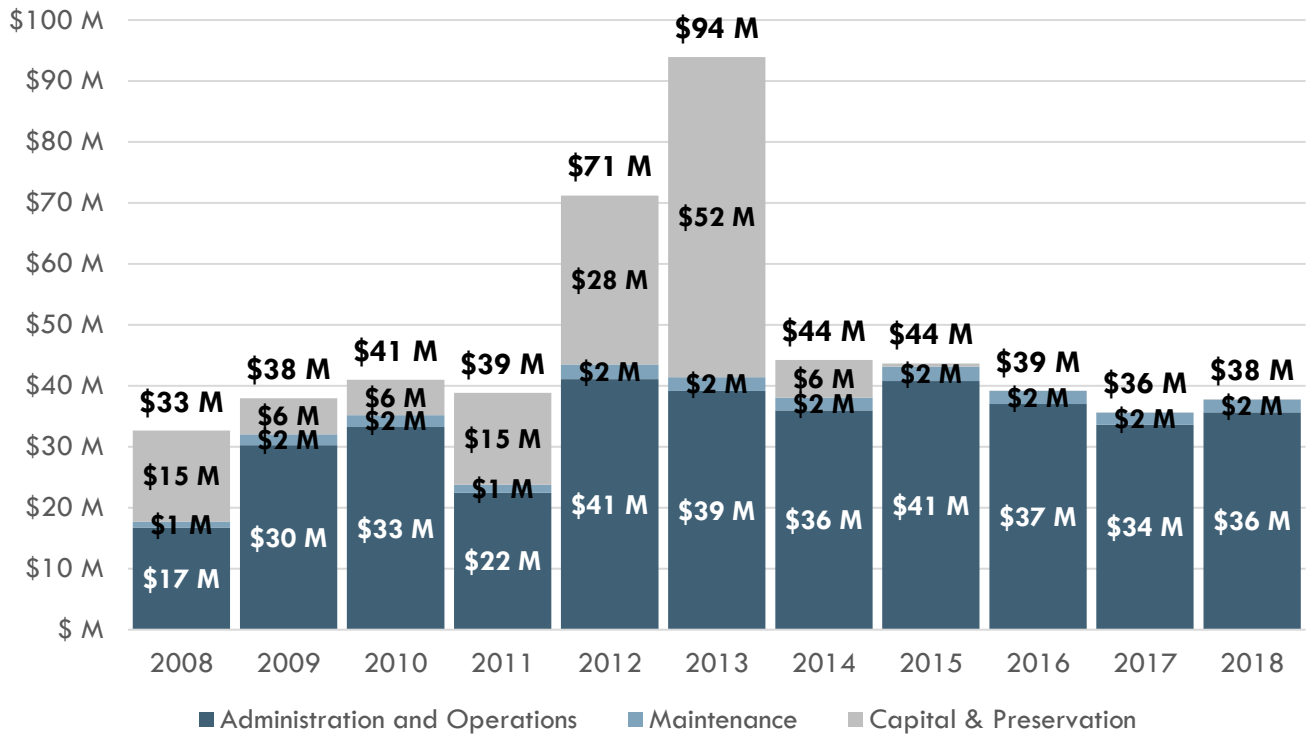
County Airports

Ten counties own or co-own public airports, including three counties—Lewis, Pierce, and Spokane—that own or co-own multiple airports.[36] County-owned airports range in size from King County International Airport-Boeing Field, which has a 10,000-foot runway and averages 200,000 takeoffs and landings per year, [37] to Cashmere Dryden Airport (Chelan County), which has an 1,800-foot runway and averages just over 3,000 takeoffs and landings per year.[38] County responsibilities for airports include construction and maintenance of capital facilities, and management of airport operations.

[36] WSDOT Aviation Division, "All Washington State Airports," 2020. https://www.wsdot.wa.gov/aviation/AllStateAirports/default.htm
[37] King County, "King County International Airport-Boeing Field," 2019. https://www.kingcounty.gov/services/airport.aspx
[38] WSDOT Aviation Division, *Washington State Airport Guide*, 2019. https://www.wsdot.wa.gov/publications/manuals/fulltext/M3049/airportguide.pdf

Exhibit 20 shows historical expenditures for county airports. County airport historical expenditures have also been volatile in past years. Capital and preservation expenditures have ranged from a high of $52 million in 2013, driven by runway and facility construction projects at Snohomish County's Paine Field, to lower amounts in 2016-2018. Meanwhile, county airport programmatic expenditures have slightly increased yet remained relatively stable from 2008-2018.

Exhibit 20. Historical Expenditures for County Airports, 2019$



Notes: Funding for these expenditures comes from all sources.
2011-2018 County Airport operating costs were split between Administration & Operations and Maintenance using the methodology presented in Appendix A.
Sources: SAO Financial Intelligence Tool, 2008-2018; BERK, 2020.

County Rail

Four counties—Clark, Snohomish, Spokane, and Yakima—own rail lines. All four are freight short lines, and counties typically contract with private rail companies for operation of the lines. County-owned rail lines range in size from Spokane County's 5.6-mile Geiger Spur Rail Line[39] to Clark County's 33-mile Chelatchie Prairie Railroad route.[40] Clark and Spokane counties' lines are currently operated by private companies. Snohomish and Yakima counties' lines did not report any spending from 2008-2018 and may currently be inactive.

[39] Spokane County, "Lease Agreement By and Between Spokane County and Washington Eastern Railroad, LLC," 2018. https://www.spokanecounty.org/DocumentCenter/View/22162/Item-No-5g
[40] Clark County, "Chelatchie Prairie Railroad," 2020. https://www.clark.wa.gov/public-works/chelatchie-prairie-railroad

County Public Transit

Three counties—Columbia, Garfield, and Grays Harbor—operate **county public transportation authorities**, which provide public transit (bus) services countywide, including in both incorporated and unincorporated areas. King County has the state's only **metropolitan transit agency**—King County Metro Transit Department—which serves the entire county, including both incorporated and unincorporated areas. Twenty counties have **public transportation benefit areas** (PTBAs), which are special purpose districts formed specifically to provide transit service.[41] County transit agencies vary in scope—TranGO of Okanogan County offers three shuttle routes, while King County Metro Transit operates more than 200 bus routes.

2.2.4. Cities

There are 281 incorporated cities and towns in Washington State, responsible for management of city streets and—in some cases—airports, public transportation (bus) systems, and rail lines.

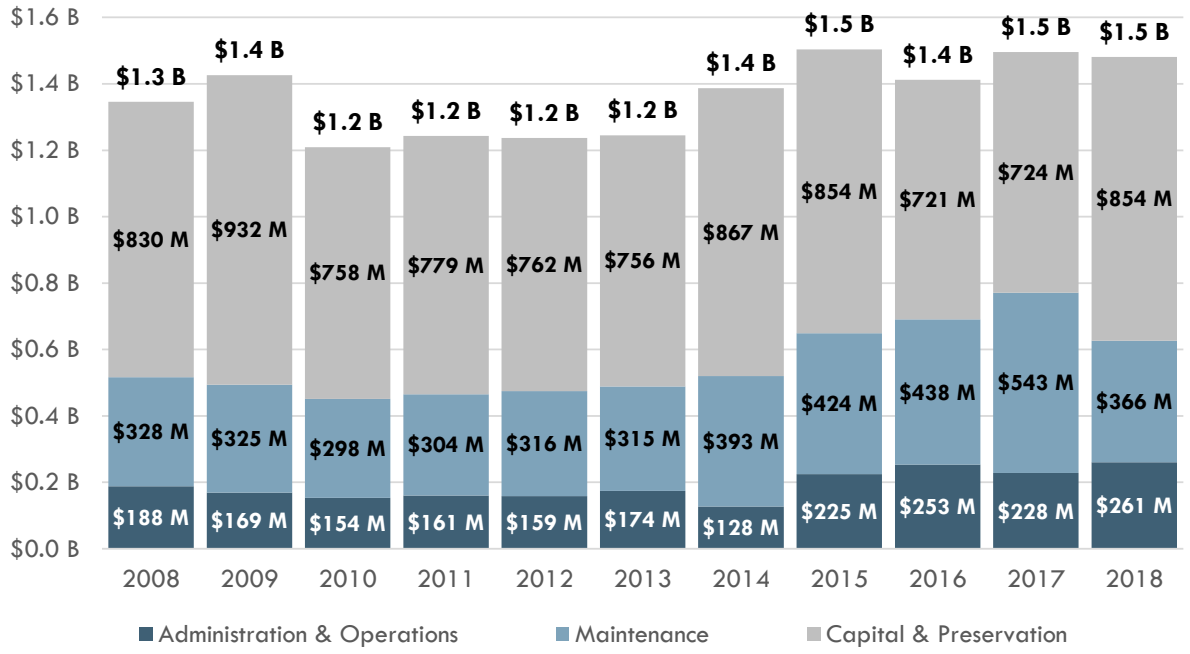
City Streets

All 281 cities and towns are responsible for construction, preservation, and maintenance of city streets, including associated facilities such as sidewalks, lighting, bicycle lanes, sewers, and storm drainage. Across the state, cities are responsible for more than 17,000 centerline miles of city streets. Cities are also responsible for some elements of operation and maintenance for state highways within their limits. These responsibilities include highway illumination, cleaning and snow plowing, stormwater facility maintenance, traffic enforcement, and (for larger cities) slope stabilization and traffic control signals.[42] City street systems range in size from 2 centerline miles in Krupp to 1,667 lane miles in Seattle.[43]

Exhibit 21 summarizes historical expenditures for city streets over the last 10 years, as reported to the SAO. City streets historical expenditures have steadily increased over the past several years, with growth in expenditures across all categories. While capital and preservation expenditures have been largely stable with around 2% growth over the period from 2008 to 2018, they still comprise of the majority of city street spending at an average of 59% of city street historical expenditures.

[41] Municipal Research and Services Center, "Public Transportation Systems in Washington," 2018. http://mrsc.org/Home/Explore-Topics/Transportation/Integrating-Transportation-Modes/Public-Transportation-Systems.aspx
[42] Association of Washington Cities, "Introduction to City Transportation Funding and Needs," January 2017.
[43] HPMS, 2017.

Exhibit 21. Historical Expenditures for City Streets, 2019$



Note: Funding for these expenditures comes from all sources.
Sources: SAO Financial Intelligence Tool, 2008-2018; BERK, 2020.

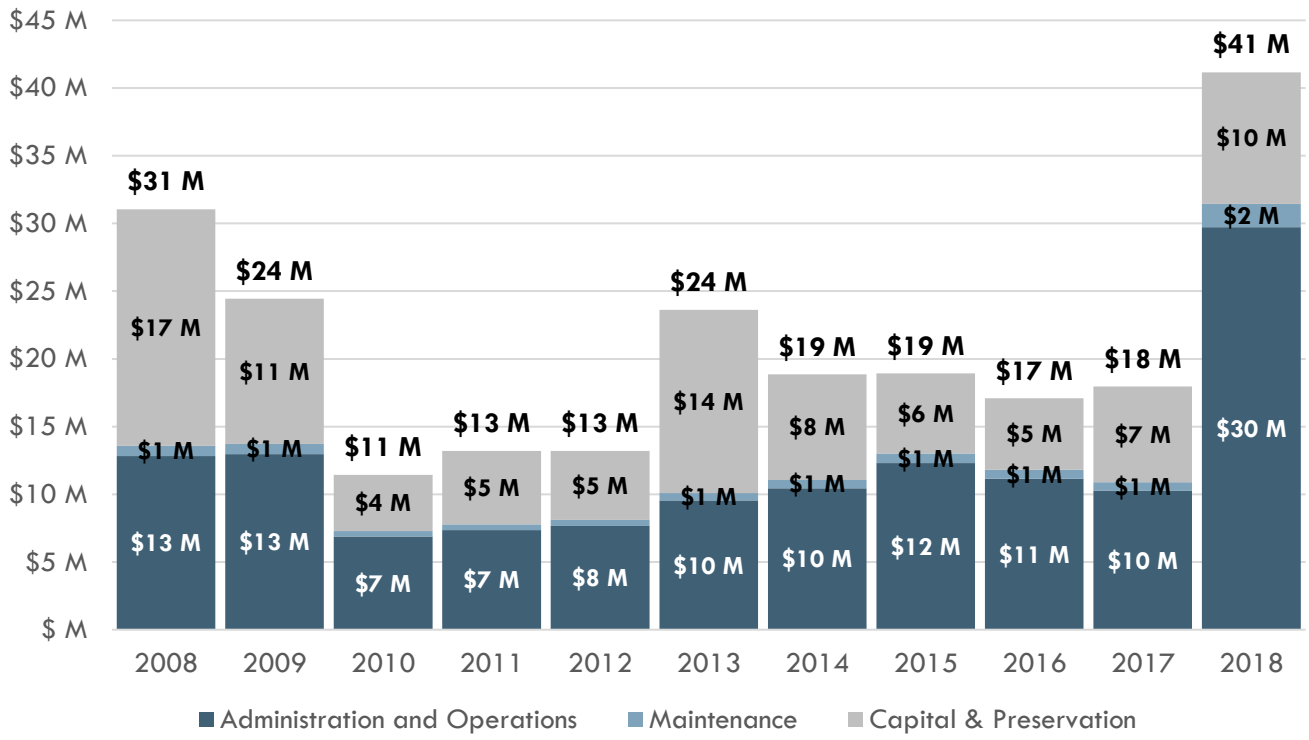
City Airports

Thirty-nine Washington cities own or co-own municipal airports. This include two cities, Forks and Spokane, which own multiple airports. In addition, two cities, Lakewood and Renton, own seaplane bases.[44] These facilities range in size from Spokane International Airport (co-owned by the City of Spokane and Spokane County)—with an 11,000-foot runway and more than 68,000 annual takeoffs and arrivals—to small, single-runway local use airports, such as Twisp Municipal Airport (Town of Twisp) and Mears Field (Town of Concrete).[45]

Exhibit 22 shows historical expenditures for city airports. City airport historical expenditures have been volatile over the period from 2008 to 2018, with both programmatic and capital & preservation expenditures displaying varying spending levels year over year. Programmatic expenditures comprise the majority of city airport spending at an average of 60% over the 10-year period. In 2018, programmatic expenditures for city airports hit a high of around $30 million, primarily driven by the City of Pullman for the projects relating to a new runway for the Pullman-Moscow Regional Airport.[46]

[44] WSDOT Aviation Division, "All Washington State Airports," 2020.
https://www.wsdot.wa.gov/aviation/AllStateAirports/default.htm
[45] WSDOT Aviation Division, *Washington State Airport Guide*, 2019.
https://www.wsdot.wa.gov/publications/manuals/fulltext/M3049/airportguide.pdf
[46] More information about this project is in the case study in Appendix D.

Exhibit 22. Historical Expenditures for City Airports, 2019$



Notes: Funding for these expenditures comes from all sources.
2011-2018 City Airport operating costs were split between Administration & Operations and Maintenance using the methodology presented in Appendix A.
Sources: State Auditor's Office Financial Intelligence Tool, 2008-2018; BERK, 2020.

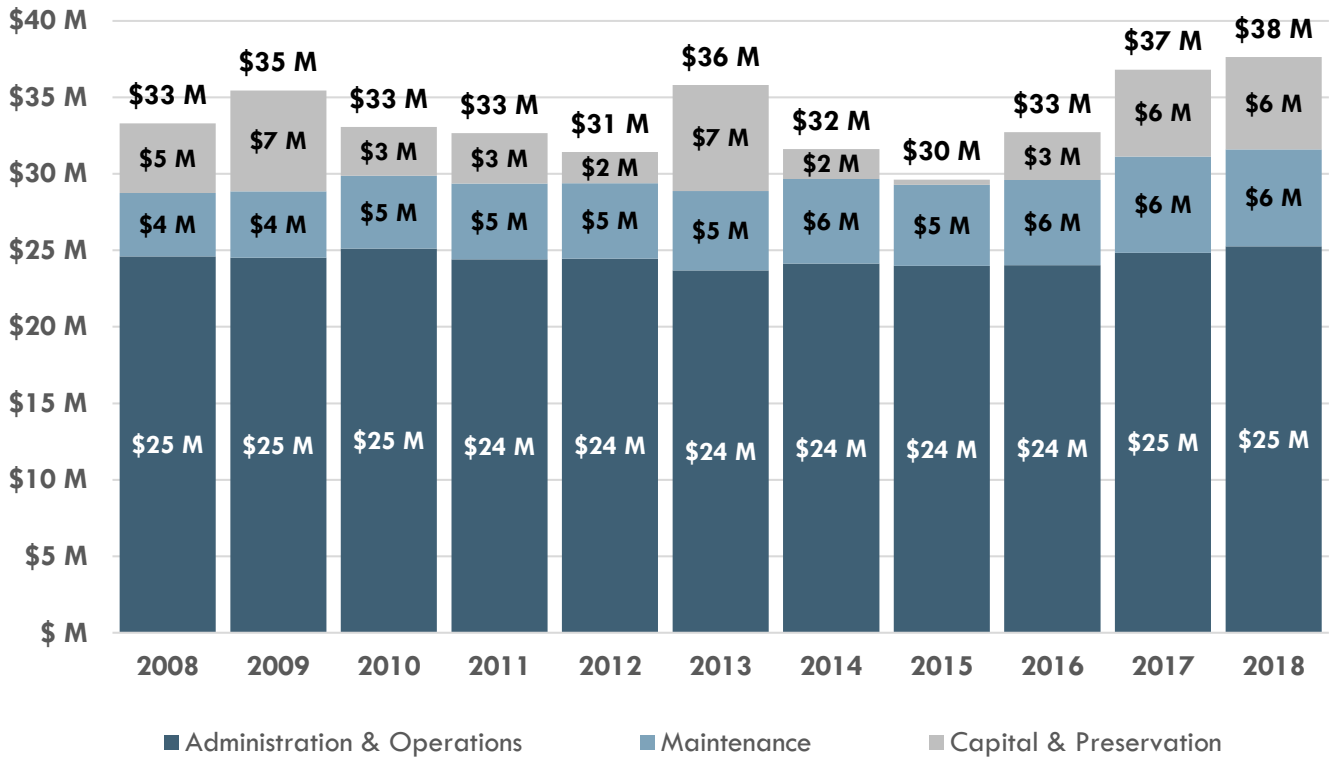
City Public Transit

Five cities in Washington State operate their own city public transit agencies to provide bus and paratransit services. Everett, Pullman, and Yakima provide these services via city departments, while Selah and Union Gap contract with outside organizations to provide them.[47]

Exhibit 23 shows historical expenditures for city buses, as reported by the FTA. City bus historical expenditures have remained stable over the 10-year time period. On average, programmatic expenditures comprise 88% of city bus historical expenditures, with administration and operation expenditures comprising around 73% of city bus historical spending.

[47] Municipal Research and Services Center, "Public Transportation Systems in Washington," 2018. http://mrsc.org/Home/Explore-Topics/Transportation/Integrating-Transportation-Modes/Public-Transportation-Systems.aspx

Exhibit 23. Historical Expenditures for City Bus, 2019$



Note: Funding for these expenditures comes from all sources.
Sources: FTA National Transit Database, 2008-2018; BERK, 2020.

2.2.5. Port Districts

There are 75 public port districts located in the State. Port districts' primary focus is to promote economic development and job development by investing in infrastructure. They own and operate airports, roadways, ferry systems, rail lines, and marine ports.

As self-supporting, entrepreneurial quasi-governmental agencies, public ports generate the largest share of their funding from user fees and charges. In 2018, these revenues totaled more than $1.2 billion across all port and airport districts in the state.[48] Ports received a combined $55.7 million from federal grants, state grants, and state shared revenues for operating purposes, and a further $68.5 million in state and federal grants for capital projects. $161.4 million in revenues came from local property taxes levied by port districts.[49]

While port districts do not currently operate ferries, port districts have the authority to do so, and they also own land-based ferry infrastructure. Jetty Island Ferry is owned by the Port of Everett and operated by the City of Everett.

[48] The SAO dataset, which we use as one input into needs estimation, includes 75 public port districts, 2 airport districts, and 5 publicly owned airports that are co-owned or co-operated by multiple jurisdictions.
[49] SAO *Financial Intelligence Tool*, 2018.

Port districts may also operate rail and roads and fund infrastructure improvements, including road and railroad improvements, on port property. The Port of Pend Oreille in the northeast corner of the state operates the Pend Oreille Valley Railroad which provides locomotive repair, railcar storage, and freight service between Metaline Falls, WA and Sandpoint, ID. Three other ports—the Port of Benton, the Port of Columbia, and the Port of Royal Slope—own rail short lines. These lines are leased by private operators. The Port of Longview owns a short section of track that allows it to provide on-dock rail service and connection to BNSF and Union Pacific lines.

Port District Airports

There are 34 port-owned airports in Washington State, owned by 28 different ports. These airports in range in size from Seattle-Tacoma International Airport (Port of Seattle)—the largest airport in the Pacific Northwest—to the Port of Ilwaco Airport, which maintains a 2,080-foot runway and has fewer than 700 landings and takeoffs annually.[50][51]

Port District Marine Ports

Washington has 21 public marine freight ports, including 12 river ports on the Columbia-Snake River System, nine Salish Sea ports, and one port on the Pacific Ocean. These range in size from the Northwest Seaport Alliance (NWSA, composed of the ports of Seattle and Tacoma), which is the fourth-largest North American seaport by annual volume, to small, shallow draft ports on the Snake River, like the Port of Garfield County-Central Ferry—an 85-acre, single-dock grain transport site.[52] [53]

In Washington, public airports may be owned or operated by any of the following:

- The State
- Port districts
- Airport districts
- Cities
- Counties
- Co-owned or co-operated by multiple jurisdictions

AIRPORT DISTRICTS

- The state's two airport districts are King County Airport District No. 1, which maintains Vashon Municipal Airport, and Grant County Airport District No. 1, which operates Desert Aire Airport.
- Airport districts are distinct from port districts in that they are administered at the county level. By default, the board of county commissioners or county council serves as the board of commissioners for an airport district, unless voters petition for the creation of a separate airport district board of commissioners.[1]
- Additionally, airport districts have limited operational authority compared with port districts. They are responsible for the construction, maintenance, and operation of public use airports under their jurisdiction.[2]

[1] *RCW 14.08.300-14.08.302.*
[2] *RCW 14.08.020.*

[50] WSDOT Aviation Division, "All Washington State Airports," 2020. https://www.wsdot.wa.gov/aviation/AllStateAirports/default.htm
[51] AirNav, "Port of Ilwaco Airport," May 2020. http://www.airnav.com/airport/7w1
[52] WSDOT, *2017 Washington State Marine Ports and Navigation Plan*, 2017.
[53] Port of Garfield County, "Central Ferry Site," 2020.

Marine Cargo Forecast. In 2017, Washington Public Ports Association (WPPA) and FMSIB co-sponsored a Marine Cargo Forecast and Rail Capacity Analysis.[54] The purpose of this report was to assess the expected flow of waterborne cargo through the State's port system and to evaluate the distribution of cargo over the State's transportation network. The study forecasts trade by commodity and cargo type from 2015 through 2035. These forecasts were unconstrained and assume that infrastructure needed to move the cargo will exist to meet demand. The report does not estimate the cost of such infrastructure investment and focuses on marine, road, and rail systems; air transportation was not included in the report. The study produces long-term projections of cargo imports and exports from different regions of the world by analyzing underlying trends and conditions.

A NOTE ABOUT PORT DISTRICT DATA IN SAO DATASET

- As one input into this study's needs estimation, we use historical data reported by SAO. This dataset includes 75 port districts, two **airport districts** in Washington, and five publicly owned airports that operate as separate reporting entities because they are co-owned or co-operated by multiple jurisdictions. There is also one **port alliance**, the Northwest Seaport Alliance.
- Port district financial data from the SAO is not disaggregated by port mode supported or by expenditure category. Further, port district operations can include non-transportation related expenditures, and the SAO data does not differentiate between transportation and non-transportation expenditures. We used several assumptions to estimate this distinction in our needs assessment, which are outlined in detail in **Appendix A: Technical Methodology for Needs Estimation.**

2.2.6. Public Transit Agencies

There are 22 independent (not operated directly by a city or county) public transit agencies in the State. These include 21 **public transportation benefit areas** (PTBAs) and one **regional transit authority** (Sound Transit). These agencies may operate bus, rail, and ferry service.

All 21 PTBAs, plus Sound Transit, provide bus service. Many of the State's PTBAs provide shuttle, bus, and paratransit services to smaller rural communities. Because of the nature of these services, their costs are typically concentrated in operations, rather than capital investments.

Sound Transit is the only public transit agency to provide commuter rail service in Washington State. King County Metro, a county agency, provides rail service on the Seattle streetcar and monorail. Kitsap Transit is the only public transit agency to provide ferry service. The State, four counties, one county ferry district, and one Tribal Nation also provide ferry service.

WSDOT's Public Transportation Division has published statewide plans to guide public transportation improvements:

Washington State Public Transportation Plan. This plan is a 20-year blueprint outlining goals, strategies, and actions for Washington's system of public transportation.[55]

Washington State Human Services Transportation Plan. This plan is a strategic framework for addressing existing and future human services transportation needs, and it recommends strategies to

[54] WPPA/FMSIB, *Marine Cargo Forecast and Rail Capacity Analysis: Final Report*, 2017.
[55] WSDOT, *Washington State Public Transportation Plan,* 2016.

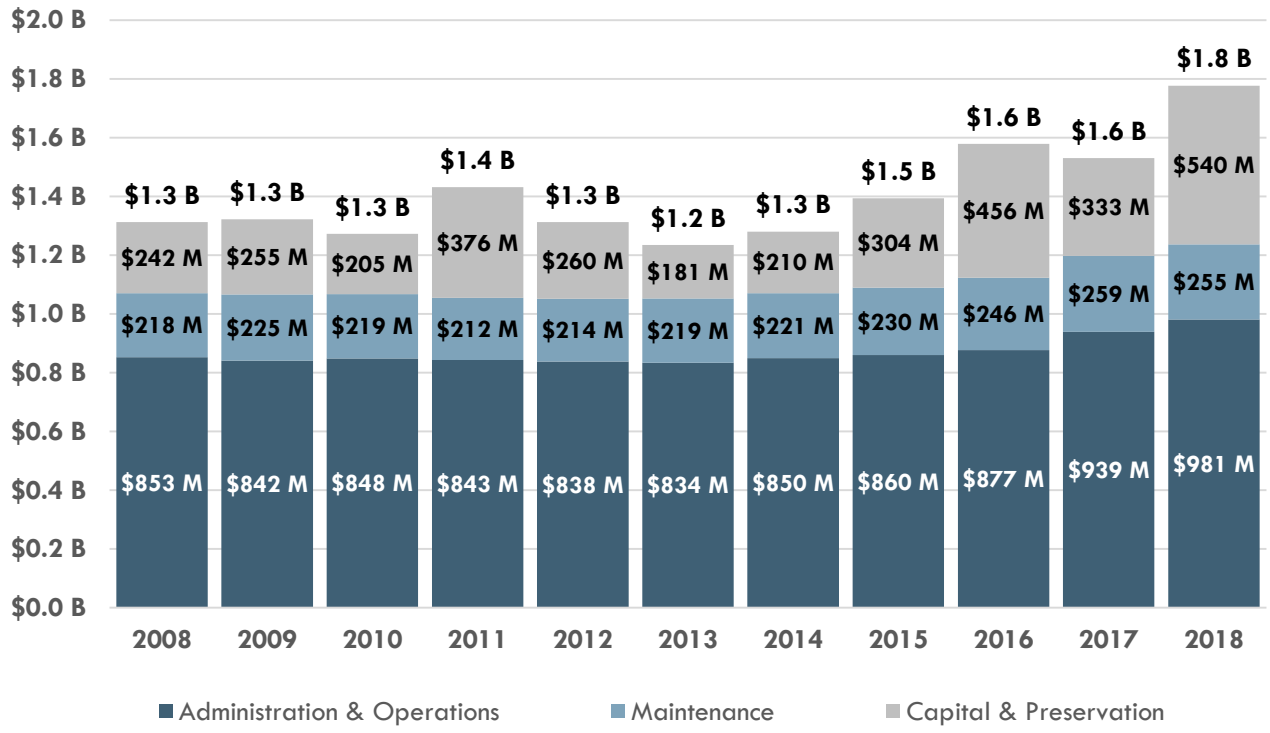
improve access to transportation across the state, focusing on delivering transportation services to people with special needs and those who are unable to transport themselves. This study was produced in coordination with Regional Transportation Planning Organizations (RTPOs) in 2013.[56]

Transportation Demand Management Strategic Plan. WSDOT, the Washington State Commute Trip Reduction Board, and community stakeholders developed a demand management strategic plan to strengthen the role of demand management in transportation decision-making and investment strategies. The report provides recommendations to expand travel options to be faster, smarter, and more affordable.[57]

Public Transit Buses

Exhibit 24 shows historical expenditures for public transit buses from 2008-2018. Public transit bus historical expenditures have steadily increased over the 10-year period. Public transit bus historical spending is largely comprised of programmatic expenditures, which make up 79% of total spending from 2008 to 2018. Administration and operations spending make up the bulk of these costs.

Exhibit 24. Historical Expenditures for Public Transit Bus, 2019$



Note: Funding for these expenditures comes from all sources.
Sources: FTA National Transit Database, 2008-2018; BERK, 2020.

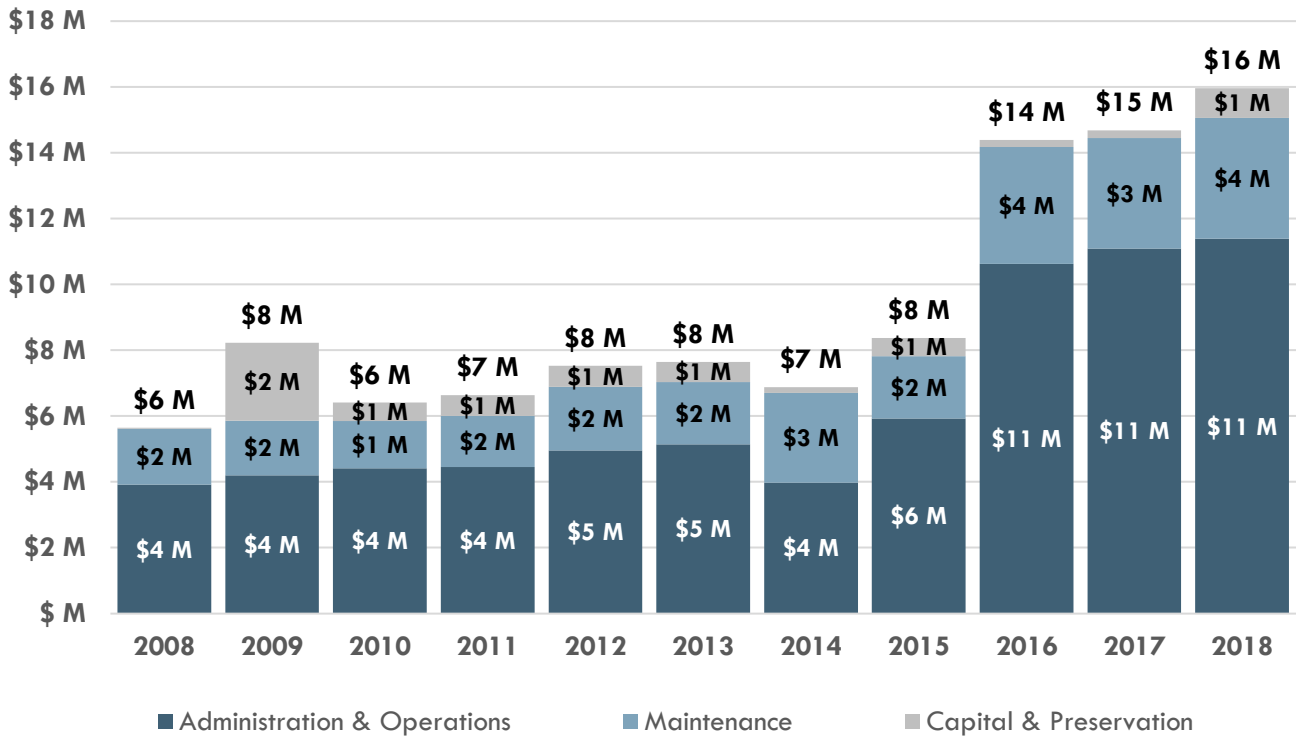
Other than services operated by PTBAs, Sound Transit, cities, and counties, bus services can be run by universities or private systems. There is also a privately-operated Intercity Bus Service, which is funded by WSDOT with FTA program funds. The lines fill gaps in the public transportation network by connecting rural communities to major transportation hubs and urban centers.

[56] WSDOT, *Washington State Human Services Transportation Plan,* 2013.
[57] WSDOT, *Expanding Travel Options: Faster, Smarter, and More Affordable: A 2019-2023 Strategic Plan,* 2018.

Public Transit Rail

Exhibit 25 shows historical expenditures for public transit rail from 2008-2018. Public transit rail historical expenditures have also seen a steady rise from 2008 to 2018, primarily driven by programmatic expenditures. Rail programmatic expenditures saw a significant rise since 2016 with the opening of the City of Seattle's First Hill Seattle Streetcar line.

Exhibit 25. Historical Expenditures for Public Transit Rail, 2019$

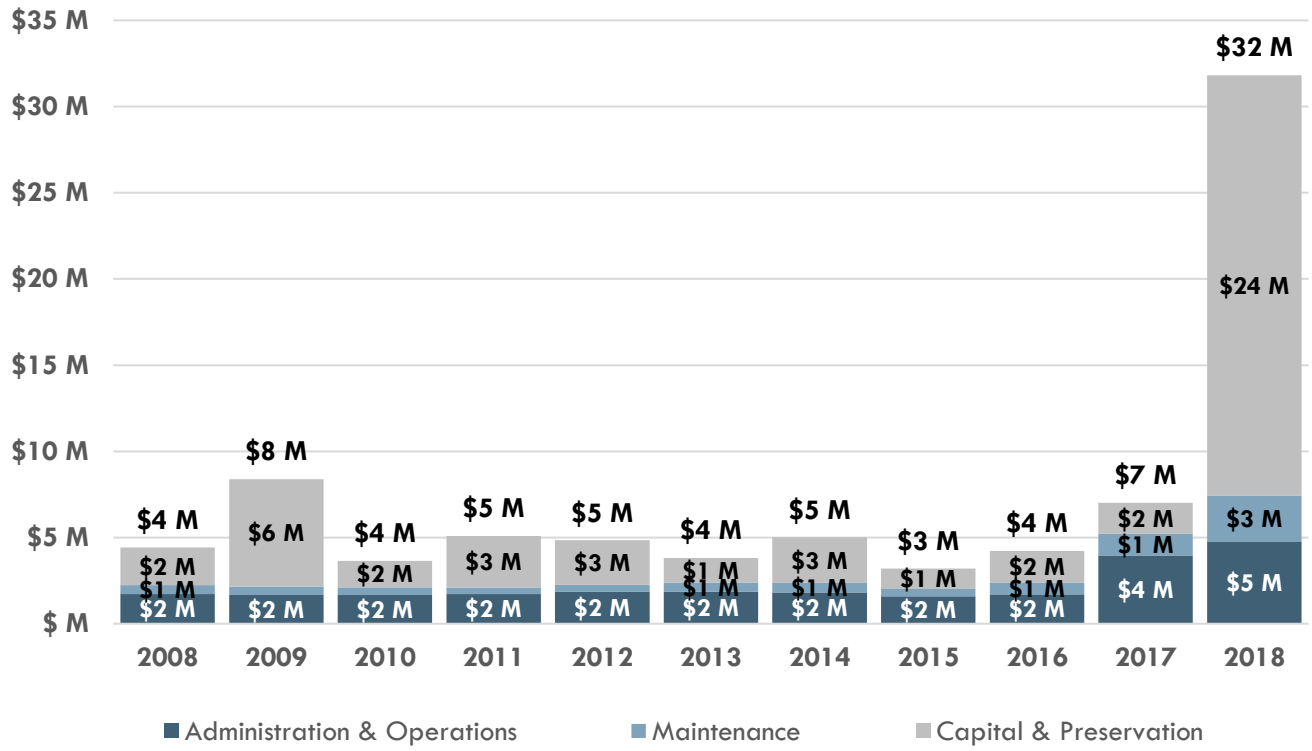


Note: Funding for these expenditures comes from all sources.
Sound Transit is not included due to voter approval for ST3 and ST3 being beyond the 10-year time frame of this study.
Sources: FTA National Transit Database, 2008-2018; BERK, 2020.

Public Transit Ferries

Exhibit 26 shows historical expenditures for public transit ferries from 2008-2018. Public transit ferry historical expenditures have been mostly stable from 2008 to 2017, with a large increase in capital and preservation expenditures in 2018. This was largely driven by vessel purchases and refurbishments by Kitsap Transit, which has been expanding ferry services over the past several years.

Exhibit 26. Historical Expenditures for Public Transit Ferries, 2019$



Notes: Funding for these expenditures comes from all sources.
This is exclusively Kitsap Transit ferries. King County passenger only ferry services are included under county ferries (rather than public transit ferries), since they are operated by the King County Department of Transportation.
Sources: FTA National Transit Database, 2008-2018; BERK, 2020.

2.3. APPROACH TO ESTIMATING CATEGORICAL NEEDS

This section provides an overview of our methodology for quantifying categorical needs. A detailed technical methodology of data sources, assumptions, and approach can be found in **Appendix A: Technical Methodology for Needs Estimation.**

Section 2.4 complements this section by describing how we qualitatively address needs that cannot be fully incorporated in our quantifiable needs estimate.

2.3.1. Defining Need and Overall Approach

For the purposes of this study, we define "need" as total need, not just funded or unfunded need. Estimating 10-year categorical needs is challenging, given that this charge requires a summary of information that does not readily exist. While 6-year Capital Improvement Plans and 10-year master plans provide insights, they do not provide a full 10-year spending need estimate. Additionally, historical spending may *underestimate* needs, given past fiscal constraints and the need to make tradeoffs, while fiscally unconstrained lists may *overestimate* what is needed by including "nice-to-have" items.

CHALLENGES OF ASSESSING 10-YEAR NEEDS

- A 10-year needs assessment requires a summary of information that **does not readily exist.**
- Fiscally constrained lists or historical spending may **underestimate** needs.
- Fiscally unconstrained lists may **overestimate** needs.
- There is **no consistent statewide categorization of expenditures** across all modes and jurisdictions. Different types of jurisdictions and individual jurisdictions approach expenditures differently based on their unique context.
- There is **no consistent statewide approach to system improvement plans**. Agencies have different standards for levels of service and different funding constraints that inform these plans. Because of this, some categories of system improvement investments are included to some degree, but likely not fully, in our quantified needs estimates. Additional consideration is given to such investment categories in **Section 2.4.**

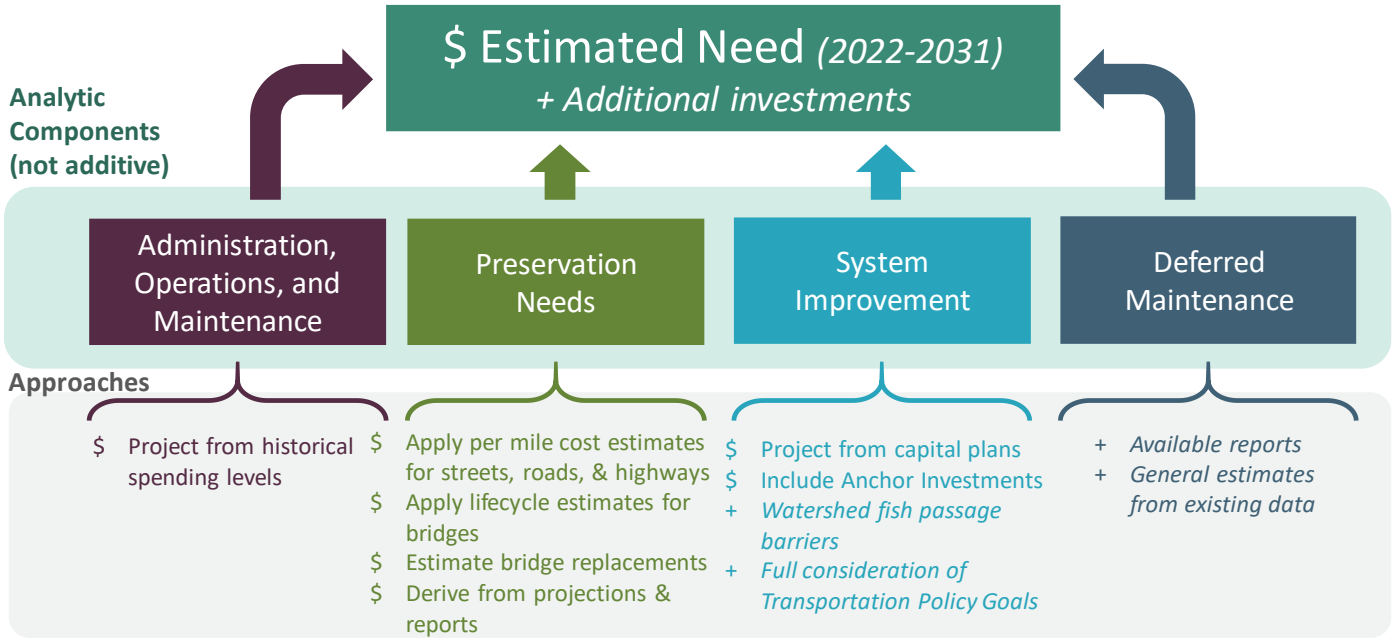
In addition, there are concerns about fiscal constraints impacting how needs are reported. Under 49 USC 5303(j), Transportation Improvement Programs (TIPs) developed by Metropolitan Planning Organizations are required to report upcoming transportation projects "only if full funding can reasonably be anticipated to be available for the project or the identified phase within the time period contemplated for completion of the project or the identified phase".[58] This means that many projects identified as a need in a region may not be included in TIPs because of a lack of available resources.

Finally, construction cost increases over time are a concern about the calculation of needs. Increases in construction costs over time have been outpacing general inflation: from 2010-2019, the Consumer Price Index (CPI) has increased by about 17% while the National Highway Construction Cost Index (NHCCI) has increased by 31%.[59] Although we have accounted for these differences with the inflation factors used in our analysis, if these trends continue the cost of identified needs will continue to increase and comparable funding levels will be able to buy less over time.

Given these challenges, we integrate several analytic components, including data sources, per-mile cost estimates, capital plans, and existing studies and reports. Exhibit 27 summarizes the analytic components of our approach to estimating the 10-year need at a high level.

[58] 49 USC 5303(j)(3)(D)
[59] Federal Highway Department (USDOT), 2020; US Bureau of Labor Statistics, 2020.

Exhibit 27. Approach to Estimating Need



Source: BERK, 2020.

Exhibit 28 and Exhibit 29 summarize our cost estimation methodology for each type of jurisdiction and mode of transportation/infrastructure. Please refer to **Appendix A: Technical Methodology for Needs Estimation** for more detail.

Exhibit 28. Methodology Summary, Part 1 (State, Tribal Nations, and Counties)

Type of Jurisdiction	Mode	Programmatic Needs		Capital Needs	
		Administration & Operations	Maintenance	System Preservation	System Improvement
State	Highways	**Data:** WSDOT **Method:** Projection of Historical Expenditures **Time Period:** 2010-2019	**Data:** WSDOT **Method:** Projection of Historical Expenditures **Time Period:** 2010-2019	**Data:** Perteet Estimates **Method:** Apply per mile estimates to highway mileage	**Data:** State TIP **Method:** Excess project costs above preservation estimates
	Bridges			**Data:** Perteet Estimates **Method:** Apply per square foot costs to bridge deck area	**Data:** State TIP **Method:** Excess project costs above preservation estimates
State	Ferries	**Data:** FTA National Transit Database **Method:** Projection of Historical Expenditures **Time Period:** 2008-2018	**Data:** FTA National Transit Database **Method:** Projection of Historical Expenditures **Time Period:** 2008-2018	**Data:** WSF 2040 LRP **Method:** Based on annualized biennial estimates from 2022-2031 and converted to 2019$	**Data:** WSF 2040 LRP **Method:** Based on annualized biennial estimates from 2022-2031 and converted to 2019$
State	Airports	**Data:** WSDOT **Method:** Projection of Historical Expenditures **Time Period:** 2010-2019		**Data:** WSDOT Airport Investment Study **Method:** Based on State Share of Statewide Airport Needs	
State	Rail	**Data:** WSDOT **Method:** Projection of Historical Expenditures **Time Period:** 2010-2019		**Data:** WSDOT **Method:** Projection of Historical Expenditures **Time Period:** 2010-2019	
Tribal Nations	Transit/ Ferry	**Data:** FTA National Transit Database **Method:** Projection of Historical Expenditures **Time Period:** 2015-2018	**Data:** FTA National Transit Database **Method:** Projection of Historical Expenditures **Time Period:** 2015-2018	**Data:** FTA National Transit Database **Method:** Projection of Historical Expenditures **Time Period:** 2015-2018	
Tribal Nations	Roads/ Bridges	**Data:** Comparisons with County **Method:** Scaling based on ratio of programmatic needs to capital needs from counties **Time Period:** 2015-2019	**Data:** Comparisons with County **Method:** Scaling based on ratio of programmatic needs to capital needs from counties **Time Period:** 2015-2019	**Data:** Perteet Estimates **Method:** Either apply per mile estimates to highway mileage or apply per square foot costs to bridge deck area	**Data:** RTPOs **Method:** Excess project costs above preservation estimates
Counties	Roads	**Data:** SAO FIT **Method:** Projection of Historical Expenditures **Time Period:** 2008-2018	**Data:** SAO FIT **Method:** Projection of Historical Expenditures **Time Period:** 2008-2018	**Data:** Perteet Estimates **Method:** Apply per mile estimates to highway mileage	**Data:** RTPOs **Method:** Excess project costs above preservation estimates
	Bridges			**Data:** Perteet Estimates **Method:** Apply per square foot costs to bridge deck area	**Data:** RTPOs **Method:** Excess project costs above preservation estimates
Counties	Ferries	**Data:** FTA National Transit Database **Method:** Projection of Historical Expenditures **Time Period:** 2008-2018	**Data:** FTA National Transit Database **Method:** Projection of Historical Expenditures **Time Period:** 2008-2018	**Data:** FTA National Transit Database **Method:** Projection of Historical Expenditures **Time Period:** 2008-2017	
Counties	Airports	**Data:** SAO FIT **Method:** Projection of Historical Expenditures **Time Period:** 2008-2018	**Data:** SAO FIT **Method:** Projection of Historical Expenditures **Time Period:** 2008-2018	**Data:** SAO FIT **Method:** Projection of Historical Expenditures, disaggregated by BERK assumptions **Time Period:** 2008-2018	

Source: BERK, 2020.

Exhibit 29. Methodology Summary, Part 2 (Cities, Port Districts, Public Transit Authorities)

Type of Jurisdiction	Mode	Programmatic Needs		Capital Needs	
		Administration & Operations	Maintenance	System Preservation	System Improvement
Cities	Streets	**Data:** SAO FIT **Method:** Projection of Historical Expenditures **Time Period:** 2008-2018	**Data:** SAO FIT **Method:** Projection of Historical Expenditures **Time Period:** 2008-2018	**Data:** Perteet Estimates **Method:** Apply per mile estimates to highway mileage	**Data:** RTPOs **Method:** Excess project costs above preservation estimates
	Bridges			**Data:** Perteet Estimates **Method:** Apply per square foot costs to bridge deck area	**Data:** RTPOs **Method:** Excess project costs above preservation estimates
Cities	Airports	**Data:** SAO FIT **Method:** Projection of Historical Expenditures **Time Period:** 2008-2018	**Data:** SAO FIT **Method:** Projection of Historical Expenditures **Time Period:** 2008-2018	**Data:** SAO FIT **Method:** Projection of Historical Expenditures, disaggregated by BERK assumptions **Time Period:** 2009-2018	
Cities	Bus	**Data:** FTA National Transit Database **Method:** Projection of Historical Expenditures **Time Period:** 2008-2018	**Data:** FTA National Transit Database **Method:** Projection of Historical Expenditures **Time Period:** 2008-2018	**Data:** FTA National Transit Database **Method:** Projection of Historical Expenditures **Time Period:** 2008-2018	
Port Districts	Airports	**Data:** SAO FIT **Method:** Projection of Historical Expenditures **Time Period:** 2008-2018	**Data:** SAO FIT **Method:** Projection of Historical Expenditures **Time Period:** 2008-2018	**Data:** SAO FIT **Method:** Projection of Historical Expenditures, disaggregated by BERK assumptions; Port of Seattle 2020 CIP **Time Period:** 2008-2018; 2019-2024	
Port Districts	Marine Ports	**Data:** SAO FIT **Method:** Projection of Historical Expenditures **Time Period:** 2008-2018	**Data:** SAO FIT **Method:** Projection of Historical Expenditures **Time Period:** 2008-2018	**Data:** SAO FIT **Method:** Projection of Historical Expenditures, disaggregated by BERK assumptions **Time Period:** 2008-2018	
Public Transit Authority	Bus	**Data:** FTA National Transit Database **Method:** Projection of Historical Expenditures **Time Period:** 2008-2018	**Data:** FTA National Transit Database **Method:** Projection of Historical Expenditures **Time Period:** 2008-2018	**Data:** FTA National Transit Database **Method:** Projection of Historical Expenditures **Time Period:** 2008-2018	
Public Transit Authority	Rail	**Data:** FTA National Transit Database **Method:** Projection of Historical Expenditures **Time Period:** 2008-2018	**Data:** FTA National Transit Database **Method:** Projection of Historical Expenditures **Time Period:** 2008-2018	**Data:** FTA National Transit Database **Method:** Projection of Historical Expenditures **Time Period:** 2008-2018	
Public Transit Authority	Ferries	**Data:** FTA National Transit Database **Method:** Projection of Historical Expenditures **Time Period:** 2008-2018	**Data:** FTA National Transit Database **Method:** Projection of Historical Expenditures **Time Period:** 2008-2018	**Data:** FTA National Transit Database **Method:** Projection of Historical Expenditures **Time Period:** 2008-2018	

Source: BERK, 2020.

2.3.2. Programmatic Needs: Administration, Operations, and Maintenance

We projected programmatic needs across all jurisdictions and modes based on current and historical programmatic expenditures over the last 10 to 11 years. Programmatic expenditure data was sourced from the SAO Financial Intelligence Tool (FIT), FTA National Transit Database (NTD), and WSDOT biennial budgets. We inflation-adjusted historical expenditures to 2019 dollars and then projected 2022-2031 estimates by aligning a line or curve of best fit to historical expenditures.

Please refer to **Appendix A: Technical Methodology for Needs Estimation** for detailed methodology.

2.3.3. Capital Needs: Preservation and System Improvement

We estimated capital investments needed to maintain the current system in a state of good repair and to expand capacity and function of the system to meet ongoing needs.

Preservation Needs

We identified the amount and location of roadways and bridges in four main datasets: the TIB Street Inventory (for communities with up to 5,000 residents), state-level Highway Pavement Management System (HPMS) data, entries in the 2018 National Bridge Inventory (NBI), and available information from the County Road Administration Board (CRAB) on short-span bridges with spans of 20 feet or less.

Estimated preservation costs were calculated based on estimated unit costs for preservation over the entire lifecycle of the infrastructure. For highways, streets, and roads, we identified costs per mile based on prototype preservation projects, with estimates based on WSDOT region, surface treatment type, and urban versus rural locations. We annualized these costs based on an ideal schedule of these projects over the lifecycle of the roadway and combined them to provide an estimated 10-year cost.

For bridges, we divided preservation between two types of expenditures: regular preservation activities during the lifecycle of the bridge and the replacement or major refurbishment of the bridge after the end of its functional lifetime:

- For **regular bridge preservation**, we estimated unit costs of preservation projects based on the size of the bridge deck and the construction material used (e.g., primarily concrete or steel), and determined annual costs by bridge.
- For **system-wide bridge replacement costs**, we based our estimates on age data, as well as condition data from the NBI. Bridges were assumed to require replacement or major refurbishment if they were outside of their expected lifetime and/or in poor condition. Costs for replacement were calculated as a range between a cost per unit area based on bridge materials, and the cost of the project identified in the NBI, adjusted to 2019 dollars.

Short-Span Bridges

In addition to bridges included in the NBI, the transportation network also includes "short-span bridges" of less than 20 feet in length, due in part to their ineligibility for funding under the federal Highway Bridge Replacement and Rehabilitation Program (HBRRP). Although these smaller bridges are not included in the federal inventory, there are a considerable number located along state and local routes, and these bridges can be expensive for agencies to replace. Many of these bridges also serve as fish passage barriers, which need to be addressed as well.

System Improvement

It is difficult to determine "need" when considering system improvement investments. Improvement plans are developed by state, regional, and local agencies, based both on the need for addressing deficiencies in levels of service and constraints in available funding. However, each agency has different standards for levels of service and different constraints on funding, complicating our ability to establish a consistent, statewide approach.

To assess overall need for system improvement across **agencies and regions**, we calculated estimated based on the listed capital projects in the State Transportation Improvement Plan (STIP) from 2020. Because the STIP is limited to a six-year examination of costs, we projected the identified funding levels to the end of the study period as described below.

Challenges with Identifying System Improvement Needs

The expansion of system accessibility, mobility, and functionality is based on policy goals that may differ from jurisdiction to jurisdiction and in some cases, it may be challenging or infeasible for certain jurisdictions to meet, even with state assistance.

Additionally, the level of system improvement in the State network is highly dependent on funding packages. The 2015 Connecting Washington package, in particular, is based on an 11.9 cent increase in the state gas tax and is expected to invest $16 billion on state multimodal transportation infrastructure to 2032. Although this program will not expire until after the period of interest for this study, these investments are dependent on this source of funding.

To provide bounds for these estimates, we reflected needs and constraints in the estimates in two ways. Given that the STIP includes data from both four- and six-year TIPs, we removed estimates of capital expenditures identified as extending beyond the first four years of the timeline and determined the funding level over the four-year period to be a standard level of capital funding required to address needs. A high-end estimate assumed that all relevant projects listed in the STIP would be required over a four-year period.

We also reviewed available Regional Transportation Improvement Plans (RTIPs), Regional Transportation Plans, and other documents requested from each of the state's RTPOs to determine the difference between the low-end estimate and the projected needs over the four- or six-year periods covered by each RTIP. Documentation from some jurisdictions highlighted that there were considerable additional needs beyond what was provided in Transportation Improvement Programs. Without higher-level measures of levels of service and comparable project lists developed by each jurisdiction, however, it is challenging to compile a consistent state-wide listing of project needs beyond what is provided as part of the STIP.

To **estimate State system improvement investment needs**, we supplemented the above approach with a list of unfunded needs provided by WSDOT to supplement the costs identified in the STIP. As this list includes needs that are also counted at local levels, we carefully selected items from the list of unfunded needs to ensure that they did not double-count other needs expressed in the city, county, or Tribal calculations.

Combined Preservation and System Improvement Needs

For calculations of capital investments needed for transit and ports, we relied on higher-level information about previous capital expenditures to provide projections for historical levels of investment. For air and marine ports, this information was drawn from SAO FIT data about capital expenditures, with assumptions about the disaggregation of overall costs. For transit, including bus, rail, and ferries, we used FTA NTD

information to project historical trends forward to 2022-2031 with a trend line of best fit.

2.3.4. Anchor Investments

Part of this study's charge was to identify a limited number of discrete, significant, high-cost, high-impact projects to guide future investments. The JTC Executive Committee selected a short list of Anchor Investments, all of which have not been completed. These costs are embedded in the 10-year categorical needs estimates, with the exception of watershed fish passage barrier replacements. Criteria, descriptions, costs for these investments is detailed in **Section 2.6**.

2.4. ADDITIONAL INVESTMENTS

Some investment needs are not captured, or not fully captured, in our quantified 10-year categorical needs estimates due to limitations in our ability to disaggregate specific costs. The extent to which standards for active transportation, safety, and ADA are already embedded into programming and budgeting, and therefore into the baseline data we are using to calculate a quantifiable needs estimate, varies by community. Because they are impossible to fully capture in the categorical needs estimates we describe each such investment category separately below.

We use this section to provide a qualitative description of the following needs:

- While **ADA investments** have long been integrated into the preservation and system improvement costs our model relies on, we do not include the investment required to fully implement ADA Transition Plans as they may include costs other than transportation, such as access to government buildings and services.
- Similarly, while **pedestrian and bicycle infrastructure** is included in some projects based on standards set by local jurisdictions, there are surely other additional system improvement projects that would promote active transportation that are not captured by our estimates. The 10-year categorical needs estimate includes costs outlined in WSDOT's *Draft Active Transportation Plan,* but it does not include local jurisdiction system improvement projects that specifically support active transportation.
- While baseline engineering for **safety** is included in many preservation or system improvement costs and safety projects are included in the Regional TIPs, we do not have a full inventory of safety needs by local jurisdiction. Needs for **WSP** and **DOL** are not included in our categorical cost estimates but called out separately in this section.
- **Fish passage barrier removal** is not included the categorical needs as these costs are an indeterminate mix of preservation, system improvement, and bridge costs. The State responsibility for fish passage barrier removal under federal court order is included in this study as an Anchor Investment. A completed inventory is still needed for a full picture of city and county investments.
- **Deferred maintenance** is challenging to evaluate as no statewide data exists. From discussions with individual agencies that manage infrastructure, there are also often difficulties estimating what would be required to fully address the backlog of project needs at a local level.

Each of these topics is discussed below and **Section 2.4.6** presents a summary organized by State Transportation Policy Goal.

2.4.1. ADA Compliance

The Americans with Disabilities Act of 1990 (ADA) provides requirements for local and state governments to prevent discrimination against people with disabilities and ensure accessibility to facilities and services. Overall, ADA mandates accessibility improvements to ensure that all users of the transportation system can have access to needed services. Title II of the ADA specifically includes roadways and pedestrian infrastructure as well as public buildings, parks, and other facilities.

Under the requirements of ADA, all public agencies are required to identify, inventory, and evaluate current access deficiencies through a self-evaluation. These self-evaluations highlight barriers to access and obligate the agency to pursue remedial action on these items. Agencies with more than 50 employees are also required to retain their self-evaluations for three years to ensure compliance.

Agencies with more than 50 employees are required to develop a Transition Plan (or "Program Access Plan") to detail how to make their facilities more accessible, including a schedule to achieve compliance. This requires transportation projects to incorporate ADA-compliant features, as well as additional projects to address other obstacles to accessibility beyond currently scheduled transportation projects.

With respect to this study, ADA compliance represents four broad categories of costs:

- **Preservation.** The calculations we use to estimate preservation costs incorporate general ADA compliance costs (e.g., curb cuts or accessible signals).
- **System improvement projects.** Cost estimates for system improvement projects assume that projects are ADA-compliant and fully internalize costs of accessibility under ADA requirements. Other improvement projects identified for safety and accessibility in the STIP and RTIPs may also be incorporated into these estimates.
- **Specific projects to address system accessibility gaps.** Aside from identified preservation and system improvement expenditures, ADA Transition Plans may have a schedule for other improvements beyond existing system improvement estimates. We do not include these costs.
- **Full implementation of ADA Transition Plans.** ADA Transition Plans may include other costs beyond transportation, such as access to government buildings and services. We do not consider these costs as they are outside the scope of this study.

ADA compliance in current capital projects (preservation and improvement) generate additional costs associated with improved facilities for access, such as improved signals, curb cuts, and removal of barriers. Accessible features are essential and mandatory components of contemporary standards, and without commensurate increases in funding, they compete with other scarce resources and reduce the extent of jurisdictions' other transportation preservation or system improvement investments.

State

At the State level, WSDOT estimates that it would require an additional **$75 million** over 10 years over currently budgeted levels to implement WSDOT's ADA Transition Plan for barriers within WSDOT's mandate. This includes addressing facilities and vessels owned by WSF.[60]

Local

For counties and cities, the required expenditures for ADA compliance are unclear. Although ADA Transition Plans are necessary with mandated content under the Act, not all jurisdictions have implemented or updated their ADA Transition Plans or have included a comprehensive estimate of the cost of compliance in their public reporting.

Some examples of cost estimates provided in Transition Plans include:

- The City of SeaTac presented an ADA Transition Plan in April 2018 that provided an estimate of about $20.2 million to bring transportation facilities in the public right-of-way to compliance.[61]
- A draft ADA Transition Plan released by the City of Blaine in November 2019 highlighted $6.5 million in investments in street improvements, and an addition $1.9 million in trail ADA improvements.[62]
- Pierce County released its 2019 ADA Transition Plan, which indicated the need for $96 million in investments to address barriers with pedestrian signals, curbs, driveways, and sidewalks.[63]

It is unclear how much of this estimated cost would be folded into existing capital projects or draw upon other sources of funding for support (e.g., Safe Routes to Schools), and given the inconsistent implementation of ADA Transition Plans, the actual distribution of the costs beyond expected preservation and system improvement projects is unknown. This lack of information means that the expected gap in funding ADA compliance over the next 10 years is unclear.

As part of the implementation planning for ADA Transition Plans, some cities have committed specific revenues toward ADA compliance efforts. One example is the City of Bremerton, which is devoting 5% of its maintenance and operations budget in the Streets Fund (or a minimum of $100,000) to ADA compliance not otherwise managed through other projects.[64]

2.4.2. Active Transportation: Non-motorized Transportation

Active transportation, including walking, biking, and other types of non-motorized transportation, is becoming a greater focus with the management of the transportation system by transportation-related agencies across the state. This has been related to several trends:

- Pedestrians and cyclists using the existing transportation system are at risk of fatal and serious injuries from traffic crashes and providing new facilities can improve safety.

[60] WSDOT *Draft Unfunded Needs List*, 4/17/2020.
[61] City of SeaTac, *ADA Transition Plan*, 2018.
[62] City of Blaine, *ADA Transition Plan for Pedestrian Facilities in the Public Right of Way*, Draft, 2019.
[63] Pierce County, *Americans with Disabilities Act Transition Plan for Public Rights-of-Way*, 2020.
[64] City of Bremerton, *ADA Transition Plan*, 2016.

- Providing environments that are walkable and bikeable can also increase access to local destinations, including for those that may not necessarily be able to drive.
- Active transportation with complete networks can provide ways to make the current transportation system more efficient, reducing traffic and parking demands in certain situations.

State

WSDOT is also pursuing an *Active Transportation Plan* to coordinate investments in active transportation on State-owned rights-of-way, including state routes that serve as main streets in smaller communities. WSDOT is coordinating system improvements for these routes with local governments to help fill gaps in larger active transportation networks that would support city and regional goals.

WSDOT estimates **$7.95 billion**[65] in 10-year unfunded need for:

- Active transportation linkages on State routes in population centers†‡
- Unfunded projects in the Safe Routes to School Program‡
- Ongoing active transportation system preservation and maintenance†
- Analysis and support of programs to promote active transportation†
- Bikeways and regional trail systems†‡
- Multimodal connections†‡

Notes: †State owned, ‡ State interest
State interest refers to investments in infrastructure or modes not owned by the State, but support State interest.

This State estimate is included in the 10-year categorical estimates in Section 2.5.

Local

WSDOT provides grants that support local active transportation projects. The two primary sources of funding are:

- Safe Routes to Schools Program (**$71 million** for 215 projects for 2005-2017)
- Pedestrian and Bicyclist Program (**$72 million** for 158 projects for 2005-2019)[66]

At the Tribal Nation, city, and county levels, the provision of active transportation is managed through local pedestrian and bicycling plans. For many of these agencies, active transportation is assumed to be the standard and multimodal corridors the norm. However, the specific perspectives on needs and commensurate levels of service may vary substantially from community to community. As a result, our system improvement estimates include partial accounting of active transportation needs at the local level.

[65] WSDOT, *Draft 2020 Active Transportation Plan*, 2020.
[66] WSDOT, *Pedestrian and Bicycle & Safe Routes to School Programs 2019–2021 Prioritized Project List and Program Update*, 2018.

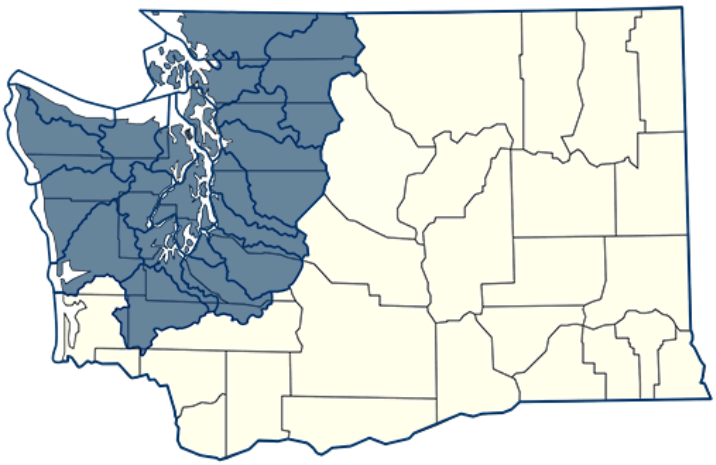
2.4.3. Fish Passage Barrier Removal

A major cost driver expected in future transportation budgets is the management and replacement of culverts and other structures on fish-bearing stream channels. In 2001, 21 Tribes in western Washington filed suit in Federal District Court over the State's failure to guarantee sufficient salmon stocks to support treaty rights in taking fish. The court decision, upheld by the US Supreme Court in 2018, requires the State to address all culverts that present a barrier to salmon migration. This work, involving around 800 fish barriers, must be completed by 2030.

Watershed fish passage barrier replacements are not included in the 10-year categorical needs estimate because fish passage remediation is an indeterminate mix of improvement, preservation, and bridge projects, and it will likely receive its own funding identifier and reporting requirements once fully funded.

However, the State responsibility to fulfill the court order is incorporated as one of the Anchor Investments identified in **Section 2.6.** WSDOT estimates that the State bears a **$3.1 billion unfunded need** to address compliance with the 90% habitat requirement of the court injunction by 2030 and to address non-significant barriers that reach their end of service life during that time period.[67] The court injunction case area is shown in Exhibit 30.

Exhibit 30. Federal Court Injunction for Fish Passage



Source: WSDOT, 2020 Federal Court Junction for Fish Passage, 2020.

City and county estimates for fish passage barrier removal are not included because complete inventory is still needed, both for the number of barriers and the costs of removal.

[67] WSDOT, *Draft Unfunded Needs List*, 4/17/2020.

Local Fish Passage Barrier Removal and Statewide Estimates

Although the Supreme Court order is focused on State-owned culverts and other fish barriers in western Washington, the scope of this decision means that other city and county agencies may also face ongoing obligations to remove fish barriers on stream channels.

The Washington Department of Fish and Wildlife (WDFW) has been coordinating statewide inventories of fish passage barriers, with the location of over 19,000 barriers publicly released to date.[1] The State has provided grant support for fish passage barrier removal through the Brian Abbott Fish Barrier Removal Board, established in 2014 and administered by WDFW and the Recreation and Conservation Office. Additional inventories and cost estimates will be needed to evaluate the full scope of the issue, but ongoing barrier removal will impose additional costs on transportation budgets.

WDFW provided preliminary estimates of the full costs of reconstructing culverts across the entire state, including outside of the court injunction area: [1]

- **$1.7 billion** for cities
- **$4.7 billion** for counties
- **$25.3 million** for Tribal Nations
- **$47.6 million** for other districts
- **$8.7 billion** for WSDOT
- **$98 million** for non-WSDOT State organizations
- **$1.2 billion** from private organizations involved with salmon recovery

[1] WDFW, *Barrier Estimate for SOS Report*, 3/27/2020.

2.4.4. Safety

Investing in safety is a critical piece of meeting transportation needs, as the costs of not investing are fatalities and serious injuries. Ideally, our study would quantify the costs of safety or investments required to address safety concerns associated with the transportation network.

Safety-related expenditures represent several broad categories of costs:

- **Services related to traffic safety.** State and local agencies provide services that support the safe and efficient use of transportation systems across the state.
- **Preservation.** Our calculations to estimate preservation costs incorporate safety costs.
- **System improvement projects.** Our calculations for system improvement projects include safety costs.
- **Specific projects to address system safety gaps.** Aside from identified preservation and system improvement expenditures, we do not include specific projects to address system gaps in the 10-year categorical needs estimate.

Traffic Safety Services

Although several agencies are involved in traffic safety, especially with respect to Target Zero goals, statewide management of safety issues is primarily the domain of two agencies: the Washington State Patrol (WSP) and the Department of Licensing (DOL). Although these agencies are not considered to be "transportation-related" under certain definitions[68], they are funded in part through the State transportation budget and provide essential services for the safe operation of transportation facilities statewide.

WSP is the largest law enforcement agency in the State, with over 2,400 FTE employees. The 2020 supplemental FY 2019–2021 state budget provides **$751 million** to WSP over the biennium, with $540 million allocated from transportation funding and appropriations. Although this budget amount increased by over 9% from the FY 2017-2019 budgets, there are gaps to necessary funding. As about 85% of costs to WSP are related to staff salaries and benefits, increases have been able to keep pace with current staffing, but there have been minimal increases in field operations staff even as transportation levels in many regions throughout the state have increased dramatically. This has required that law enforcement, motorist support, and emergency services be deployed in more strategic ways to adapt to new demand.

In addition, while their capital expenditures are smaller, the need for upgrades to WSP assets is critical to support their ongoing mission. Providing expanded tower coverage for both communications and internet access is essential, especially in rural areas. Other needed expenditures include expanding facilities, as well as staffing, to meet increased demands for toxicology testing services, improving records management to support a data-driven approach to improving performance and outcomes, and managing depreciated physical buildings managed by WSP.

To date, certain unfunded needs for assets and supplies have been managed through vacancy savings, via funding for vacant trooper positions redirected to maintenance and equipment purchases (such as breath testing instruments). However, over the long term this approach to asset management is not sustainable, as it does not provide a secure long-term source for maintenance expenditures and needed capacity expansion.

DOL provides additional supporting roles in the transportation system. In addition to providing revenue collection for fuel taxes, it is also charged with licensing standard and commercial drivers (and revoking licenses as required) and registering vehicles. The 2020 supplemental FY 2019-2021 state budget provides **$429 million** to DOL for the biennium, a 5% increase over the final budgeted amount for the FY 2017-2019 biennium. This funding is largely drawn from transportation funding and appropriations and is devoted specifically to operations.

Funding levels for DOL include some distinct gaps:

- The influx of new residents to Washington State paired with increases in business costs has meant that there has been an increase in services requested from DOL for new licenses and vehicle registration without a substantial increase in operating funding.
- While capital needs are relatively small when compared to other agencies, DOL is strongly dependent on IT services and technology. Ongoing efforts with improving data governance and

[68] See RCW 46.68.290.

management, revenue forecasting, data analytics, and data sharing through the Data Stewardship and Privacy Program has required additional funding for staff, and other funding for new testing systems and a website refresh is envisioned in agency planning to support DOL services.

- Relocation of offices in Tacoma, Lacey, and Bel-Red, and facility maintenance in Vancouver are upcoming costs for facilities, with about $4 million in additional maintenance and capital costs identified over the next 6 years.

State Safety Investments

WSDOT has provided some estimates of costs needed for some safety investments:

Roadway. WSDOT estimates that it faces **$1.7 billion** in unfunded need over 10 years for state highway safety investments.[69] This would fund safety investments like rumble strips, breakaway cable terminal replacement, median protection, guardrail infill, pedestrian crossing treatments, barrier preservation, and lane departure systemic curve treatments. Note that some of these safety improvements may overlap with ADA accessibility improvements noted above in Section 2.4.1, and active transportation improvements in Section 2.4.2.

Rail. In 2017, WSDOT identified **$660 million** in unfunded need for safety improvements at 25 of the state's 50 most dangerous rail crossings.[70] Needed investments to reduce fatalities and injuries at highway-rail crossings—which have totaled 54 and 148, respectively, over the last 10 years—include grade separations at rail crossings, as well as new signal equipment, signage and lighting updates, and technological upgrades.[71][72]

Aviation. While this study does not specifically focus on safety, WSDOT Aviation's *2018 Pavement Condition Study* assesses pavement condition and identifies system pavement needs and found that the condition of the pavement system (excluding SEA, GEG, and PSC) statewide has been decreasing since 2005. The study found that approximately **$395.4 million** is needed over the next seven years to fund all recommended pavement maintenance and rehabilitation projects at the airports (excluding SEA, GEG, and PSC). More information on this study is in the State Airports section.

Local Safety Investments

While local agencies currently do not estimate future safety needs specifically, many agencies have developed Local Road Safety Plans that highlight upcoming safety needs, typically in the next two-to-three years. Local agencies submit these plans to WSDOT's City and County Safety Programs.

The purpose of the County and City Safety Programs is to reduce fatal and serious injury crashes on city streets and county roads. The County and City Safety Programs each take place every two years on alternating years. Each project must have a schedule for work that begins prior to the next call for projects. Since 2014, 37 counties and 50 cities have developed a Local Road Safety Plan. To incentivize using this funding, while federal safety funds require a 10% match, WSDOT waives this match for construction and matches with toll credits if agencies can obligate those funds within a certain time period.

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[69] WSDOT, Draft Unfunded Needs List, 4/17/2020.
[70] WSDOT, *Washington State Freight System Plan*, 2017.
[71] Federal Railroad Administration Office of Safety Analysis, "4.12 Casualties by State/Railroad," 2020.
[72] JTC, *Prioritization of Prominent Road-Rail Conflicts in Washington State*, January 2017.

In 2019, 30 counties submitted a Local Road Safety Plan as part of their application for federal Highway Safety Improvement Program funding with WSDOT's County Safety Program. In total, the counties requested **$79 million** in projects, while WSDOT's County Safety Program has $25 million available per year.[73] In 2020, 44 cities submitted a safety plan requesting **$127 million** in funding, while WSDOT's City Safety Program also has $25 million available per year. This application period closed in March 2020.

2.4.5. Deferred Maintenance

Our calculations of programmatic and capital needs assume that there is sufficient funding to maintain a state of good repair across the system. At ideal funding levels, agencies would maintain these facilities using sound **asset management** principles, but budget gaps and competing priorities can result in delays of the projects necessary to meet these targets.

While our cost esimation methodology accounts for current gaps between mainenance and preservation levels and the investment level required to maintain the lowest lifecycle costs, we are challenged to quantify the cumulative impacts of deferred projects:

- Gaps between optimal and actual funding levels for maintenance and preservation in previous years have left a **backlog of projects** for each agency. These would need to be addressed to bring the system to a state of good repair.
- **Costs can compound over time** as preservation and preventative maintenance activities are deferred and the condition of facilities further degrades. Delays in asset preservation will increase maintenance costs (e.g., increases in spot repairs required to keep the system functioning) as well as preservation costs (e.g., a full reconstruction rather than a routine seal coating may be required when preservation is deferred and the condition of the street declines).
- **Levels of service can decline** as required maintenance is deferred. This can include situations such as poor-quality roads impacting traffic flow, bridges in poor condition requiring weight limitations, or buses in poor condition breaking down and impacting services.

DEFERRED MAINTENANCE AND DEFERRED PRESERVATION

Although the need to defer maintenance and preservation activities can be based on the same budget constraints, the two terms technically refer to different types of activities, and they have different effects.

Deferred maintenance activities will result in a system in poorer condition in the short-term, and likely a degradation in levels of service. Examples are delays in filling potholes or conducting preventative maintenance on rolling stock.

Deferring preservation projects, on the other hand, will increase the costs for both preservation and maintenance in the future, and reduce the effective lifetime of these assets by contributing to a fundamental degradation of the asset. Example include delaying a seal coat treatment on a roadway or retaining buses in a transit system past their expected lifetime.

Different jurisdictions use these terms differently. In common usage, "deferred maintenance" describes what are technically preservation activities.

For the purpose of this study, we use the commonly used term "deferred maintenance" to refer to delayed investments that reduce the effective lifetime of assets. We recognize that "deferred preservation" may be a more accurate term to describe these activities and note that it is a preferred term by State transportation agencies.

[73] WSDOT Local Programs, 2020.

Historical data does not capture the costs of deferred maintenance and preservation attributable to any of the phenomena described above. To identify the general magnitude and scope of these costs, we relied on several sources:

- **Existing studies** provided a general assessment of the overall costs of deferred maintenance, including the determination of Deferred Preservation Liability in the 2019 Transportation Asset Management Plan (TAMP), MPO/RTPO Transportation Management Plans, and the *2019 JTC Capital Needs of Public Transit Systems Study*.
- Previous **interviews** about current maintenance and preservation backlogs conducted with local, regional, and State transportation and public works staff for this study and the *2019 JTC City Transportation Funding Study*.
- **Infrastructure inventory data** about bridge condition from the NBI, and road condition from the HPMS and TIB Road Inventory.

2.4.6. Summary of Consideration of State Transportation Policy Goals

Investments to advance some State Transportation Policy Goals are embedded in state and local investment standards and included *to some degree* in the quantitative categorical needs estimates presented in **Section 2.5**. Advancing State Transportation Policy Goals may include meeting standards set in state or local policies such as:

- ADA requirements.
- Safety standards.
- Stormwater infrastructure standards.
- Active transportation infrastructure standards.

Exhibit 31 summarizes needs that are included and not included in our quantified 10-year categorical needs estimate. Additional investments that may address the State Transportation Policy Goals could include some state and local system improvements designed to address gaps or meet specified goals, deferred maintenance and preservation, and full consideration of ADA, active transportation, safety plans, and fish passage barrier removal.

Exhibit 31. Consideration of State Transportation Policy Goals

TRANSPORTATION POLICY GOAL	INCLUDED IN QUANTIFIED CATEGORICAL NEEDS ESTIMATES	ADDITIONAL INVESTMENT TYPES NOT INCLUDED IN OUR QUANTIFIED ESTIMATES
Economic Vitality	▪ Included in some **Anchor Investments** and to some degree system improvement costs	▪ State and local system improvements focused on increasing **economic vitality** beyond those included in our base
Preservation	▪ Included in **preservation** investment levels designed to minimize asset lifecycle costs	▪ Closing the gap on **deferred maintenance and preservation**
Safety	▪ Included in **Department of Licensing** and **Washington State Patrol** needs ▪ Included to some degree in **preservation** and **system improvement** needs	▪ Full implementation of **Target Zero** and the **Washington Highway Safety Plan** ▪ Addressing **compiled local assessments** of traffic safety issues and solutions
Mobility	▪ Included in some **Anchor Investments** and to some degree in **categorical system improvement costs** ▪ Addressing **critical bridge connections** over 10-year period ▪ **ADA investments** incorporated in standard preservation and system improvement projects ▪ **Active transportation infrastructure** is included to some degree in preservation and system improvement needs	▪ State and local system improvements focused on increasing **capacity and connections** beyond those included in our base ▪ **Full consideration of ADA:** ○ Addressing system gaps beyond identified projects ○ Compiled local ADA transition plans ▪ **Full consideration of active transportation:** ○ WSDOT Active Transportation Plan (under development) ○ Compiled local multimodal mobility plans
Environment	▪ **Stormwater investments** are included to some degree in preservation and system improvement needs	▪ State and local responsibilities for **fish passage barrier removal** (State responsibility is included as an Anchor Investment)
Stewardship	▪ Included as part of **administration and operations costs**	

Source: BERK, 2020.

2.5. SUMMARY OF 10-YEAR COST ESTIMATES

All cost estimates shown below are intended to represent total transportation needs, inclusive of both funded and unfunded needs. However, as discussed in Section 2.4, some investment categories are not fully captured, including ADA compliance, active transportation, fish passage barrier removals, and safety improvements. All cost estimates are presented in 2019 dollars, in millions, and are shown as ranges to account for the level of uncertainty inherent when forecasting statewide transportation needs across a 10-year timeframe. A detailed technical methodology of our range estimate approach can be found in **Appendix A: Technical Methodology for Needs Estimation.**

Exhibit 32 shows 10-year estimated categorical needs from 2022-2031 organized by jurisdiction type and expenditure type. The table also lists the various modes of transportation or transportation infrastructure types that are operated or managed by each jurisdiction type.

As described earlier in the report, what is sometimes referred to as the "state transportation system" is actually a decentralized network managed by a variety of jurisdictions, including the State, Tribal Nations, counties, cities, port districts, and public transit authorities. The State is not responsible for funding all of the needs inventoried in this comprehensive needs assessment and summarized below.

Exhibit 32. Ten-Year Cost Estimates from 2022-2031, by Type of Jurisdiction (2019$)

Type of Jurisdiction	Modes/ Infrastructure	Programmatic Needs (in Millions)		Capital Needs (in Millions)		Total Costs (in Millions)
		Administration & Operations	Maintenance	System Preservation	System Improvement	
State	*Highways, Bridges, Ferry, Airports, Rail, Active Transportation* [2]	$5,600-$6,900	$3,100-$3,800	$31,000-$44,000	$22,000-$27,000	**$61,000-$82,000**
Tribal Nations	*Roads, Bridges, Bus, Ferry*	$150-$190	$95-$120	$150-$170	$37-$45	**$440-$520**
Counties	*Roads, Bridges, Ferry, Airports*	$3,300-$4,000	$3,400-$4,200	$8,500-$12,000	$1,100-$1,500	**$16,000-$21,000**
Cities	*Streets, Bridges, Bus, Airports*	$3,300-$4,000	$5,900-$7,200	$7,300-$12,000	$3,100-$4,100	**$20,000-$28,000**
Port Districts	*Airports, Marine Ports, Rail*	$5,600-$8,400	$1,400-$2,200	$6,200–$9,300		**$13,000-$20,000**
Public Transit Authority [1]	*Bus, Rail, Ferry*	$9,400-$11,000	$2,700-$3,300	$5,800–$7,100		**$18,000-$22,000**

[1] Sound Transit not included due to voter approval for ST3 and ST3 being beyond the 10-year time frame of the study.

[2] Active Transportation estimates in 2020$ based on WSDOT's Draft 2020 Active Transportation Plan. Funding for Safe Routes to School and Pedestrian & Bicycle Programs ($1.1B) serves local agencies, schools, OSPI, and WSDOT regions.

Sources: FTA National Transit Database, 2008-2018; JTC Transit Capital Needs Assessment, 2019; SAO Financial Intelligence Tool, 2008-2018; Port of Seattle Budget, 2020; WSDOT Airport Investment Study, 2014; WSDOT Biennial Budgets, 2009-2019; WSDOT Draft Active Transportation Plan, 2020; WSDOT Statewide Transportation Improvement Program, 2020; WSF Long Range Plan, 2019; Perteet, 2020; BERK, 2020.

Exhibit 33 shows 10-year estimated categorical needs from 2022-2031, organized by mode of transportation or investment. The various jurisdiction types that operate or manage each mode of transportation or transportation investment type are listed as well.

Exhibit 33. Ten-Year Cost Estimates from 2022-2031 by Transportation Mode/Infrastructure (2019$)

Mode/ Infrastructure	Jurisdictions	Programmatic Needs (in Millions)		Capital Needs (in Millions)		Total Costs (in Millions)
		Administration & Operations	Maintenance	System Preservation	System Improvement	
Highways	*State*	$3,300-$4,000	$2,500-$3,100	$11,000-$14,000	$10,000-$12,000	**$27,000-$33,000**
Streets and Roads	*Tribal Nations, County, City*	$5,500-$6,700	$9,200-$11,000	$7,900-$12,000	$3,600-$4,800	**$26,000-$35,000**
Airports	*State, County, City, Port Districts*	$3,700-$5,600	$780-$1,200	$4,200-$6,300		**$8,700-$13,000**
Marine Ports	*Port Districts*	$2,700-$4,100	$690-$1,000	$2,300-$3,400		**$5,700-$8,600**
Ferries	*State, County, Public Transit Authority*	$2,100-$2,600	$510-$620	$1,600-$2,000	$2,000-$2,500	**$6,200-$7,600**
Bus[1]	*Tribal Nations, County, City, Public Transit Authority*	$9,500-$12,000	$2,700-$3,300	$5,800-$7,100		**$18,000-$22,000**
Rail[1]	*State, Port Districts, Public Transit Authority*	$620-$750		$1,100–$1,400		**$1,700-$2,100**
Bridges	*State, County, City, Port Districts*	Included in Highways, Streets, and Roads		$26,000-$41,000	$1,700-$2,100	**$27,000-$43,000**
Active Transportation	*State*[2]	$4.5-$5.5	$130-$150	$7,000-$8,600		**$7,200-$8,700**

[1] Sound Transit not included due to voter approval for ST3 and ST3 being beyond the 10-year time frame of the study.

[2] Active Transportation estimates in 2020$ based on WSDOT's Draft 2020 Active Transportation Plan. Funding for Safe Routes to School and Pedestrian & Bicycle Programs ($1.1B) serves local agencies, schools, OSPI, and WSDOT regions.

Sources: FTA National Transit Database, 2008-2018; JTC Transit Capital Needs Assessment, 2019; SAO Financial Intelligence Tool, 2008-2018; Port of Seattle Budget, 2020; WSDOT Airport Investment Study, 2014; WSDOT Biennial Budgets, 2009-2019; WSDOT Draft Active Transportation Plan, 2020; WSDOT Statewide Transportation Improvement Program, 2020; WSF Long Range Plan, 2019; Perteet, 2020; BERK, 2020.

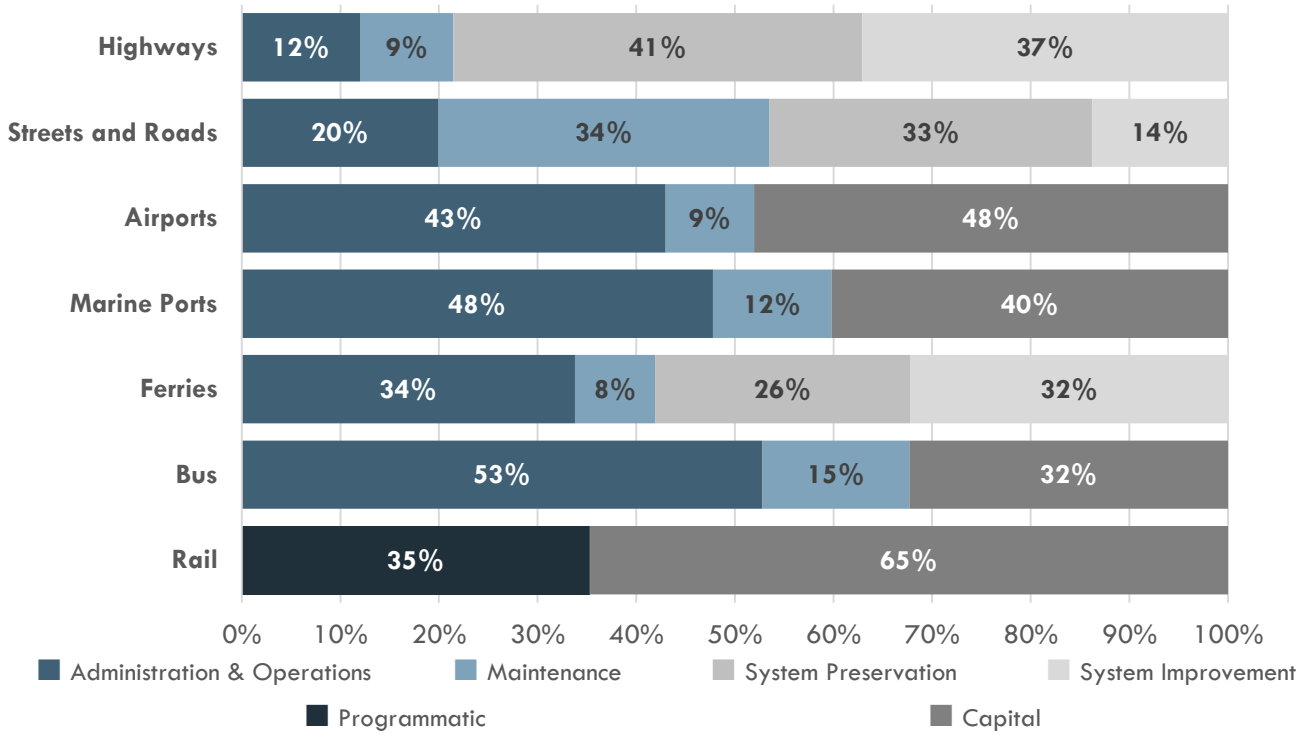
For both Exhibit 32 and Exhibit 33:

- We disaggregated estimated categorical needs by **programmatic needs** (further categorized into administration & operations needs and maintenance needs) and **capital needs** (further categorized into system preservation and system improvement needs).
- For some modes or jurisdictions, estimated categorical needs were aggregated to the programmatic needs or capital needs level. In these cases, best available data did not lend itself well to further disaggregation.

- We estimated programmatic needs based on current and historical spending levels, sourced from:
  - SAO FIT: for counties, cities, and port districts.
  - FTA NTD: for public transit authorities and public transit agencies operated by cities, counties, Tribal Nations, state, etc.
  - WSDOT budgets: for state highways, airports, and rail.
- We estimated capital needs using a variety of approaches, including applying per mile estimates of preservation costs to inventories of the street network, calculating lifecycle preservation cost estimates to bridge inventory, using and adapting existing planning documents or projections, or, in lieu of the above, projecting based on current and historical capital spending levels. Data sources used for capital needs estimates include the WSDOT Statewide Transportation Improvement Program, *WSF 2040 Long Range Plan,* the *WSDOT Airport Investment Study,* estimates from our sub-consultant Perteet, and the *JTC Transit Capital Needs Assessment.*

Exhibit 34 shows the breakdown of expenditure type across different modes of transportation, as a percent of total estimated needs.

Exhibit 34. Expenditures by Type of Transportation Mode/ Infrastructure, Percent of Total Estimates



Sources: FTA National Transit Database, 2008-2018; JTC Transit Capital Needs Assessment, 2019; SAO Financial Intelligence Tool, 2008-2018; Port of Seattle Budget, 2020; WSDOT Airport Investment Study, 2014; WSDOT Biennial Budgets, 2009-2019; WSDOT Draft Active Transportation Plan, 2020; WSDOT Statewide Transportation Improvement Program, 2020; WSF Long Range Plan, 2019; Perteet, 2020; BERK, 2020.

Given the varying level of detail of estimated categorical needs, expenditures by type of transportation mode or infrastructure type are presented as:

- **Fully disaggregated**, with administration & operations, maintenance, system preservation and system improvement; or

- **Rolled up** as total programmatic and capital expenditures.

Exhibit 35 summarizes 10-year needs estimates for State highways, bridges, active transportation, ferries, airports, and rail.

Exhibit 35. State Only: Ten-Year Cost Estimates from 2022-2031 by Type of Transportation Mode/Infrastructure (2019$)

Type of Jurisdiction	Mode/ Infrastructure	Programmatic Needs (in Millions)		Capital Needs (in Millions)		Total Costs (in Millions)
		Administration & Operations	Maintenance	System Preservation	System Improvement	
State	Highways	$3,300-$4,000	$2,500-$3,100	$11,000-$14,000	$10,000-$12,000	**$46,000-$63,000**
	Bridges			$18,000-$29,000	$1,400-$1,700	
State	Ferries	$1,900-$2,300	$440-$530	$1,600-$2,000	$2,000-$2,500	**$5,900-$7,200**
State	Airports	$130-$160		$120-$140		**$250-$300**
State	Rail	$400-$490		$1,100-$1,400		**$1,500-$1,900**
State	Active Transportation[1]	$4.5-$5.5	$130-$150	$7,000-$8,600		**$7,200-$8,700**

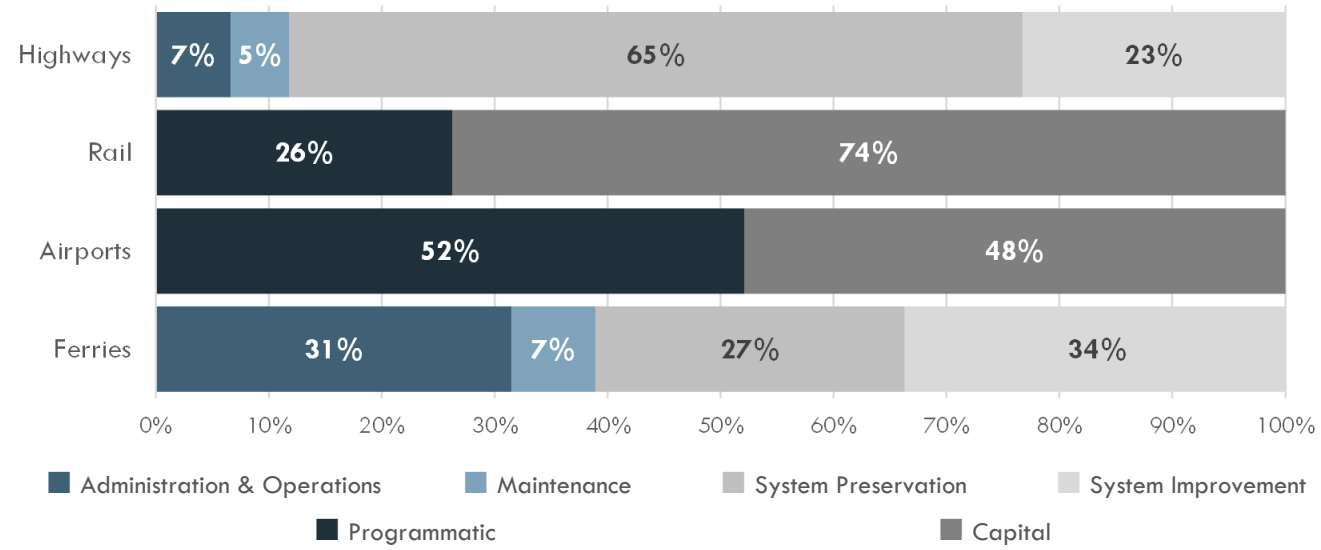
[1] *Active Transportation estimates in 2020$ based on WSDOT Draft 2020 Active Transportation Plan. Funding for Safe Routes to School and Pedestrian & Bicycle Programs ($1.1B) serves local agencies, schools, OSPI, and WSDOT regions.*

Sources: FTA National Transit Database, 2008-2018; WSDOT Airport Investment Study, 2014; WSDOT Biennial Budgets, 2009-2019; WSDOT Draft Active Transportation Plan, 2020; WSDOT Statewide Transportation Improvement Program, 2020; WSF Long Range Plan, 2019; Perteet, 2020; BERK, 2020.

- We estimated State programmatic costs based on current and historical spending levels sourced from WSDOT budgets for State highway, bridges, airports, and rail and FTA NTD for State ferries.
- We estimated State capital costs using a variety of approaches.
  - For State highways and bridges, capital needs estimates were based on applying per-mile estimates to centerline miles, applying bridge lifecycle estimates to bridge inventory, and adapting existing projections from the WSDOT Statewide Transportation Improvement Program.
  - For State ferries, capital needs estimates were based on adapting existing projections from the *WSF 2040 Long Range Plan.*
  - For State airports, capital needs estimates were based on adapting existing projections from the *WSDOT Airport Investment Study*.
  - For State rail, capital needs estimates were based on current historical spending levels sourced from WSDOT budgets.

Exhibit 36 summarizes the breakdown of expenditures by transportation mode for State infrastructure.

Exhibit 36. State Only: Expenditures by Type of Transportation Mode/ Infrastructure, Percent of Total Estimates



Sources: FTA National Transit Database, 2008-2018; WSDOT Airport Investment Study, 2014; WSDOT Biennial Budgets, 2009-2019; WSDOT Statewide Transportation Improvement Program, 2020; WSF Long Range Plan, 2019; Perteet, 2020; BERK, 2020.

As in Exhibit 34, the level of detail of estimated categorical needs dictated whether we broke down expenditures into administration and operations, maintenance, system preservation and system improvement or estimated expenditures as total programmatic and capital expenditures.

A detailed technical methodology of our approach can be found in **Appendix A: Technical Methodology for Needs Estimation.**

2.6. ANCHOR INVESTMENTS

Part of this study's charge was to include a limited number of discrete, significant, high-cost, high-impact projects to guide future investments. The JTC Executive Committee selected a short list of anchor investments, defined as:

- Investments that will require State participation due to extraordinary scale, scope, and/or cost;
- Investments that are difficult for local agencies to address with available resources; and
- Investments that are important to achieving Statewide Transportation Policy Goals.

Exhibit 37. Anchor Investments

Investment	Estimated costs	
I-5 Columbia River Bridge and/or alternative crossing (Hood River & White Salmon)	$344 Million – $2.6 Billion[1]	*Included in categorical needs estimates*
I-5 carpool lane extension to JBLM (38th St. to Mounts Road)	$1.56 Billion[2]	
SR 18 widening – Issaquah-Hobart Road to Raging River	$260 Million[3]	
US 2 trestle	$1.4 Billion[3]	
Washington State Ferries vessel replacements	$2.4 Billion[3]	
Watershed fish passage barrier replacements (State responsibility; does not include additional investment by local jurisdictions)	$3.1 Billion[3]	*Addressed in addition to categorical needs estimates*

[1] *WSDOT Draft Unfunded Needs List, 4/17/2020; LEAP List 2020 NL-1, 2/5/2020.*
[2] *In 2017 dollars; WSDOT HOV Feasibility Study I-5: JBLM to S. 38th St, WSP/Parson Brinkerhoff Study, January 2017. While the cited study presumes general purpose lanes to Mounts Road, the incremental cost of making the lanes HOV is presumed to be negligible.*
[3] *WSDOT Draft Unfunded Needs List, 4/17/2020.*

All proposed Anchor Investments are embedded in the 10-year categorical needs estimates, with the exception of watershed fish passage barrier replacements. Watershed fish passage barrier replacements are not included in categorical needs estimate because fish passage remediation is an indeterminate mix of improvement, preservation, and bridge projects, and it will likely receive its own funding identifier and reporting requirements once fully funded. More information on fish passage barrier removal is in **Section 2.4.3.**

I-5 Columbia River Bridge and/or alternative crossing (Hood River & White Salmon)

The I-5 Columbia River Bridge is located in the City of Vancouver. Senate Bill 5806 directed WSDOT to inventory and document existing data related to construction of a new I-5 bridge over the Columbia River.[74] WSDOT estimates that the Columbia River Bridge replacement would cost $2.6 billion.[75] A bridge from Hood River to White Salmon would cost around $344 million.[76] This item is embedded in the categorical needs estimate.

I-5 Carpool Lane Extension to JBLM (38th St. to Mounts Road)

This $1.6 billion project to construct the I-5 HOV lanes from 38th Street to Mounts Road, located in Pierce County, presumes funding of the full design standard identified in the January 2017 WSP/Parsons Brinkerhoff study.[77] This investment will result in higher mobility, safety, and forward compatibility (possible ETL conversion and use of toll revenue to partly finance) score.

State Route 18 Widening – Issaquah-Hobart Road to Raging River

SR18 is a highway that serves as a truck route between western and eastern Washington. A 6-mile section has one lane in each direction, with the exception of occasional truck-climbing lanes. This project would widen SR 18 from Issaquah-Hobart Road to Raging River into two lanes in each direction with a center median or barrier.[78] This project will include replacing fish culverts under the roadway. WSDOT estimates that this would cost $260 million (YOE$).[79]

US 2 Trestle

The US 2 Trestle connects the I-5 interchange to Bickford Avenue in the City of Everett. WSDOT estimates that a US 2 Trestle full rebuild would cost $1.4 billion (YOE$).[80] WSDOT completed a funding and financing study for this project in 2018.[81]

Washington State Ferries vessels replacements

This investment would replace State ferry vessels approaching the end of their service life. Ferry vessels have a useful life of 60 years if they receive a mid-life renovation and are properly maintained. WSF has acquired seven new vessels since 2010. The *WSF Long Range Plan* calls for acquiring nine more vessels in the upcoming 10 years, costing $1.4 billion; one of these vessels is funded. An additional $1.2 billion is needed from new revenues to replace the remaining eight vessels.[82]

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[74] WSDOT, "*Columbia River I-5 Bridge Planning Inventory*," https://www.wsdot.wa.gov/accountability/ssb5806/
[75] WSDOT, *Draft Unfunded Needs List*, 4/17/2020.
[76] LEAP, List 2020 NL-1, 2/5/2020.
[77] WSDOT, *HOV Feasibility Study I-5: JBLM to S. 38th St, WSP/Parson Brinkerhoff Study,* January 2017. https://www.wsdot.wa.gov/publications/fulltext/LegReports/15-17/I5_JBLM_HOV_LaneFeasibilityStudy_SummaryReport.pdf#page=7
[78] WSDOT, SR 18- Issaquah/Hobart Rd to Raging River Br-Widening. https://www.wsdot.wa.gov/projects/sr18/issaquah-raging-river-br/
[79] WSDOT, *Draft Unfunded Needs List*, 4/17/2020.
[80] WSDOT Draft Unfunded Needs List, 4/17/2020.
[81] WSDOT, *US 2 Westbound Trestle Funding and Finance Study*, January 2018. https://www.wsdot.wa.gov/sites/default/files/2018/01/30/us2-westbound-trestle-funding-and-finance-study-2018-01-17.pdf
[82] WSDOT Draft Unfunded Needs List, 4/17/2020.

Watershed fish passage barrier replacements (State responsibility)

Washington State is under federal court injunction by the US Supreme Court to replace culverts on the state highway system within a case area.[83] $3.1 billion (YOE$) represents the amount needed to comply with the terms of the injunction by 2030 within the case area. It does not address additional investments by cities and counties that are not part of the current court order.

More information on fish passage barrier removal is in **Section 2.4.3.**

[83] Federal court injunction for fish passage shown in map: https://www.wsdot.wa.gov/Projects/FishPassage/CourtInjunction.htm

2.7. ESTIMATED FUNDING GAP

The estimate of 10-year funding needs for the transportation system presented in **Section 2.5** represents the ongoing financial support required to maintain the statewide transportation system as it currently operates, with targeted investments to expand capacity. These estimates represent all needs in this category, and not simply just the needs that have historically been funded.

The key question for policy decisions, however, is what gap exists between expected levels of funding and this calculation of total need. The overall funding gap and how it is divided between modes and jurisdictions is a critical component to discussions about how to address shortfalls. To this end, this section provides additional details about the funding gap between needed and actual investments for the following jurisdictions:

- State agencies.
- Tribal Nations.
- Cities.
- Counties.
- Public transit agencies.
- Ports districts.[84]

There are some limitations to calculations of funding gaps in this report:

- **Costs to address deferred maintenance and preservation may change over time.** As deferred maintenance and preservation accumulates, the cost of addressing these projects may increase, especially as infrastructure degrades further. This can mean that the final costs of bringing the system to an overall "state of good repair" are dependent not only on the amount of funding, but on the timing as well.
- **Estimates of certain types of transportation costs are at a high level and may not reflect all requirements.** Although we provide a detailed evaluation of optimal life-cycle costs for maintaining physical infrastructure, we rely on historical administration and operations expenditures to evaluate needs in most jurisdictions and agencies. Because of this, there may be additional gaps in funding human resources, IT systems, non-transportation assets (e.g., equipment and buildings), and other costs that are not considered.
- **This high-level analysis does not provide a detailed assessment of finances by individual jurisdiction.** Calculating the funding gap across all jurisdictions and modes would require extensive resources to solicit information from every jurisdiction and agency across the state. We are unable to estimate the funding gap for every jurisdiction and mode, but we have provided order-of-magnitude estimates using existing studies and reports.
- **Some jurisdictions have limited high-level data available to calculate funding gaps.** In addition to challenges with detailed estimates, the scope of this analysis makes it difficult to evaluate funding gaps where aggregate budget data is not available. In this study we do not provide detailed

[84] As described in Section 2.2.5, the SAO dataset, which we use as one input into needs estimation, includes 75 public port districts, 2 airport districts, and 5 publicly owned airports that are co-owned or co-operated by multiple jurisdictions.

estimates of funding gaps for Tribal Nations and port districts given a lack of available aggregate information about revenue and funding support.

2.7.1. State

Total Need

As detailed in **Section 2.5**, estimated categorical needs for the State over the next 10 years amounts to **$61–$82 billion** (2019$), including both programmatic and capital needs for this period.[85] Funding gaps in additional investment areas are identified in **Section 2.4.**, as well as projections of funding from the 2020 State Transportation Improvement Program (STIP):

- ADA compliance (with ~$75 million in estimated unfunded needs).
- State responsibility for fish passage barrier removal ($3.1 billion unfunded, $1.6 billion projected).
- Safety improvements ($2.4 billion unfunded road/rail, $749 million projected).
- Deferred maintenance and preservation.
- Agencies in the Transportation Budget outside of WSDOT.

Funding Gap

Although future funding of the State transportation budget is to be determined, the current State biennium budget for 2019-2021 is approximately $10.5 billion, including $7.4 billion budgeted to WSDOT and $1.8 billion for bond retirement and interest.[86] Given the costs evaluated in this study, extending current WSDOT funding over five biennia amounts to approximately $37 billion in current dollars. This suggests a difference of approximately $24–45 billion dollars between the categorical needs alone and the total WSDOT budget over a 10-year period, increasing to a **$32-53 billion gap** when considering the full costs to address ADA, fish passage barrier removal, and safety improvements. Note that this funding gap does not include the costs to address deferred maintenance and preservation.

One comparative reference point for confirmation of this estimate is the *Draft Unfunded Needs List* compiled by WSDOT as of April 2020. This list estimates that the total unfunded state budget needs for transportation amount to approximately $64.8 billion (2019$) over 10 years.[87] The *Draft Unfunded Needs List* aligns with the calculations of need in this study as follows:

- The *Draft Unfunded Needs List* includes State investments in roadway, rail, ferries, aviation, traffic operations, and facilities, which are also included in our 10-year categorical needs estimates.
- In addition, the *Draft Unfunded Needs List* incorporates the Columbia River Bridge replacement, US 2 Trestle full rebuild, SR 18 Highway widening, and WSF vessel replacements, which are included as four Anchor Investments identified in this study.
- The items in the *Draft Unfunded Needs List* also include costs that are not captured in these 10-year

[85] This State estimate includes the Draft Active Transportation Plan ($7.9 billion unfunded, with $18 million projected in the 2020 STIP).
[86] 2019–2021 State Transportation Budget, 2020 Supplemental, Enacted April 3, 2020.
[87] WSDOT, *Draft Unfunded Needs List,* 4/17/2020.

estimates. These include the State responsibility to address fish passage barrier removal, as well as budget items for local assistance, ADA compliance, highway safety, fiscal impacts of I-976, employee retention, ultra high speed rail, and local programs funded by the State.

Setting aside items not included in the 10-year estimate of total need included above, based on the *Draft Unfunded Needs List* we estimate that about **$51 billion** (2019$) of the total estimated categorical needs are unfunded.

This figure is within our estimated $32–$53 billion gap, giving us confidence in this range.

A second comparison is the *2020 State of Transportation* presentation provided by State Secretary of Transportation Roger Millar in January 2020, included as Exhibit 38 below.[88] This assessment compared approximately $92 billion of transportation needs across several categories to a projected $31 billion of funding, for an estimated funding gap of approximately **$61 billion.**

This funding gap estimate is likely higher given that it includes deferred maintenance and preservation necessary to maintain a state of good repair (SOGR).

Exhibit 38. *2020 State of Transportation* Estimates, Total Need versus Total Funding, 10-year Estimates

Source: WSDOT, 2020.

2.7.2. Tribal Nations

As noted previously, estimating the gap between available resources and transportation needs for Tribal Nations in Washington is difficult with available information for this study. The 29 Tribal governments in Washington have distinctly different needs and resources, and we were unable to compile internal budget and financial data to assess funding gaps within the scope of this study.

With respect to the needs of Tribal Nations, there are several elements that are important to consider when developing State policies to support sustainable transportation systems:

[88] WSDOT, *Beyond Tomorrow: Laying the Foundation for Washington's Transportation Future,* January 2020. https://www.wsdot.wa.gov/publications/fulltext/state-of-transportation/files/2020-state-of-transportation.pdf

- **Tribal governments are increasingly taking a role as partners with State and local governments.** Tribal governments have been transitioning into a role where they are assuming management of more transportation infrastructure across the state. As such, this has meant that Nations are positioned to be active partners in infrastructure-related projects with the State, cities, counties, and other agencies, and can help to play a role in co-managing key resources.
- **Tribal governments have limited local options for funding transportation.** Individual Nations in Washington do not have as wide of a range of revenue tools for funding local transportation projects. Sources such as Tribal business revenues, leases, shares of fuel taxes, and other sales taxes on Tribal lands provide the main sources of local revenue to support programs for many Nations, but many of the revenue tools applicable to other governments in the state are not available. Additionally, available Tribal revenue is often expected to fund a broader range of programs and services than other governments of similar size, meaning that there are more demands on these resources and less net funding available.
- **Some State funding allocations do not consistently consider Tribal Nations.** While State programs often provide support for Tribal governments, certain elements of State funding are not always available. This can include such mechanisms as direct project funding and support for smaller communities, which can be critical approaches in supporting local transportation systems. This can mean that Tribal governments may have fewer options for funding transportation, especially with respect to larger capital projects.
- **External federal support is not sufficient for maintaining transportation systems.** Tribal governments benefit from resources available from federal agencies, including competitive and formula grants from the US Department of Transportation, operation and maintenance of certain roads and bridges directly by the Bureau of Indian Affairs (BIA), and BIA Tribal Priority Allocations funding. These resources are limited, however, and funding is divided between the 573 federally recognized Tribes in the US.
- **Resources may vary significantly between Tribal Nations.** Although these issues are broadly applicable between different Nations, each Nation is independent and manages different situations with available revenue and transportation needs. Local approaches may require flexibility to consider the differences in these needs.

Although the gap between resources and need for Tribal Nations cannot be completely defined as part of this work, the State should continue to work in partnership with Tribal Nations to understand ongoing transportation needs and provide support in achieving key transportation goals.

2.7.3. Cities

Total Need

In our calculations described in **Section 2.3**, we identified that the categorical transportation needs for cities in Washington over the next 10 years amounts to approximately **$20–28 billion** (2019$). These figures include both programmatic and capital needs for this period, but they do not include the full costs of ADA compliance, active transportation, fish passage barrier removal, safety improvements, and deferred maintenance and preservation. Unlike estimates of State needs, there is no comparable

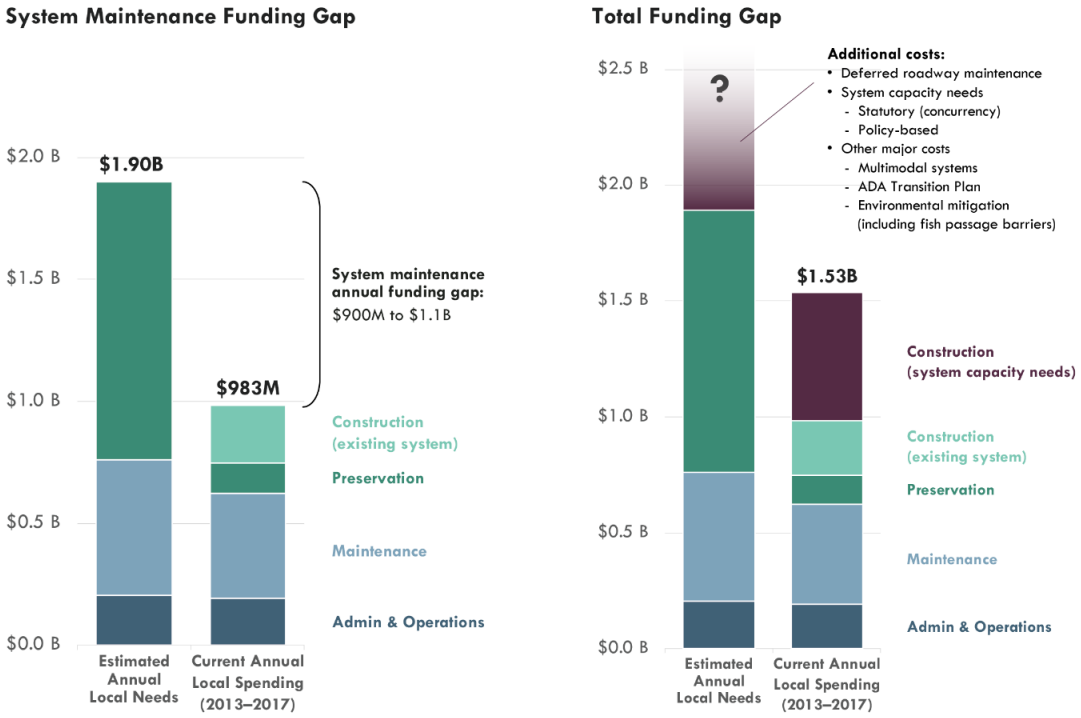
assessment statewide about estimated unfunded needs in these categories, although individual estimates do exist by city.

Funding Gap

Based on budget data collected by WSDOT, cities spent approximately $1.5 billion in 2018 on transportation-related expenses. Assuming that these funding levels are maintained in the future, this suggests that about $15 billion in funding will be expended by cities over a 10-year period. ***This funding level creates a $5–13 billion gap over the 10-year period for categorical needs, which is increased by additional costs associated with full consideration of ADA compliance, active transportation, fish passage barrier removal, safety improvements, and deferred maintenance and preservation.***

Earlier reports have also highlighted gaps in city funding. The *JTC Assessment of City Transportation Needs* highlights that average spending levels by cities from 2013–2017 were approximately $1.5 billion per year, with about $980 million allocated to maintaining the existing system.[89] A graph of these values compared with estimated needs is provided in Exhibit 39. The report includes a calculation of about $1.9 billion per year in funding necessary to maintain the current system alone, or a **$9–11 billion gap** over the next 10 years (2019$). Note that the referenced study of city needs provides a more aggressive schedule for bridge replacement, which in part provides a higher 10-year estimate of needs.

Exhibit 39. Funding Gap Calculations, 2019 City Transportation Needs Report



Source: JTC Assessment of City Transportation Funding Needs, 2019.

[89] JTC, *City Transportation Funding Needs Study*, 2019. http://leg.wa.gov/JTC/Meetings/Documents/Agendas/2019%20Agendas/June%2026%202019/JTC_CityFundingReportDRAFTFINAL.pdf

2.7.4. Counties

Total Need

The calculations in **Section 2.5** indicate that the categorical needs for counties in Washington to support their transportation systems over the next 10 years amount to approximately **$16–21 billion** (2019$). These figures include both broad programmatic and capital needs, but they do not include the full costs of ADA compliance, fish passage barrier removal, safety improvements, and deferred maintenance and preservation. As with cities, there is no comparable assessment statewide about estimated unfunded needs in these categories, although individual estimates exist by county.

Funding Gap

From available budget information compiled by SAO and WSDOT, counties spent approximately $770 million in transportation expenses across all modes in 2018. ***Assuming this general funding level is maintained into the future, this would represent a $8–13 billion gap (2019$) over a 10-year period.***

A Washington Association of Counties (WSAC) Needs Report from 2010 estimated a $408 million annual funding gap for county road maintenance and preservation.[90] However, this study was completed ten years ago, and the estimate only includes maintenance and preservation costs. At the time of this report, WSAC is currently coordinating a county transportation funding study, with the results expected to be released by Fall 2020.

2.7.5. Public Transit Agencies

Total Need

Based on the calculations provided in **Section 2.5**, we estimate that public transit agencies' 10-year categorical needs are between **$18–$22 billion** (2019$). This includes about **$5.8–$7.1 billion** (2019$) in capital spending necessary according to projections. As noted previously, these calculations do not include Sound Transit due to the voter-approved Sound Transit 3 package extending beyond the 10-year study period in this report.

Funding Gap

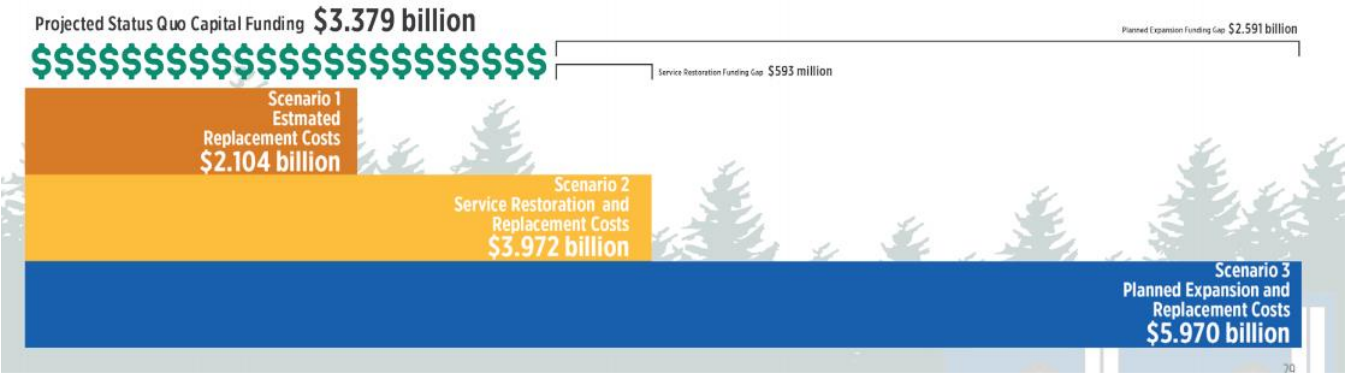
From SAO data on public agency expenditures in the state, transit agencies (excluding Sound Transit) spent about $730 million on regular budget expenditures in 2018. This suggests that if funding levels are expected to generally stay at the same levels for the next 10 years, there would be an **$11–$15 billion** (2019$) gap in funding.

The 2019 *JTC Transit Capital Needs Study* estimates **$2.1–$5.9 billion** in total capital need over 10 years, with projected status quo capital funding of $3.4 billion over 10 years. Note that in addition to excluding Sound Transit, the 2019 study also excludes tribal transportation providers and all non-rubber-wheeled public transit systems from calculations.

[90] WSAC, *County Road Preservation Needs Report to the Washington State Association of Counties*, November 2010.

Overall, the study describes an overall capital funding gap that depends on expected service levels, ranging from $590 million (to achieve restoration of pre-recession service) to $2.6 billion (to address planned expansion and replacement costs) over a 10-year period.[91] This suggests that while replacement costs for rolling stock could be managed under status quo funding, funding gaps would prevent a full restoration of services.

Exhibit 40. Estimated 10-Year Gaps in Transit Capital Needs, 2019



Source: JTC Transit Capital Needs Study, 2019.

2.7.6. Port Districts

Total Need

Based on the results reported in **Section 2.5**, the total of estimated categorical needs for port and airport districts amounts to approximately **$13–20 billion** (2019$) over the next 10 years.[92] Note that this includes all transportation-related responsibilities of these organizations, including both air and marine ports, but it does not incorporate other functions that may be adopted by individual ports, such as local land use planning, real estate management, or economic development activities.

Funding Gap

According to data from SAO, the expenditures of public port and airport districts in 2018 amounted to approximately $1.3 billion, which includes about $390 million in debt service. ***Over a 10-year period, consistent investment at this level would represent an overall $4–11 billion gap in funding.*** To date, no other sources provide any information about potential shortfalls in funding for port districts.

[91] JTC, *Transit Capital Needs Study,* 2019. http://leg.wa.gov/JTC/Meetings/Documents/Agendas/2019%20Agendas/June%2026%202019/JTC_TransitCapitalNeedsDRAFTFINAL.pdf

[92] As described in Section 2.2.5, the SAO dataset, which we use as one input into needs estimation, includes 75 public port districts, 2 airport districts, and 5 publicly owned airports that are co-owned or co-operated by multiple jurisdictions.

2.7.7. Summary of Identified Gaps

Current funding for each jurisdiction type is less than half of what is needed, without considering the costs to catch up on deferred maintenance and preservation.

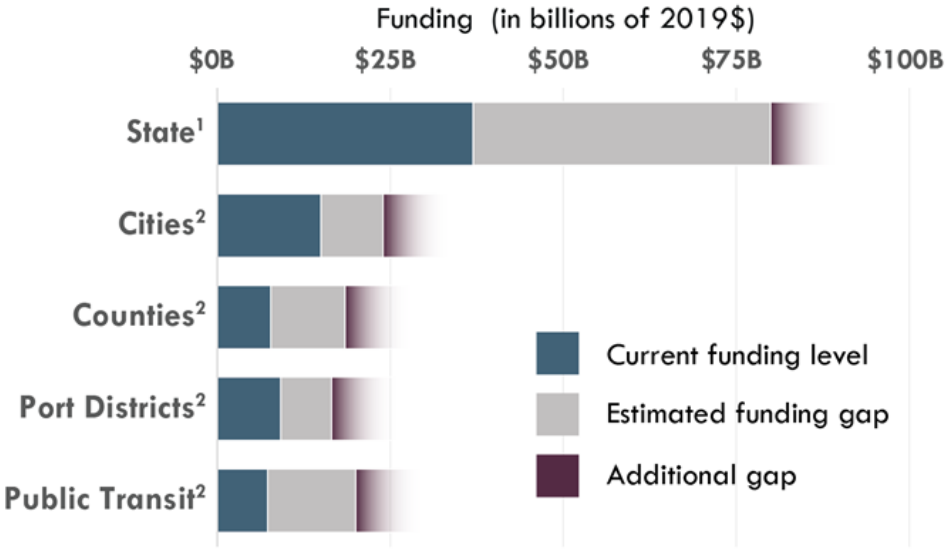
Our estimation of the gaps between current or recent spending levels by individual agency types and estimated categorical needs is not a perfect estimate of the actual shortfalls of funding. In particular, we should stress that the estimates in this study may undercount elements of the transportation system where available information is limited, such as administration costs or deferred maintenance and preservation. An undefined "additional gap" is noted in this figure to account for other needs that have not been quantified completely, as discussed previously.

There is also a challenge here in identifying what future levels of spending will be on transportation. While projections of historical expenditures are possible to understand future trends, allocations to transportation budget levels are political decisions based on available resources by agency. For the purposes of a general assessment of funding gaps, we assume that 10-year funding levels are equivalent to the current funding levels identified in the 2019–2020 State budget (2020 supplemental) for State agencies and averaged recent levels of funding for other agencies, extended over a 10-year period. With the funding challenges associated with I-976 and the fiscal impacts from the COVID-19 pandemic, however, actual funding levels may be lower than what is identified here.

Given these assumptions, the gaps presented in this section indicate that existing levels of funding across among all jurisdiction types fall substantially short of meeting needs, as summarized in Exhibit 41.

Current funding for each jurisdiction type is less than half of what is needed, even without considering costs to catch up on deferred maintenance and preservation.

Exhibit 41. Estimated 10-Year Funding Gaps by Jurisdiction Type



	ESTIMATED 10-YEAR NEED	10-YEAR ESTIMATE FROM CURRENT LEVELS	ESTIMATED 10-YEAR FUNDING GAP
State[1]	$69–90B	$37B	$32–53B
Tribal Nations[3]	$440-520M	Unknown	Unknown
Cities[2]	$20–28B	$15B	$5–13B
Counties[2]	$16–21B	$7.7B	$8–13B
Public Transit[2]	$18–22B	$7.3B	$11–15B
Ports Districts[2]	$13–20B	$9.1B	$4–11B

[1] *State estimates include consideration of active transportation, safety, and fish passage barriers as well as categorical estimates from Exhibit 32. Calculations do not include deferred maintenance and preservation, and other departments under the transportation budget.*

[2] *These calculated gaps do not include costs to addressed deferred maintenance and preservation; as well as local full costs to address fish passage barrier removal, safety, active transportation, and ADA compliance.*

[3] *Note: We were unable to compile internal budget and financial data to assess individual and overall funding gaps within the scope of this study. These estimates may undercount actual needs, and each Nation will have different needs and resources.*

Sources: WSDOT, 2020; SAO, 2020; BERK, 2020

3.0. Menu of Funding Options

The study team created a funding model in Excel with the goal of providing policymakers with an order-of-magnitude estimate of revenue opportunities. The revenue model allows users to adjust underlying assumptions and see how revenues respond, ultimately helping decisionmakers weigh tradeoffs among revenue options.

The funding model displays incremental revenues that respond to changing assumptions. These revenues are modeled from:

- Changes to rates for **existing sources.**
- **New sources** identified from proposed bills, study efforts, and input from the Technical Team and Staff Workgroup.

Task 2 Technical Team

Representatives from Transportation Revenue Forecast Council and agencies including:

- Department of Licensing
- House Transportation Committee
- JTC
- Local government representatives
- Office of Financial Management
- Senate Transportation Committee
- WSDOT

The model assumes that the Legislature would have discretion over State revenue allocation, including changing traditional revenue distribution patterns and limitations. The model notes where 18th Amendment restrictions apply to the use of certain revenues.

⚠ **Economic impacts from the current COVID-19 pandemic.** Since this study began in mid-2019, local and global economic disruptions due to the COVID-19 pandemic have impacted the state. As of the writing of this report, WSDOT is working to understand the financial repercussions of the pandemic to State revenue sources such as fuel tax, tolls, ferry fares, and even certain fees, like title fees. The June 2020 forecasts from the Transportation Revenue Forecast Council suggest that estimated revenue loss in the 2019-21 biennium from COVID-19 shutdowns and lower economic variable will be $469 million, down 9.2% in FY 2020 and down 6.8% in FY 2021.[93]

Due to a lag in revenue reporting, the model does not consider impacts from the pandemic. Therefore, many estimates based on adjustments to existing rates, especially regarding fuel consumption and the oil market, are already outdated because they are based on pre-pandemic forecasts.

Although the full impact of COVID-19 on future revenues is not yet known, we anticipate sharp declines, especially in sources that have seen large demand-induced drops such as fuel. Modeled rate increases may not generate enough revenue to recover estimated losses from the pandemic, let alone new revenues beyond the current baseline. The Legislature should consider the economic impacts of the pandemic when using this study's revenue model to interpret feasible options to address funding needs.

[93] Transportation Revenue Forecast Council, Volume 1, June 2020.

⚠ **Impacts of Initiative 976.** Initiative 976, passed during the November 2019 election, would affect state and local transportation revenues if implemented. The fiscal statement for I-976 indicated that it would result in a revenue loss of $1.9 billion to the State and $2.3 billion to local governments over six years.[94] Estimates from legislative committee staff in 2019 suggest revenue losses of $3.5 billion to the State and $581 million to local governments over 10 years.[95]

Since the authority to levy this fee is still undetermined, pending resolution of legal challenges, the model does not project the impacts of I-976, but instead indicates which revenues could be affected.

3.1. APPROACH

3.1.1. Identifying State and Local Revenue Options

The study team worked with the Task 2 Technical Team to compile a list of existing and potential revenue sources. The initial list was created by compiling previously considered revenue options from past legislative proposals, discussing options with legislative and agency staff, and reviewing past transportation funding studies, including:

- DOL Driver and Vehicle Services Fee Study (2017)
- Joint Legislative Audit and Review Committee: 2008 Full Tax Preference Performance Reviews
- JTC Capital Needs of Public Transit Systems Study (2019)
- JTC City Transportation Funding Study (2019)
- JTC Long-Term Transportation Financing Study (2007)
- JTC Regulation of Taxi and For-Hire Services Study (2019)
- JTC Regulation of Transportation Network Companies (2019)
- JTC Washington State Air Cargo Movement Study (2018)

After creating the list, Technical Team members, the Staff Workgroup, the Association of Washington Cities (AWC), and the Washington State Association of Counties (WSAC) were invited to review and suggest additions, particularly revenue sources that local governments could use.

3.1.2. Revenue Estimation Methodology

The Revenue Model includes a total of 67 existing and potential new revenue sources. We used different approaches for existing versus new sources and for State versus local sources.

We modeled most existing revenue sources using the Transportation Revenue Forecast Council (TRFC) Quarterly Transportation Revenue Forecasts. Washington law mandates the preparation and adoption of the revenue forecasts and the Economic and Revenue Forecast Council and the Office of Financial Management are primarily responsible, with technical staff from the DOL, WSDOT, WSP, and the Office of Forecast Council producing the forecasts.[96] We base the model on the most recent quarterly forecast

[94] Office of Financial Management, Fiscal Impact Statement for Initiative 976, 2019. https://ofm.wa.gov/sites/default/files/public/budget/ballot/2019/FiscalImpactStatementInitiative976-093019.pdf
[95] Senate Committee Service Staff, Estimated Revenue Impacts of Initiative 976, 11/8/2019.
[96] RCW 43.88.020

published in February 2020. The model includes both the revenue amount and the underlying revenue drivers.

- For example, for State fuel tax, we use historical revenue generated from gasoline and special fuel taxes to establish a baseline, and then we project future fuel tax collections by applying a new rate to the forecast of gallons of total motor fuel sold.

We used a similar approach for every revenue included in the model that also exists in the TRFC forecast.

Some revenue sources included in the TRFC do not have a corresponding revenue driver. For example, the TRFC forecast includes penalty fee revenue, but not the underlying number of penalties.

- When the current fee was singular and known, we calculated the corresponding revenue driver to project changes in the future.
- When this was not possible, we calculated future revenue increases on a percentage basis using an appropriate factor.

We projected only two existing revenues using an alternate means: indexed fuel taxes and TBD sales tax.

- The indexed fuel tax projections use the National Resource Defense Council's (NRDC) previous work and indexes future fuel tax to both inflation and total fuel consumption. A major assumption in the projection is a decline in sales of motor fuel, which is anticipated as vehicles become more fuel efficient. The TRFC does not forecast a decline in motor fuel sales (as of February 2020). To overcome this limitation of the TRFC, we incorporated NRDC's projection of declining fuel sales in place of the TRFC projection.
- TBD sales tax is a local revenue option that assumes changes to an existing policy. Because the revenue is local, it is not included in the State's revenue projections. We projected TBD sales tax with adjustable assumptions for how many cities may adopt the policy change and using existing State data around taxable retail sales to project anticipated revenues.

Each new revenue projection is unique but relies heavily on existing publicly available data, previous work published in publicly available studies, and/or previous legislative work for bills proposed prior to this study. The model includes the details of each projection method and data sources on the corresponding revenue projection worksheet.

3.2. USING THE REVENUE MODEL

We designed the model for legislative staff use. When the Advisory Panel meets during Phase II of this study to review study findings and provide directional guidance to the Legislature, JTC staff might use this model to estimate potential revenue combinations. We also designed the model to easily be updated as new TRFC forecasts become available.

Creating a Package of Revenue Options

A user can work with the model as-is (without adjusting rates or updating any underlying data) by selecting specific revenue sources to create a revenue "package" and see the potential revenues generated. The user can accomplish this on a *Choose Your Revenue Tools* worksheet in the model by selecting any of the revenue options from a drop-down menu (see Exhibit 42). Once the user selects a revenue option, the model populates corresponding information about the revenue category, the rate adjustment or projection method, and the estimated revenues generated, both by biennium and in total over the 10-year study period.

Exhibit 42. Screenshot of Excel Revenue Model: Summary of Selected Revenue Options

Potential New Revenue Tools

			Total Revenue Generated (in Millions)		Additional Revenue Generated by Rate Adjustment (In Millions)					
Existing Transportation Revenue Sources	Category	Adjustment Description	2022 - 2031 Baseline Total	2021 - 2031 Rate Adjusted Total	2021-2023 Biennium	2023-2025 Biennium	2025 - 2027 Biennium	2027-2029 Biennium	2029-2031 Biennium	Revenue Increment 2022 - 2031
Fuel Taxes	Fuel Collections	Additional $0.06. Further adjustments by year can be made on worksheet.	$18,963.9	$21,266.2	$448.8	$455.0	$460.9	$466.2	$471.3	$2,302.3
Light Duty Truck License Fee	Vehicle Fee	$10 increase for each category	$1,078.5	$1,221.2	$28.0	$28.1	$28.4	$28.9	$29.3	$142.8
For Hire and TNC Fees	Transportation Tax	50 cents per trip	$.0	$291.3	$52.5	$55.2	$58.1	$61.1	$64.4	$291.3
Air Quality Surcharge	Pollution Tax	$1,058 average new car surcharge.	$.0	$1,011.3	$197.3	$211.0	$206.8	$202.2	$194.0	$1,011.3
EV Fuel Economy Rating Tax	Fuel Collections	Tax EVs as if they drove on gasoline, based on federal fuel economy rating. Adjust assumptions on worksheet.	$.0	$760.9	$16.2	$36.8	$84.2	$192.2	$431.5	$760.9

Local Transportation Benefit District (TBD) Utility Tax
Motor Home Vehicle Weight Fee
Motor Vehicle Excise Tax
Motor Vehicle Filing Fees
Oil Production Tax (Barrel fee)
Oil Spill Tax
Passenger Vehicle Weight Fees
Payroll Tax

Source: BERK, 2020.

Using Rate Adjustments

In some cases, a user may want to model a rate adjustment that differs from the currently summarized rate. In those cases, the user should work in the *Simple Input Output* worksheet where simple rate adjustments can be made (see Exhibit 43). For instance, the model currently projects a $0.06 increase in fuel taxes. If the user wants to instead consider a $0.03 or $0.10 increase, the user can make that and any other simple adjustments on this worksheet of the model. Here, the user can enter the change in rate and the model will calculate the corresponding revenue that will be generated over the 10-year study period.

Exhibit 43. Screenshot of Excel Revenue Model: Rate Adjustment Page

Revenue Tool	Increase Description	Current	Adjustment	New	Revenue Increment 2022 - 2031 (in millions)
Potential New Revenues from Existing Sources					
Fuel Taxes	Additional $0.06. Further adjustments by year can be made on worksheet.	$0.49	$0.06	$0.55	$2,302.3
Indexed Fuel Taxes	Index fuel taxes to inflation and fuel consumption. Inflation intiiatlly set to 1%		1%		$1,282.0
Vehicle Registration Fees	$5 increase	$30	$5	$35	$325.1
Light Duty Truck License Fee	$10 increase for each category	$53 - $93	$10	$63 - $103	$142.8
Freight Project Fees	Additional 10-22% phased-in over 5 biennia.		10%-22%		$44.3
Personal Trailer Fees	$5 increase from $15 to $20	$15	$5	$20	$26.4
Intermittent-Use Trailer Fees	10% Increase	$188	$19	$206	$1.4
Motor Home Vehicle Weight Fee	$25 increase	$75	$25	$100	$17.1
Trip Permit Fees (3-day)	$25 increase	$25	$25	$50	$49.6
Passenger Weight Fees	Advance $35-$82 increase to 2019; $10 increase per vehicle weight class	$25 - $72	$10	$35 - $82	$613.5
Electric Hybrid Vehicle Fee	$200 increase in 2021	$75	$200	$275	$482.0
Plate Fees	100% increase	$4/$10	100%	$8/$20	$381.7
Filling & Plate Retention Fees	10% Increase		10%		$7.7
Motor Vehicle Filing Fees	10% Increase		10%		$5.5
Subagent.Title.Service Fees	10% increase on fees and titles. $3 increase on service fees (in addition to EHB 17)				$128.3
Title Fees			10%		
Quick Titles			10%		
Title Service Fee $12 (Vehicles & Vessels)		$12.00	$3	$15.00	
Registration Service Fee $5 (Vehicles & Vessels)		$5.00	$3	$8.00	
Dealer Temporary Permit Fees	Increase $10 WSP distribution to $20	$10	$10	$20	$74.8
DOT Collected Fees	3% Increase		3%		$2.8
IFTA Decals	$22.50 increase from $10 to $32.50	$10	$23	$33	$8.1
Standard Driver's License Fees	$22 increase.	$54	$22	$76	$248.3
Enhanced Driver's Licenses and Indentic	$30 increase to $54 (on top of driver's license fee)	$24	$30	$54	$236.3
Penalty Fees	10% Increase		10%		$5.9
Rental Car Tax	Increase 1% from 5.9% to 6.9%	5.9%	1%	6.9%	$70.4
Sales Tax on New Vehicles	Additional 0.1%	0.3%	0.1%	0.4%	$203.9
HOV Lane Violations	$64 increase to $250 base fine	$186 - $536	$64	$250 - $600	$11.2

Source: BERK, 2020.

Comparing Baseline Revenues to Revenues with Adjustments

For existing revenues, the user can compare projected revenues with and without a rate increase. In some cases, the user may desire more complicated revenue adjustments. In cases where we anticipate this need, the model includes functionality to allow the user to do so easily. For example, the user may want to consider further adjustments to fuel tax rates by year. The user can accomplish this by changing the increase by year on the specific revenue projection worksheet.

Updating TRFC Forecasts

As mentioned in the Revenue Estimation Methodology section, we calculate most of the existing revenues based on existing TRFC forecasts. We exported these forecasts from the existing baseline Volume II Excel files, using two worksheets that pull information from the many TRFC forecast worksheets containing the relevant information into one worksheet for revenues and one for underlying data drivers. The corresponding Excel files include detailed instructions on how to use these worksheets to pull information from future TRFC forecasts. The export is reliant on the existing TRFC layout, and future adjustments to the layout would necessitate a different extraction method.

3.3. REVENUE OPTIONS MODELED

3.3.1. Potential State Transportation Revenue Sources

Exhibit 44 shows revenue sources we modeled that are not currently used by the State for transportation. This includes both existing revenue sources that are used for purposes other than transportation and new revenue sources.

Exhibit 44. Potential New State Transportation Revenue Sources

Potential New Revenue Source	Category	Adjustment Summary
Air Quality Surcharge	Pollution Tax	$1,058 average new car surcharge[97]
Airport Landing Fees	Other Fees	Charge a state landing fee at all airports of $1.50/1,000 lbs.
Apply Sales & Use Tax to Motor Fuel	Transportation Tax	Based on current state 6.5% sales and use tax rate and applied to total statewide fuel sales from TRFC fuel gallon estimates and WSDOT average annual fuel price forecast estimates
Auto Parts Sales & Use Tax	Transportation Tax	1% increase over state rate (from 6.5% to 7.5%)
Auto Repair Sales & Use Tax	Transportation Tax	Based on statewide taxable auto repair sales from DOR; used same growth as auto parts
Bicycle Sales & Use Tax	Transportation Tax	1% increase over state rate (from 6.5% to 7.5%)
Cap and Trade Revenues	Pollution Tax	Previous legislative estimates shown
Capital Amtrak Surcharge	Capital Surcharge	$0.50 per ticket
Carbon Pollution Fee	Pollution Tax	$15 per metric ton
Commercial Aircraft Fuel Tax	Transportation Tax	Assumes exempt commercial fuel gallons taxed at current aircraft fuel tax at $0.11
Container Fees	Freight Tax or Fee	$15 per loaded important containers. Based on 2008 JTC study (Range of fees $1 - $30)
Development Impact Fees	Taxes or Fees on Construction	Previous legislative estimates shown
DOL Fees on No-Fee Services	Vehicle Fee	No-fee services suitable to have fees assigned. Fees based on comparable DOL services
Employee Excise Tax	Business Tax	2017 estimate from JTC Transit Capital Needs with growth rates applied from state population forecast
EV Fuel Economy Rating Tax	Fuel Collections	Tax EVs as if they drove on gasoline, based on federal fuel economy rating. Adjust assumptions on worksheet.
Ferry Passenger Terminal Fee	Other Fees	$1 fee forecasted based on ferry ridership

[97] The $1,058 average new car surcharge is based off of the average new vehicle gas mileage (24 mpg), gallons consumed (500 gallons), and miles driven per year (12,000) as well as the tons of emissions produced by that 500 gallons (52.9 tons) and a $20 per ton one-time surcharge. Which is $1,058 for a new car.

Potential New Revenue Source	Category	Adjustment Summary
For Hire and TNC Fees	Transportation Tax	$0.50 per trip
Increase Diesel Fuel Price Commensurate with Federal Gasoline/Diesel Differential	Fuel Collections	Increase diesel fuel price to match federal gas/diesel differential
Interest Income	Operating Income	Constant $2.5 M per year per previous legislative estimates
Motor Vehicle Excise Tax	Vehicle Fees	Based on 2006 JTC Motor Vehicle Excise Tax Study and car and truck forecast from TRFC
Oil Production Tax (Barrel fee)	Fuel Collections	$0.50 per barrel tax. Constant $110 M per year per Connecting WA Final Report
Oil Spill Tax	Other Fees	Based on historical tax collections and assuming a $0.01 incremental increase
Payroll Tax	Business Tax	0.143% rate from JTC Capital Needs Assessment Report
Petroleum Products Tax	Other Fees	Based on historical tax collections and assuming an 0.15% incremental increase for transportation purposes
Repeal Exported Fuel Exemption	Fuel Collections	2007 estimate from 2008 JLARC report with growth rates applied from taxable motor vehicle fuel from 2008 to 2031
Road Usage Charge	Transportation Tax	New charge per mile driven. Assumes RUC for all new vehicles starting in 2025. Assumptions based on RUC WSTC study
Tax Increment Revenues	Taxes or Fees on Construction	Modeled for Columbia River Crossing and based on assumptions from 2005 JTC Study of Alternative Transportation Project Funding Options
Transportation Benefit Assessment	Special Assessment	New assessment on new construction
Weight Mile Fee	Vehicle Fees	Constant $32 M per biennium per 2008 JTC Analysis

3.3.2. Existing State Transportation Revenue Sources

Exhibit 45 shows a list of existing State transportation revenue sources with modeled rate adjustments. This is not a comprehensive list of all transportation revenue sources; rather, this table shows sources with modeled potential rate adjustments. The TRFC forecasts most of these revenue sources. Initial rate adjustments can be updated in the model.

Exhibit 45. Adjustments to Existing State Transportation Revenue Sources

Transportation Revenue Source	Category	Adjustment Summary
Aircraft Excise Tax	Transportation Tax	Increase each fee $5. Current average for all aircraft registrations is $55
Aircraft Fuel Tax	Transportation Tax	$0.04 increase
Capital Vessel Surcharge	Capital Surcharge	$0.50 increase
Dealer Temporary Permit Fees	Vehicle Fees	Increase $10 WSP distribution to $20
DOT Business Revenue	Other Fees	10% Increase
DOT Collected Fees	Vehicle Fees	3% Increase
Electric Hybrid Vehicle Fee	Vehicle Fees	$200 increase in 2021
Enhanced Driver's Licenses and Identicards	Driver Fees	$30 increase to $54 (on top of driver's license fee)
Ferries Fare Revenue	Fares and Tolls	5% increase each year (rather than 2.5%)
Filling & Plate Retention Fees	Vehicle Fees	10% increase
Freight Project Fees	Vehicle Fees	Additional 10-22% phased-in over 5 biennia
Fuel Taxes	Fuel Collections	Additional $0.06. Further adjustments by year can be made on worksheet
Hazardous Substance Tax	Other Fees	Can increase current flat assumption of $25 million/year if needed
HOV Lane Violations	Other Fees	$64 increase to $250 base fine
Indexed Fuel Taxes	Fuel Collections	Index fuel taxes to inflation and fuel consumption. Inflation initially set to 1%
Intermittent-Use Trailer Fees	Vehicle Fees	10% Increase
International Fuel Tax Agreement (IFTA) Decals	Transportation Tax	$22.50 increase from $10 to $32.50
Light Duty Truck License Fee	Vehicle Fees	$10 increase for each category
Motor Home Vehicle Weight Fee	Vehicle Fees	$25 increase
Motor Vehicle Filing Fees	Vehicle Fees	10% Increase
Passenger Vehicle Weight Fees	Vehicle Fees	Advance $35-$82 increase to 2019; $10 increase per vehicle weight class
Penalty Fees	Driver Fees	10% Increase
Personal Trailer Fees	Vehicle Fees	$5 increase from $15 to $20
Plate Fees	Vehicle Fees	100% increase
Rental Car Tax	Transportation Tax	Increase 1% from 5.9% to 6.9%
Sales Tax on New Vehicles	Transportation Tax	Additional 0.1%
School Zone Fines	Other Fees	10% Increase
Standard Driver's License Fees	Driver Fees	$22 increase.
Subagent, Title, and Service Fees	Vehicle Fees	10% increase on fees and titles. $3 increase on service fees (in addition to EHB 17)
Toll Revenue	Fares and Tolls	Increase tolls 5%
Trip Permit Fees (3-day)	Vehicle Fees	$25 increase
Vehicle Registration Fees	Vehicle Fees	$5 increase

3.3.3. Existing and Potential Local Transportation Revenue Sources

Exhibit 46 shows a list and adjustment summary of existing and new local transportation revenue sources that would require State legislative action. This is not a comprehensive list of existing or new local revenue options – only those considered with the Staff Workgroup.

Exhibit 46. Potential Local Transportation Revenue Sources

Potential New Revenue Source	Type	Revenue Model Adjustment Summary
Local Household Excise Tax	New	Per unit charge to pay for transportation investments
Local Motor Vehicle Special Fuel Tax	New	Assumes 50% of counties will successfully impose the special fuel tax at 5% rate. The 50% assumption can be updated in the model
Local Option Tolls	New	Assumes only Seattle implements at a rate of $130 million each year (2019$)
Local Rental Car Sales Tax	New	Assumes all cities with rental car sales will implement the tax at 1%
Local Transportation Benefit District (TBD) Sales Tax	Existing	Doubles the tax rate, doubles the duration of the tax, and is councilmanic
Local Transportation Benefit District (TBD) Utility Tax	New	Increases utility rates currently capped at 6% by 2% for transportation

3.4. EVALUATION OF POTENTIAL REVENUE OPTIONS

The revenue model includes 67 revenue sources to fund transportation in Washington. The following sections evaluate a shorter list of revenue options from legislative proposals, legislative estimates, and past study efforts.

We evaluate these options using the criteria described below:

- **Order of Magnitude:** What is the fundraising strength of this revenue option?
- **Applicability:** How widely applicable is this option, considering current restrictions on eligible expenditures and jurisdictions that may use this?
- **Equity:** How much does the revenue option align the burden of who pays the tax/fee/charge with who potentially benefits?
- **Ease of Implementation:** How operationally/administratively feasible is the option? To what extent are revenues reduced by collection/administrative costs?
- **Legislative History:** Has this revenue option been proposed in the Legislature in past or current sessions?
- **Resource Efficiency:** Does this option incentivize energy efficiency or fuel efficiency?
- **18th Amendment:** Is this revenue option restricted by the 18th Amendment for "highway purposes"?

3.4.1. Potential New Revenues from New State Sources

New revenue sources refer to completely new revenue sources as well as current revenue sources not currently used by the State for transportation. Exhibit 47 shows an evaluation of a short list of these sources, which we selected based on revenue options from legislative proposals, past study efforts, fundraising magnitude, and input from the Staff Workgroup and Technical Team.

Appendix B: Evaluation of Potential Funding Options includes a detailed description of these options and their legislative history, potential benefits, and potential drawbacks.

Among the new potential State revenue options we modeled, a carbon pollution fee, employee payroll tax, or road usage charge could generate the greatest magnitude of funding.[98]

- A **carbon pollution fee** could generate $8.7 billion over 10 years and encourages fuel efficiency by discouraging the use of fossil fuels. However, it could be difficult to implement given that carbon pollution fee initiatives have failed in the past.
- An **employee payroll tax** could generate $830 million over 10 years and would be relatively simple to administer from an operational perspective as it is similar to existing programs. However, it could be regressive from an equity perspective, with higher proportional impacts on lower-wage earners than on higher-wage earners.
- A **road usage charge (RUC)** could generate $2.5 billion over 10 years and could generate a more stable source of transportation funding than the current gas tax as vehicles become more fuel efficient. However, some are concerned that the per-mile basis rather than the current per-gallon

[98] We assume that a road usage charge would replace the existing motor vehicle fuel tax and is not an additional charge.

cost would eliminate the incentive to purchase fuel-efficient vehicles.

The auto parts sales and use tax and bicycle sales and use tax are existing State revenue sources that are not currently used for transportation investments. They would be relatively easy to apply to transportation purposes given that they already exist.

- An **auto parts sales and use tax**, levied on owners of personal vehicles, could encourage the use of public transportation. A 1% increase dedicated to transportation could generate $270 million over 10 years.
- A **bicycle sales and use tax** would introduce a mechanism for a new group of users, who currently do not pay fuel taxes or registration fees, to contribute to funding the State transportation system. However, the tax could marginally disincentivize the use of cycling as a mode of transportation. A 1% increase dedicated to transportation could generate $10 million over 10 years.

The **air quality surcharge, cap and trade revenues**, and **electric vehicle fuel economy rating tax** are options that will also encourage fuel efficiency.

Along with the carbon pollution fee, auto parts sales and use tax, and bicycle sales and use tax, the recent Forward Washington proposal in 2019 included **for hire and transportation network company (TNC) fees** and **a statewide special transportation benefit assessment**.

A revenue option related to fuel tax and not included in Exhibit 48 is the **repeal of the export fuel exemption**, which would nearly double the tax base of the fuel tax. Some view this option as a double-tax on those gallons of exported fuel since they would also be taxed when used in another state. Others believe that export gallons, especially those that are not transported through the oil pipeline system, use the Washington highway system and should compensate the State for that use. It is unclear whether it would be difficult to repeal the export fuel exemption for just part of the exported fuel that is transported to other states outside the pipeline system.

Many other revenue options have been discussed by various agencies, organizations, policymakers, and stakeholders. While we did not model these, we briefly describe these ideas below:

- **Tax increment financing:** The tax increment comes from a portion of the growth in assessed value for existing properties and for new development, as well as future increases in assessed value of the new development.[99]
- **Transit assessment district:** This would be a special purpose district, where the funding mechanism would be fees based on the portion of a property's assessed value that is attributable to the presence of transit infrastructure and service. Unlike tax increment financing, which would be limited to committed contributions for construction, a transit assessment district would assess all properties benefiting from transit service.
- **Sales and use tax on aircraft sales:** Washington State already collects sales or use taxes on aircraft sales – sales taxes are due on the selling price of an aircraft while, if a sales tax was not paid, use taxes are due on the value of the aircraft at the time of first use in the state. Currently, these funds are dedicated towards the state's general operating budget and deposited into the State General

[99] Report to the Washington Legislative Transportation Committee, Study of Alternative Transportation Project Funding Options, April 2005. http://leg.wa.gov/JTC/Documents/AltFinFinalRpt.pdf

Fund. To increase transportation funding, these funds could be dedicated for transportation or specifically aviation specific purposes and be deposited in the Aeronautics fund account, Multimodal Transportation fund account, or other transportation specific fund accounts.

- **Deposit of sales and use tax on highway and ferry construction:** Sales and use tax revenue on highway and ferry construction is currently dedicated towards the state's general operating budget and deposited into the State General Fund. In occasions in the past, these funds have been transferred from the operating budget for transportation purposes. Another option for increasing transportation funding would be dedicate these revenues for transportation specific purposes and deposit these funds in the Multimodal Transportation fund account.
- **Aircraft cargo parking fees:** A potential new revenue source for enhancing aeronautical activities and increasing air cargo capacity around Washington State is to enact or increase air cargo parking fees. These fees can be charged for use of cargo operations areas used to load and unload air freight. Typically, these fees are based on aircraft size, the type of operation, and the duration of time needed to occupy the cargo operations area.

Exhibit 47. Evaluation of Potential New State Transportation Revenue Sources

Order of Magnitude	What is the fundraising strength of this revenue option?
Applicability	How widely applicable is this option, considering current restrictions on eligible expenditures and jurisdictions that may use this?
Equity	How much does the revenue option align the burden of who pays the tax/fee/charge with who potentially benefits?
Ease of Implementation	How operationally/administratively feasible is the option? To what extent are revenues reduced by collection/administrative costs?
Legislative History	Has this revenue option been proposed in the Legislature in past or current sessions?
Resource Efficiency	Does this option incentivize energy efficiency or fuel efficiency?
18th Amendment	Is this revenue option restricted by 18th Amendment for "highway purposes"?

Revenue Sources	Fundraising Order of Magnitude *(scale below)*	Applicability	Equity	Ease of Implementation	Legislative History	Resource Efficiency	18th Amendment Restriction
New State Transportation Revenue Sources *(new sources + sources not currently used for transportation)*							
Air Quality Surcharge	$$$	High	Medium	Medium	✎	🍃	
Auto Parts Sales and Use Tax**	$$	High	Medium	High	✎	🍃	
Bicycle Sales and Use Tax**	$	High	Medium	High	✎		
Cap and Trade Revenues	$$$	Medium	Medium	Low	✎	🍃	
Carbon Pollution Fee	$$$$	High	Medium	Medium	✎	🍃	
Electric Vehicle Fuel Economy Rating Tax	$$$	High	Medium	Medium		🍃	
Employee Payroll Tax	$$$$	High	Low	High			
For Hire and TNC Fees	$$	High	Medium	Medium	✎		
Road Usage Charge*	$$$$	High	Medium	Low	✎		
Statewide Special Transportation Benefit Assessment	$$$	Low	Medium	Medium			

Legend

Magnitude over 10 Years		Applicability	Equity, Ease of Implementation	
$	<$50 M	Applicable to nearly all jurisdiction types/expenditures	High	
$$	$50 M - $500 M	Applicable to some jurisdiction types/expenditures	Medium	
$$$	$500 M - $5 B	Applicable to limited jurisdiction types/expenditures	Low	
$$$$	>$5 B			

**Assuming a road usage charge would replace the motor vehicle fuel tax and is not an additional charge. WSTC recommended that expenditures of RUC revenue should be subject to 18th Amendment.*

***Existing state revenue that is not currently used for transportation*

Note: 18th Amendment restriction reflects current law.

Source: BERK, 2020.

3.4.2. Potential New Revenues from Existing State Sources (Rate Adjustments)

This section describes existing State transportation revenue sources that we modeled with rate adjustments. Exhibit 48 shows an evaluation of a short list of these sources, which we selected based on legislative proposals, past study efforts, fundraising magnitude, and input from the Staff Workgroup and Technical Team.

Appendix B: Evaluation of Potential Funding Options includes a detailed description of these options and their legislative history, potential benefits, and potential drawbacks.

These options are all relatively easy to implement given that they are existing sources with administrative structures in place to collect revenues.

The **indexed fuel tax** is the only option in this section based on a new revenue collection structure. This option allows fuel tax revenues to keep pace with inflation and future decreases in fuel consumption and could stabilize fuel tax revenues when oil prices rise. It would require the State to monitor inflation and prices and adjust the tax rate in response. A fuel tax indexed to inflation and fuel consumption could generate $1.3 billion over 10 years.

Among the options in this section, a fuel tax increase, indexed fuel tax, and passenger vehicle weight fee increase have the highest relative fundraising potential based on the rates modeled, although these rates can be adjusted.

- **An increase in the fuel tax**, which the State currently collects at a rate of $0.494 per gallon, generating over $3 billion in revenue per biennium. Under the Forward Washington, SB 5971 funding proposal, the State would impose either an additional $0.06 or an additional $0.08 beginning in July 2020. A $0.06 rate adjustment would generate an additional $2.3 billion over 10 years.
- **An indexed fuel tax** is the only option in this section based on a new revenue collection structure that would require the State to monitor inflation and prices and adjust the tax rate in response. A fuel tax indexed to inflation and fuel consumption could generate $1.3 billion over 10 years.
- **Passenger vehicle weight fees** would be paid by owners of passenger vehicles, motor homes, and other vehicle types as part of annual vehicle registration. Raising the $35-$82 fees by $10 would generate an additional $613 million over 10 years.

The **capital vessel surcharge** has the most restricted applicability in that it only applies to ferry vessels. It would be relatively easy to administer and collect, as it is incorporated into the ticketing process for ferries. A $0.50 increase could generate about $88 million over 10 years.

The **electric hybrid vehicle fee** ensures that users of hybrid and electric vehicles pay for use of the roads, but it could discourage consumers from purchasing more fuel-efficient vehicles. A $200 increase in annual fees could generate about $480 million over 10 years.

The **rental car tax** would primarily fall on those who live outside Washington but use the roadway system. It generates a relatively small amount of revenue, estimated at around $70 million over 10 years.

The capital vessel surcharge, fuel tax, IFTA decals, light duty truck license fee, freight project fee, trip permit fees, and vehicle registration fees are all restricted, at least in part, by the 18th Amendment, which

means revenues must be used "for highway purposes."

The 2019 legislative package Forward Washington proposed rate adjustments to all the options shown in Exhibit 48 except for the indexed fuel tax.

The model also includes several **oil-related fees:** the hazardous substance tax (HST), oil spill tax, barrel fee, and container fee. An advantage of the HST is it includes all fuel in the state, including exported fuel. A disadvantage is that it is subject to wider revenue swings than fuel tax given that HST responds to the price of petroleum products. As oil prices have dropped under COVID-19, HST revenue has also dropped. The Motor Vehicle Fund currently receives a fixed amount of revenue per biennium from HST, so revenue is protected from wide swings in the tax. If HST increases in the future, dedicating an additional increment to transportation would continue to provide the Motor Vehicle Fund with consistent revenue.

Exhibit 48. Evaluation of Adjustments to Existing State Transportation Revenue Sources

Order of Magnitude	What is the fundraising strength of this revenue option?
Applicability	How widely applicable is this option, considering current restrictions on eligible expenditures and jurisdictions that may use this?
Equity	How much does the revenue option align the burden of who pays the tax/fee/charge with who potentially benefits?
Ease of Implementation	How operationally/administratively feasible is the option? To what extent are revenues reduced by collection/administrative costs?
Legislative History	Has this revenue option been proposed in the Legislature in past or current sessions?
Resource Efficiency	Does this option incentivize energy efficiency or fuel efficiency?
18th Amendment	Is this revenue option restricted by 18th Amendment for "highway purposes"?

Revenue Sources	Fundraising Order of Magnitude *(scale below)*	Applicability	Equity	Ease of Implementation	Legislative History	Resource Efficiency	18th Amendment Restriction
Existing State Transportation Revenue Sources *(Rate Adjustments)*							
Capital Vessel Surcharge: *rate increase*	$$	🔴	🟡	🟢	✎		⚠
Electric Hybrid Vehicle Fee: *rate increase*	$$	🟡	🟡	🟢	✎		⚠ *in part*
Enhanced Driver's Licenses/Identicards: *rate increase*	$$	🟡	🟡	🟢	✎		
Freight Project Fees: *rate increase*	$$	🟡	🟡	🟢	✎		⚠
Fuel Tax: *rate increase*	$$$	🟢	🟡	🟢	✎	🍃	⚠
HOV Lane Violations: *rate increase*	$	🔴	🔴	🟢	✎		
Indexed Fuel Tax	$$$	🟢	🔴	🟡	✎	🍃	⚠
Int'l Fuel Tax Agreement (IFTA) Decals: *rate increase*	$	🟡	🟡	🟢	✎		⚠
Light Duty Truck License Fee: *rate increase*	$$	🟡	🟡	🟢	✎		⚠
Passenger Vehicle Weight Fees: *rate increase*	$$$	🟡	🟡	🟢	✎		
Rental Car Tax: *rate increase*	$$	🟡	🟢	🟢	✎		
Trip Permit Fees (3-day): *rate increase*	$$	🟡	🟡	🟢	✎		⚠ *in part*
Vehicle Registration Fees: *rate increase*	$$	🟢	🟡	🟢	✎		⚠

Legend

Magnitude over 10 Years		Applicability	Equity, Ease of Implementation	
$	<$50 M	Applicable to nearly all jurisdiction types/expenditures	🟢	High
$$	$50 M - $500 M	Applicable to some jurisdiction types/expenditures	🟡	Medium
$$$	$500 M - $5 B	Applicable to limited jurisdiction types/expenditures	🔴	Low
$$$$	>$5 B			

Note: 18th Amendment restriction reflects current law.

Source: BERK, 2020.

3.4.3. Potential Local Transportation Revenue Options

Local jurisdictions could benefit from adjustments to State revenue options described in previous sub-sections, as the Legislature could allocate some or all of these revenues to local jurisdictions. The creation of new options for local governments to generate revenue would require State legislative action. We evaluated some new local transportation revenue sources as well as adjustments to existing local transportation revenue sources that would require State legislative action.

Exhibit 49 shows an evaluation of a short list of these sources, which we selected based on legislative proposals, past study efforts, fundraising magnitude, and input from the Staff Workgroup and Technical Team. Many of these ideas have been proposed in previous legislative sessions.

Appendix B: Evaluation of Potential Funding Options includes a detailed description of these options and their legislative history, potential benefits, and potential drawbacks.

The *2019 JTC City Transportation Funding Study* recommended the Transportation Benefit District (TBD) utility tax option, TBD sales tax adjustment, local option rental car sales tax, and local motor vehicle fuel tax (MVFT) adjustment. These options were proposed in Senate Bill 6652 and House Bill 2362 in the 2019-2020 legislative session.[100]

- The TBD options would use existing revenue authorities while increasing the revenue-generating potential of an existing revenue source.
- By doubling the **TBD sales tax** rate, doubling the duration of the tax, and allowing the tax to be imposed by councilmanic action (and therefore assuming it would be used by more jurisdictions), we estimate the TBD sales tax could generate an additional $704 million over 10 years.
- We estimate that a TBD **transportation utility tax** could generate approximately $1.6 billion over 10 years.
- The **local motor vehicle fuel tax** is an existing option has not been enacted by any county. The proposed changes would make ballot language easier for voters to understand and give counties more flexibility to decide what rate to impose. By enacting recommended changes designed to increase public understanding and use of the tax by jurisdictions, we estimate this could generate an additional $470 million over 10 years. This assumes 50% of counties will successfully impose a 5% tax rate.

The *2019 JTC Transit Capital Needs study* evaluated the **household excise tax** option.[101] This would be a relatively stable revenue option, since the tax is based on number of household units. Economic downturns lead to decreased spending but they do not lead to changes in the number of housing units. A new administrative structure would be required to collect this tax, and it could be considered regressive since lower-income households would pay a higher proportion of their income on this tax. We estimate that a $1.50 per unit household excise tax could generate approximately $134.8 million over 10 years.

Our model also considers **local option tolls** by estimating revenues for the one city in the state where

[100] JTC Assessment of City Transportation Funding Needs, June 2019. http://leg.wa.gov/JTC/Documents/Studies/Final_CityFundingReport.pdf

[101] JTC Transit Capital Needs Assessment, June 2019. http://leg.wa.gov/JTC/Documents/Studies/Transit%20Study_PaulNeal/Final_JTCTransitCapitalNeedsTechnicalReportandExecSum.pdf

such an option might be feasible. Assuming only the City of Seattle implements a local option toll at rate of $130 million each year (2019$), we estimate this could generate $1.4 billion over 10 years.

Many other revenue options have been discussed by various agencies, organizations, policymakers, and stakeholders. While we did not model these, we briefly describe these ideas below:

- **Lift the one percent property tax cap:** Because most local transportation spending comes from general or unrestricted revenues, this cap affects funds available for transportation investments. This idea was most recently introduced as House Bill 2145 during the 2019-2020 legislative session.
- **Street utility charge:** This option would charge users based on their use of the transportation system, but this option was found unconstitutional in 1995 and may not be viable.
- **Community facilities districts (CFD):** CFDs are funding mechanisms used to fund infrastructure projects where residential and community property owners are charged an annual fee for the benefit of infrastructure on the area.[102] CFDs are regional and not tied to a specific facility.
- **Local tax for truck, delivery vehicle, or larger vehicles and/or businesses using them:** This would be a locally imposed charge for trucks, delivery vehicles, or other large vehicles and/or the businesses using those vehicles. Proponents see this as a more equitable approach to align users with payers since larger vehicles cause greater degradation to infrastructure than other vehicles. However, this tax could discourage business activities that require trucks, delivery vehicles, and large vehicles.

[102] JTC Long-Term Transportation Financing Study, January 2007. http://leg.wa.gov/JTC/Documents/TransportationFinancingStudyJan07.pdf

Exhibit 49. Evaluation of Adjustments to Local Transportation Revenue Sources

Order of Magnitude	What is the fundraising strength of this revenue option?
Applicability	How widely applicable is this option, considering current restrictions on eligible expenditures and jurisdictions that may use this?
Equity	How much does the revenue option align the burden of who pays the tax/fee/charge with who potentially benefits?
Ease of Implementation	How operationally/administratively feasible is the option? To what extent are revenues reduced by collection/administrative costs?
Legislative History	Has this revenue option been proposed in the Legislature in past or current sessions?
Resource Efficiency	Does this option incentivize energy efficiency or fuel efficiency?
18th Amendment	Is this revenue option restricted by 18th Amendment for "highway purposes"?

Revenue Sources	Fundraising Order of Magnitude *(scale below)*	Applicability	Equity	Ease of Implementation	Legislative History	Resource Efficiency	18th Amendment Restriction
Local Transportation Revenue Sources *(Require State legislative action/statutory change)*							
Communities Facilities District	N/A	🔴	🟡	🟡	✎		
Household Excise Tax	$$	🟢	🔴	🟡	✎		
Lift the 1% Property Tax Cap	N/A	🟢	🟡	🔴	✎		
Local Rental Car Sales Tax	$$	🔴	🟡	🟡			
Local Option Tolls	$$$	🔴	🟢	🟡	✎		
Local Motor Vehicle Fuel Tax Adjustment	$$	🟡	🟡	🟢	✎		
Local Tax or Fee for Truck/Delivery Vehicle/Large Vehicles and/or Businesses Using Them	N/A	🔴	🟡	🟡			
Street Utility*/Road Benefit Charge	N/A	🟢	🟢	🔴	✎		
Transportation Benefit District Sales Tax Adjustment	$$$	🟡	🟡	🟢	✎		
Transportation Benefit District Utility Tax Option	$$$	🟡	🟡	🟡	✎		

Legend

Magnitude over 10 Years		Applicability	Equity, Ease of Implementation	
$	<$50 M	Applicable to nearly all jurisdiction types/expenditures	🟢	High
$$	$50 M - $500 M	Applicable to some jurisdiction types/expenditures	🟡	Medium
$$$	$500 M - $5 B	Applicable to limited jurisdiction types/expenditures	🔴	Low
$$$$	>$5 B			

**Previously found unconstitutional*

Note: 18th Amendment restriction reflects current law.

Note: N/A indicates that BERK did not estimate the fundraising magnitude of this revenue option.
Source: BERK, 2020.

4.0. Economic Impacts of Transportation Investments

4.1. METHODOLOGY

The following 12 case studies tell stories of the challenges and benefits associated with transportation investments across the state. We selected projects that are complete or nearing completion to provide the most comprehensive investment information possible while presenting a diversity of:

- Investment types;
- Locations within the state;
- Modes of transportation;
- Orders of magnitude of cost; and
- Lead jurisdiction types.

We do not intend for these case studies to serve as a tool to evaluate the different potential impacts among transportation investments of different types, scales, or locations. Instead, the collection serves to provide tangible examples of the themes outlined throughout the rest of this report.

While most of the case studies describe purely transportation-focused projects, such as Spokane County's reconfiguration of a rural intersection into a grade-separated interchange, some present transportation investments as one component of a larger infrastructure or development project. For example, Metro Parks Tacoma's Dune Peninsula and Wilson Way Pedestrian Bridge project features new park acreage, a 600-foot long pedestrian bridge, a new roundabout, and new parking. The Wilson Way Pedestrian Bridge closed a key gap in multimodal connectivity as part of a larger park expansion project at Point Defiance Park. By featuring both transportation-specific and transportation-inclusive projects, the case studies reflect the wide range of ways that transportation investments impact local communities.

Exhibit 50 illustrates the distribution of case studies statewide and Exhibit 59 summarizes key attributes.

Exhibit 50. Economic Impact Case Studies

Source: BERK, 2020.

4.1.1. Process

Based on the criteria described above, we compiled a list of projects that collectively showcase the diversity of transportation investments in the state. The Staff Workgroup suggested some changes to the initial list of projects proposed by the consultant team. With this final list, we then:

1. Interviewed a member or members of the project team using the interview guide shown in **Appendix C: Case Study Interview Protocol.**
2. Gathered documentation from the project's lead jurisdiction and supplemented the data with desk research.
3. Submitted the draft case study to the interviewee to confirm accuracy and made final revisions based on feedback received.

Acknowledged Limitations

We conducted no original quantitative analysis of project benefits, but instead cite figures given to us by the jurisdiction or reported in reports, environmental documents, news articles, or interviews. Data was available in various forms and levels of detail for each project and as a result, the format and detail of project impacts are not consistent across all case studies.

4.1.2. Approach

Benefits

We categorize benefits into four categories:


Transportation Benefits


Fiscal Benefits


Economic Benefits


Community Benefits

Across all categories, we list benefits that are:

- **Topline, not exhaustive.** Each case study features the most significant benefits of the project, not an exhaustive list of benefits. For example, while many case study projects may engender community pride, these benefits are listed only in case studies for which these benefits were central to the project's impacts.
- **Direct and indirect.** We include both direct and indirect benefits of projects. For example, many projects created immediate direct fiscal benefits to the State and local jurisdictions through project contractors' payment of sales and use taxes on aspects of project construction. Many projects create long-term indirect fiscal benefits by facilitating economic development that results in increased tax revenues.
- **State and local.** We note whether each benefit accrues more clearly to the State, a local jurisdiction, or both. We determine state benefits using the framework provided by the State's Transportation System Policy Goals (RCW 47.04.280) of Economic Vitality, Preservation, Safety, Mobility, Environment, and Stewardship.

Challenges

One criterion for selecting case studies is that they are considered "significant" projects, substantial in scale, compared to similar types of projects in the same jurisdiction. As with all major projects, the lead jurisdictions had to overcome both common and unique challenges on the way to completion. We discuss key challenges that lead jurisdictions overcame to successfully complete the projects.

Funding Partners

We broadly categorize each project's total funding by source, including federal, state, local, and private funds. For some case study projects, we also highlight tradeoffs the lead jurisdiction had to make when deciding to prioritize the project over other potential uses of resources.

4.2. SUMMARY OF FINDINGS

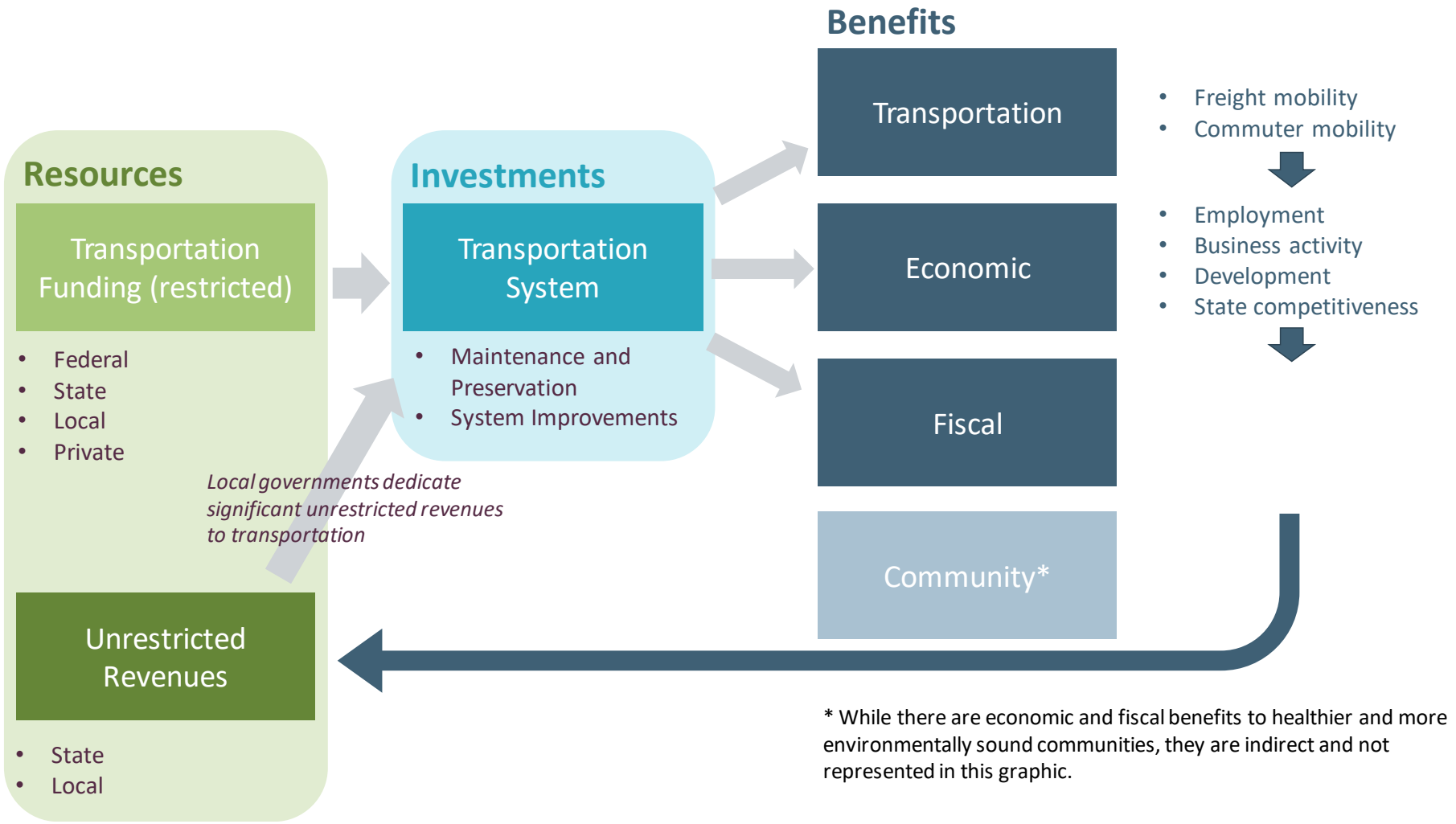
4.2.1. Cycle of Transportation, Economic, and Fiscal Benefits

Interrelated Nature of Transportation Investments and Benefits Categories

Exhibit 51 distills two processes that are common across transportation investments.

1. **Benefits of transportation projects compound.** There is an observable pattern whereby transportation benefits create economic benefits that in turn create fiscal benefits. Community benefits more indirectly play into this cycle and are not represented in this graphic. The following sections more closely examine how transportation benefits create economic benefits and how economic benefits create fiscal benefits.
2. **Jurisdictions may receive a financial return on investment.** The following sections more closely examine how tax receipts accrue and when they may offset, or even exceed, an individual jurisdiction's investment in the project.

Exhibit 51. Interrelated Nature of Benefits Categories



Source: BERK, 2020.

Transportation Benefits

Across the case study projects, transportation benefits are diverse. The most common benefits include improvements to safety; improvements to mobility, including increased capacity, connectivity, and reliability; and improvements to multimodal transportation or pedestrian infrastructure. Depending on the project, transportation benefits can accrue to local, regional, or statewide networks.

Many transportation benefits create economic benefits by improving functions essential to trade or improving the state's competitiveness for key industries. For example, WSDOT's Snoqualmie Pass East project improves freight reliability along I-90, a key thoroughfare for intrastate and interstate trade. The Port of Vancouver USA's West Vancouver Freight Access project improves the Port's capacity and competitiveness, increasing the Port's number of jobs and the trade that will pass through the state.

Economic Benefits

Case studies reveal that the state's transportation network is an essential contributor to state, regional, and local economies, with benefits ranging from job creation to improved freight mobility. Many case study projects also broadly support economic activity, including increasing foot traffic for local businesses and providing transportation access to major economic drivers, including private industry or a port with statewide economic impact.

Many economic benefits lead to fiscal benefits for the State and local jurisdictions either by creating net new taxable activity or by sustaining taxable activity that would have ceased without the project. For example, the Port of Vancouver USA project discussed in the previous section increases the trade that will pass through the state, thereby increasing the tax revenue that the Port will generate for the State and local jurisdictions.

Fiscal Benefits

Two fiscal benefits were the most common among case study projects:

1. Many projects reduce ongoing operating and maintenance costs. Some others offset the need for separate capital investments.
2. All case studies result in tax receipts to the State and/or local jurisdictions. There are two components of a project's tax receipts:
   A. Projects directly generate **one-time construction-based tax revenues.**
   B. As noted in the above section, projects enhance economic activity and thereby generate **ongoing tax revenues.**

   Exhibit 52 illustrates how these two components combine to create the total tax receipts attributable to a project, and the following sections detail both components.

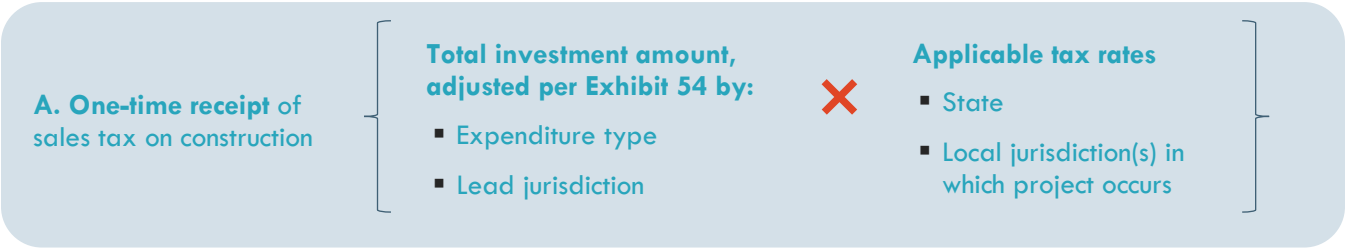
Exhibit 52. Function to Determine Total Tax Receipts Attributable to a Project

Source: BERK, 2020.

Component A: One-time receipt of taxes on construction

Calculating the one-time receipt of sales tax revenue on construction costs is not as simple as applying state and local tax rates to the total construction costs. As Exhibit 53 shows, the taxable construction costs must first be adjusted by expenditure type and lead jurisdiction.

Exhibit 53. Function to Determine One-time Construction-based Tax Receipts



Source: BERK, 2020.

Exhibit 54 details how construction costs are adjusted by expenditure type and lead jurisdiction to determine the taxable amount. Typically, the State pays more taxes than a local jurisdiction on a transportation project due to the Public Road Construction Exemption (RCW 82.04.050(10)), which exempts construction labor and services from sales and use tax when construction occurs on highways owned by cities, counties, special districts, or the federal government. This means that the State pays tax at times when comparable investment by other entities would not be taxed.

There are a few factors that do **not** impact total tax revenues collected:

- The original source of funds before the lead entity acquired funding is irrelevant to taxation. For example, if a local jurisdiction receives a grant from the State and uses this grant money toward taxable construction costs, taxes on construction costs are still calculated for non-State jurisdictions in Exhibit 54.
- The location in which a contractor purchases materials is irrelevant to taxation. The local tax rate on construction costs depends on the location where the project occurs.

Exhibit 54. Road construction project expenditures subject to sales and use taxes based on project lead jurisdiction type

Jurisdiction leading the project	Expenditure Type: Contractor charges and labor	Purchase of materials permanently integrated into the infrastructure*	Purchase of materials consumed by the contractor in the course of work (i.e., not permanently integrated into the infrastructure)*
Town, City, or County	✗	✗	✓
Transportation Benefit District	✗	✗	✓
State	✓	✗	✓
Federal Government	✗	✗	✓

** The location of a construction project determines the applicable sales and use tax rate, regardless of the location where a contractor purchases materials.*

Source: BERK, 2020; Joint Transportation Committee, 2014.

If the lead jurisdiction collects sales and use taxes, the jurisdiction will effectively tax itself on taxable project costs. As a result, the lead jurisdiction effectively transfers some tax payments from the transportation budget to the general fund. Exhibit 55 shows which jurisdictions receive tax revenues on a construction project based on the lead jurisdiction. The taxes collected are subject to the adjustments based on Exhibit 54.

Exhibit 55. Jurisdictions that receive tax revenues on a construction project based on project lead jurisdiction type

		Recipient of Tax Revenues (jurisdiction in which the project is located)		
		Town, City, or County	**Transportation Benefit District**	**State**
Jurisdiction leading the project	**Town, City, or County**	↺	✓	✓
	Transportation Benefit District	✓	↺	✓
	State	✓	✓	↺
	Federal Government	✓	✓	✓

Key

↺ The lead jurisdiction taxes itself, effectively resulting in an interfund transfer from the transportation/project budget to the general fund.

✓ Recipient jurisdiction receives Sales and Use taxes on consumables only.

✓ Recipient jurisdiction receives Sales and Use taxes on both consumables and contractor charges.

Source: BERK, 2020.

The below examples from case study projects illustrates the rules outlined in Exhibit 54 and Exhibit 55.

- **State lead: WSDOT US-2 I-90 to Euclid Paving.** WSDOT paid sales and use taxes on both contractor labor and materials the contractor consumed during construction, but not on materials integrated into the roadway. WSDOT paid these taxes to the State and to the City of Spokane, where the entire project is located. Notably, since 99% of project funding stemmed from federal and local sources, the State's tax revenues from this project are greater than WSDOT's 1% investment in the project. Both the City of Spokane and the State received net revenue from these tax payments.
- **Local jurisdiction lead: City of Seattle Lander Street Bridge.** The City of Seattle paid sales and use taxes on materials the contractor consumed during construction, but not on contractor labor or

materials integrated into the Lander Street Bridge. The City paid these taxes to the State and to itself. Only the State received net revenue from the City's tax payments on this project.

- **Local jurisdiction lead: Community Transit *Swift II* Bus Rapid Transit.** Community Transit paid sales and use taxes on materials the contractor consumed during construction, but not on contractor labor or materials integrated into the *Swift II* infrastructure. Community Transit paid these taxes to the State and to each of the jurisdictions through which the *Swift II* line extends, including Bothell, Everett, and Mill Creek. Community Transit is a public transit authority and has a separate budget from any of these jurisdictions, so the State and each of these jurisdictions received net revenue.

Some case studies include the approximate value of sales and use taxes paid on project construction. In some of these cases, project leads tracked total taxes paid and reported this number to us. In other cases, we reviewed total project investments to identify taxable costs, then approximated the tax revenues to the State or local jurisdictions based on the local sales and use tax rate.

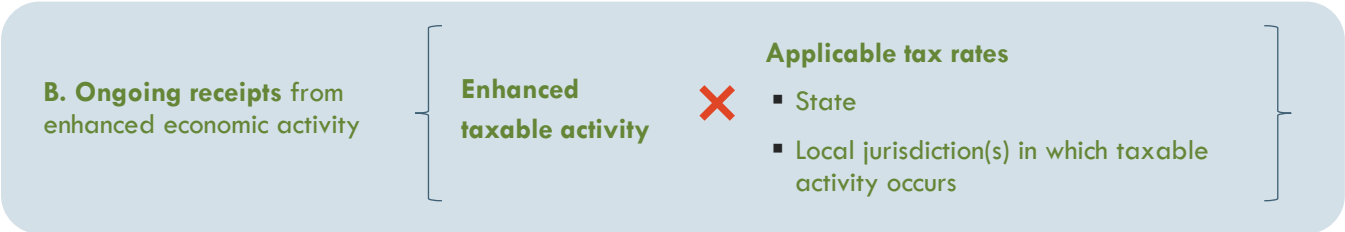
Other case studies omit the value of direct tax revenues due to incomplete data. For example, one project contractor provided the lead jurisdiction a single invoice for multiple concurrent projects, preventing the lead jurisdiction from determining the taxes paid only for the case study project. In these cases, we note that while the State or local jurisdictions received sales and use taxes, the value of the revenue is unknown.

Component B: Ongoing tax receipts from enhanced economic activity

As noted in the above sections, many projects enhance economic activity and thereby generate ongoing tax revenues. Transportation projects do this either by creating net new taxable activity or by sustaining taxable activity that would have ceased without the project. This benefit varies by type of jurisdiction. A local jurisdiction will benefit from any new local economic activity, regardless of whether it was created anew or diverted from another location. The State only benefits if an investment brings economic activity to the state that would have otherwise been lost to another state.

The calculation to determine ongoing tax receipts from transportation projects is more straightforward than that of one-time construction-based tax revenues, as illustrated in Exhibit 56.

Exhibit 56. Function to Determine Ongoing Tax Receipts



Source: BERK, 2020.

Return on Transportation Investments

While all transportation investments should generate a range of benefits, it is also possible to calculate return on investment (ROI) from a purely fiscal perspective: what amount of tax revenue does a jurisdiction receive relative to its expenditures? Exhibit 57 presents a simplified function to calculate the return based on the tax receipts described in the prior section.

Exhibit 57. Function to Determine Return on Investment

Return on investment for a jurisdiction (either State or local) is a function of:

$$\frac{\text{New tax receipts attributable to the project}}{\text{Investment amount by that jurisdiction.}}$$

Investment amount by that jurisdiction. Does not include investments from other jurisdictions, such as grants.

Source: BERK, 2020.

Because tax receipts are based on total taxable activity, a jurisdiction can receive returns far greater than its investment. For example, WSDOT US-2 I-90 to Euclid Paving is an example where the large percentage of federal funding (97% of project total) meant that the State and local governments generated more in tax revenues than they invested in the project.

Community Benefits

Each case study project created benefits specific to the needs of the community. Several projects resulted in substantial environmental benefits, such as remediating contaminated soil and improving water or air quality. Many projects improved opportunities for Washingtonians to access recreation or get around by walking, biking, or other non-motorized modes of transportation. Some jurisdictions leveraged projects to simultaneously improve utilities infrastructure while project construction had made this infrastructure easily accessible for utilities construction crews.

Some projects created unique community benefits that we did not encounter in other case study projects. For example, the City of Vancouver's waterfront street system project supports the development of new housing stock; the City of Colville's Colville 2000 projects enhance community identity; and Metro Parks Tacoma's Dune Peninsula and Wilson Way Pedestrian Bridge projects enhanced youth education opportunities during project construction.

Although some community benefits result in economic and fiscal benefits that impact a transportation project's total return on investment, these impacts are typically indirect. Some case studies show the economic impacts of community benefits, such as the dollar equivalent of carbon emissions saved, but we do not further discuss these impacts in this report.

Funding Challenges

For nearly all case study projects, lead jurisdictions were forced to assemble funding from multiple sources to complete their projects – ranging up to as many as 21 distinct funding sources for one project. In most cases, project funding drew on a combination of direct budgeting and revolving sources,

and in some cases also one-time, unique sources such as private contributions. This piecemeal pattern of funding was necessary because no singular source could provide sufficient resources to fund the entire project.

Combining different funding sources and managing competing requirements and schedules requires time and resources. The increased level of effort to assemble and coordinate funding sources creates additional costs for the lead jurisdiction, compounding the initial challenge of acquiring project funding. In addition, "timeout" provisions threaten loss of funds from a specific source if other funding cannot be brought to bear quickly enough. While not evidenced among our case studies, it is possible that a lack of a clear path for major project funding could cause some projects to stall partway through completion, resulting in a waste of time and dollars.

In a world of limited resources, lead jurisdictions cited a wide range of reasons for prioritizing their case study projects over other potential investments, and a few trends surfaced. Many projects were prioritized because of their connections to regional plans or larger regional projects occurring in conjunction. Other projects were prioritized because they addressed essential transportation systems that were failing or no longer able to provide a needed level of service.

4.2.2. Economic and Fiscal Impacts of Select Case Study Projects

Assessing the economic and fiscal impact of transportation projects requires isolating outcomes that are directly attributable to a project. This data is not always available, as it can be challenging to separate project impacts from macro forces.

Exhibit 58 summarizes four case study projects where available data allowed us to highlight economic impacts and calculate a fiscal return on investment. Our analysis below likely underestimates each project's impacts, which extend beyond those listed.

Exhibit 58. Estimated Returns on Investment for Select Case Study Projects

State ROI	Local ROI	
Runway Realignment | Pullman-Moscow Regional Airport		
120% by project completion.	**15%** 10 years after project completion.	**Retained jobs and economic activity.** Local jurisdictions invested $7.2 million in the project and collected $1.3 million in construction sales and use taxes. Based on 2014 rates, local property tax and sales and use tax revenues will total $700,000 annually. We attribute this ongoing revenue stream to the project, which **enabled the airport to comply with FAA standards to retain and expand its capacity for commercial air service**, the bulk of the airport's function. For its part, the State invested $3 million in the project and **collected more than twice that amount ($6.7 million) in one-time construction sales and use taxes.** Beyond this return, the State will continue to collect ongoing tax revenues as a result of the project.
Duportail Bridge | City of Richland		
150% 15 years after project completion.	**225%** by project completion, plus $2.5 million in cost savings annually.	**Avoided higher-cost investments.** This new bridge diverts traffic from Interstate 182 by providing a more direct, local street alternative route across the Yakima River. Without the bridge, the **Interstate would be due for $80 million of upgrades** over the next 15 years, a cost that the State avoided by investing $31.7 million in this project. The bridge allowed the City to **avoid constructing an additional fire station** at an estimated cost of $10 million in a capital investment. This achieves a 225% ROI on the City's $3.1 million without considering the savings in operating costs required to operate an additional station, estimated at $2.5 million annually.
Highway US-2, I-90 to Euclid Paving | WSDOT		
515% by project completion.	**20%** by project completion.	**Leveraged federal investments generate state and local taxes.** Construction-based sales and use taxes comprised $374,000 of the project budget, 97% of which was funded by federal dollars. The State collected $276,250 in one-time construction tax revenues and the City of Spokane collected $97,750. **Both jurisdictions collected more tax revenue from the project than they invested in the project:** the State invested $44,786 and the City invested $81,420. Because 97% of the project budget was funded through federal funds, **the State and the City of Spokane received more in one-time sales and use taxes on construction than they invested in the project.**
Vancouver Waterfront Street System | City of Vancouver		
20% in 2024, after five years of increased.	**255%** in 2020 property tax revenues.	**Stimulated private investment to develop previously unusable land.** We estimated returns on investment by comparing actual and projected property tax revenues to 2014 pre-project levels. It is reasonable to attribute development of the property and increased property tax values to the project, because the land was not easily accessible or usable prior to the investment. To project future property tax revenues, we examined 2020 taxes billed by parcel, estimated how future completion of buildings under construction would increase taxable value, and applied 2020 tax rates to the new value. We did not account for the impacts of a potential economic downturn associated with COVID-19.

Note: We rounded all returns on investments to the nearest 5% to reflect the uncertainty inherent in such estimations.

Source: BERK, 2020. See case studies for detailed citations.

SUMMARY OF CASE STUDIES

Exhibit 59. Summary of Case Studies

CASE STUDY PROJECT	LEAD JURISDICTION	TYPE OF JURISDICTION	MODE	INVESTMENT TYPE	LOCATION	INVESTMENT	DESCRIPTION
Runway Realignment	Pullman-Moscow Regional Airport	Port District	Air	Maintenance, Capacity Expansion	East	$154M	Modifies runway to allow commercial aviation to continue
Dune Peninsula and Wilson Way Pedestrian Bridge	Metro Parks Tacoma	Park District	Bridge	Capacity Expansion	West	$80M	Expands Point Defiance Park and completes multimodal trail between downtown Tacoma and the Park
Duportail Bridge	City of Richland	City	Bridge	Capacity Expansion	Central	$38M	Creates Yakima River crossing to connect downtown to growth area
Lander Street Bridge	City of Seattle	City	Bridge	Capacity Expansion	West	$96M	Separates grade of railroad and street
M.V. Spokane Dockside Preservation	WSDOT	State	Ferry	Preservation	West	$13M	Addresses preservation needs and existing deficiencies
Highway US-2, I-90 to Euclid Paving	WSDOT	State	Highway	Preservation	East	$5M	Resurfaces portion of Highway US-2
Snoqualmie Pass East	WSDOT	State	Highway	Capacity Expansion	Central	$991M	Widens and improves 15 miles of I-90 and adds wildlife crossings
West Vancouver Freight Access	Port of Vancouver	Port District	Rail	Capacity Expansion	West	$251M	Constructs new port access track and new loop track
Bigelow Gulch/ Forker Road Interchange	Spokane County	County	Road	Preservation, Capacity Expansion	East	$10M	Separates grade at intersection
Colville 2000 Projects	City of Colville	City	Street	Capacity Expansion	East	$20M	Improves downtown streetscape and creates freight truck bypass
Vancouver Waterfront Street System	City of Vancouver	City	Street	Capacity Expansion	West	$14M	Creates new street system that supports mixed-use redevelopment
Swift II Bus Rapid Transit	Community Transit	Public Transit Agency	Transit	Capacity Expansion	West	$74M	Expands bus rapid transit service in Snohomish County

Exhibit 60. Summary of Case Study Benefits

PROJECT | JURISDICTION	TRANSPORTATION BENEFITS	ECONOMIC BENEFITS	FISCAL BENEFITS	COMMUNITY BENEFITS
Runway Realignment | Pullman-Moscow Regional Airport	Improves reliability and maintains airport service.	Created and sustains jobs, maintains commercial air service, and supports economic activity.	Generated construction taxes and ongoing taxes.	Supports state schools.
Dune Peninsula and Wilson Way Pedestrian Bridge | Metro Parks Tacoma	Improves safety and multimodal connectivity	Created jobs and increases tourism	Generated construction taxes.	Improves water quality, remediates contaminated soil, and created new shoreline and estuary. Enhances recreation and youth education.
Duportail Bridge | City of Richland	Reduces travel time and increases safe and convenient multimodal connectivity.	Created jobs and supports economic activity.	Generated construction taxes and ongoing taxes. Saves operating and capital costs	Improves emergency response times, recreation access, and environmental health. Upgrades utility infrastructure.
Lander Street Bridge | City of Seattle	Improves safety, eliminates delays, and increases active transportation opportunities.	Created jobs, supports economic activity, improves rail reliability, and reduces truck freight delay.	Generated construction taxes and ongoing taxes. Creates tax benefits.	Improves air quality and emergency response times.
M.V. Spokane Dockside Preservation | WSDOT	Improves safety and travel reliability.	Created jobs, generated federal spending, and supports business commuters and freight.	Saves operating and maintenance costs and maximizes vessel lifespan.	Maintains popular ferry system and avoids waste of resources.
Highway US-2, I-90 to Euclid Paving | WSDOT	Improves safety and increases capacity.	Created jobs and improves freight mobility.	Generated construction taxes and ongoing taxes.	Increases ADA accessibility
Snoqualmie Pass East | WSDOT	Improves safety, capacity, and road alignment. Reduces risks and closures.	Creates jobs, improves freight reliability, and supports economic activity.	Generated construction taxes and ongoing taxes. Promotes least lifecycle cost.	Supports tribal use of local and customary areas. Improves water quality, habitat, and recreation access.
West Vancouver Freight Access | Port of Vancouver	Increases port capacity, improves rail access to the port, and reduces regional rail congestion by 40%.	Created and sustains jobs, supports economic activity, and improves port competitiveness.	Generated construction taxes and ongoing taxes.	Creates habitat and reduces noise pollution.
Bigelow Gulch/ Forker Road Interchange | Spokane County	Improves safety, capacity, and connectivity. Eliminates seasonal restrictions.	Created jobs and improves reliability and freight mobility.	Generated construction taxes and saves operating and maintenance costs.	Improves air quality and water quality.
Colville 2000 Projects | City of Colville	Improves traffic flow, walkability, and safety. Restores downtown parking	Created jobs. Supports freight mobility and economic activity.	Generated construction taxes and saves operating and maintenance costs.	Improves small-town atmosphere, utility infrastructure, and county fairgrounds.
Vancouver Waterfront Street System | City of Vancouver	Improves connectivity, active transportation opportunities, and pedestrian safety.	Created jobs and supports a major economic driver. Draws tourism and encouraged private investment.	Generated construction taxes and ongoing taxes. Leveraged private investment for new infrastructure.	Remediates contaminated soil and supports new units of housing.
***Swift II* Bus Rapid Transit** | Community Transit	Improves connectivity, safety, business access, transit network, and active transportation. Reduces travel time.	Created jobs. Supports economic activity and a major economic driver.	Generated construction taxes and saves operating and maintenance costs.	Encouraged development and improves transit accessibility.

Source: BERK, 2020.

Appendix A: Technical Methodology for Needs Estimation

This technical methodology outlines the data sources, assumptions, and methodology used by BERK to produce the 10-year categorical needs estimates in the *2020 JTC Statewide Transportation Needs Assessment*. This appendix is organized into the following sections:

- City Streets, County Roads, and State Highways
  - Programmatic needs (administration, operations, maintenance)
  - System preservation and deferred maintenance
  - System improvement
- State Airports
  - Programmatic needs (administration, operations, maintenance)
  - Capital needs (system preservation and system improvement)
- State Ferries
  - Programmatic needs (administration, operations, maintenance)
  - Capital needs (system preservation and system improvement)
- State Rail
  - Programmatic needs (administration, operations, maintenance)
  - Capital needs (system preservation and system improvement)
- State Active Transportation
  - Programmatic and capital needs
- Tribal Nations
  - Ferry/Transit
    - Programmatic, system preservation, and system improvement
  - Roads/Bridges
- Port Districts – Marine Ports, Airports, Rail
  - Programmatic needs (administration, operations, maintenance)
  - Capital needs (system preservation and system improvement)
- County and City Airports
  - Programmatic, system preservation, and system improvement
- Public Transit Authorities – Bus, Transit, Rail
  - Programmatic, system preservation, and system improvement

CITY STREETS, COUNTY ROADS, AND STATE HIGHWAYS

Programmatic Needs (Administration, Operations, Maintenance)

County Roads & City Streets

BERK collected and summarized historical expenditures for county roads and city streets from the SAO Financial Intelligence Tool (FIT) for the period of 2008 to 2018. Based upon standardized expenditure categories in the FIT, road and street expenditures were sorted into two categories: administration & operations and maintenance, as shown in Exhibit 61.

Exhibit 61. Expenditure Categorization from SAO FIT Expenditure Categories

Expenditure Category	SAO FIT Expenditure Category
Administration and Operations	▪ Roads/Streets General Administration and Overhead TOTAL ▪ Roads/Streets Operations TOTAL ▪ Roads/Streets Extraordinary Operations TOTAL ▪ Public Works – Centralized Services TOTAL
Maintenance	▪ Roads/Streets Ordinary Maintenance TOTAL

Source: SAO Financial Intelligence Tool, 2019; BERK, 2020.

Categories were then inflation adjusted to 2019 dollars. In each category, annual estimates were projected from 2019 through 2031 by fitting either a line or curve of best fit to historical expenditures from 2008 to 2018. This period was chosen because it represents the full historical data available from the SAO FIT and includes both economic recessionary and expansionary periods.

Estimates were then reported as ranges based on a 10% plus or minus percentage range around the initial estimated amount. This approach of presenting estimates as a range of probable costs based on a percentage above and below initial estimates is consistent with WSDOT Planning Level Cost Estimation methodology.[103]

We used the *2019 JTC Assessment of City Transportation Funding Needs* was used in our analysis as a comparison and check for city street programmatic needs.[104]

[103] Murshed, Ph.D., P.E., D., & McCorkhill, P. (2012, December). *Planning Level Cost Estimation*. Retrieved from Washington State Department of Transportation: https://www.wsdot.wa.gov/mapsdata/travel/pdf/PLCEManual_12-12-2012.pdf
[104] JTC, *Assessment of City Transportation Funding Needs,* June 2019.

State Highways

For state highways, BERK collected 2010 to 2019 historical expenditure information provided by WSDOT. Based upon WSDOT budget programs and with guidance from WSDOT staff, BERK categorized expenditures into administration & operations and maintenance based on the allocations shown in Exhibit 62 (allocations provided by WSDOT budget staff).

Exhibit 62. Expenditure Categorization from WSDOT Budget Programs

Budget Program Name	A&O% vs. M%
Toll Maintenance and Operations	91% A&O, 9% M
Information Technology	60% A&O, 40% M
Facilities, operating	60% A&O, 40% M
Program Delivery, Management, and Support	100% A&O
Highway Maintenance	11% A&O, 89% M
Traffic Operations, operating	100% A&O
Transportation Management and Support	100% A&O
Transportation Planning, Data, and Research	100% A&O
Public Private Partnerships	10% A&O*
Charges from Other Agencies	100% A&O of other state agencies
Public Transportation	2% A&O*
Local Programs, operating	100% A&O

** The remaining portion of these expenditures are for grants to local transportation providers; these are excluded from the projections of state highway expenditures to avoid double counting with other jurisdiction types.*

Source: WSDOT, 2020; BERK, 2020.

Categories were then inflation adjusted to 2019 dollars. In each category, annual estimates were projected from 2019 through 2031 by fitting either a line or curve of best fit to historical expenditures from 2010 to 2019. This period was chosen because it represents the full historical data available from the SAO FIT and includes both economic recessionary and expansionary periods.

Estimates were reported as ranges based on a 10% plus or minus percentage range around the initial estimated amount. This approach of presenting estimates as a range of probable costs based on a percentage above and below initial estimates is consistent with WSDOT Planning Level Cost Estimation methodology.[105]

System Preservation and Deferred Maintenance (Deferred Preservation)

Roads, Streets, and Highways

Two sources were used to identify the location of roadways for calculations regarding the estimated preservation costs for the roads, streets, and highways in the state:

- **TIB Street Inventory.** TIB maintains a comprehensive street inventory for cities with populations under 5,000 as part of its Small City Street Preservation Program. This information includes the pavement type, dimensions of the roadway, and pavement condition ratings.
- **State HPMS data.** At the state level, WSDOT compiles information about public roadways for the federal Highway Performance Monitoring System (HPMS). This includes information about the location of all public roadways in the state, including data on the characteristics of streets and highways in the National Highway System.

Based on this information about the entire network, preservation costs were calculated according to the location of the roadway and the available data:

- **Small cities.** For communities with Pavement Condition Rating data available from TIB, per-mile preservation costs were projected generally on a square foot basis for surface treatments based on the estimated costs of a seal coat over a regular 15-year maintenance schedule.
- **Urban areas.** For locations within a city, Urban Growth Area, or "urbanized area" (calculated from WSDOT 2013 boundaries), the cost of surface treatments was calculated by road class and WSDOT region on a per-mile basis. Based on expected cycles of up to 18–20 years, these costs were annualized and calculated for each road segment in the system.
- **Rural areas.** For locations outside of cities and urban areas, the cost of surface treatments was calculated by WSDOT region for county roads on a per-mile basis and annualized based on expected treatment cycles. We assumed lower maintenance costs for major county roads than comparable city roads, given different levels of traffic and expected infrastructure needs.

A concern with this methodology voiced in discussions with local agencies is that many local transportation and public works departments may not apply regular preservation treatments to local roads, focusing preservation activities on maintaining the condition of major routes instead. Without a comprehensive assessment of these policies on a community-by-community basis, the final estimates of preservation costs use full preservation of local roads as an upper bound to the estimate, with no preservation of local roads as the lower bound.

[105] Murshed, Ph.D., P.E., D., & McCorkhill, P. (2012, December). *Planning Level Cost Estimation.* Retrieved from Washington State Department of Transportation: https://www.wsdot.wa.gov/mapsdata/travel/pdf/PLCEManual_12-12-2012.pdf

We used the *2019 JTC Assessment of City Transportation Funding Needs* as a comparison and check for city street system preservation needs.

Bridges

Estimates of bridge maintenance costs were based on the 2018 National Bridge Inventory (NBI), available from the US Department of Transportation. This was supplemented by a review of the 2019 inventory data available from WSDOT, as well as additional inventory data for short-span bridges with span lengths of less than 20 feet, which are not addressed in the NBI.

For this calculation, estimated preservation costs rely on two distinct calculations: estimated costs of preserving the bridge during its useful life, and the projected costs of bridge replacement or major rehabilitation if the bridge is beyond its useful life. For the purposes of this analysis, both costs are assumed to be considered preservation, even the expansion of existing bridge capacity during rehabilitation or replacement. Preservation costs in this analysis were assumed to be the same across different geographies.

Calculation of these figures are provided as follows:

- **Regular preservation.** Cost estimates for regular preservation activities on a bridge were calculated based on the area of the bridge deck, based on the bridge materials (typically either concrete or steel). The expected bridge preservation costs were annualized over the expected bridge lifetime and reported as a yearly cost.
- **Bridge replacement.** For the 10-year period under review, it was assumed that bridges will need replacement if they are either in "Poor" condition according to the National Bridge Inventory rating system, or if they are in "Fair" condition but past their expected lifetime in the 2018 Inventory. Calculations for the costs of bridge replacements were made based both on estimates per square foot of the existing bridge deck, and listed replacement/rehabilitation costs in the NBI.

These figures are reported separately in the description of this analysis and in the text, and a combined figure is given in the overall estimate reported in the summary tables. A range for replacement costs is provided based on the high and low replacement/rehabilitation costs by bridge in the NBI.

Calculations of bridge preservation and replacement for short-span bridges are coordinated in a similar way, but as a condition classification comparable to the NBI field is not provided, the calculation only assumes that bridges are replaced at the

The *2019 JTC Assessment of City Transportation Funding Needs* was used in our analysis as a comparison and check for city bridge system preservation needs.

Deferred Maintenance (Deferred Preservation)

Costs for deferred maintenance (deferred preservation) activities for the street network and bridges were not included in the 10-year categorical needs estimates. Instead, given the lack of consistent statewide information, we evaluated these costs in qualitative terms. We used several approaches to understand the magnitude of this issue:

- **Short-term gaps between needs and current funding.** The calculated estimates of preservation needs for both streets and bridges were compared with recent expenditures on preservation and

bridge replacement at the state, county, and city levels over the past five years to understand the short-term gaps in preservation. These gaps are likely associated with deferring an ideal preservation schedule and are reported to highlight likely shortfalls in ongoing preservation.

- **Available condition ratings of the street network.** Information about the condition ratings of small cities and selected highway and street segments are available from existing sources (the TIB Street Inventory and the 2018 HPMS, respectively). Statistics about current conditions are provided to indicate the general status of these roadways and highlight areas where a lack of investments in preservation may have compromised these elements of the system.
- **Interviews with city transportation and public works departments.** As part of the *2019 JTC Assessment of City Transportation Funding Needs*, several city transportation and public works departments were interviewed. This input is reported, which highlights the magnitude of local deferred maintenance and preservation activities.

System Improvement

Streets, Roads, and Bridges

One challenge with identifying needs for system improvement is that the expansion of system accessibility, mobility, and functionality is based on policy goals that may differ from jurisdiction to jurisdiction and in some cases, it may be challenging or infeasible for certain jurisdictions to meet, even with state assistance.

Additionally, the level of system improvement in the Washington State network is highly dependent on temporary programs. The 2015 Connecting Washington package, in particular, is based on an 11.9 cent increase in the state gas tax and is expected to invest $16 billion on state multimodal transportation infrastructure to 2032. Although this program will not expire until after the period of interest for this study, these investments need to be noted as outlays that are dependent on this source of funding.

Finally, a significant issue is the notion of "fiscally constrained" estimates with transportation capital project lists. Since 1991, the US Department of Transportation has incorporated fiscal constraint provisions with transportation planning at the state and regional levels. These provisions link to the needs for these planning documents to include a financial plan that identifies the public and private resources available to support transportation projects. Based on these financial plans, project lists can only include those projects where funding "can reasonably be expected to be available".[106]

Considering these factors, our analysis was based on the needs identified in the 6-year State Transportation Improvement Program (STIP) lists, as well as WSDOT budgeting information for capital expenditures and identified unfunded needs. Although these figures represent a "constrained" view of need in the state given state and local funding limitations, they identify which investments were prioritized given these limitations, and is useful to bound for estimating regular system improvements necessary to keep pace with previous improvements.

[106] Fiscal requirements for long-range statewide transportation plans are included under 23 CFR 450.216(m), and fiscal constraint requirements for state Transportation Improvement Programs are identified under 23 CFR 450.218(o). For 20-year metropolitan transportation plans, requirements for financial plans and identification of funding sources are included under 23 CFR 450.324(f)(11), and the fiscal constraint requirements for regional TIPs are included under 23 CFR 450.326(k).

Given that the STIP project list includes project lists from both 4- and 6-year TIPs at the regional and local levels, and there is a concern about the impacts of fiscal constraints on the estimates of need, we approached projections to a 10-year estimate in two ways. For a lower-bound estimate, we removed estimates of capital expenditures identified as extending beyond the first four years of the timeline, and highlighted the funding level over the four-year period as a standard level of capital funding required to address needs. A high-end estimate to account for fiscal constraints versus needs assumed that all relevant projects listed in the STIP would be required over a four-year period.

We also reviewed available Regional Transportation Improvement Plans (RTIPs), Regional Transportation Plans, and other documents requested from each of the state's RTPOs to determine the difference between the low-end estimate and the projected needs over the four- or six-year periods covered by each RTIP. In these cases, documentation from different jurisdictions highlighted that there were considerable additional needs beyond what was provided in Transportation Improvement Programs. Without higher-level measures of levels of service and comparable project lists developed by each jurisdiction, however, it is challenging to compile a consistent state-wide listing of project needs beyond what is provided as part of the STIP.

STATE AIRPORTS

Programmatic Needs (Administration, Operations, Maintenance)

For state airports, BERK collected 2010 to 2019 historical expenditure information provided by WSDOT. Based upon WSDOT budget programs, BERK categorized expenditures into one programmatic cost category as shown in Exhibit 63. With programmatic costs not being report in discrete administration & operations versus maintenance categories by WSDOT and absent a method for breaking them apart, all programmatic costs were rolled into one category.

Costs were then inflation adjusted to 2019 dollars. Annual estimates were projected from 2019 through 2031 by fitting either a line or curve of best fit to historical expenditures from 2010 to 2019. This period was chosen because it represents the full historical data available from the SAO FIT and includes both economic recessionary and expansionary periods

Estimates were then reported as ranges based on a 10% plus or minus percentage range around the initial estimated amount. This approach of presenting estimates as a range of probable costs based on a percentage above and below initial estimates is consistent with WSDOT Planning Level Cost Estimation methodology.[107]

[107] Murshed, Ph.D., P.E., D., & McCorkhill, P. (2012, December). *Planning Level Cost Estimation*. Retrieved from Washington State Department of Transportation: https://www.wsdot.wa.gov/mapsdata/travel/pdf/PLCEManual_12-12-2012.pdf

Exhibit 63. State Airport Expenditure Categorization

Expenditure Category	WSDOT Budget Programs
Programmatic	Aviation Operations

Source: WSDOT, 2020; BERK, 2020.

Capital Needs (System Preservation and System Improvement)

System preservation and system improvement needs for state airports were sourced from the 2014 WSDOT Airport Investment Study by inflation adjusting forward the average annual state share of statewide airport needs and spreading those over the 10-year period of 2022-2031.

The Airport Investment Study estimates 20-year need by 1) calculating total baseline need using Statewide Capital Improvement Plan data; 2) adjusting to total projected need using projections for projects that were likely but not yet annotated on airport CIPs; and then 3) subtracting non-program projects to get to a final number of $3.56 billion over 20 years, with estimated statewide share of $242 million over 20 years.[108]

Within the Airport Investment Study, statewide needs were not broken out into discrete system preservation or system improvement needs. Absent a method for breaking them apart, all capital costs were rolled into a total capital needs category in this study.

Estimates were then reported as ranges based on a 10% plus or minus percentage range around the initial estimated amount. This approach of presenting estimates as a range of probable costs based on a percentage above and below initial estimates is consistent with WSDOT Planning Level Cost Estimation methodology.[109]

STATE FERRIES

Programmatic Needs (Administration, Operations, Maintenance)

Historical expenditures for state ferries were collected from the Federal Transit Administration's (FTA) National Transit Database (NTD), for the period of 2008 to 2018. Ferry expenditures were categorized as shown in Exhibit 64 and into two expenditure categories – administration & operations and maintenance – as shown in Exhibit 65.

[108] WSDOT Airport Investment Study Executive Summary, 2014. https://www.wsdot.wa.gov/sites/default/files/2013/03/25/aviation-ais-solutions.pdf

[109] Murshed, Ph.D., P.E., D., & McCorkhill, P. (2012, December). *Planning Level Cost Estimation.* Retrieved from Washington State Department of Transportation: https://www.wsdot.wa.gov/mapsdata/travel/pdf/PLCEManual_12-12-2012.pdf

Exhibit 64. State Ferries Mode Categorization from FTA NTD Modes

Mode	FTA NTD Mode
Ferry	Ferryboat

Source: FTA National Transit Database, 2019; BERK, 2020.

Exhibit 65. State Ferries Expenditure Categorization from FTA NTD Expenditure Categories

Expenditure Category	FTA NTD Expenditure Category
Administration and Operations	Vehicle Operating Expenses and General Administration Expenses
Maintenance	Vehicle Maintenance Expenses and Non-Vehicle Maintenance Expenses

Source: FTA National Transit Database, 2019; BERK, 2020.

Categories were then inflation adjusted to 2019 dollars. In each category, annual estimates were projected from 2019 through 2031 by fitting either a line or curve of best fit to historical expenditures from 2008 to 2018. This period was chosen because it represents the full historical data available from the SAO FIT and includes both economic recessionary and expansionary periods

Estimates were then reported as ranges based on a 10% plus or minus percentage range around the initial estimated amount. This approach of presenting estimates as a range of probable costs based on a percentage above and below initial estimates is consistent with WSDOT Planning Level Cost Estimation methodology.[110]

[110] Murshed, Ph.D., P.E., D., & McCorkhill, P. (2012, December). *Planning Level Cost Estimation*. Retrieved from Washington State Department of Transportation: https://www.wsdot.wa.gov/mapsdata/travel/pdf/PLCEManual_12-12-2012.pdf

Capital Needs (System Preservation and System Improvement)

System preservation and system improvement costs for state ferries were sourced from the Washington State Ferries 2040 Long Range Plan (LRP).[111] System preservation costs were derived from the LRP's categories of preservation and improvement relative to vessel and terminal capital investment. System improvement costs were derived from LRP categories of new build and electrification of the fleet relative to vessel and terminal capital investment. Since estimates in the LRP spanned until 2040 but were broken out into biennial costs, we isolated 2022-2031 costs by collecting biennial costs between 2021-2023 and 2029-2031.

Estimates were then reported as ranges based on a 10% plus or minus percentage range around the initial estimated amount. This approach of presenting estimates as a range of probable costs based on a percentage above and below initial estimates is consistent with WSDOT Planning Level Cost Estimation methodology.[112]

STATE RAIL

Programmatic Needs, System Preservation, and System Improvement

For state airports, BERK again collected 2010 to 2019 historical expenditure information provided by WSDOT. Based upon WSDOT budget programs, BERK categorized expenditures into programmatic cost and capital cost categories as shown in Exhibit 66. With programmatic costs not being broken into discrete administration & operations versus maintenance categories and absent a method for breaking them apart, all programmatic costs were rolled into one category. Similarly, capital costs were rolled into one capital needs category as well.

Exhibit 66. State Rail Expenditure Categorization

Expenditure Category	WSDOT Budget Programs
Programmatic	Rail Freight Operations and Rail Passenger Operations
Capital	Rail Freight Capital and Rail Freight Capital

Source: WSDOT, 2020; BERK, 2020.

Costs were then inflation adjusted to 2019 dollars. Annual estimates were projected from 2019 through 2031 by fitting either a line or curve of best fit to historical expenditures from 2010 to 2019. This period was chosen because it represents the full historical data available from the SAO FIT and includes both economic recessionary and expansionary periods

Estimates were reported as ranges based on a 10% plus or minus percentage range around the initial estimated amount. Presenting estimates as a range of probable costs using a percentage above and below initial estimates is consistent with WSDOT Planning Level Cost Estimation methodology.[113]

[111] WSF, *2040 Long Range Plan.*
[112] Murshed, Ph.D., P.E., D., & McCorkhill, P. (2012, December). *Planning Level Cost Estimation.* Retrieved from Washington State Department of Transportation: https://www.wsdot.wa.gov/mapsdata/travel/pdf/PLCEManual_12-12-2012.pdf
[113] Murshed, Ph.D., P.E., D., & McCorkhill, P. (2012, December). *Planning Level Cost Estimation.* Retrieved from Washington State Department of Transportation: https://www.wsdot.wa.gov/mapsdata/travel/pdf/PLCEManual_12-12-2012.pdf

STATE ACTIVE TRANSPORTATION

Programmatic and Capital Needs

For the State's active transportation needs estimates, we relied on 10-year needs estimates from WSDOT's *Draft 2020 Active Transportation Plan*. We categorized these expenditures into the categories shown in Exhibit 67with guidance from WSDOT staff. We acknowledge that some categories do not neatly fall into one expenditure category.

Exhibit 67. Expenditure Categorization of Draft Active Transportation Plan

Active Transportation Draft Plan Category	BERK Categorization
Active Transportation Decision Analysis Tool	Administration & Operations
Population Centers Speed Management Active Transportation Safety Program	Capital
Population Centers Active Transportation Safety – Separated Pedestrian and Bicyclist Facility Needs	Capital
Population Centers Active Transportation Safety Crossing Treatments	Capital
Active Transportation Washington Bikeways Network and Regional Trail System	Capital
Active Transportation Maintenance	Maintenance
Local Agency Bike/Ped/Safe Routes to School Programs Backlog Projects	Capital
Bridge Retrofit/Improvements for Active Transportation	Capital
Active Transportation US Bicycle Route System & State Bikeways Network Route Identification and Signage Program	Maintenance
Ped/Bike Count Data Collection & Analysis	Administration & Operations
Accessible Active Transportation Network Analysis and Asset Management Data	Administration & Operations
Active Transportation Innovation & Adaptation	Administration & Operations

Source: WSDOT, 2020; BERK, 2020.

TRIBAL NATIONS

Programmatic Needs, System Preservation, and System Improvement

Transit/Ferry

Tribal Nations' historical transit expenditures were collected from the FTA NTD as with State ferries. However, tribal jurisdictions only started reporting to the NTD starting in 2015 and only report total operating and total capital expenditures, rather than breaking expenditures out into administration, operations, maintenance, and various forms of capital expenditures. Therefore, we categorized Tribal Nation transit expenditures into two categories: programmatic costs and capital costs.

Categories were then inflation adjusted to 2019 dollars. In each category, annual estimates were projected from 2019 through 2031 by fitting either a line or curve of best fit to historical expenditures from 2015 to 2018. However, due to the variability of historical capital expenditures, annual capital expenditures were projected by taking an average of the ratio of capital to programmatic needs from 2015 to 2018 and applying this to annual programmatic needs estimates from 2019 to 2031.

Estimates were then reported as ranges based on a 10% plus or minus percentage range around the initial estimated amount. This approach of presenting estimates as range of probable costs based on a percentage above and below initial estimates is consistent with WSDOT Planning Level Cost Estimation methodology.[114]

Roads/Bridges

Tribal Nation road locations were identified in two ways:

- **State HPMS data.** WSDOT compiles information about public roadways for the federal Highway Performance Monitoring System (HPMS). This includes information about the location of all public roadways in the state, which includes Bureau of Indian Affairs (BIA) roads that may be maintained by individual Tribal Nations.
- **OpenStreetMap data.** For Tribal Nation roads other that BIA roads, available state government information is not complete. In these cases, other available sources of information, including OpenStreetMap data, were used to identify the locations and general classes of these roadways. These roads were clipped to the boundaries of individual Tribal Nations and known BIA roads were removed to avoid double-counting.

Based on this information about the entire network, preservation costs were calculated according to the location of the roadway and the available data:

- **Urban areas.** For locations on Tribal lands within a city, Urban Growth Area, or "urbanized area" (calculated from WSDOT 2013 boundaries), the cost of surface treatments was calculated by road class and WSDOT region on a per-mile basis. Based on expected cycles of up to 18–20 years, these costs were annualized and calculated for each road segment in the system.

[114] Murshed, Ph.D., P.E., D., & McCorkhill, P. (2012, December). *Planning Level Cost Estimation*. Retrieved from Washington State Department of Transportation: https://www.wsdot.wa.gov/mapsdata/travel/pdf/PLCEManual_12-12-2012.pdf

- **Rural areas.** For locations on Tribal lands outside of cities and urban areas, the cost of surface treatments was calculated by WSDOT region for county roads on a per-mile basis and annualized based on expected treatment cycles. This assumes lower maintenance costs for major county roads than comparable city roads, given different levels of traffic and expected infrastructure needs.

Calculations for bridge preservation costs were also complicated by a lack of data. While bridges owned by BIA are included in the calculations, information on bridges managed by Tribes is limited. In these cases, required investments in bridge preservation (both long- and short-span) were assumed to involve a projected percentage of road preservation for cities (for Tribal Nation lands in urban areas) or counties (for Tribal Nation lands in rural areas), plus calculated values for BIA-controlled bridges.

PORT DISTRICTS – AIRPORTS, MARINE PORTS, RAIL

Programmatic Needs (Administration, Operations, Maintenance)

Similar to county roads and city streets, port district historical expenditures were collected for the period of 2008 to 2018 from the SAO FIT. Port district data within the FIT is reported at a lower level of detail than with to county roads and city streets. Port district financial information is not disaggregated by port mode supported (i.e. airports, marine ports, rail) and programmatic costs are not disaggregated into categories such as administration & operations or maintenance. Finally, port district operations can include non-transportation related expenditures and port district financial information in the FIT does not differentiate between transportation and non-transportation expenditures.

Exhibit 68 shows the disaggregation needed for port district programmatic needs information to match the level of detail of data of other jurisdiction and mode types in the FIT such as county roads and city streets.

Exhibit 68. Port District Disaggregation Needs – Programmatic Needs

Port District Data in SAO FIT	Mode Disaggregation Needed	Cost Disaggregation Needed
Operating Expenditures	Airports	▪ Administration and Operations ▪ Maintenance
	Marine Ports	▪ Administration and Operations ▪ Maintenance
	Rail Ports	▪ Administration and Operations ▪ Maintenance

Source: SAO Financial Intelligence Tool, 2019; BERK, 2020.

Due to these limitations, BERK categorized all port districts into tiers based on the magnitude of 2018 operating expenditures and sorted port districts within each tier based on the type of port modes operated.

Within each tier, example ports were selected to represent each unique combination of tier and type of port modes operated (ex. the Port of Bellingham was selected for all ports in tier 2 that operate both

airports and marine ports). From this categorization, ten example port districts were selected as shown in Exhibit 69, which also shows the percent of total 2018 operating expenditures for each mode and operating expenditure type.

Exhibit 69. Example Port Districts Selected and Breakdown of 2018 Operating Expenditures by Mode and Operating Expenditure Type

Name	Tier	Modes	Airport – A&O %	Airport – Maint. %	Marine – A&O %	Marine – Maint. %	Source
Port of Seattle	1	Airport and Marine	61%	14%	9%	2%	2018 CAFR
Northwest Seaport Alliance	1	Marine	0%	0%	73%	19%	2018 CAFR
Port of Tacoma	2	Marine	0%	0%	64%	20%	2018 CAFR
Spokane Airport Board	2	Airport	21%	74%	0%	0%	2018 CAFR
Port of Bellingham	2	Airport and Marine	23%	5%	31%	7%	2018 CAFR
Port of Skagit County	3	Airport and Marine	8%	1%	35%	5%	2018 CAFR
Port of Edmonds	3	Marine	0%	0%	65%	5%	2018 CAFR
Port of Camas Washougal	4	Airport and Marine	22%	5%	26%	6%	2018 CAFR
Port of Brownsville	4	Marine	0%	0%	85%	13%	2018 CAFR

Note: The breakdown of operating expenditures may not sum to 100% due to the exclusion of non-transportation related expenditures.
Spokane Airport Board is a separately-reporting entity, co-owned by the City of Spokane and Spokane County, that governs Spokane International Airport.

Sources: Port of Seattle CAFR, 2018; Northwest Seaport Alliance CAFR, 2018; Port of Tacoma CAFR, 2018; Spokane Airport Board CAFR, 2018; Port of Bellingham CAFR, 2018; Port of Skagit County CAFR, 2018; Port of Edmonds CAFR, 2018; Port of Camas Washougal CAFR, 2018; Port of Brownsville CAFR, 2018; BERK, 2020.

Using 2018 Comprehensive Annual Financial Report (CAFR) information from each example port, breakdowns of operating expenditures by port mode and by operating expenditure category were applied to 2018 port district operating expenditures for each unique combination of tier and type of port modes operated. 2018 operating expenditures were then summarized by port mode and by type of operating expenditure to achieve disaggregation estimation for 2018 expenditures. This method also supported estimation of only transportation-related expenditures.

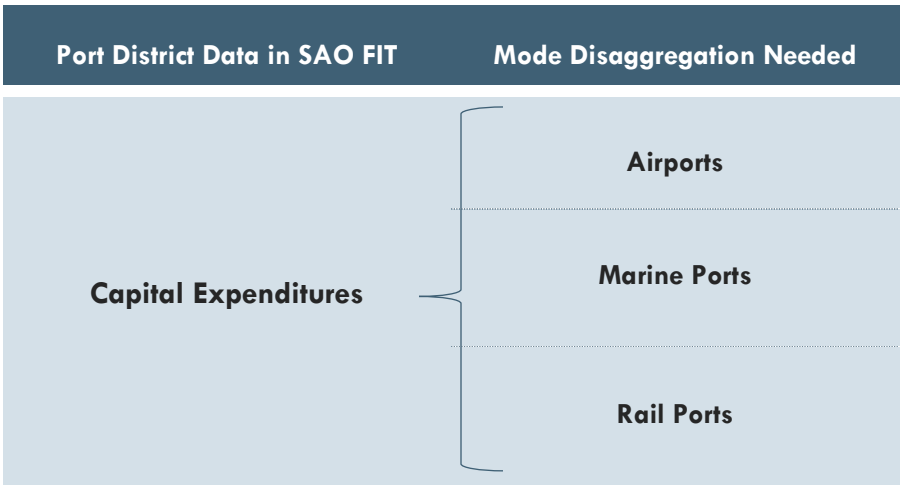
Categories were then inflation adjusted to 2019 dollars. In each category, annual estimates were projected from 2019 through 2031 by fitting either a line or curve of best fit to historical expenditures from 2008 to 2018. This period was chosen because it represents the full historical data available from the SAO FIT and includes both economic recessionary and expansionary periods

Given the number of assumptions made by BERK, estimates were then reported as ranges based on a 20% plus or minus percentage range around the initial estimated amount. This approach of presenting estimates as range of probable costs based on a percentage above and below initial estimates is consistent with WSDOT Planning Level Cost Estimation methodology.[115]

Capital Needs (System Preservation and System Improvement)

Like port district programmatic needs, port district capital needs also required disaggregation to match the level of detail of data of other jurisdiction and mode types in the FIT such as county roads and city streets, as shown in Exhibit 70.

Exhibit 70. Port District Disaggregation Needs – Capital Needs



Source: SAO Financial Intelligence Tool, 2019; BERK, 2020.

The ratios of 2018 operating expenditures by port mode to total 2018 operating expenditures were used to disaggregate 2018 capital expenditures by mode. Total port district expenditures from 2008 to 2017 were weighted by ratios of 2018 operating and capital expenditures to 2018 total expenditures within each mode type to achieve disaggregation estimation for historical expenditures. Categories were then inflation adjusted to 2019 dollars.

Marine Ports

For port district marine ports, annual estimates were projected from 2019 through 2031 by fitting either a line or curve of best fit to historical expenditures from 2008 to 2018. This period was chosen because it represents the full historical data available from the SAO FIT and includes both economic recessionary and expansionary periods.

As a check on order of magnitude, we compared these estimates to rough 10-year needs estimates calculated from 2020-2024 maritime CIP information pulled from the 2020 budgets for five entities: Port of Seattle, Northwest Seaport Alliance, Port of Tacoma, Port of Everett, and Port of Vancouver. These five entities represented around 70% of 2018 port district marine port capital expenditures. The two methods yielded estimates that aligned in order of magnitude.

[115] Murshed, Ph.D., P.E., D., & McCorkhill, P. (2012, December). *Planning Level Cost Estimation*. Retrieved from Washington State Department of Transportation: https://www.wsdot.wa.gov/mapsdata/travel/pdf/PLCEManual_12-12-2012.pdf

Airports

Port district airport capital needs were projected with a slightly different approach from port district marine ports. Like marine ports, all historical expenditure categories were inflation adjusted to 2019 dollars. However, we used the Port of Seattle's 2020-2024 aviation CIP information to forecast the Port of Seattle 10-year capital expenditures for two reasons:

1. Port of Seattle constitutes the vast majority of port district airport spending at 83% of port district airport capital spending in 2018.
2. Port of Seattle reported no capital spending in the SAO FIT from 2009-2014.

For the 2019-2024 projections, we incorporated the Port of Seattle Aviation Division's budgeted CIP numbers from 2019-2024, along with annual estimates of all other port district airport capital spending (excluding Port of Seattle historical capital spending) using a line of best fit to historical expenditures. These 2019-2024 projections of port district airport capital needs were further projected to 2025-2031 by fitting a line of best fit to total 2019-2024 port district airport capital spending projections.

Given the number of assumptions made by BERK, estimates were then reported as ranges based on a 20% plus or minus percentage range around the initial estimated amount. This approach of presenting estimates as range of probable costs based on a percentage above and below initial estimates is consistent with WSDOT Planning Level Cost Estimation methodology.[116]

COUNTY & CITY AIRPORTS

Programmatic Needs, System Preservation, and System Improvement

Data for county and city airports was gathered from the SAO FIT from 2008 to 2018. Expenditure data for county and city airports is not delineated explicitly in the FIT but categorized as "port" expenditures. Given that marine ports in the state are operated by port districts, an assumption was made that all such port expenditures reported for counties and cities were for airports. This has been borne out in research into the type of ports supported by counties and cities.

Additionally, operating port expenditures are not disaggregated by expenditure category from 2010 to 2018. From 2008 to 2010, county and city operating port expenditures were reported in the three categories of administration, operations, and maintenance. An average of the portion of operating port expenditures in administration & operations versus maintenance was applied to operating port expenditures from 2010 to 2018. From this, we were able to categorize expenditures into three different categories: administration & operations, maintenance, and capital expenditures. With capital expenditures not being broken into discrete preservation or improvement categories and absent a method for breaking them apart, we rolled all capital expenditures into one category.

Categories were then inflation adjusted to 2019 dollars. In each category, annual estimates were projected from 2019 through 2031 by fitting either a line or curve of best fit to historical expenditures from 2008 to 2018. This period was chosen because it represents the full historical data available from the SAO FIT and includes both economic recessionary and expansionary periods

[116] Murshed, Ph.D., P.E., D., & McCorkhill, P. (2012, December). *Planning Level Cost Estimation*. Retrieved from Washington State Department of Transportation: https://www.wsdot.wa.gov/mapsdata/travel/pdf/PLCEManual_12-12-2012.pdf

Given the number of assumptions made by BERK, estimates were then reported as ranges based on a 20% plus or minus percentage range around the initial estimated amount. This approach of presenting estimates as range of probable costs based on a percentage above and below initial estimates is consistent with WSDOT Planning Level Cost Estimation methodology.[117]

Data Limitations – County Airports

For county airports, annual operating expenditure estimates were projected from 2019 through 2031 by fitting by fitting either a line of best fit to historical expenditures from 2008 to 2018. However, given the variability of historical capital expenditure information, annual capital expenditure estimates were projected by taking an annual average of capital expenditures from 2008 to 2018 and applying them annually to the 10-year time frame.

PUBLIC TRANSIT AGENCIES – BUS, RAIL, FERRIES

Programmatic Needs, System Preservation, and System Improvement

Historical expenditures for public transit agencies statewide were collected from the FTA NTD, as with Tribal Nations transit, for the period of 2008 to 2018. Sound Transit was excluded from our analysis given that ST3 will be funded by a dedicated voter-approved source and because ST3 extends beyond the 10-year time frame of the study. Expenditures were categorized by mode types (bus, rail, and ferry) as shown in Exhibit 71 below, as well into three different expenditure categories: administration & operations, maintenance, and capital expenditures as shown in Exhibit 72. As capital expenditures were not broken into discrete preservation or improvement categories, we rolled all capital expenditures into one category.

Exhibit 71. Mode Categorization from FTA NTD Modes

Mode	FTA NTD Mode
Bus	Bus, Bus Rapid Transit, Commuter Bus, Demand Response, Demand Response Taxi, Trolleybus, Vanpool, Jitney, Publico
Rail	Cable Car, Commuter Rail, Heavy Rail, Hybrid Rail, Inclined Plane, Light Rail, Monorail, Streetcar Rail, Aerial Tramway
Ferry	Ferryboat

Source: FTA National Transit Database, 2019; BERK, 2020.

[117] Murshed, Ph.D., P.E., D., & McCorkhill, P. (2012, December). *Planning Level Cost Estimation*. Retrieved from Washington State Department of Transportation: https://www.wsdot.wa.gov/mapsdata/travel/pdf/PLCEManual_12-12-2012.pdf

Exhibit 72. Expenditure Categorization from FTA NTD Expenditure Categories

Expenditure Category	FTA NTD Expenditure Category
Administration and Operations	Vehicle Operating Expenses and General Administration Expenses
Maintenance	Vehicle Maintenance Expenses and Non-Vehicle Maintenance Expenses
Capital Expenditures	Rolling Stock (Vehicles), Facilities, and Other (IT, Equipment, etc.)

Source: FTA National Transit Database, 2019; BERK, 2020.

Categories were then inflation adjusted to 2019 dollars. In each category, annual estimates were projected from 2019 through 2031 by fitting either a line or curve of best fit to historical expenditures from 2008 to 2018. This period was chosen because it represents the full historical data available from the SAO FIT and includes both economic recessionary and expansionary periods

Estimates were then reported as ranges based on a 10% plus or minus percentage range around the initial estimated amount. This approach of presenting estimates as range of probable costs based on a percentage above and below initial estimates is consistent with WSDOT Planning Level Cost Estimation methodology.[118]

We used the *2019 JTC Transit Capital Needs Assessment* in our analysis as a comparison and check for public transit bus capital needs.[119]

[118] Murshed, Ph.D., P.E., D., & McCorkhill, P. (2012, December). *Planning Level Cost Estimation*. Retrieved from Washington State Department of Transportation: https://www.wsdot.wa.gov/mapsdata/travel/pdf/PLCEManual_12-12-2012.pdf
[119] JTC, *Transit Capital Needs Assessment,* June 2019.

Appendix B: Evaluation of Potential Funding Options

New Revenues from State Sources

Jump to section:

Air Quality Surcharge

Description: A one-time charge on the sale of new vehicles, as well as a one-time charge on the remaining life of a vehicle being retitled in Washington for the first time. There would be no charge for the purchase of a used vehicle. The charge would vary based on a vehicle's estimated lifetime greenhouse gas pollution, which is calculated from average national driving habits and the car's EPA combined fuel economy rating.[120]

Legislative history: This option has not been proposed in the Legislature. The nonprofit organization Climate Solutions has supported this idea as a strategy to fill the funding gap left by Initiative 976.

Burden: Purchasers of new vehicles; purchasers of used vehicles (indirectly).

Potential Benefits:

- A surcharge incentivizes purchasing more efficient, less polluting vehicles. Since the fee would be based on average national driving habits, the surcharge would not adversely impact rural or suburban drivers who typically must drive longer distances.
- Because the surcharge would be collected only at the point of first sale and would not require emissions monitoring, it would be relatively easy to implement and administer as compared to other emissions-based fees and taxes.

[120] Climate Solutions, Air Quality Surcharge 2020. https://www.climatesolutions.org/sites/default/files/uploads/pdf/air_quality_surcharge_2020_v3_feb_17.pdf

Potential Drawbacks:

- While the surcharge would only apply to new vehicles, some of the burden would be passed through to purchasers of used cars via increased down-the-line prices.
- Because the surcharge is based on the vehicle's estimated lifetime pollution and not vehicle price, lower-income buyers could pay a greater proportion of their income than higher-income individuals.

Auto Parts Sales and Use Tax

Description: A 1% increase to the existing sales tax on auto parts in Washington State. Under the Forward Washington proposal, this revenue would be dedicated for transportation expenditures.

Legislative history: This was proposed as part of Forward Washington, SB 5971, a transportation funding package proposed in 2019.

Burden: Purchasers of auto parts.

Potential Benefits:

- This tax would be simple to implement, as it would take advantage of existing systems for collecting retail sales and use taxes.
- The tax would be levied upon purchasers of auto parts, who are likely to be users of the public roadway system.
- By increasing the costs of owning a personal vehicle, the tax increase could encourage use of public transportation and other congestion-reducing transportation modes.

Potential Drawbacks:

- This revenue would be collected as a sales tax, meaning that lower-income individuals would pay a greater proportion of their income towards transportation funding than higher-income individuals.

Bicycle Sales and Use Tax

Description: A 1% increase to the existing sales tax on bicycles in Washington State. Under the Forward Washington proposal, this revenue would be dedicated for transportation expenditures.

Legislative history: This was proposed as part of Forward Washington, SB 5971, a transportation funding package proposed in 2019.

Burden: Purchasers of bicycles.

Potential Benefits:

- This tax would be simple to implement, as it would take advantage of existing systems for collecting retail sales and use taxes.
- This would introduce a mechanism for bicycle riders, who do not currently pay fuel taxes or registration fees (in their capacity as cyclists), to contribute to State transportation funds.

Potential Drawbacks:

- This revenue would be collected as a sales tax, meaning that lower-income individuals would pay a greater proportion of their income towards transportation funding than higher-income individuals.
- Because the revenues would not be dedicated towards bicycle facilities, cyclists would be contributing to infrastructure used by motor vehicle owners (for example, highways or interchanges).
- By raising the cost of purchasing a bicycle, this tax could disincentivize the use of cycling as a mode of transportation. Cycling creates zero emissions, reduces traffic congestion, and can promote physical fitness for riders.

Cap and Trade Revenues

Description: A program that could cap statewide levels of greenhouse gas emissions at levels that decline over time. Businesses would be allowed to trade state-sold pollution allowances among themselves. Revenue from the sale of allowances would be dedicated for transportation purposes.

Legislative history: A cap and trade program was introduced to the State Legislature as SB 5981 in March 2019. In 2017, a similar cap and trade program under Washington Initiative 1631 was defeated.

In a January 2020 State Supreme Court ruling, the court upheld a 2017 lower court decision that the State Department of Ecology had exceeded its legal authority in trying to apply Clean Air Act standards to "indirect emitters"—namely, petroleum and natural gas distributors. While this ruling does not preclude the State from implementing a cap and trade program, it does dictate the level at which the exchange could operate. Based on the ruling, the State could issue a cap on businesses that emit greenhouse gases, but not on businesses that distribute carbon-based fuels. Administering a cap and trade program is more costly the further "downline" it is applied because more businesses are involved, requiring more State management. However, this ruling is based on existing State law (the Clean Air Act) and the State Legislature could alter the Act to remove this provision.

Burden: Businesses; customers (indirectly).

Potential Benefits:

- Cap and trade revenues could incentivize reductions in greenhouse gas emissions.
- Revenues would be stable and predictable.

Potential Drawbacks:

- A cap and trade initiative failed in the past and could be challenging to implement.
- Implementing this option would require emissions monitoring to ensure that businesses do not exceed their allotted levels, which would increase the administrative costs of the program.
- Given the level of management and monitoring involved, and the interlocal nature of carbon pollution, a cap and trade program might not make sense for local governments and might only be effective at the state level.
- Cap and trade revenues would not be directly levied upon road users because it would be administered at the firm level. Still, the costs might be passed on to consumers.

Carbon Pollution Fee

Description: This was proposed in the 2019 legislative session as a $15 or $20 per ton carbon pollution fee on the sale or use of fossil fuels.

Legislative history: This was proposed as part of Forward Washington, SB 5971, a transportation funding package proposed in 2019. A similar idea was previously proposed as Initiative 1631 in November 2018; that initiative failed in 36 of 39 counties and did not pass.

Burden: Businesses and individuals using fossil fuels.

Potential Benefits:

- A carbon pollution fee would discourage the use of fossil fuels and encourage fuel efficiency.
- The burden of collecting and remitting revenue would fall onto businesses—and could tie into their existing tracking systems for sales taxes—which would reduce the costs of administrating the fee.

Potential Drawbacks:

- If oil refineries were to pass the costs on to consumers, consumers could face higher costs.
- A carbon fee could disproportionately affect lower-income consumers—particularly in the short-term—who are more likely to use older vehicles and older home heating systems, which utilize more carbon-based fuels.
- Carbon pollution fee initiatives have failed in the past and could be challenging to implement.
- In the long-term, carbon-emitting businesses could leave the state in favor of other states without a carbon fee. This could lead to lost jobs and reductions in other sources of State revenue, such as the B&O tax.
- Not all road users have vehicles that emit carbon—road users with electric or hybrid vehicles would pay less, which may not reflect their actual usage of roadways.

Electric Vehicle Fuel Economy Rating Tax

Description: An annual fee on electric vehicles based on the vehicle's miles-per-gallon fuel economy rating, the gas tax that would otherwise apply, and the typical number of miles a car drives annually.[121] This process includes two steps:

State and local gas taxes would be indexed to inflation and total fuel consumption.

The State would collect an annual EV fee based on what those vehicles would pay if they drove on gasoline.

Legislative history: The EV fuel economy rating tax is not currently proposed in the Legislature, but it has been supported by the National Resource Defense Council.

Burden: Owners of electric vehicles.

[121] National Resource Defense Council, "A Simple Way to Fix the Gas Tax Forever," 2019. https://www.nrdc.org/experts/max-baumhefner/simple-way-fix-gas-tax-forever

Potential Benefits:

- An EV fuel economy rating tax incentivizes reduced fuel consumption and more efficient vehicles. Currently, EVs pay an annual $150 registration fee plus $75 electrification charge in lieu of the gas tax, which can erode fuel cost savings that motivate consumers to buy EVs. Some believe the EV fuel economy rating tax would be a more equitable approach by incorporating fuel efficiency into the EV tax rate. An EV fuel economy tax would be relatively simple to implement, as it is based on available data and could be levied through the existing annual vehicle registration process.

Potential Drawbacks:

- Some argue that this approach is less equitable and suggest instead that all users should pay the same cost per mile rate (known as a VMT or road usage charge). EVs contribute to wear-and-tear on transportation infrastructure, and an EV rating tax would not account for the deterioration that an individual vehicle can cause based on the number of miles it travels.
- While an EV rating tax would be simpler to implement than an emissions-based or per-mile tax, it would be significantly more complex than the existing gas tax and vehicle registration systems, which would require no calculations related to vehicle efficiency.

Employee Payroll Tax for Transit

Description: A tax on payroll wages. Employers would withhold the tax from employees' wages.

Legislative history: Washington does not currently have a payroll tax. Oregon has a statewide payroll tax dedicated to transit funding. The *2019 JTC Transit Capital Needs Study* recommended this option.[122]

Burden: Employees.

Potential Benefits:

- An employee payroll tax would have a broad base applying to all wages and salaries.
- This would be relatively simple to administer since payroll taxes typically do not include deductions, exemptions, and credits. The program could function similarly to the Paid Family and Medical Leave Program and use administrative structures that are already set up.

Potential Drawbacks:

- An employee payroll tax could be regressive, meaning that lower-income individuals would pay a greater proportion of their income towards transportation funding than higher-income individuals.

For Hire and Transportation Network Company (TNC) Fees

Description: The State would collect fees from for-hire companies and TNCs. Currently, Washington's statewide regulations of for-hire companies and TNCs are limited to insurance requirements and driver's licensing requirements; cities and counties may individually regulate or collect driver, vehicle, and/or company licensing fees.

[122] JTC Transit Capital Needs Study, 2019. http://leg.wa.gov/JTC/Documents/Studies/Transit%20Study_PaulNeal/Final_JTCTransitCapitalNeedsTechnicalReportandExecSum.pdf

Legislative history: This was proposed as part of Forward Washington, SB 5971, a transportation funding package proposed in 2019.

Burden: For-hire companies and TNCs; customers (indirectly).

Potential Benefits:

- A statewide for-hire/TNC fee would reduce the complexity associated with local versions of the fee. For-hire companies, TNCs, and local governments might invest significant resources in determining who receives local fee revenue, as many rides cross jurisdictional boundaries.
- The fee would account for the difference in road usage between a personal passenger vehicle and a passenger vehicle used on a for-hire basis or by a TNC.

Potential Drawbacks:

- Customers would most likely pay higher rates for rides. This could lead some customers to switch to driving their own vehicles, which increases congestion, emissions, and demand for parking spaces.
- A per-ride fee would function as an excise tax, which would place a proportionately larger tax burden on lower-income individuals than higher-income individuals.
- A single statewide rate could place a higher burden as a proportion of income on riders in Eastern Washington than Western Washington.

Road Usage Charge

Description: A pay-by-the-mile system of collecting revenues for transportation, also known as vehicle miles traveled (VMT) fees. If implemented, a road usage charge (RUC) would replace the current statewide motor vehicle fuel tax (gas tax). A RUC is a direct user fee where users of the road would pay based on how much they use the road, measured in distance driven.

Legislative history: In January 2020, the Washington State Transportation Commission (WSTC) submitted their final report recommending a phased transition to a RUC. This report followed a pilot from 2018-2019 that included 2000 participants who tried out a RUC system with four mileage reporting options and shared feedback through surveys and focus groups.

In the 2020 legislative session, three Senate Democrats introduced SB 6586 to create an initial RUC program for electric and hybrid vehicles to begin in 2024. Under SB 6586, the WSTC and DOL would develop an RUC plan by December 2021 with different mileage reporting options and recommended fee rates to minimize administrative costs.

Burden: All road users.

Potential Benefits:

- All users would pay the same for use of the roads, regardless of fuel efficiency. Some believe this would be a more equitable approach than the gas tax.
- Revenues could be used for maintaining and operating the entire roadway network, rather than being restricted to reinvestment in that same facility (as with tolling).

- As vehicles become more fuel efficient and gas consumption decreases, state revenues from the gas tax will decline. The RUC could potentially generate a more stable source of transportation funding. Since revenue rises and falls with road usage, revenue follows more closely with system costs.[123]

Potential Drawbacks:

- Since all users pay the same for use of the roads, a RUC would eliminate the fee-based incentive to purchase fuel-efficient vehicles.
- Some are concerned that a RUC could disproportionately affect lower-income individuals who tend to live further away from work due to housing prices.
- A RUC would be more complex to administer than the gas tax because it would require tracking vehicle miles traveled. Such tracking would also raise some privacy concerns.

Given that the current gas tax has been pledged for debt repayment in the form of highway construction bonds, a potential transition to a RUC would require careful consideration of debt refinancing structures. The Steering Committee explored several options during the pilot.[124]

An alternative or additional option to a RUC is a **truck weight mile tax**, which would provide a more graduated tax system for trucks. A truck weight mile tax would assess larger trucks at a higher rate and would be based on the number of miles driven in Washington. Oregon uses a weight mile tax, where vehicles in commercial operations on public roads with a registered weight over 26,000 pounds pay a higher rate per mile.[125] This option would be costly to administer and would not likely be supported by the trucking industry.

Statewide Special Transportation Benefit Assessment

Description: A new benefit charge assessment on new construction at varying rates for residential, commercial, and manufacturing projects.

Legislative history: This was proposed as part of Forward Washington, SB 5971 a transportation funding package proposed in 2019.

Burden: New construction: residential, commercial, manufacturing.

Potential Benefits:

- This option would generate dedicated property-based transportation revenue at the state level.
- Benefit charges could be more equitable than property taxes, because they would account for the benefit that the property owner/developer receives from public services.

Potential Drawbacks:

- This option could increase housing costs, as charges are passed through to purchasers and renters by developers.

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[123] Washington State Transportation Commission, Road Usage Charge Assessment Final Report, 2020. https://waroadusagecharge.org/final-report/

[124] Washington Road Usage Charge Final Report, Volume 2. https://waroadusagecharge.org/wp-content/uploads/2020/01/WSTC-Final-Report-Vol-2-SC-Report-WEB-2020_01.pdf

[125] Oregon DOT, https://www.oregon.gov/odot/MCT/Pages/ReportYourTaxes.aspx

- This option would require additional administration beyond existing property tax structures. The State would need to calculate the benefit of state transportation services and facilities to new construction projects.

New Revenues from Existing State Sources (Rate Adjustments)

Jump to section:

Capital Vessel Surcharge: Rate Increase

Description: A per-fare surcharge imposed on tickets on Washington State Ferries. Revenues are currently restricted for the construction and purchase of new ferry vessels. The current total charge is $0.50 per fare.

Legislative history: In 2011, the State first imposed a $0.25 vessel replacement surcharge on one-way and roundtrip ferry tickets. In 2019, the Legislature approved an additional $0.25 surcharge, to be collected beginning May 2020.

A rate increase to $0.75 was proposed as part of Forward Washington, SB 5971 a transportation funding package proposed in 2019.

Burden: Ferry riders.

Potential Benefits:

- Costs for vessel replacement are paid by those who use the ferries.
- The fare is easy to administer and collect, as it is incorporated into the ticketing process for ferries.

Potential Drawbacks:

- This is a highly restricted revenue source that may only be used for replacing ferry vessels.
- All riders pay the same fee, regardless of their impact on the ferry vessel. Walk-on passengers and cyclists, who take up less space and cause less wear-and-tear on vessels, pay the same amount per trip as drivers of vehicles do.

Electric Hybrid Vehicle Fee: Rate Increase

Description: Owners of electric and hybrid vehicles pay an annual $150 registration fee plus $75 electrification charge as part of their vehicle registration bill. Because owners of these vehicle types do not pay the gas tax—or pay less in gas tax per mile-driven—this fee replaces lost gas tax revenue.

Legislative history: In 2012, the State Legislature implemented a $100 annual registration fee for hybrid and electric vehicles. In 2015, the legislature increased the annual fee to $150. In 2019, the legislature added a $75 annual electrification fee to fund a statewide network of electric vehicle charging stations. Revenues are dedicated to the multimodal transportation account, the motor vehicle fund, and—for the $75 fee—the electric vehicle account.

Burden: Owners of electric and hybrid vehicles.

Potential Benefits:

- Because owners of hybrid and electric vehicles currently pay no gas tax or a reduced gas tax, this fee ensures they contribute to public road funds. Some see this fee as introducing equity between owners of different vehicle types. Electric vehicle owners also fund the state electrification project, which they would benefit most from.
- This fee is simple to administer and collect because it is charged as part of an existing annual fee.

Potential Drawbacks:

- Increasing this fee could discourage consumers from purchasing more fuel-efficient vehicles. Electric vehicles are marketed for both the fuel efficiency benefits but also lower operating costs. As fuel prices steadily decrease, diminishing the operating cost savings incentive of purchasing a fuel-efficient vehicle, an increase in EV fees would further increase the relative cost of operating an EV.
- Unlike the gas tax, an annual fee is not affected by how many miles a vehicle owner drives. This means that electric and hybrid vehicle owners have less incentive to reduce their miles driven. It also means that vehicle owners who contribute more to road deterioration pay the same as those who contribute less.
- Hybrid vehicles owners pay for the state electrification project, which they are unable to use.

Enhanced Driver's Licenses and Identicards: Rate Increase

Description: Currently, a $24 fee is collected from individuals who apply for an enhanced state driver's license or identification card. Revenues are dedicated to the State Highway Safety Fund.

Legislative history: The Legislature first imposed a $15 fee on driver's license/identification card renewals in 2007. The $24 rate was implemented in 2017 and represented a reduction from the $54 rate established in 2016.

A rate increase to $39 was proposed as part of Forward Washington, SB 5971, a transportation funding package proposed in 2019.

Burden: State residents who apply for a driver's license/identification card and are US citizens, as only those with US citizenship are eligible for enhanced identification.

Potential Benefits:

- Revenues will increase in the 2019-2021 biennium as the federal government implements a new rule requiring enhanced identification for domestic air travel.[126]
- Revenues will remain predictable over time, as individuals renew identification and driver's license on a regular schedule.
- The fee is simple to collect, as it makes use of the State's current system for driver's license and identification renewals.

Potential Drawbacks:

- The fee is imposed on users of identification cards in addition to users of driver's licenses. Identification card users may not drive, and thus they may subsidize road users through this fee.

Fuel Tax Rate Increase

Description: The State currently collects a motor vehicle fuel tax (MVFT) of $0.494 per gallon. Revenues are distributed to a variety of State transportation accounts and to cities and counties. It currently generates over $3 billion in revenue per biennium.

Legislative history: The state gas tax was first imposed in 1921. The Legislature last authorized a fuel tax increase in 2015. The current rate was achieved with step increases in 2015 and 2016. Under the Forward Washington, SB 5971 funding proposal, the State proposed an additional $0.06 beginning in July 2019.

Burden: Consumers.

Potential Benefits:

- The tax incentivizes using fuel efficient vehicles and reducing vehicle trips.
- The tax is straightforward to collect. Retailers impose the tax at the point of sale and transmit the revenue to the state.

Potential Drawbacks:

- Revenues are declining over time as vehicles become more fuel efficient.

[126] The federal government's original implementation date of October 1, 2020 for the enhanced identification requirement was been postponed due to the COVID-19 pandemic. As of May 2020, the Transportation Security Administration has extended the deadline to October 1, 2021.

- The fuel tax burden does not necessarily correlate to a vehicle's contribution to road deterioration. For example, electric vehicles pay no fuel tax, but contribute to roadway wear-and-tear.
- The tax may disproportionately burden lower-income individuals who tend to live further away from work due to housing prices.

HOV Lane & Toll Violations: Rate Increase

Description: Fines imposed on individuals who violate laws restricting access to high occupancy vehicle (HOV) lanes, high occupancy toll (HOT) lanes, or express toll lane (ETL). Fines range from $186 to $536 and are issued to violators by the Washington State Patrol or local law enforcement.

Legislative history: The State approved the creation of HOV lanes in 1974. The current fine schedules were set in 2019.

A rate increase of $114 was proposed as part of Forward Washington, SB 5971, a transportation funding package proposed in 2019.

Burden: Individuals who violate HOV lane, laws.

Potential Benefits:

- The fines discourage HOV lane, HOT lane, and ETL violations, preserving the incentive to carpool.
- Fines accrue to single-occupancy drivers, who have a higher impact on roadway deterioration as compared to carpool or transit vehicles.

Potential Drawbacks:

- Fines are not tied to a violator's income, reducing the burden on higher-income individuals, as well as their incentive to abide by the law.
- It can be costly and difficult to enforce HOV lane, HOT lane, and ETL violations.

Indexed Fuel Tax

Description: Adjustable fuel tax rate based on inflation or oil prices. This contrasts with Washington State's existing flat per-gallon fuel tax.

Legislative history: The state gas tax was first imposed in 1921. A variable motor fuel tax was authorized in 1977 and repealed in 1983.[127] The Legislature last authorized a fuel tax increase in 2015, raising the tax to its current rate with step increases in 2015 and 2016.

Burden: Consumers.

Potential Benefits:

- The tax allows fuel tax revenues to keep pace with inflation, reducing the gap between infrastructure costs and revenues.

[127] U.S. Department of Transportation Federal Highway Administration *Highway Statics Summary to 1985* and Federation of Tax Administrators Research Report No.77, *Trends in State Tax Legislation 1976 - 1977*

- The tax can stabilize fuel tax revenues when oil prices rise. Under a per-gallon tax, revenues can fall when prices rise, as consumers purchase less fuel.

Potential Drawbacks:

- The tax requires the State to monitor inflation and prices and adjust the tax rate in response.
- The tax retains the other problems with the existing fuel tax—the tax burden does not correlate to a vehicle's contribution to road deterioration, and the tax may disproportionately burden lower-income individuals who tend to live further away from work due to housing prices.

International Fuel Tax Agreement (IFTA) Decals: Rate Increase

Description: Commercial vehicles meeting certain size and weight requirements must purchase and display IFTA decals if operating in Washington State. The current cost for IFTA decals is $10 per set per year. Revenues are deposited into the State Motor Vehicle Account.

Legislative history: IFTA decals were first required in Washington in 2002. The $10 fee has been in place since that year. Raising the annual fee to $32.50 in July 2020 was proposed as part of Forward Washington, SB 5971, a transportation funding package proposed in 2019.

Burden: Operators of commercial vehicles.

Potential Benefits:

- Charging and raising the fee is easy to implement because operators are already required to purchase and display the decals.
- The decal fee is collected from commercial vehicle operators, whose vehicles have a greater impact on road deterioration than passenger vehicles.

Potential Drawbacks:

- The fee raises costs for commercial freight transportation in Washington State.
- The flat fee means that owners of vehicles of different weights—with different impacts on the road system—pay the same amount towards public road preservation.

Rental Car Tax: Rate Increase

Description: Currently a 5.9% excise tax on short-term rentals of vehicles in Washington State. The tax only applies to rentals of less than 30 days. Revenues are deposited into the State Multimodal Transportation Account. Regional transit authorities (RTAs) can impose an additional 0.8%. RTA revenues fund light rail, commuter rail, and express bus systems.

Legislative history: A rate increase to 6.9% was proposed as part of Forward Washington, a transportation funding package proposed in 2019.

Burden: Individuals and businesses renting vehicles.

Potential Benefits:

- The tax burden falls primarily on those who live outside of Washington State, but who utilize the state's roadway system.

- The tax burden falls primarily on those who are traveling for business or leisure, reducing some of the equity concerns associated with other sales and excise taxes.
- The tax is straightforward to collect, as it makes use of existing systems for collecting retail sales taxes.

Potential Drawbacks:

- Taxes that increase the cost of travel to and in Washington State may discourage tourism and business travel to the state.
- Revenues will likely decline over time as for-hire and TNC trips become more popular among travelers.

Trip Permit Fees (3-day): Rate Increase

Description: Owners of unregistered vehicles purchase a trip permit fee that allows them to temporarily operate the vehicle on public highways. The current permit fee is $25.

Legislative history: The State Legislature first introduced the trip permit fee in 1957. It was raised to its current rate in 2010. An increase in the trip permit fee to $45 was proposed as part of Forward Washington, a transportation funding package proposed in 2019.

Burden: Owners of unregistered vehicles.

Potential Benefits:

- The fee is paid by road users who do not otherwise contribute to state roadway funds through vehicle registration fees.

Potential Drawbacks:

- The fees are more costly to administer than registration fees, because administration requires individual transactions for each permit purchased.
- Increases in the fees may disproportionately impact lower-income individuals or smaller businesses, some of whom use the permits to avoid registration fees on vehicles they rarely use or move.

Vehicle Registration Fees: Rate Increase

Description: Owners of cars, motorcycles, and other vehicles pay an annual $30 registration fee. Revenues are distributed to the State Highway Patrol Account, Puget Sound Ferry Operations Account, Transportation Partnership Account, and Motor Vehicle Account.

Legislative history: Vehicle registration fees were first imposed in 1909 and raised to its current rate in 2000. A proposed fee increase from $30 to $35 was included in Forward Washington, SB 5971, a proposed funding proposal in 2019.

Burden: Vehicle owners.

Potential Benefits:

- The fee is easy to administer as it is collected as part of the annual vehicle registration process.

- Revenue is stable and predictable because the fee is levied at a flat rate and total vehicle numbers do not change dramatically from year to year.
- The tax burden is paid by vehicle owners, who are all road users to some degree.

Potential Drawbacks:

- The flat-rate fee does not reflect how intensely vehicle owners use road facilities. Miles traveled, vehicle emissions, and vehicle weight all contribute to the strain that a vehicle places on infrastructure and are not accounted for in this model.

Weight Fees

Freight Project Fees: Rate Increase

Description: Owners of vehicles over 10,000 pounds must pay a fee equal to 15% of the vehicle's license fee, which is based on vehicle weight.

Legislative history: The State Legislature introduced the 15% freight project fee in 2016.

A phased increase of an additional 10% to 22% in fees over 10 years was proposed as part of Forward Washington, SB 5971, a transportation funding package proposed in 2019.

Burden: Owners of trucks weighing over 10,000 pounds.

Potential Benefits:

- The fee is simple to administer as they are collected through the annual vehicle registration process.
- The fee places a higher burden on heavier vehicles, which contribute more to road deterioration.

Potential Drawbacks:

- The fee does not incorporate vehicle miles traveled, which also contributes to a vehicle's impact on roadway deterioration.

Light Duty Truck License Fee: Rate Increase

Description: Owners of trucks pay an annual registration fee based on vehicle weight. Annual fees for light duty trucks (under 10,000 pounds) range from $38 to $60 depending on weight.[128]

Legislative history: The State Legislature first approved vehicle weight fees in 1987. The current rates were set in 2015. Weight fees are scheduled to increase by $10 in 2023. Raising the fees for light duty trucks, which are under 10,000 pounds, by $10 was proposed as part of Forward Washington, a transportation funding package proposed in 2019.

Burden: Owners of light duty trucks.

Potential Benefits

- The fee discourages the use of heavier vehicles, which cause more damage to public roadways.
- The fee is easy to implement, as it makes use of the current vehicle registration system.

[128] RCW 46.17.355

Potential Drawbacks

- The fee does not fully tie payers' tax burden to actual usage of transportation facilities—while vehicle weight contributes to road deterioration, volume of miles traveled also plays a role.

Passenger Vehicle Weight Fees: Rate Increase

Description: Owners of passenger vehicles and motor homes currently pay an annual registration fee based on vehicle weight. The fee varies depending on the weight category of the vehicle.

Legislative history: The State Legislature first approved vehicle weight fees in 1987. The current rates were set in 2015. Weight fees are scheduled to increase by $10 in 2023. Raising the $35-$82 rates by $10 was proposed as part of Forward Washington, a transportation funding package proposed in 2019.

Burden: Owners of motor homes and passenger vehicles.

Potential Benefits:

- The fee discourages the use of heavier vehicles, which cause more damage to public roadways.

Potential Drawbacks:

- The fee does not fully tie payers' tax burden to actual usage of transportation facilities—while vehicle weight contributes to road deterioration, volume of miles traveled also plays a role.

Potential Local Transportation Revenue Options

Jump to section:

Community Facilities Districts (CFDs)

Description: Funding mechanisms used to fund infrastructure projects where residential and community property owners are charged an annual fee for the benefit of infrastructure on the area.[129] CFDs are regional and not tied to a specific facility.

Legislative History: The legislature enacted ESSB 6241 in 2010 to allow the use of CFDs.[130] This funding option is outlined in RCW 36.145, though it is unclear whether it is currently used in the state. This option is used in California, Arizona, Illinois, New Mexico, and Hawaii.[131]

Potential Benefits:

- CFDs could work well for regional transportation projects since there is no direct connection between the properties that would pay the tax and the specific facilities that would be funded.[132]

Potential Drawbacks:

- There would be no specific connection between properties that would pay the tax and the specific facilities that would be funded.

Lift One Percent Property Tax Cap

Description: Currently, growth of property tax revenue is limited to 1% plus the value of new construction. This option would allow jurisdictions to lift that cap permanently by voter approval.

Legislative History: Senate Bill 6114, introduced in the 2015 legislative session, proposed increasing the limit to 3% or the current rate of inflation, whichever is less in any given year. The same bill was reintroduced in the 2016 legislative session. House Bill 2145, introduced in the 2019 legislative session, proposed lifting the 1% property tax cap and tie the rate to inflation and population growth.

Potential Benefits:

- Since most local spending comes from general revenues, the 1% cap limits local tax collections. Raising the property tax 1% limit would allow local jurisdictions to generate sufficient revenue to match expenses, such as criminal justice, construction, labor, and benefit costs that rise faster than 1% per year due to inflation.

Potential Drawbacks:

- The ability for local jurisdictions to collect additional property tax revenue would depend on voter approval. Differences in property tax rates could potentially widen the gap in government revenues collected across communities.

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[129] JTC Long-Term Transportation Financing Study, January 2007. http://leg.wa.gov/JTC/Documents/TransportationFinancingStudyJan07.pdf
[130] MRSC, Legislative Enacts Community Facilities District Legislation – A Very Modest Step, 2011. http://mrsc.org/getmedia/1A7F32AB-C65C-4C4F-868A-F7B72582F558/bs11cfd.aspx
[131] Report to the Washington Legislative Transportation Committee, Study of Alternative Transportation Project Funding Options, April 2005. http://leg.wa.gov/JTC/Documents/AltFinFinalRpt.pdf
[132] *Ibid.*

Household Excise Tax

Description: Per RCW 35.95.040, local agencies may impose a household excise tax of up to one dollar per month per household to support its transit system, but this may not be imposed concurrently with transit sales tax.[133] Currently, only the City of Pullman is allowed to levy this tax pending voter approval.[134] Most transit agencies use the sales tax rather than this option. The JTC Transit Capital Needs Study discussed allowing this option for transit agencies.[135]

Legislative History: Currently, up to one dollar per month of a household excise tax may be charged for transit purposes by voter approval, but it cannot be used concurrently with sales and use tax for transit. The legislature would need to act to allow this revenue source to be used by transit agencies that are also using sales tax.

Potential Benefits:

- A household excise tax would be a relatively stable revenue option, since economic changes are not closely related to household changes.

Potential Drawbacks:

- This tax would require a new administrative cost since there is no administrative structure already collecting this type of tax in Washington.
- This tax could be regressive since lower-income households would pay a higher proportion of their income on this tax.

Local Option Rental Car Sales Tax

Description: RCW 82.08.020(2) and RCW 82.14.049 currently allow the State and counties to levy a sales tax on retail car rentals. The State levies a 5.9% sales tax on retail car rentals, the proceeds of which accrue to the Multimodal Transportation Account and can be used for transportation purposes appropriated by the legislature. Counties may impose a 1% sales tax on taxable retail car rentals to fund public sports stadiums and other sports facilities without voter approval. As of 2017, this tax has been imposed in five counties: Franklin, King, Kittitas, Pierce, and Spokane.

The *2019 JTC City Transportation Funding Study* recommended creating a local option of the retail car rental sales tax for cities to generate revenues dedicated to transportation purposes, specifically for street maintenance.[136]

Legislative History: This option was proposed in Senate Bill 6652 and House Bill 2362 (companion bills) in the 2019 legislative session; the bill did not pass.

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[133] MRSC Revenue Guide for Cities and Towns, 2019.
[134] JTC Transit Capital Needs Assessment, June 2019. http://leg.wa.gov/JTC/Documents/Studies/Transit%20Study_PaulNeal/Final_JTCTransitCapitalNeedsTechnicalReportandExecSum.pdf
[135] *Ibid.*
[136] JTC Assessment of City Transportation Funding Needs, June 2019. http://leg.wa.gov/JTC/Documents/Studies/Final_CityFundingReport.pdf

Potential Benefits:

- This would allow cities to impose a local version of a rental car tax that currently may be used by the State and counties.
- In cities with substantial car rental activity, particularly those with commercial airports, this option could help generate revenue to cover additional costs of higher growth areas.

Potential Drawbacks:

- This option would likely apply to less than 30 cities with commercial car rental activity, based on analysis conducted in the JTC City Transportation Funding Study.

Local Option Tolls

Description: Washington currently has five toll facilities: SR 520 Bridge, Tacoma Narrows Bridge, SR 167 HOT Lanes, I-405 Express Toll Lanes, and SR 99 Tunnel. Tolls could be implemented on new or existing facilities. Toll revenues must be dedicated to funding the facilities or infrastructure where the tolls are collected. Local option tolling would allow local or regional entities to implement tolling, where local or regional jurisdictions would control rates, policies, and revenues.

Legislative History: Currently, the legislature authorizes tolls, the Washington State Transportation Commission sets rates and policy, and WSDOT implements toll facilities. Washington does not have local option tolling.

Local option tolling has been used in other urban areas including Dallas-Fort Worth, Houston, Miami, New York City, Orange County-California, Orlando, San Diego, and Tampa.[137]

Potential Benefits:

- Revenue collected from tolls would be dedicated to funding the transportation infrastructure where they would be collected.
- Local option tolls could support reduced travel times and increased bus transit speeds.

Potential Drawbacks:

- The tolls would require new administration and implementation costs since this would be a new revenue collection structure.
- Without a toll rebate program, tolls could disproportionately impact low-income households who would pay a proportionately higher share of their income. With a toll rebate program, however, low-income households could receive a rebate to alleviate their burden.[138]

Local Motor Vehicle Fuel Tax Adjustment

Description: RCW 82.38.010(2) currently allows counties to impose a motor vehicle and special fuel tax, the proceeds of which are distributed to the unincorporated county and cities using a per capita formula.

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[137] Transportation Futures, Overview of Transportation Funding, April 2015. http://www.thefuturestaskforce.org/wp-content/uploads/2015/11/Transportation-Funding-04-24-15-Revised.pdf

[138] Transportation White Paper: Fair and Efficient Congestion Pricing for Downtown Seattle, July 2019. https://sightline-wpengine.netdna-ssl.com/wp-content/uploads/2019/07/ECONW-Fair-and-Efficient-Congestion-Pricing-Paper.pdf

The local option tax must be approved by a simple majority of voters and must be levied in an amount equal to 10% of the statewide fuel tax rate. To date, no counties are enacting this tax. Spokane County and Snohomish County have attempted to levy this tax, and both ballot measures failed.

The *2019 JTC City Transportation Funding Study* recommended two changes to this option:[139]

- Make the language around the motor vehicle and special fuel tax more flexible to allow counties to impose a tax *less than* 10% of the statewide fuel tax rate, rather than *equal to* 10%; and
- Require that the ballot communicate the tax rate *in cents* to make it more relevant and easier to understand for voters.

Legislative History: This option was proposed in Senate Bill 6652 and House Bill 2362 (companion bills) in the 2019-2020 legislative session; the bill did not pass.

Potential Benefits:

- This adjustment would make the ballot language more clear and easier for voters to understand.
- This change would give counties more flexibility to decide what rate to impose.

Potential Drawbacks:

- The local option tax has not been successfully imposed in any counties.

Local Tax for Truck, Delivery Vehicle, or Other Large Vehicles and/or Businesses Using Them

Description: This would be a locally imposed charge for trucks, delivery vehicles, or other large vehicles and/or the businesses using those vehicles.

Legislative History: This idea has not been proposed in the Legislature.

Potential Benefits:

- Since these larger vehicles cause greater degradation to infrastructure than other vehicles, they would pay additional fees for their use of the transportation system. Proponents see this as a more equitable approach to align users with payers.

Potential Drawbacks:

- This tax could discourage business activities that require trucks, delivery vehicles, and large vehicles.

Street Utility/Road Benefit Charge

Description: Street utility fees treat transportation systems like utilities in which residents and businesses pay based on their use of the system, rather than on the value of their property. Typically, charges are based on the number of trips generated by different land uses.

Legislative History: The street utility was found unconstitutional in 1995.

Starting in 1990, City Street Utility Charges were authorized in Washington under RCW 82.80.040, allowing any city or town to establish a street utility to generate revenue in an amount up to 50% of the

[139] JTC Assessment of City Transportation Funding Needs, June 2019. http://leg.wa.gov/JTC/Documents/Studies/Final_CityFundingReport.pdf

costs for transportation maintenance, operation, and preservation. When authorized, 12 cities adopted the charge.[140]The Washington State Supreme Court declared the fee invalid in November 1995 on the grounds that it was an unconstitutionally imposed property tax.[141]

In 2012, the state legislature directed the Washington State Transportation Commission to study the feasibility of a similar mechanism, a road usage charge. A road usage charge is a per-mile charge drivers would pay based on the number of miles they drive, rather than by the number of gallons of gas purchased as with the current gas tax. The approach is similar to how people pay for their utilities, including electricity or water. The study was submitted to the Legislature in 2020.

Potential Benefits:

- A street utility would charge users based on their use of the transportation system. Proponents see this as a more equitable approach to collecting transportation revenues.

Potential Drawbacks:

- The street utility has been previously found unconstitutional in Washington and may not be viable.

Transportation Benefit District Utility Tax Option

Description: Any city or town can form a TBD under Chapter 36.73 RCW to raise revenues for transportation purposes. One of the recommendations from the *2019 JTC City Transportation Funding Study* was that TBD authorities be amended to create a new option for TBDs to increase 6% capped utility taxes by 2% and dedicate the funds to transportation.[142]

RCW 35.21.870 currently allows cities and towns to impose business and occupation taxes upon the gross operating revenues of public and private utilities that provide service within the boundaries of the jurisdiction imposing the tax. There is no restriction on tax rates for water, sewer, solid waste, and stormwater utilities, but the tax rate for electric, gas, steam, and telephone utilities is capped at 6%.

The *2019 JTC City Transportation Funding* study's recommendation is to create an additional councilmanic authority for Transportation Benefit Districts in RCW 36.73.040. This would allow TBDs to increase utilities capped in statute at 6% (electric, gas, steam, and telephone) by 2% and dedicate the increase to transportation uses, creating a new dedicated transportation funding source.

Legislative History: This option was proposed in Senate Bill 6652 and House Bill 2362 (companion bills) in the 2019-2020 legislative session; the bill did not pass.

Potential Benefits:

- A TBD utility tax option would use an existing authority and allow additional revenues to be dedicated to transportation.

[140] Grandview, Kent, Mabton, Marcus, Medical Lake, Richland, Seattle, Snoqualmie, Soap Lake, Union Gap, Wenatchee, and Wilkeson.
[141] Supreme Court of Washington, Covell v. Seattle. https://casetext.com/case/covell-v-seattle
[142] JTC Assessment of City Transportation Funding Needs, June 2019. http://leg.wa.gov/JTC/Documents/Studies/Final_CityFundingReport.pdf

Potential Drawbacks:

- TBDs must be imposed by voter approval; only places that can establish a TBD would be able to also impose a TBD utility tax option.

Transportation Benefit District Sales Tax Adjustment

Description; RCW 82.14.0455 allows TBDs to impose a sales tax up to 0.2% with the approval of a simple majority of voters. Unlike most sales tax options, the TBD sales tax has a maximum duration of 10 years with the option to reintroduce the tax to the voters every 10 years in perpetuity. Uncertainty over duration of this source makes it harder to use for projects or to support a long-term maintenance program. One recommendation from the *2019 JTC City Transportation Funding Study* was to remove the 10-year sunset provision from the RCW to allow the TBD sales tax option to exist in perpetuity like other voted sales tax options.[143] Two other options related to the TBD sales tax are to double the sales tax rate or to allow the sales tax to be imposed by councilmanic action, rather than by vote.

Legislative History: Senate Bill 6652 and House Bill 2362 (companion bills), which addressed local transportation revenue options in the 2019-2020 legislative session, proposed:

- Doubling the sales tax rate to 0.4%;
- Allowing the sales tax to be imposed by councilmanic action; and
- Doubling the length of the tax to 20 years.

Potential Benefits:

- This option would use an existing authority while increasing revenue-generating potential of an existing revenue source.
- These adjustments make it easier for local jurisdictions to implement and maintain this funding source.

Potential Drawbacks

- Increasing TBD authority might not be a viable option given voter passage of Initiative 976, which removes other TBD authorities.

[143] JTC Assessment of City Transportation Funding Needs, June 2019. http://leg.wa.gov/JTC/Documents/Studies/Final_CityFundingReport.pdf

Appendix C: Case Study Interview Protocol

Joint Transportation Committee:
Statewide Transportation Needs Assessment

Case Study Interview Discussion Guide

Our team is working with the Joint Transportation Committee on a comprehensive assessment of statewide transportation needs and priorities over the ten-year timeframe of 2022-2031. A factsheet for this project can be found here.

As part of this work, we will produce case studies that describe how different transportation investments can impact communities across the state. We will highlight fiscal and economic benefits to the State and impacted jurisdictions and qualitatively review other effects. We hope to learn more about a case study from you.

INTERVIEW GUIDE

- What was the impetus for the project? What were the goals?
- What challenges has the project encountered?
- What were the project's funding sources?
  - What challenges did you encounter in acquiring funding?
- Can you walk through the categories of project costs?
- What were the primary outcomes of the investment? Please cite quantitative data where you can and otherwise rely on qualitative evidence. Consider the following categories:
  - Transportation benefits (such as increases in safety, mobility, or levels of service).
  - Economic impacts (job creation or other economic development).
  - Fiscal impacts (tax receipts or cost savings in operations or lifecycle costs).
  - Social, environmental, or community health benefits.
- How have these benefits been distributed among the State and other jurisdictions (including Tribal Nations, cities, counties, port districts, and public transit agencies)?
- What changes in state policy or programs would better support your ability to make similar transportation investments?
- Is there anything else you'd like to share that would help inform our study?

DATA REQUEST

1. Project funding breakdown
2. Project cost breakdown
3. Sales tax payments: by year, by recipient district, by payer agency
4. Environmental Impact Statement
5. Project schematics
6. Project photos
7. Capital plans
8. Grant applications (if applicable)
9. Engineering studies
10. Any studies of project results showing economic or fiscal impacts; changes in safety or mobility; etc.

Appendix D: Case Studies

RUNWAY REALIGNMENT

Pullman-Moscow Regional Airport

Total Investment	$154.1 million
Timeline	2007 Master plan update begins
	2016 Construction begins
	2019 Project complete

Benefits

Transportation

- Improves travel reliability
- Maintains airport service for large aircraft

Fiscal

- Generated construction-based tax revenue of $8 million
- Generates $1.8 million in ongoing tax revenue

Economic

- Created 93 construction jobs
- Sustains and creates 300 jobs
- Supports economic activity
- Infuses $2.5 million in federal spending into the State

Community & Environment

- Supports state schools with 11,000 annual university-related flights

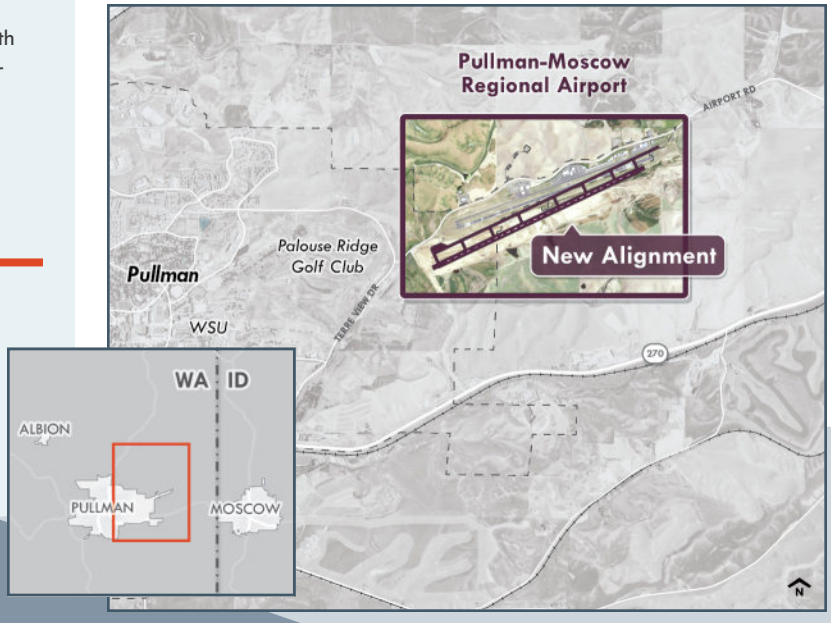
Challenges

- Stakeholder goal alignment
- Earthwork
- Confusion leading to congressional legislation
- Coordination with airport schedule
- Conflicts with existing and planned infrastructure

About the Project

The Pullman-Moscow Regional Airport (PUW) rotated its existing runway and taxiway system 5.5 degrees and extended the 6,700-foot runway to 8,000 feet, all within a physically constrained site. These updates allowed the airport to meet Federal Aviation Administration (FAA) design standards for the aircraft that use the airport, including commercial aircraft, corporate users, and charter flights for local universities. The project also improved the airport's all-weather reliability with an Instrument Landing System and new GPS approach capabilities. The project further included improvements to stormwater collection and treatment, new utilities, and earthwork that will benefit future projects, such as the current passenger terminal development.

The Pullman-Moscow Regional Airport's Board includes representation from two cities in two states, two counties, two universities, a port district, and other local partners. Accomplishing this project required substantial coordination of stakeholders.



TRANSPORTATION
Benefits

Improves travel reliability. The former runway alignment caused cancellation or diversion of an average of **124 commercial flights** and **160 charter flights** per year due to poor weather conditions.[1]

The realignment project includes a full Instrument Landing System, GPS approach technologies, and private approach capabilities that enable equipped aircraft to operate during inclement weather.

Maintains airport service for large aircraft. The runway now meets FAA design standards for larger commercial commuter aircraft. Without the realignment, the airport could not have continued to serve these aircraft.

ECONOMIC
Benefits

Created construction jobs. Construction directly created **93 jobs** for five years. Including indirect job creation, the construction project created an estimated 226 total jobs annually.[1]

Sustains and creates permanent jobs. The airport adds **300 direct jobs** to the regional economy.[2] Without the realignment project, the airport would not have met FAA standards and would have had to reduce its commercial aircraft service, leading to a loss of jobs.

Supports economic activity. Pullman's regional economy is driven by higher education, research, and agricultural products sold on the global market. The manufacturing and services sector alone accounts for over **6,000 jobs** and **$374 million in gross regional product**.[1]

The airport is significant for this sector. For example, Schweitzer Engineering Laboratories, the region's largest manufacturing company, bases its fleet of business jets at PUW. Without the airport, this sector could move to another region or state. The runway realignment maintains the regional competitiveness that PUW provides to attract and retain both employers and professional employees.

Infuses spending into Washington. The airport estimates that without the realignment project, the region could lose approximately **$2.5 million in annual federal grants and contracts** tied to commercial air service.[1]

FISCAL
Benefits

Generated construction-based tax revenue. Direct taxable construction sales on this project totaled over $103 million, generating over **$8 million in sales and use tax** for both the State and local jurisdictions. Based on the local sales tax rate at the start of construction, the State received $6.7 million of these payments.

Generates ongoing tax revenue. As noted above, PUW would have had to reduce its service for large aircraft without the realignment. Realignment sustains the airport's economic and tax contributions, which the airport estimates at over $20 million to Washington's gross regional product and **$1.8 million in state and local taxes in Washington**.[1]

Further, as noted in the economic impacts section, the realignment helped sustain the region and state's competitiveness for major high technology employers.

State Local **Benefits**

COMMUNITY & ENVIRONMENTAL
Benefits

Supports state schools. The region is home to two major land grant universities, Washington State University and the University of Idaho, as well as Lewis-Clark State College. PUW provides support for over 40 charter flights per year for sports teams. PUW supported a total of about **11,000 university-related flights** in 2015.[1]

Challenges

Stakeholder goal alignment. Pullman-Moscow Regional Airport's Board includes representation from two cities in two states, two counties, two universities, and a port district. While these entities shared the same overall goal related to the airport, differences in financial capacity, politics, and fiscal calendars added complexity to the project. To address these concerns, funding contributions for the realignment project were set not equally, but at levels that were determined to be equitable.

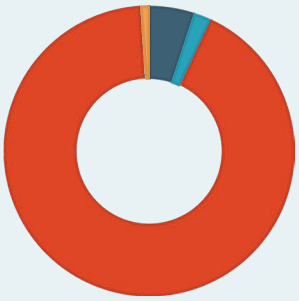
Earthwork. PUW's location in the rolling hills of the Palouse Region required that the project move more than 8 million cubic feet of earth to create level land for the runway and created the largest wetland mitigation site in Eastern Washington, according to the airport.[3] Construction crews added a culvert to Airport Creek, built by the Civilian Conservation Corps in the 1930s, to relocate it 60 feet underground.

Confusion leading to congressional legislation. The match rate for FAA funding differs between Washington and Idaho. Because stakeholders from both states helped fund this project, there were initial uncertainties about which match rate would apply. To address this uncertainty, Senator Maria Cantwell's office lead a 2-year effort to pass a bill in US Congress that stipulated that if an airport is within 15 miles of a state border, the FAA match rate for the project should average that of the two states.

Coordination with airport schedule. The airport had to phase construction carefully to minimize airport closures.

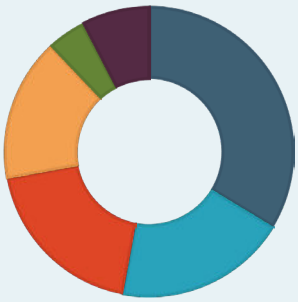
Conflicts with existing and planned infrastructure. The location of the realignment conflicted with the planned realignment of the State Highway 276 corridor, the existing location of power lines, and Washington State University's agricultural research facilities. These conflicts had to be resolved in project planning.

Funding Sources



- Federal
- State
- Local
- Private

Funding Uses



- Site preparation and earthwork
- Paving
- Drainage and wetland construction
- Land acquisition
- Lighting and navigation aids
- Other

Sources

1 Peterson, Steven (2016, March 1). The Economic Impacts of the Pullman-Moscow Airport and Realignment Project. *University of Idaho.*

2 Pullman-Moscow Regional Airport. (2016). Pullman-Moscow Regional Airport Runway Realignment Project. Retrieved April 16, 2020, from City of Moscow: https://www.ci.moscow.id.us/DocumentCenter/View/205/Project-Overview-PDF.

3 Interview with Tony Bean, Pullman-Moscow Regional Airport. (March 11, 2020.)

Photos: Pullman-Moscow Regional Airport, 2020.
Map: BERK, 2020.

Funding Partners

Federal Contributions (92%) The FAA issued grant funds equal to 91.9% of the project costs, for a total of $141.5 million.

State Contributions (2%) State universities from both Washington and Idaho helped to meet the match for the FAA's contributions. Washington State University and its Aerospace Studies Department contributed $500,000 and $1.5 million respectively, and the University of Idaho and its Aerospace Studies Department contributed $1.0 million collectively.

Local Contributions (5%) Local jurisdictions from both Washington and Idaho collaborated to compile the necessary funding to match the FAA's contributions. The Cities of Pullman and Moscow each contributed $2.5 million. PUW and Whitman County each contributed $900,000; the Port of Whitman County contributed $300,000; and Latah County contributed $100,000.

Private Contributions (1%) Schweitzer Engineering Laboratories and Ed and Beatriz Schweitzer each contributed $1.0 million, for a total of $2.0 million in private contributions.

Project Prioritization

Stakeholders invested in this project within the context of several other priorities. The City of Pullman had bonds out for a high school expansion, new elementary school, hospital improvements, and a new city hall during the project period. The City of Moscow had bonds and projects for a new police station, parks and recreation projects, street paving projects, and other surface transportation projects during the project period. Both Washington State University and the University of Idaho invested in building construction.

DUNE PENINSULA AND WILSON WAY PEDESTRIAN BRIDGE

City of Tacoma

Total Investment	$80.5 million
Timeline	April 2014 – Bond approved June 2016 – Construction begins July 2019 – Bridge opens

Benefits

Transportation

- Improves safety
- Increases multimodal connectivity by finishing seven-mile trail

Fiscal

- Generated $2.5 million in taxes

Economic

- Created 60 construction jobs
- Draws over 400,000 new tourists per year

Community & Environment

- Improves runoff water quality by 91%
- Remediates contaminated soil
- Creates 1,000 feet of shoreline and 2.5 acres of estuary
- Improves recreation with 11 acres of new park
- Enhanced youth education

Challenges

- Funding coordination
- Oversight from multiple jurisdictions
- Seasonal weather
- Change in federal administration

About the Project

This project created new waterfront park access on Dune Peninsula, remediated environmental damage, and improved active transportation opportunities. Metro Parks constructed the 600-foot-long, 50-foot-tall Wilson Way Pedestrian Bridge to address a "missing link" in a seven-mile shared-use path to allow pedestrians and cyclists to travel from downtown Tacoma to Point Defiance Park entirely via trail. The project also incorporates a new roundabout at the entrance to the park and a new boat trailer parking lot.

Although transportation benefits are substantial, the project was foremost a project to expand Point Defiance Park to Dune Peninsula, adjacent to the Asarco Superfund site. To do so, Metro Parks Tacoma worked with the Washington State Department of Ecology and the US Environmental Protection Agency (EPA) to remediate contaminated soils. The 11 acres of new park incorporate paved trails, large slides, an amphitheater, new utilities and restrooms, and a rental space for parties.

TRANSPORTATION
Benefits

☑ ☑ **Improves safety.** Prior to the project, the entrance to the park included a six-way intersection. The project added a roundabout with dedicated bike and pedestrian paths with Americans with Disabilities Act (ADA) accessibility. The roundabout shortened nonmotorized crossings from 80 feet to 24 feet, a **decrease of 70%**, and added pedestrian refuge and striped markings.[3]

The Wilson Way Pedestrian Bridge spans North Pearl Street/State Route 163, providing grade separation that enables pedestrians to more safely cross the highway.

○ ☑ **Increases safe and convenient multimodal connectivity.** The project creates a "missing link" of **seven-mile shared-use trail**, completing the final piece of a 60-year community dream to connect Point Defiance Park with downtown Tacoma via the Ruston Way waterfront trail.[1] The trail is 20 feet wide and ADA-accessible.

ECONOMIC
Benefits

☑ ☑ **Created construction jobs.** The project created **297,000 hours of labor** and created approximately **60 full-time construction-based jobs**.

○ ☑ **Draws tourism.** Each year, 3 million visitors visit Point Defiance Park, the second largest city park in the country.[1] Metro Parks estimates that the project will result in an increase of over **400,000 new visitors per year.**[1]

FISCAL
Benefits

☑ ○ **Generated construction-based tax revenue.** Project contractors paid approximately **$2.5 million in sales and use tax** to both the State and City of Tacoma on all materials purchased or used for the work. The State received approximately $1.7 million of this total. Taxes were not paid on construction labor and services as they are exempt per the Public Road Construction Exemption.

State Local Benefits

COMMUNITY & ENVIRONMENTAL Benefits

- ☑ ☑ **Improves water quality.** The project creates a regional stormwater facility that treats **91% of the urban runoff from over 720 acres of land.**[2] This runoff previously discharged into Puget Sound untreated.
- ☑ ☑ **Remediates contaminated soil.** The project excavated contaminated soil created by the Asarco smelter and contained it with an artificial cap on the Dune Peninsula.
- ☑ ☑ **Creates habitat.** The project reclaims over **1,000 linear feet of shoreline** and creates **2.5 acres of estuary** to provide important habitat for endangered species such as salmon and sand lance.[1] Plantings incorporated into the project are native.
- ○ ☑ **Improves recreation access and opportunities.** The entire Dune Peninsula is now an **11-acre waterfront park** with public access, restoring public use of a property that was previously unusable to the public. The Wilson Way Pedestrian Bridge helps create public access to the park and the trails within.
- ○ ☑ **Enhanced youth education opportunities.** The program expanded learning opportunities for students in Tacoma Public Schools' Science and Math Institute by providing opportunities for students to engage in hands-on studies to support the planning and development of the project.

Challenges

Funding coordination. The project received several grants, which created challenges in tracking all grant requirements. To adhere to grant timelines, Metro Parks began construction before fully funding the project, adding uncertainty.

Oversight from multiple jurisdictions and agencies. The project area spanned both the City of Tacoma and the City of Ruston, a small city adjacent to Tacoma with a 2010 population of 749.[5] The cities have different road standards and tax rates. Both the EPA and Department of Ecology governed different environmental portions of the project.

Seasonal weather. Weather played a substantial role in the project, as the region experienced extremely wet winters when the project had exposed 48 acres of soil. The 2016-2017 winter set a record for winter precipitation.[4]

Change in federal administration. With the change of the federal administration in 2017, the composition of the design team from the EPA changed. Further, Metro Parks was unsure whether the new administration would continue to support and prioritize the project.

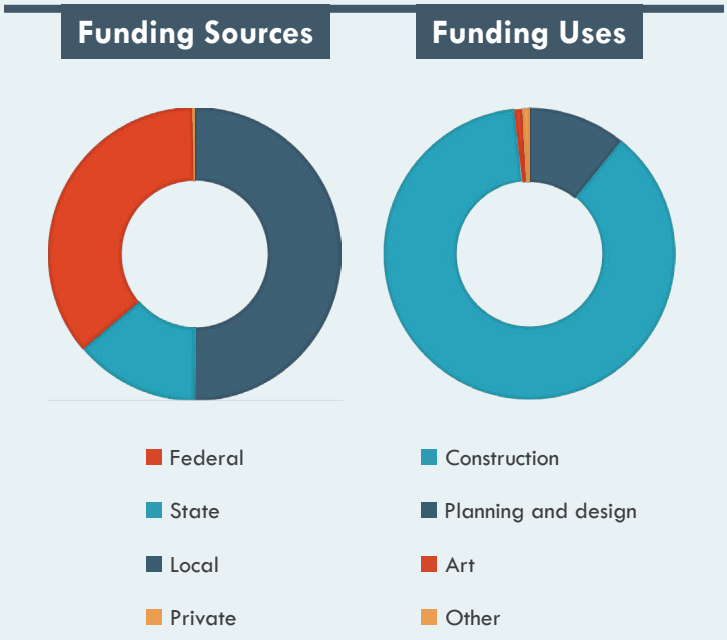
Funding Partners

Federal Contributions (36%) As a Superfund site, the park project received $28.8 million from the federal government's settlement with Asarco. The project also received a $500,000 federal Land and Water Conservation Fund grant, distributed by the state Recreation and Conservation Office (RCO).

State Contributions (14%) The project was awarded a $2.5 million competitive grant from the state RCO Washington Wildlife and Recreation Program. The State appropriated an additional $7.5 million for the project via capital budgets.

Local Contributions (50%) The project drew on $39 million from bond issues by Metro Parks Tacoma. The City of Tacoma provided $410,000 in funding from its Environmental Services Department stormwater budget.

Private Contributions (0.3%) The Tacoma Yacht Club, located next to the Dune Peninsula, contributed $240,000 to the project.



Project Prioritization

This project connected two popular community points of interest and transformed an environmentally damaged site into a public park. The voters of Tacoma decided that these investments in Point Defiance Park were important and approved a $198 million bond issue in 2014.

Sources

1 Metro Parks Tacoma. (2013). Member Requested Local Community Project Information Form: Destination Point Defiance Missing Link.

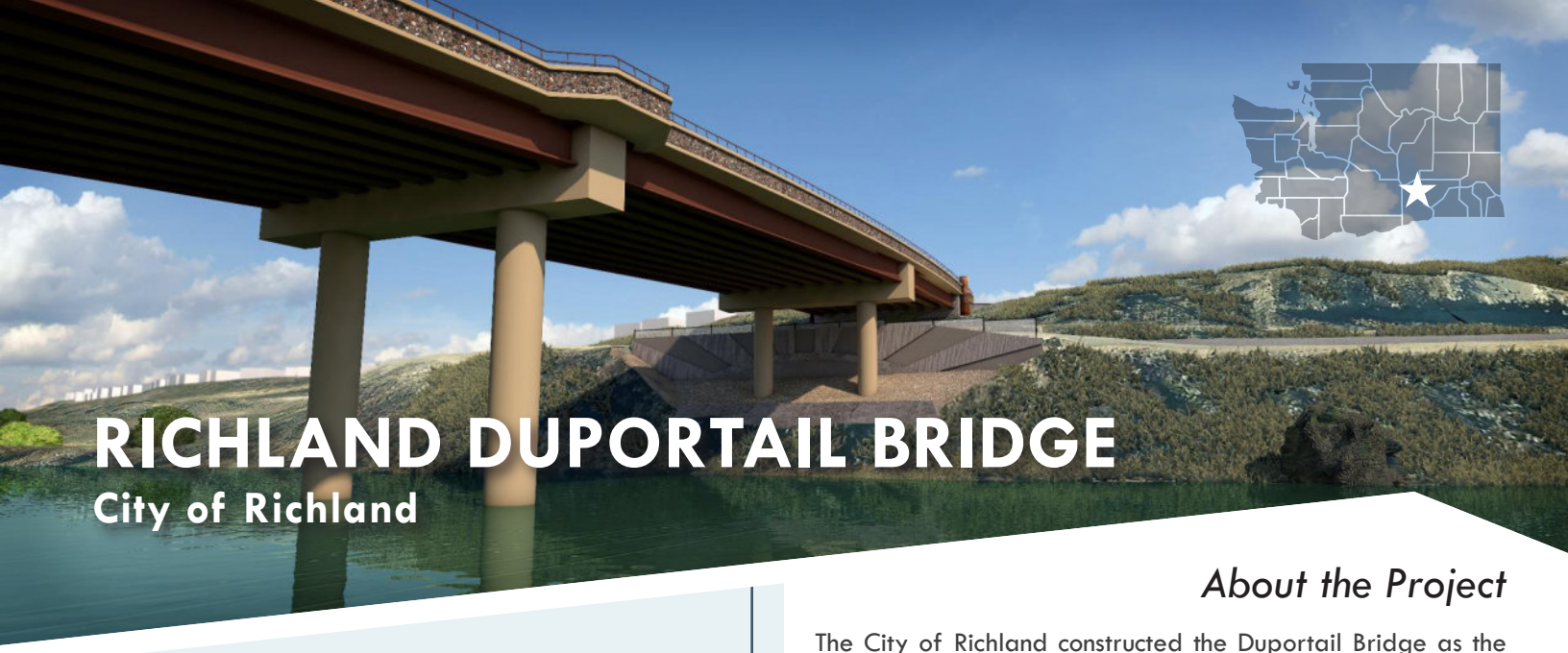
2 City of Tacoma. (2011). Fiscal Year 2012 Statewide Stormwater Grant Program Application: Pt. Defiance Regional Treatment Retrofit.

3 Metro Parks Tacoma. (2014). 2014 Pedestrian and Bicycle Program Grant Application Form: Point Defiance Park Multimodal Entrance.

4 Glenn, S. (2017, April 24). It's officially the wettest winter on record. *Tacoma News Tribune*. Retrieved May 5, 2020, from Tacoma News Tribune: https://www.thenewstribune.com/news/local/article146455299.html

5 City of Ruston. Retrieved May 5, 2020, from City of Ruston: https://www.rustonwa.org/living-in-ruston.

Photos: Metro Parks Tacoma, 2020; Metro Parks Tacoma, 2018.
Map: BERK, 2020.



RICHLAND DUPORTAIL BRIDGE

City of Richland

Total Investment	$37.5 million
Timeline	January 2008 Design begins
	March 2018 Construction begins
	Fall 2020 Estimated completion

Benefits

Transportation

- Reduces travel time worth **$1.7 million**
- Increases safe and convenient multi-modal connectivity

Fiscal

- Generated construction-based tax revenue worth **$790,000**
- Generates ongoing tax revenue
- Eliminates the need for an additional fire station, worth **$10 million**
- Saves operating costs worth **$1.4 million** in 2020

Economic

- Created **442** construction jobs
- Supports economic activity

Community & Environment

- Improves emergency response times by **44-76%**
- Improves recreation access
- Improves environmental health, worth **$259,000** in 2020
- Upgrades utility infrastructure

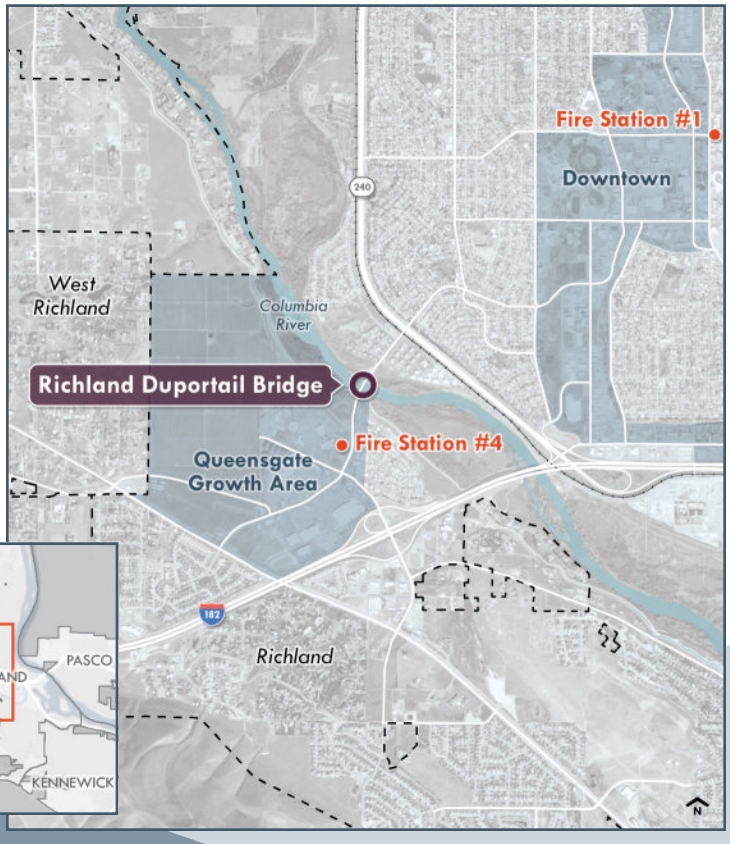
Challenges

- Funding coordination
- Work windows
- Fish permitting

About the Project

The City of Richland constructed the Duportail Bridge as the final phase of a corridor improvement strategy to provide a local street connection over the Yakima River, which bisects the City of Richland. The bridge directly connects the city's downtown core and a rapidly expanding suburban part of the city via Duportail Street. These two neighborhoods were previously linked by Interstate 182, as the Duportail Bridge is the only local street connection across the river within Richland.

The bridge incorporates sidewalks and bicycle lanes on both sides, enabling active transportation to commercial development and a substantial open space area with recreational trails. The bridge construction included an upgrade of the City's primary water supply infrastructure.



TRANSPORTATION
Benefits

○ ☑ **Reduces travel time.** The bridge improves direct travel within Richland, saving time and mileage for travelers.

– Time and distance savings in 2020 alone are estimated **at 78,638 hours and 2,515,497 miles, worth $1.7 million.**[1]

– These reductions could prevent injuries and fatalities associated with transportation, estimated at over **148 injuries and two fatalities** over the 75-year lifespan of the bridge.[1]

○ ☑ **Increases safe and convenient multi-modal connectivity.** Prior to the construction of the bridge, the only connectivity between the downtown and the growing center on the west side of the river was by state highway. The highway system is not well-suited for local circulation or non-motorized transportation, and mixing these forms of travel with long-distance vehicle travel creates safety concerns. The Duportail Bridge resolves this issue by incorporating local roads, bike lanes, and sidewalks that connect the neighborhoods.

ECONOMIC
Benefits

☑ ☑ **Created construction jobs.** Construction of the bridge is estimated to have created **442 near-term construction jobs.**[1]

○ ☑ **Supports economic activity.** Increased connectivity is leading to a downtown economic revival, resulting in:

– Construction of the first significant multifamily development (in progress) to leverage zoning regulations updated to support mixed use development. In 2020-2025, the City expects **540,000 square feet of commercial or retail space construction**, valued at $81 million.[3]

– New availability of City-owned parcels for development that will help activate the downtown area.

FISCAL
Benefits

☑ ○ **Generated construction-based tax revenue.** The City of Richland estimates that project contractors paid approximately **$430,000 in sales and use tax** to both the State and City of Richland on all materials purchased or used for the work. Approximately $327,000 of this was state revenue. Taxes were not paid on bridge construction labor and services as they are exempt per the Public Road Construction Exemption.

As of January 2020, the City of Richland paid approximately **$360,000 in sales tax** on the water line portion of the project. Approximately $274,000 of this was state revenue.

☑ ☑ **Generates ongoing tax revenue.** The new development described in the economic benefits section will generate additional tax revenue for the City of Richland.

☑ ☑ **Saves operating and maintenance costs.** By reducing travel distance for the public, the addition of the bridge is estimated to save **$1.4 million in operating and maintenance costs** on existing state and local roads in 2020 alone. Construction of the bridge is anticipated to save **$80 million of interstate upgrades** over the next 15 years.

○ ☑ **Eliminates the need for an additional fire station.** The bridge has allowed the City to construct a single fire station near the planned southwest terminus of the bridge with fast emergency access to both sides of the river, avoiding the need for an additional fire station on the other side of the river. According to the City and based on comparable nearby fire stations, this will result in:

– Savings of **$10 million in capital investments.**

– Savings of **$2.5 million on staff and operations** annually.[2]

State Local **Benefits**

COMMUNITY & ENVIRONMENTAL
Benefits

- ☑ ☑ **Improves air quality by reducing emissions.** As noted in the Transportation benefits section, the bridge will reduce travel time and thereby decrease carbon emissions, pollutants, and noise. This will lead to an estimated **$259,000 in environmental cost savings** associated with reduced noise and air pollution in 2020.[1]
- ○ ☑ **Improves recreation access and opportunities.** By creating safe, local connections and incorporating bike and pedestrian paths, the bridge supports:
  - Increased walkability in the street network.
  - Improved quality of life within the heart of the city.
  - Improved access to recreational trails and a non-motorized boat launch.
- ○ ☑ **Improves emergency response.** By creating more direct access, the bridge will lead to a **44–76% reduction in average emergency response times** for the area southwest of the Yakima River, as well as improved evacuation safety.[1]
- ○ ☑ **Upgrades utilities infrastructure.** Bridge construction facilitated replacement of water distribution infrastructure from the 1950s with support from the Federal Emergency Management Agency (FEMA).

Challenges

Funding coordination. It was challenging to assemble the total funding required for the project, which far outstripped local funding ability, and to manage different timelines and requirements for federal, state, and local sources.

Work windows. Construction required modifications to a regionally significant irrigation canal. This work had to be scheduled during the winter to avoid interrupting irrigation service. Project contractors had to continue work during the exceptional snowstorm of February 2019.

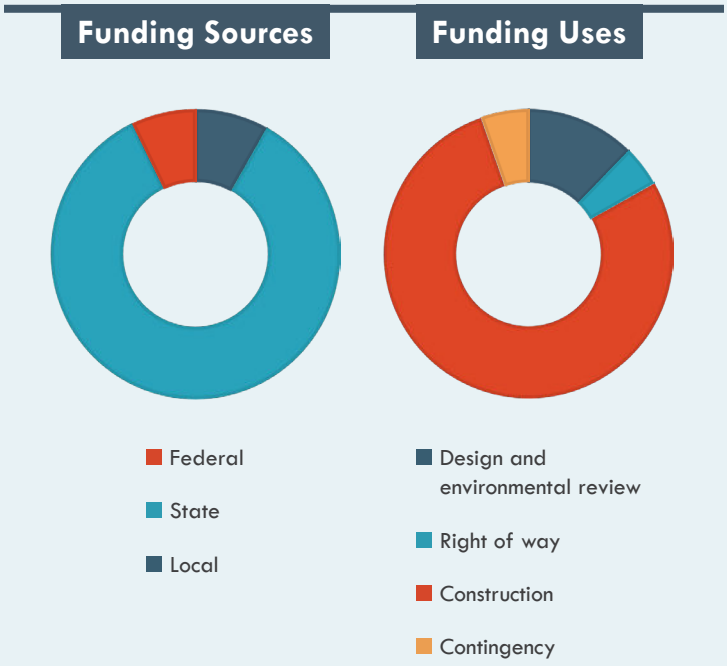
Fish permitting. Endangered Species Act permitting allowed a 90-day work window within the Yakima River each calendar year. To accommodate this constraint, engineers designed the bridge to be constructed using cranes positioned on the riverbanks. The engineering plan would have used two seasonal work windows to complete the bridge. The contractor acquired a larger crane than was included in the engineer's plans, enabling use of only one work window and accelerating construction by approximately 90 days.

Funding Partners

Federal Contributions (7%) The project received $2.4 million in Federal Surface Transportation Program Block Grant funds, distributed via the Washingon State Department of Transportation's formula-based allocation system. The project received a direct appropriation of $330,000 and FEMA supported the water supply upgrade with a competitive $2 million grant.

State Contributions (85%) A $20 million Connecting Washington appropriation and a $9 million competitively-awarded Transportation Improvement Board grant totaled more than three-quarters of the project funding.

Local Contributions (8%) The City of Richland dedicated general fund and real estate excise tax resources and leveraged a Public Works Trust Fund loan and a limited tax general obligation bond issue. Just over 50% of the City's contribution ($1.7 million) was an interfund loan put towards water infrastructure improvements.



Project Prioritization

The City prioritized the Duportail/Stevens corridor improvement project to focus on top city priorities like emergency response time improvements and water supply resilience. The City selected these goals over other pressing matters, including congestion relief for southbound commute traffic, buildout of planned active transportation features, citywide pavement preservation needs, improvements to substandard streets, and capital improvements like public safety facilities and parks and recreation facilities.

Sources

1 City of Richland. (2016, April 29). Duportail Bridge Project Application: TIGER Discretionary Grant Project Application. Richland, WA.
2 Interview with Pete Rogalsky, City of Richland. (March 11, 2020.)
3 Email records of Pete Rogalsky, City of Richland. (October 17, 2014.)

Photos: City of Richland, 2020.
Map: BERK, 2020.

LANDER STREET BRIDGE

City of Seattle

Total Investment	$96.2 million
Timeline	January 2016 Design begins
	May 2018 Construction begins
	Fall 2020 Estimated completion

Benefits

Transportation

- Improves safety by eliminating 485 crossing violations per day
- Eliminates delays worth up to $691 million
- Improves active transportation opportunities

Fiscal

- Generated construction-based tax revenue
- Supports ongoing tax revenue worth $4.3 billion annually for the State
- Creates $9.5 million in tax benefits by eliminating delays

Economic

- Created 125 construction jobs
- Improves rail reliability
- Reduces truck freight delay by 330 hours daily
- Supports economic activity

Community & Environment

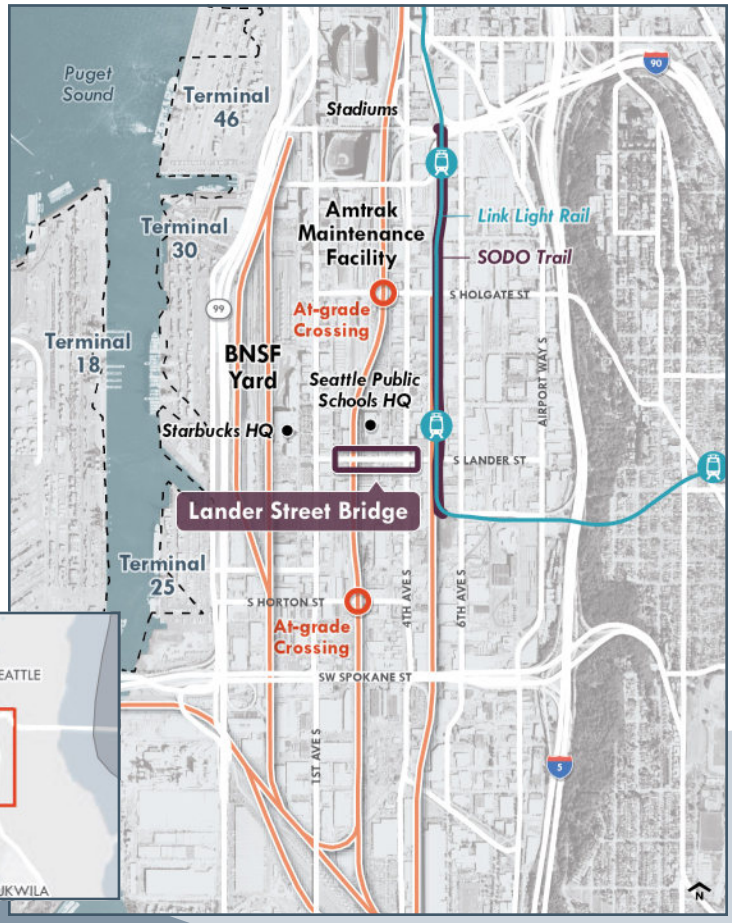
- Improves air quality by reducing emissions worth up to $264,000
- Improves emergency response time by up to eight minutes

Challenges

- Funding coordination
- Work windows
- Scheduling conflicts with concurrent projects
- Confined workspace

About the Project

The City of Seattle constructed a multi-use bridge on South Lander Street over four railroad tracks in Seattle's industrial area, connecting two main arterials for drivers, walkers, cyclists, and freight truckers. The primary purpose of the project is to improve freight mobility and safety by providing a grade separation between the roadway and the tracks. This supports residents and the Port of Seattle by improving safety for all users and eliminating a significant source of travel time delay for both people and freight.



JULY 2020

TRANSPORTATION
Benefits

- ✓ ✓ **Improves safety.** Prior to the bridge's construction, there were an average of **485 crossing violations** per day.[2]
  - – Prior to the construction of the bridge, the Federal Rail Administration ranked this crossing in the **top 0.5% of highest risk** at-grade crossings.[4]
  - – Over the past five years, the crossing saw **85 collisions** and **three fatalities.**[2]

  To support pedestrian and cyclist safety, the bridge incorporates a 14' wide multi-use path.
- ✓ ✓ **Eliminates delays.** Each day the Lander Street crossing is used by over **100 trains, 13,000 cars, 1,400 pedestrians, and 100 bicycles.**[1] The bridge will result in:
  - – **670 hours of personal vehicle delay savings** and **330 hours of truck delay savings** every day. Each train crossing delays road traffic by an average of nearly three minutes, totaling nearly five hours daily.[2]
  - – **Between $235.5 million and $690.9 million in time savings** (2014 dollars) for personal vehicles and freight over the bridge's 75-year lifespan.[2]
- ○ ✓ **Improves active transportation opportunities.** As noted in the transportation benefits section, the grade separation incorporates a multi-use path that creates a preferred route for pedestrian and bicycle travel in an area with few other dedicated multimodal crossing facilities. Connections include direct access between major employers and the SODO Link Light Rail station, pedestrian facilities on 1st Avenue South and 4th Avenue South, and the SODO Trail, a multi-use trail.

ECONOMIC
Benefits

- ✓ ✓ **Created construction jobs.** The project is estimated to have created **125 jobs** during construction.[2]
- ✓ ✓ **Improves passenger and freight rail reliability.** Over **50% of all BNSF rail cars** that move through Washington go through the Lander Street crossing. The rail corridor is also used by Amtrak and Sound Transit passenger trains.
- ✓ ✓ **Improves truck freight reliability.** Under 2015 volumes, the at-grade crossing caused **330 hours of truck freight delay per day**. Reliable freight mobility is essential to the **75,000 jobs** (increasing to 100,000 by 2040) in the local industrial area.[3]
- ○ ✓ **Supports economic activity.** Eliminating this significant congestion choke point will encourage more businesses to consider the area to the west of the intersection as a potential location.

FISCAL
Benefits

- ✓ ○ **Generated construction-based tax revenue.** Project contractors paid sales and use tax to both the State and City of Seattle on all materials purchased or used for the work. This amount is not known as detailed project expenditure records are not available. Taxes were not paid on construction labor and services as they are exempt per the Public Road Construction Exemption.
- ✓ ✓ **Supports ongoing tax revenue.** The Port of Seattle is part of the Northwest Seaport Alliance, which generates more than **$4.3 billion in state tax revenue** and annually ships more than **3.4 million containers. $2.2 billion** of those goods travel to and from the ports by rail. Investments in freight mobility are critical to the competitiveness of the Port of Seattle and the Washington State economy.[2]
- ✓ ✓ **Creates tax benefits.** The bridge will create a **$9.5 million tax benefit** per year to the State's tax base by eliminating truck freight delays. The Port of Seattle estimates that for every eliminated hour of truck delay, the State receives a $114 benefit to the tax base.[2]

State Local Benefits

COMMUNITY & ENVIRONMENTAL
Benefits

- ✓ ✓ **Improves air quality by reducing emissions.** Over its 75-year lifespan, the bridge will save **$192,000-$264,000 of costs associated with emissions** (2014 dollars) by eliminating 1,000 hours of vehicle idling under present traffic volumes.[2]
- ○ ✓ **Improves emergency response.** Emergency responders faced up to **eight minutes of delay** each day at the South Lander Street crossing under its prior configuration, essential time in an emergency.

Challenges

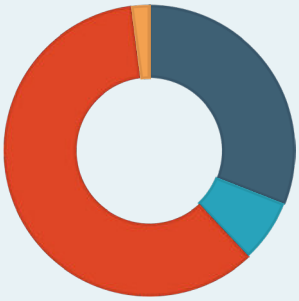
Funding coordination. It was challenging to piece together enough funding for the project and to manage different timelines and requirements for various funding sources.

Work windows. Due to rail restrictions, the project was allowed work windows only on Friday and Saturday nights, a challenging and costly schedule.

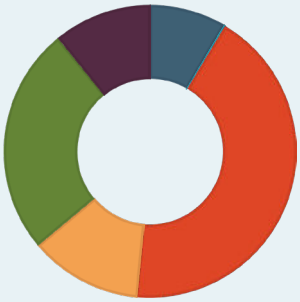
Scheduling conflicts with concurrent projects. The Alaskan Way Viaduct project occurred at the same time. Railroad needs required that the projects take place during different hours, and because Viaduct demolition was so noisy, the Lander Street bridge had to be constructed at night. This created cost and schedule inefficiencies.

Confined workspace. The worksite is extremely narrow, creating engineering challenges. However, project planners considered this from the outset and managed the issue with effective planning.

Funding Sources



Funding Uses



Funding Partners

Federal Contributions (60%) Three federal grants contributed nearly two-thirds of the total project costs, with nearly 50% from a competitively-awarded FASTLANE grant. Remaining federal funds came from a Surface Transportation Program Block Grant and National Highway Freight Program allocations, dispensed by the Washington State Department of Transportation using a formula-based allocation system.

State Contributions (7%) The state contributed $6.9 million in funding to this project through Connecting Washington, the Washington State Freight Mobility Strategic Investment Board, and the Washington State Transportation Improvement Board.

Local Contributions (31%) As the project lead, the City of Seattle contributed $24.6 million in funding and project coordination. City of Seattle funding stemmed from the Move Seattle Levy, bonds, excise taxes, and the Parking Garage Operations Fund. The Port of Seattle has contributed $4.8 million in funding.

Private Contributions (2%) As a major beneficiary of this project, BNSF has been a funding partner in the project.

Sources

1 City of Seattle. (2020, April 7). Lander St Bridge. Retrieved April 16, 2020, from Seattle Department of Transportation: www.seattle.gov/transportation/lander_bridge.htm.
2 Seattle Department of Transportation. (2016). NSFHP Request for South Lander Street Grade Separation and Railroad Safety Project.
3 Seattle Department of Transportation. (2016). PSRC Funding Application for S Lander St Grade Separation.
4 Port of Seattle. Lander Street Bridge Project. Retrieved April 16, 2020, from Port of Seattle: https://www.portseattle.org/projects/lander-street-bridge-project.

Photos: City of Seattle Department of Transportation, 2020.
Map: BERK, 2020.

M.V. SPOKANE DOCKSIDE PRESERVATION

Washington State Department of Transportation

Total Investment	$12.9 million
Timeline	March 2017 Contract advertised
	June 2017 Vessel work begins
	September 2017 Complete

Benefits

Transportation

- Improves safety
- Improves travel reliability

Fiscal

- Saves operating and maintenance costs
- Maximizes vessel lifespan

Economic

- Created 40-70 preservation jobs
- Infused $13 million of federal spending into the State
- Supports business commuters and freight for 2 million annual passengers

Community & Environment

- Maintains popular ferry system
- Avoids waste of resources

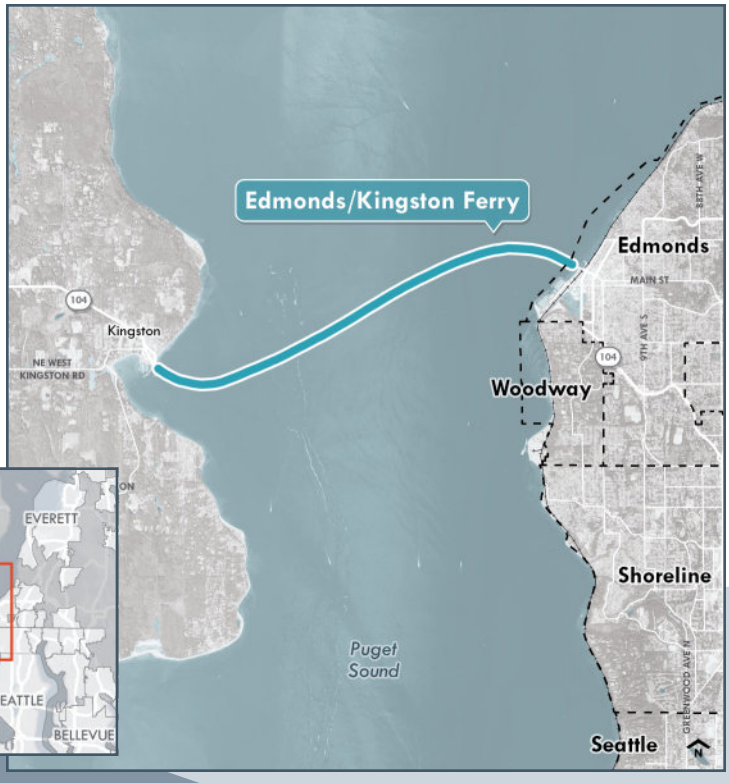
Challenges

- Funding requirements
- Dockside containment of materials
- Unexpected maintenance needs
- Limited contractor options

About the Project

To maintain the M.V. Spokane in a state of good repair, Washington State Ferries (WSF) conducted a full topside painting of the vessel as a part of regular maintenance and preservation. For efficiency and cost savings, WSF conducted the work dockside, rather than in a drydock. The project consisted of removing all existing coatings, preparing and repairing surfaces, and coating all surfaces. The project addressed all areas of the vessel that operate above the waterline, including the interior, car deck, exterior passenger deck and cabin, crew cabin, and pilothouses. The lifecycle for topside paint is eight to 10 years.

This preservation work is also essential to maintaining the safety and longevity of the ferry vessel and brings aesthetic benefits as well.



TRANSPORTATION
Benefits

Improves safety. Maintenance and preservation of the vessel fleet are essential for ensuring the safety of ferry passengers by enabling WSF to identify and address potential safety concerns before they present a risk. Non-skid paint on stairs and decks helps prevent passengers from slipping and falling, which protects passengers' well-being and reduces WSF's exposure to liabilities. Steel provides not only structural strength but structural fire protection as well.

Improves travel reliability. As the largest ferry system in the United States, valued at $4.8 billion, WSF operates 10 routes throughout Puget Sound and transports nearly **25 million passengers** each year.[1] The project helped to ensure that WSF can continue to provide reliable service for these passengers by improving the condition of the M.V. Spokane, which typicall operates on the Edmonds/Kingston route.

Based on the current size of WSF's fleet, all vessels must be available for service for 80% of the time. Vessels maybe out of service for planned maintenance/preservation, or unplanned repairs. However, as of December 2019, the M.V. Spokane's operational availability is 53%, meaning that it requires substantial maintenance that temporarily takes it out of service.[1] This preservation project helped to minimize the risk that the vessel would be further out of service due to unplanned repairs.

ECONOMIC
Benefits

Created construction jobs. The project involved **40-70 shipyard workers** during its three-month span.

Infused spending into Washington. Given that over 98% of project funding stemmed from federal sources, this project infused nearly **$13 million** in spending into Washington's economy.

Supports business commuters and freight. Commuters and businesses alike rely on reliable service from WSF to travel to work and to transport freight. Every weekday morning, more than 75,000 Puget Sound residents commute to work or school on board a Washington State Ferry.[2] In 2019, the Edmonds/Kingston route transported 4.1 million total riders (17.3% of the system total) and 2.1 million total vehicles (20.4% of the system total).[4] As one of two ferries typically on this route, the M.V. Spokane transported about half of these totals, or **2 million passengers** and **1 million vehicles.**

FISCAL
Benefits

Saves operating and maintenance costs. Deferred maintenance can lead to unplanned, emergency maintenance and the need for additional modifications, which costs more than regular preservation. Planned work typically allows for project efficiencies and a competitive bid process that lowers costs.

Topside paint helps protect and prevent the vessel's steel from deteriorating in a saltwater environment. Regular paint maintenance helps WSF avoid the costs of steel replacement, which is far more expensive than paint and also requires paint work. Emergency steel replacement can cost up to **$5 million.**[3]

Maximizes vessel lifespan. Adherence to optimal preventative maintenance cycles can significantly extend the service life of a vessel, which leads to significant cost savings. The average replacement value of a ferry of the M.V. Spokane's class is **$205 million**, and retiring a vessel requires substantial end-of-life expenses such as inspections and remediation of hazardous materials.[1]

State Local **Benefits**

COMMUNITY & ENVIRONMENTAL
Benefits

Maintains popular ferry system. Washington State's ferry system is popular for tourists and is a point of pride for the community. The project helped ensure that the vessel meets customer expectations and community standards for comfort, beauty, and reliability.

Avoids waste of resources. As noted in the Fiscal Benefits section, this project helps avoid the unnecessary replacement of steel, which comes with environmental benefits as well as cost savings.

Challenges

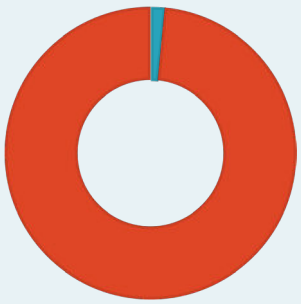
Funding requirements. The project depended heavily on federal funding which comes with requirements that materials used in the project are made in America. Many vessel components are not made in America, which makes it difficult to acquire necessary materials and adhere to funding requirements.

Dockside containment of materials. A full topside paint job such as this project would typically occur concurrently with a bottom hull exterior paint job in a drydock. This creates efficiencies and allows for easy containment of blast material. However, drydock work is substantially more expensive, and as a result this project occurred dockside, in the water. This added challenges in containing materials.

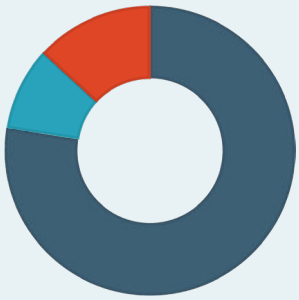
Unexpected maintenance needs. Preservation work such as this project is often deferred due to fiscal constraints, increasing the chance that additional repairs will be necessary. Once the existing paint was removed from the vessel, the preservation crew identified additional $1.7 million in repair needs, such as deteriorated steel and aluminum.

Limited contractor options. The shipyard industry has contracted over the past several decades and there has been a decrease in the number of contractors that conduct work on larger ferry vessels like the M.V. Spokane. The lack of competition has led to increased maintenance costs.

Funding Sources



Funding Uses



Funding Partners

Federal Contributions (98%) The majority ($12.7 million) of the funding for this project was awarded via two Federal Transit Administration grants.

State Contributions (2%) The State appropriated $200,000 for this project in the Washington State Ferries (WSF) capital budget.

Project Prioritization

Because preservation funding is limited, WSF faced challenging decisions about which preservation needs were most pressing. WSF prioritized this preservation project over replacement of a steering control system and a propulsion control system, both of which are no longer supported by their manufacturers. WSF deferred these major projects because both systems were operating well at the time of the decision, and because renewing the protective coatings on the ferry to preserve the steel structure was more critical for the safety of the ferry and passengers.

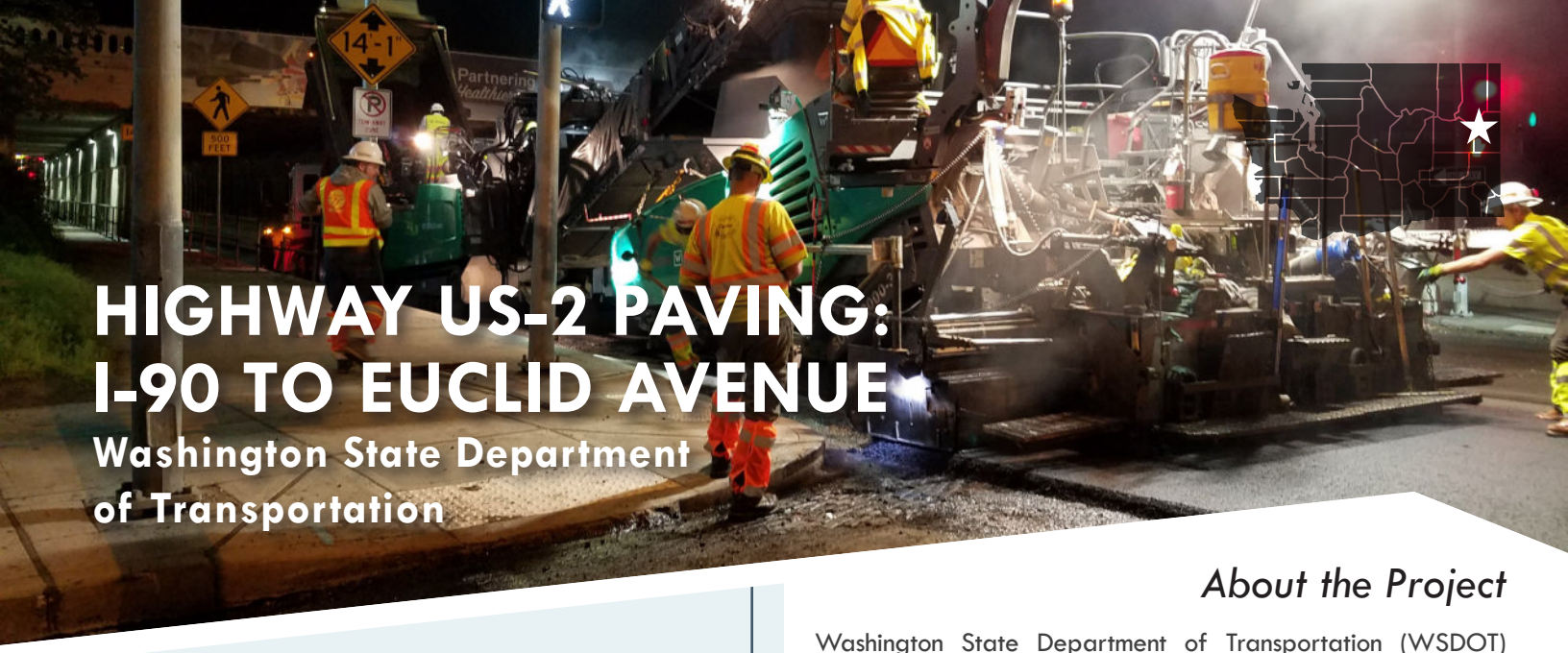
Sources

1 Washington State Department of Transportation. (2019, July 1). Washington State Ferries Vessels Asset Management Plan.

2 Washington State Department of Transportation. Commuter Center. Retrieved April 27, 2020, from WSDOT: https://www.wsdot.wa.gov/ferries/commuterupdates

3 Interview with Dan Gleaves, Jim Hasselbalch, Kynan Patterson, and John Vezina, Washington State Ferries. (March 19, 2020.)

Photos: Washington State Ferries, 2017.
Map: BERK, 2020.



HIGHWAY US-2 PAVING: I-90 TO EUCLID AVENUE

Washington State Department of Transportation

Total Investment	$4.9 million
Timeline	December 2017 Post contract
	April 2018 Construction begins
	October 2018 Complete

Benefits

Transportation

- Improves safety
- Increases capacity

Fiscal

- Generated $374,000 in construction-based taxes
- Generates ongoing tax revenue

Economic

- Created 50 construction jobs
- Improves freight mobility for 1,280 trucks daily

Community & Environment

- Adds over 30 ADA-compliant ramps

Challenges

- Safety of workers and drivers
- Dated existing infrastructure

About the Project

Washington State Department of Transportation (WSDOT) resurfaced US Highway 2 from Interstate 90 to Euclid Avenue along Division Street, a stretch of road within the City of Spokane where pavement condition had deteriorated and potholed. WSDOT ground down an existing layer of asphalt and resurfaced the road with hot mix asphalt to rehabilitate the existing pavement structure, including on the Division Street Bridge over the Spokane River. The project also included sidewalk ramp improvements in accordance with the Americans with Disabilities Act (ADA).

The project received the 2019 Carl Minor First Place Quality Award from the Washington Asphalt Paving Association.

TRANSPORTATION Benefits

- [x] [x] **Improves safety.** Prior to the project, some lanes along the project stretch of Highway 2 were in poor enough condition that travelers swerved to avoid potholes. The repaired road surface:
  - Improves driver safety. With no potholes and new striping and lane delineation, there is less swerving and evading that may contribute to collisions.
  - Improves pedestrian safety due to new crosswalks and the addition of ADA-accessible sidewalk ramps.
- [x] [x] **Increases capacity.** Because all lanes are now safely usable, Highway 2 and the greater regional street network is now more efficient.

ECONOMIC Benefits

- [x] [x] **Created construction jobs.** According to WSDOT, the project created approximately **50 construction jobs**.
- [x] [x] **Improves freight mobility.** This project directly benefits Spokane's $30 billion economy, the backbone of which is the highway network supporting freight movement into and out of the region. Highway 2 serves as Spokane's major north-south route and provides the capacity for freight and goods to move locally and regionally. This length of road supports **4.3 million tons** of freight annually and **1,280 trucks** daily.[1]

FISCAL Benefits

- [ ] [x] **Generated construction-based tax revenue.** According to WSDOT records, the State paid approximately $374,000 in sales and use taxes on the costs of this project, about 74% of which returned to state coffers.
- [x] [x] **Generates ongoing tax revenue.** Project improvements may increase the attractiveness of downtown Spokane to regional shoppers. Because Spokane is located on Washington's border, this spending may have otherwise occurred in Idaho and thus generates additional tax revenues for the State as well as the City.

State Local **Benefits**

COMMUNITY & ENVIRONMENTAL
Benefits

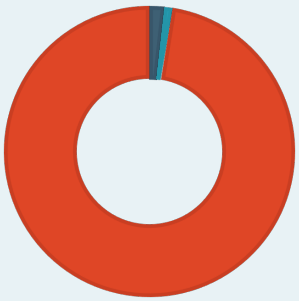
Improves ADA accessibility. As part of the project, WSDOT retrofitted sidewalks with over **30 ADA-compliant ramps** to improve mobility and accessibility for people with disabilities. These improvements have provided essential safe landings for people in wheelchairs.

Challenges

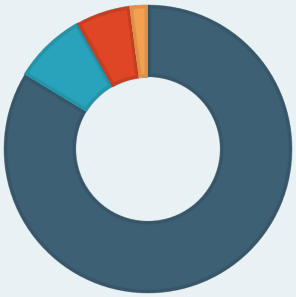
Safety of workers and drivers. Highway 2 is a high-traffic thoroughfare. This project required close management of traffic during construction to ensure safety of drivers and workers.

Dated existing infrastructure. The old age of the electrical infrastructure in the area complicated some rehabilitation work. Similarly, it was expensive and challenging to retrofit the existing, old sidewalks to accommodate ADA ramps.

Funding Sources



Funding Uses



Funding Partners

Federal Contributions (97%) Nearly all of the funding for the project came from federal funding provided to WSDOT. The entire preservation program for WSDOT is federalized and receives federal formula funds.

State Contributions (1%) WSDOT coordinated this project and contributed approximately $45,000 in funding via revenues from the Washington State fuel tax.

Local Contributions (2%) The City of Spokane contributed approximately $80,000 toward the total project costs.

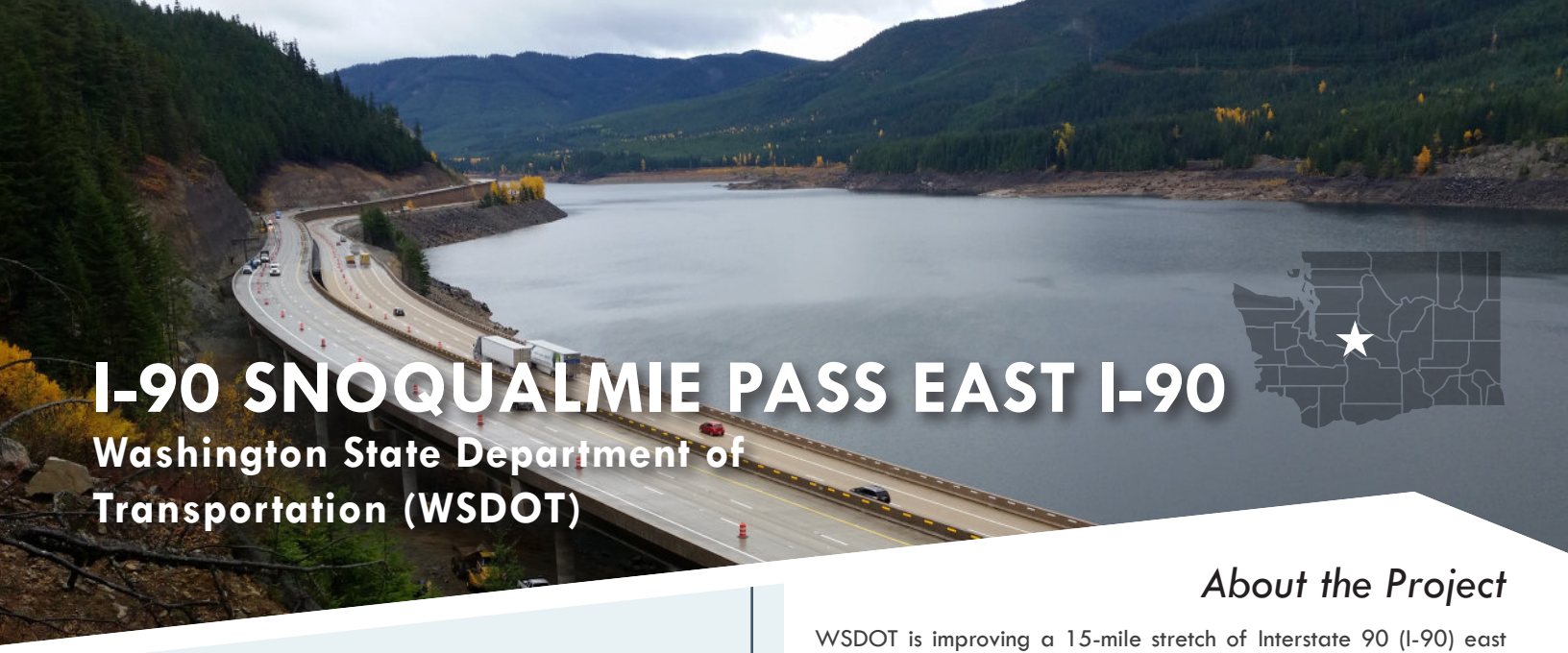
Project Prioritization

WSDOT relies on the Washington Pavement Management System and a lowest life-cycle cost approach to make road preservation decisions. This approach distributes funding to current needs that are in the most cost-efficient years of their repair cycle.

Sources

1 Washington State Department of Transportation. (2019). State Route T-1 through T-5 Classifications. Retrieved April 16, 2020, from WSDOT: https://www.wsdot.wa.gov/sites/default/files/2006/02/13/state-route-t-1-through-t-5-classifications.pdf

Photos: WSDOT, 2018.
Map: BERK, 2020.



I-90 SNOQUALMIE PASS EAST I-90

Washington State Department of Transportation (WSDOT)

Total Investment	$991 million
Timeline	1991 Scoping begins 2009 Construction begins 2019 Phases 1 & 2A complete 2029 Estimated completion

Benefits

Transportation

- Improves safety to reduce approximatley 1,500 crashes per decade
- Improves capacity by 50%
- Reduces risks and closures
- Improves road alignment

Fiscal

- Generated construction-based tax revenue
- Generates ongoing recreation-based tax revenue worth $340 million per biennium
- Promotes least lifecycle cost

Economic

- Creates 4,800 construction jobs
- Improves freight reliability for 5,800 daily trucks
- Supports economic activity, including $180 million in angler-related retail sales

Community & Environment

- Supports tribal use of local and customary areas
- Improves water quality
- Improves access and opportunities for recreationists
- Improves habitat with 27 wildlife crossings

Challenges

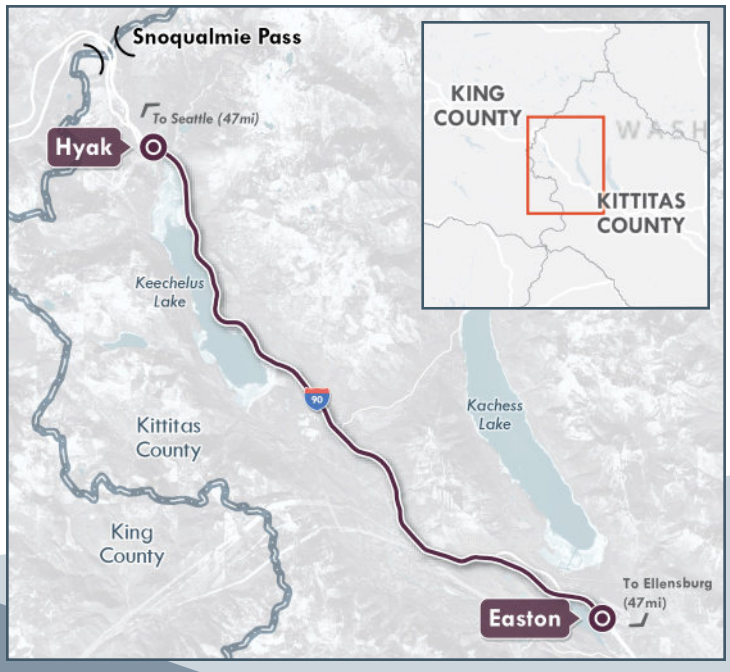
- Checkered land ownership
- Federal land management
- Safety of workers and drivers
- Confined workspace
- Stakeholder goal alignment

About the Project

WSDOT is improving a 15-mile stretch of Interstate 90 (I-90) east of Snoqualmie Pass from Hyak to Easton. This project replaces aged sections of highway built between 1913 and 1975, addresses stormwater treatment, straightens curves, improves sight distance, expands and replaces chain-up and off areas, removes fish passage barriers, adds 27 wildlife crossings including two overcrossings, replaces truck climbing lanes, adds a travel lane in both directions to address capacity that is routinely exceeded, and provides advanced Traffic Management Intelligent Technology to improve traffic flow. The project is supported by a coalition of public and private entities.

Washington's agricultural businesses depend on a cost-effective route to move commodities from the east to markets and ports in the west. Increasingly, I-90 is also used by commuters that work in the Puget Sound metropolitan area. World class medical services found in the Seattle area draw patients from the east for specialized treatments. I-90 also supports a growing recreationist population that access Snoqualmie Pass for some of the best recreational opportunities in Washington.

Two of four project phases are complete as of fall 2019.



TRANSPORTATION Benefits

- ☑ ☑ **Improves safety.** From 1991-2006, there were **1,640 reported crashes** within the project area, and three segments in the project area had crash rates higher than expected.[4] Between July 2006 and July 2016, there were an additional **1,421 reported crashes, 5% involving wildlife.**[7] In 2018, collisions and avalanches collectively resulted in approximately **72 hours of closures.**[8] The project minimizes the risk of wildlife-vehicle collisions using a combination of topography, structures, taller barriers, and wildlife fencing. The project also adds more chain-up areas to improve winter safety, as well as a lane in each direction that allows commercial trucks more space.
- ☑ ☑ **Increases capacity.** Prior to the project, traffic volumes exceeded the highway's design capacity during summer and peak travel periods, especially during daylight and on weekends, when volumes can reach **37,000 vehicles per day.** Holiday traffic can reach 58,000 vehicles per day.[7] The worsening traffic situation led to increased travel times, numbers of crashes, and adverse economic impacts.

  The project expands the highway from two to three lanes in each direction, a **50% increase in capacity** in each direction to accommodate projected traffic volumes for the next 25 years.[4]
- ☑ ☑ **Reduces risks and closures due to avalanches and rockslides.** Prior to the completion of Phase 1, I-90 was frequently closed due to avalanches and rockslides. While Phase 1 addressed some avalanche risks, some unstable slopes and saturated subgrades remain.
  - Avalanche control, snow slides, and risks within the project area previously resulted in an average of **42 hours of closures** each year.[4]
  - Rockslides previously resulted in an average of **12 hours of closures** per year and caused **nine fatalities** in the project area since 1957.[4]
- ☑ ☑ **Improves road alignment.** The project redesigned sharp curves of substandard alignment to improve safety. Approximately **55% of the corridor is curved.**[4]

ECONOMIC Benefits

- ☑ ☑ **Creates construction jobs.** Over the project lifespan, the project will result in approximately **12,100 total jobs,** including 4,800 direct jobs and 7,300 indirect jobs.[4]
- ☑ ☑ **Improves freight reliability.** I-90 is the primary east-west trade route between the Seattle metropolitan area and Eastern Washington, as well as US locations east of Washington. As a critical route to the state's current and future economic health, it moves a minimum of **35 million tons of freight** each year with more than **5,800 freight trucks** on Snoqualmie Pass every day.[6]
- ☑ ☑ **Supports economic activity.** An increasing proportion of Kittitas County residents commute to Seattle for work.[1] Regional economies on both sides of the State rely on I-90 to meet long-term economic plans. A safe and reliable highway supports state, regional, and private economies, as well as residents who count on the highway to support their family incomes and quality of life.

  The project also supports local recreation that benefits the economy. The Northwest Sport Fishing Industry Association estimates that anglers spent over **$180 million in retail sales** and supported **2,463 jobs** in 2011[3] based on activity in the two management areas contiguous with the project area.

FISCAL Benefits

- ☐ ☑ **Generated construction-based tax revenue.** Project contractors paid sales and use tax on the full contract price except on materials that were permanently integrated into the project.
- ☑ ☑ **Generates ongoing tax revenue.** The Washington State Department of Revenue estimates that wildlife watching, hunting, and fishing contributed nearly **$340 million** to the State in 2017-2019 through related sales tax and business and occupation tax revenue.[2]
- ☑ ☐ **Promotes least lifecycle cost.** Prior to the project, WSDOT resurfaced the highway using hot mix asphalt every three years, more than twice as frequently as is typical under less extreme weather conditions.[4] The project will use concrete panels that can have a service life of 50 years and eliminate the need for regular asphalt resurfacing.

COMMUNITY & ENVIRONMENTAL Benefits

Supports tribal use of local and customary areas. The project not only avoids known sites important to Washington tribes but also removes fish barriers and improves water quality important to tribes. Multiple tribes have full access to the surrounding land.

Improves water quality. The original highway construction did not consider water quality and altered some of the natural hydrology in the project area, which is within the **6,000-square mile Yakima River Basin**. WSDOT expects that roadway improvements will improve water quality by addressing debris flow, flood flow, and hydraulic calculations to protect the investment and address State and federal environmental policies.[5]

Improves habitat. The project improves wildlife connectivity, reconnects wetlands, and removes fish barriers to improve habitat by incorporating **27 wildlife crossings**, including two large overcrossing structures. The I-90 Project corridor is a critical north-south connective link for species movement in the Cascade Range, including for some protected species. Prior to the project, the highway inhibited wildlife movement in both terrestrial and aquatic habitats.[5] This led to increased mortality rates and reduced genetic exchange north and south of I-90, reducing wildlife resiliency.

From 1996 to 2006, WSDOT removed **160 deer and elk carcasses**, a number that likely underestimates the full count of wildlife death due to wildlife-vehicle collisions.[4] From 2008 to 2020, WSDOT reports documenting an additional 109 vehicle-related deer and elk carcasses and 17 carnivore deaths.

Improves recreation access and opportunities. The project corridor is a popular gateway between summer and winter recreational destinations in the Puget Sound and Eastern Washington. In the winter, I-90 provides access to approximately **23,000 miles of groomed winter trails.** Washington State Parks estimated in 2018 that non-motorized winter recreation had increased by 800% over the previous five years.[10] Visitation at Easton State Park along Lake Easton saw a 40% increase between 2016 and 2019 to an annual total of **198,000 visitors**.[9]

Challenges

Checkered land ownership. Land ownership in the project area is a checkerboard of private and public ownership, complicating project planning and environmental mitigation efforts.

Federal land management. Approximately 13 miles of the 15-mile project are on federally-managed lands, requiring WSDOT to comply with federal regulations and management plans. WSDOT streamlined this process by working with federal agencies to identify efficiencies, such as negotiating a single point of contact for multiple federal agencies and reincorporating into the final project any natural resources such as timber and minerals removed during construction.

Safety of workers and drivers. I-90 is the busiest east-west highway in Washington State. Completing the project under live traffic complicates safety measures. Project stakeholders helped WSDOT increase public safety, decrease project costs, and save construction time by advocating for WSDOT to combine the separated east- and westbound lanes for nearly two miles of the project's length, allowing over 12% of the project to be constructed outside live traffic and reducing construction times. WSDOT has committed to keeping two lanes of traffic open in the peak travel direction during construction, except when necessary to temporarily close for safety.

Confined workspace. Snoqualmie Pass has a short, weather-dependent construction season and high levels of rain and snow. The current five-year average snowfall on Snoqualmie Pass is 332 inches.[8] The Cascade Mountains present steep slopes, challenging geological conditions, and significant hydrological constraints.

Stakeholder goal alignment. Stakeholders for recreation, wildlife, and cultural resources were most actively involved. At project planning, WSDOT organized a stakeholders' interdisciplinary team (IDT) to address concerns and develop solutions. The IDT helped gain project approval and continues to help streamline designs, permit applications, and construction milestones needed to complete the remaining portions of the project.

Stakeholders interested in wildlife included the public; landowners; non-governmental organizations such as Conversation Northwest, Forterra, I-90 Wildlife Bridges Coalition, Kittitas Audubon Society, National Wildlife Federation, and Wildlife Watch; and state and federal agencies such as the US Fish and Wildlife Service, US Forest Service, and Washington State Department of Fish and Wildlife. Although conservation and wildlife advocacy groups were initially opposed to the project due to concerns about wildlife connectivity, by completion of the decision-making process in 2008, many of these groups had begun to support the project and testify before the Washington State Legislature in favor of the project.

Stakeholders associated with recreation and cultural resources included tribes, Washington State Parks, several motorized and non-motorized winter recreation groups, US Forest Service, and the Mountains to Sound Greenway. WSDOT agreed to mitigate the closure of the Price Creek Sno-Park by making improvements to the Crystal Springs Sno-Park, one of the most popular sno-parks owned and operated by Washington State Parks.

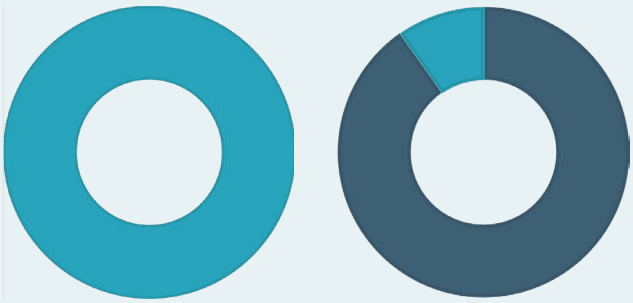
Funding Partners

State Contributions (100%) State appropriations entirely funded this project. The 2005 state gas tax Transportation Partnership Program (TPA) provided $564.9 million in funding, while the 2016 state gas tax Connecting Washington Account (CWA) funded the remaining $426.4 million.

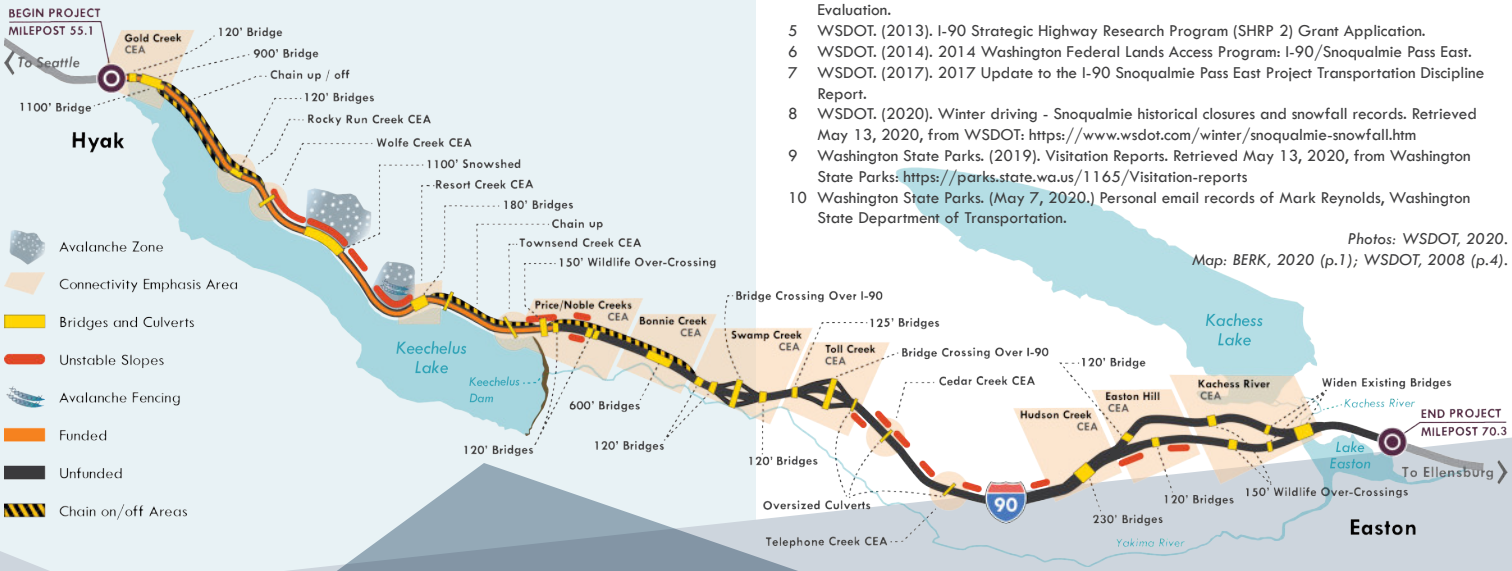
Project Prioritization

WSDOT began work in the early 2000s to define the scope and risks related to the project. WSDOT's current Strategic Plan has six values reflected in project decisions: safety, engagement, innovation, integrity, leadership, and sustainability. The project balances costs with wildlife connectivity goals to ensure that both the project and related mitigation efforts achieve the State's vision of the future.

Funding Sources



Funding Uses



Sources

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8 WSDOT. (2020). Winter driving - Snoqualmie historical closures and snowfall records. Retrieved May 13, 2020, from WSDOT: https://www.wsdot.com/winter/snoqualmie-snowfall.htm

9 Washington State Parks. (2019). Visitation Reports. Retrieved May 13, 2020, from Washington State Parks: https://parks.state.wa.us/1165/Visitation-reports

10 Washington State Parks. (May 7, 2020.) Personal email records of Mark Reynolds, Washington State Department of Transportation.

Photos: WSDOT, 2020.
Map: BERK, 2020 (p.1); WSDOT, 2008 (p.4).

WEST VANCOUVER FREIGHT ACCESS

Port of Vancouver

Total Investment	$251 million
Timeline	2005 Planning begins
	2007 Construction begins
	2015 Operational

Benefits

Transportation

- Increases annual port railcar capacity by 800%
- Improves rail access to the port
- Reduces regional rail congestion by 40%

Fiscal

- Generated $15.5 million in construction-based sales and use tax
- Generates ongoing tax revenue

Economic

- Created over 4,000 construction jobs
- Sustains and creates up to 5,200 permanent jobs
- Supports $2.9 billion in annual economic activity
- Improves port competitiveness

Community & Environment

- Creates habitat with over 1,500 new trees and shrubs
- Reduces noise pollution

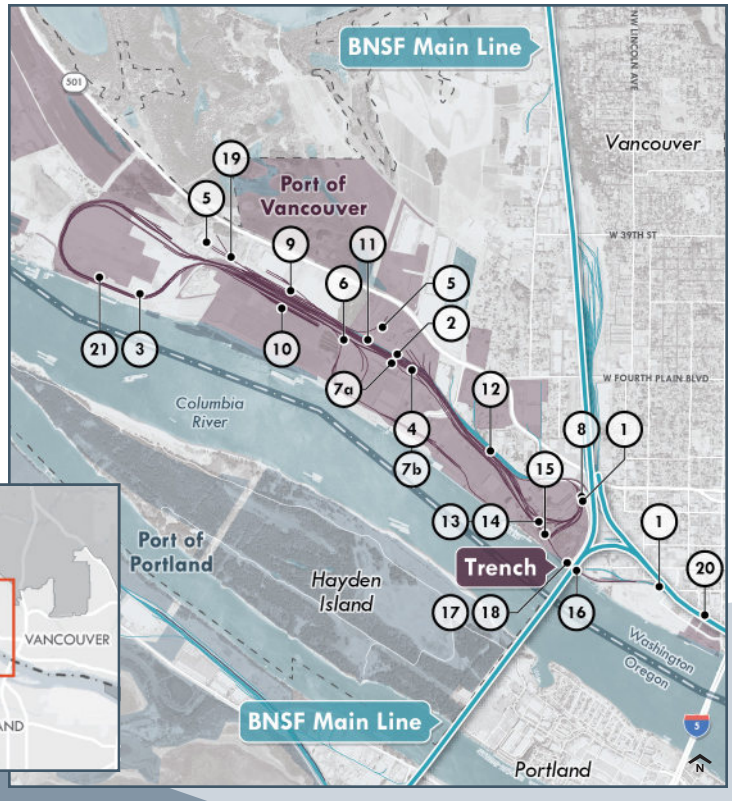
Challenges

- Project segmentation
- Confined workspace
- Nearby river habitat

About the Project

The Port of Vancouver USA led a 21-project program to increase the port's rail system capacity and remove at-grade rail conflicts. The port previously could not hold an entire unit train, which can have over 100 cars at a length of 1.25 miles.[1] This shortcoming created port inefficiencies and caused trains to block an at-grade crossing with the BNSF main line.

The project demolished and relocated existing facilities to build 42 miles of track including a loop track; constructed a pile-supported concrete trench along the Columbia River under BNSF's existing main line to eliminate a low-speed crossing, and constructed grade separations at two local roadways. In 2020, the American Society of Civil Engineers recognized the project as one of 10 recipients of its Outstanding Civil Engineering Achievement award nationally.



TRANSPORTATION Benefits

- **Increases port capacity.** The project constructed 42 miles of new track, increased the port's internal track capacity from 17 to 51 miles, and increased its annual railcar capacity from **50,000 to 400,000 cars per year.**[1] As a result, trains more easily move into and through the port. Prior to the project, the inadequate length of internal tracks required inefficient workarounds and prevented other trains from arriving or departing the port during loading or unloading of a unit train.
- **Improves rail access to the port.** The Port built a rail line in a pile-supported concrete trench under the BNSF main line to become the new primary lead into the port and reduce the use of the existing access track. The original access track crosses the BNSF line at a low-speed, at-grade diamond interchange, causing delays and limiting the number of trains that could access the port.
- **Reduces regional rail congestion.** As noted, the new rail entrance to the port prevents main line train delays by creating a grade-separated crossing. The project also constructed two additional grade-separated rail crossings. Together, these upgrades have resulted in a **40% reduction of rail congestion** on nearby critical rail lines.[1]

ECONOMIC Benefits

- **Created construction jobs.** The Port reports that the project employed **190 contractors** and about **4,000 construction workers** over about 530,000 hours during one of the worst economic downturns in US history. Those jobs were critical to the survival of a number of construction firms.
- **Sustains and creates permanent jobs.** The Port and its tenants create more than **3,200 jobs** and the Port is is the second-largest private employer in Clark County.[1] Further, the Port estimates that the project will create **1,000-2,000 new, permanent jobs** by increasing port operations.
- **Supports economic activity.** The port is a major transportation hub with access to the Columbia River, major highways, and freight rail lines. Each year, about **400 vessels** load or unload a total of **5 million metric tons of cargo**, generating **$2.9 billion in economic activity**.[1]
- **Improves port competitiveness.** The new access line to the port increases the number of trains that can enter and exit the property, allowing for port growth. Improvements to port capacity and efficiency help the Port compete with nearby facilities, including Oregon's Port of Portland.

FISCAL Benefits

- **Generated construction-based tax revenue.** Project contractors paid approximately **$15.5 million in sales and use tax** to both the State and City of Vancouver on all materials purchased or used for the work. The State received approximately **$12 million** of this total.
- **Generates ongoing tax revenue.** As noted in the Economic Benefits section, the Port brings in substantial revenue and taxes to Washington State. If the Port lost its competitive edge, these state revenues may be lost to Oregon and the Port of Portland.

State Local **Benefits**

COMMUNITY & ENVIRONMENTAL
Benefits

○ ✓ **Creates habitat.** The Port planted over **1,500 trees and shrubs** in association with the project.

✓ ✓ **Reduces noise pollution.** Because the project eliminates the at-grade rail crossing, trains no longer need to blow their whistles at the crossing.

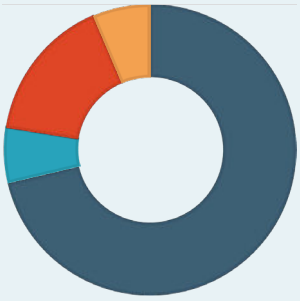
Challenges

Project segmentation. To facilitate funding, the Port divided the full project into 21 subprojects, each of which required individual city building permits. Further, because the Port was unsure which subprojects might receive federal funding, the Port adhered to guidelines and requirements for federal grants on all aspects of the project, regardless of eventual need. This added significant complexity to the project.

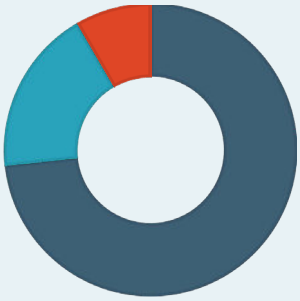
Confined workspace. It was a significant engineering feat to build the rail trench under BNSF's railroad bridge across the Columbia River, especially because BNSF's main line remained in service throughout the project. As noted in the project introduction, this project received an award from the American Society of Civil Engineers for this effort.

Nearby river habitat. Because the project involved constructing a pile-supported concrete trench along the edge of the Columbia River, construction had to occur within limited work windows to ensure limited impacts to wildlife habitat.

Funding Sources



Funding Uses



Funding Partners

Federal Contributions (16%) The project received multiple competitive federal grants, including $11.3 million through the federal TIGER II infrastructure program, $4.3 million from the Federal Railroad Administration, and $5.3 million via the Federal Highway Administration. The project also received direct appropriations of $16.9 million from the federal High Speed Intercity Passenger Rail program and $2.8 million via the American Recovery and Reinvestment Act.

State Contributions (6%) The Freight Mobility Strategic Investment Board provided $15.1 million via a competitive funding process. The project also received a $500,000 appropriation in the Washington State Department of Transportation budget.

Local Contributions (71%) The Port invested $179.0 million, primarily from sales of bonds and the Port's general account.

Private Contributions (6%) Port tenants contributed $7 million in additional lease payments and fees imposed for the project. BNSF provided funds and in-kind contributions of $9 million.

Project Prioritization

The Port experiences competing funding demands for transportation projects and commercial, industrial, and maritime development. The Port selects investments based on projections of job creation, economic development, environmental stewardship, and community betterment. This project supported both maritime development and the rail transportation system serving the port, two improvements needed for commercial strength future growth. During the freight access projects, the Port also made some progress on commercial and industrial development projects, completing the Centennial Industrial Park and advancing its Terminal 1 Initiative.

Sources
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Photos: Port of Vancouver, 2020.
Map: BERK, 2020.

BIGELOW GULCH/FORKER ROAD INTERCHANGE

Spokane County

Total Investment	$9.5 million
Timeline	January 2006 Outreach begins
	March 2018 Construction begins
	August 2019 Complete

Benefits

Transportation

- Improves safety quantified at $233,000 annually
- Increases capacity to support over 10,000 vehicles daily
- Improves connectivity
- Eliminates the need for seasonal restrictions

Fiscal

- Generated construction-based tax revenue
- Saves operating and maintenance costs

Economic

- Created construction jobs and 400 hours of on-the-job training
- Improves reliability for 4-10 million tons of freight annually
- Improves freight mobility

Community & Environment

- Improves air quality by reducing emissions
- Improves water quality

Challenges

- Limited funding
- Right of way complications
- Stream mitigation

About the Project

The Bigelow Gulch/Forker Road Corridor is a narrow, winding, and steep two-lane road that connects two industrial urban areas. The interchange improvement project is one phase of a larger project to straighten and widen the road to improve safety, reduce congestion, support pedestrians and cyclists, and support freight mobility.

The Bigelow Gulch Road and Forker Road interchange is located 11 miles northeast of downtown Spokane and was a high-accident intersection prior to the project. The project reconfigured the intersection with a grade separation so that southbound through-traffic on the corridor travels unimpeded under the Bigelow Gulch/Forker Road connector. While it is uncommon to see a rural intersection replaced with this style of graded intersection, this design most effectively met standards for design, safety, and capacity.

TRANSPORTATION
Benefits

☑ ☑ **Improves safety.** As of 2009, the intersection of Bigelow Gulch Road and Forker Road was the second most dangerous intersection in rural Spokane County, with **22 collisions** reported in a 3-year period.[2] From 1989-2009, there were fortunately no fatalities, but Spokane County estimates a cost of **$4.7 million in injuries and property damage** (2009 dollars).[2]

The high rate of accidents was due to limited sight distance and a challenging grade for freight. The project added a guard rail, widened the road, and separated the grade of the intersection. Spokane County quantifies an estimated annual benefit of **$233,000 in safety improvements.**[2]

☑ ☑ **Increases capacity.** Over **10,000 vehicles** use the road leading to the interchange each day.[1] Prior to the project, vehicles would often back up at the intersection in both directions. By separating the grade of the intersection, this project has allowed for uninterrupted flow that decreases traffic congestion.

○ ☑ **Improves connectivity.** The project helped create a safer and more reliable route between the City of Spokane Valley, northeast Spokane, and Interstate 90.

☑ ☑ **Eliminates the need for seasonal restrictions.** The intersection previously required seasonal restrictions due to the poor subsurface structure impacted by area freeze-thaw weather cycles. Because of the narrow two-way configuration and location at the bottom of a gully, weather and accidents also regularly closed the route. With the reconstruction and separated grade of the intersection, there is no longer a need for seasonal restrictions, leading to a more reliable route for freight and passengers.

ECONOMIC
Benefits

☑ ☑ **Created construction jobs.** Detailed records on the number of construction jobs created are unavailable, though the project required the contractor to provide **400 hours of on-the-job training** aimed at developing trainees to journeyman status in the trades involved.

☑ ☑ **Improves freight reliability.** The interchange is located in the middle of a corridor that connects two industrial areas, with industries ranging from food and petroleum distribution to railroad transloading facilities to commercial complexes.[1] The corridor carries **4-10 million tons of freight** annually and roughly **1,200-1,450 freight users** daily.[1] Prior to the project, the corridor was closed in certain seasons or when a collision occurred. This project has helped to improve reliability for freight users.

☑ ☑ **Improves freight mobility.** As noted above, the Bigelow/Forker Corridor is a significant route for freight and offers regional connectivity as a part of the National Highway Critical Freight Network. It is also a major freight corridor for freight traveling to destinations outside the state, both to the east and north into Canada.

FISCAL
Benefits

☑ ○ **Generated construction-based tax revenue.** Project contractors paid sales and use tax on all materials purchased or used for the work. Taxes were not paid on construction labor and services as they are exempt per the Public Road Construction Exemption.

○ ☑ **Saves operating and maintenance costs.** The project resolves issues of seasonal runoff from a nearby stream that previously caused regular road failures.

State Local **Benefits**

COMMUNITY & ENVIRONMENTAL
Benefits

- ☑ ☑ **Improves air quality by reducing emissions.** As noted in the Transportation Benefits section, the project reduces congestion and backups at the intersection. This reduction decreases idling and the resulting emissions and pollutants.
- ○ ☑ **Improves water quality.** The project improves the drainage of runoff to a nearby seasonal stream.

Challenges

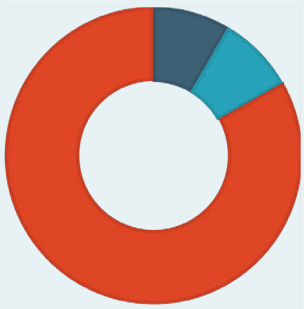
Limited funding. To fund the full corridor project, Spokane County pieced together funding from several partners with differing restrictions and timing. This required Spokane County to carefully phase the project to accommodate requirements of each partner.

Right of way complications. The project required Spokane County to acquire right of way on private land, which the landowners declined to permit. The County employed a condemnation process that extended into construction phasing. While the County eventually received possession, project efficiency was negatively affected by the uncertainty generated through this process.

Stream mitigation. There is a large seasonal stream that runs through the project area, requiring reconstruction of the streambed and accommodations to allow passage. Further, snow and rapid melt during the winter of 2018-2019 led to high flows in the stream that damaged recently-planted vegetation. This required work to reestablish the plants in 2019.

Funding Sources

Funding Uses



Funding Partners

Federal Contributions (64%) The project received $6.1 million in federal funds, mostly via a competitive National Highway Freight Program grant, as well as some funds from the Surface Transportation Block Grant Program designated for rural projects.

State Contributions (36%) The stated supported the project through two main sources: approximately $1.8 million in competitive grant funding from the Freight Mobility Strategic Investment Board and $1.6 million from the County Road Administration Board Rural Arterial Program.

Local Contributions While this project did not involve local funds, local sources contributed to other aspects of the larger corridor improvement project.

Project Prioritization

In general, improvements to the Bigelow/Forker Corridor have been highly prioritized over the past several years. Further, this project addressed an intersection with a high rate of accidents and resolved issues of a failing existing roadway. Because the corridor is significant and because safety is one of the top considerations for project prioritization, the project received prioritization to receive grant funding by multiple partners. Support from funding partners helped the County prioritize this project with minimal impacts to other roads in the county system.

Sources

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2 Spokane County Public Works. (2009). Surface Transportation Program Application: 2009 Urban and Rural Improvement Proposals for Bigelow Gulch/ Forker Road Intersection Improvement Project.

Photos: Spokane County, 2020.
Map: BERK, 2020.

COLVILLE 2000

City of Colville

Total Investment	$19.8 million
Timeline	1999 Planning begins
	2000 Construction begins
	2007 Project complete

Benefits

Transportation

- Improves traffic flow
- Improves walkability and pedestrian safety
- Restores downtown parking

Fiscal

- Generated construction-based tax revenue
- Saves operating and maintenance costs by reducing US-395 traffic by 42%

Economic

- Created construction jobs
- Improves freight mobility
- Supports economic activity

Community & Environment

- Upgrades utility infrastructure
- Restores small-town atmosphere
- Enhances community identity and incorporates art
- Improves county fairgrounds

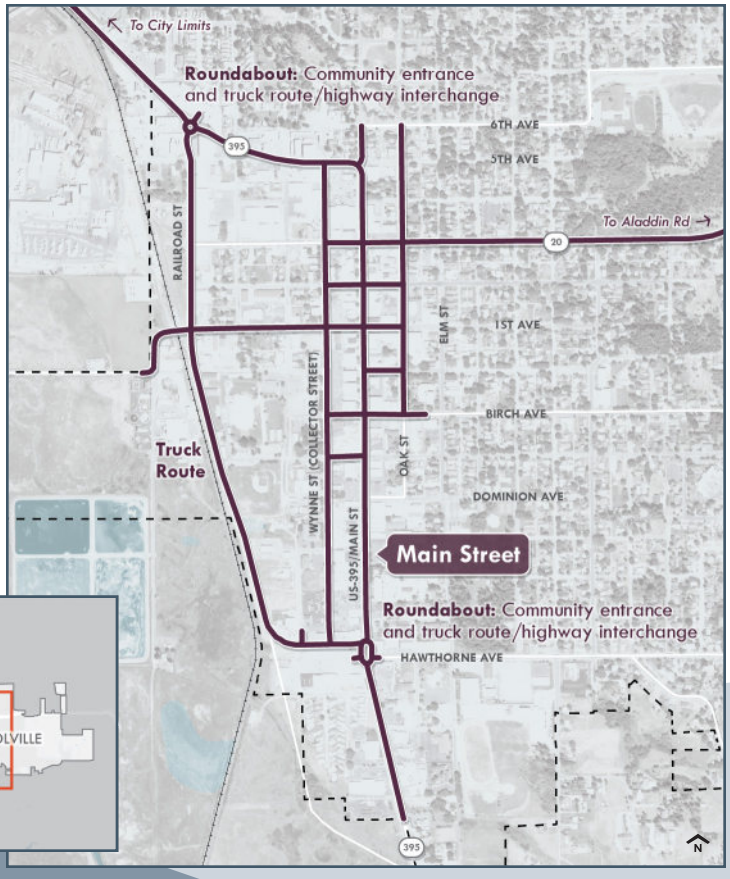
Challenges

- Limited funding
- Conflicts with nearby fairgrounds

About the Project

The City of Colville conducted a series of projects in the early 2000s to revive a small-town, community-focused atmosphere downtown. Colville accomplished this by creating an alternate truck route along existing railroad tracks at the city's outskirts for freight trucks to use instead of Main Street/US-395. The projects also created a collector street adjacent to Main Street to divert traffic, added roundabout intersections at the two primary gateways to the city, restored parking, and improved pedestrian infrastructure.

To ensure the project was responsive to community needs and to garner public support, a planning committee of Colville residents guided project development and implementation.



JULY 2020

TRANSPORTATION
Benefits

- ○ ☑ **Improves traffic flow.** By creating an alternate truck route, the project reduces traffic volumes in the downtown. This has enabled the City to increase traffic flow for non-freight travel and to remove several traffic signals from US-395, facilitating easier travel through downtown.
- ○ ☑ **Improves walkability and pedestrian safety.** Prior to the project, Main Street/US-395 was a four-lane state highway bisecting the center of Colville, creating safety challenges for pedestrians. The project provides marked crosswalks, a multi-use path, and sidewalk bulb-outs that minimize crossing distance at intersections.
- ○ ☑ **Restores downtown parking.** Prior to the project, the city had no angled street parking available downtown and parking availability was a concern for residents. The project reestablished angled street parking to increase parking availability in the downtown core.

ECONOMIC
Benefits

- ☑ ☑ **Created construction jobs.** Detailed records on the number of construction jobs created are unavailable, though the series of projects created long-term jobs over a 7-year period.
- ☑ ☑ **Improves freight mobility.** Adding an alternate truck route on the outskirts of town has provided multiple routes to transport freight through town. Roundabouts at either end of the truck route enable trucks to easily enter and exit the route from the highway.
- ○ ☑ **Supports economic activity.** As a result of the project, businesses along Main Street have reported an increase in foot traffic and sales.[2]

FISCAL
Benefits

- ☑ ○ **Generated construction-based tax revenue.** Project contractors paid sales and use tax to both the State and City of Colville on all materials purchased or used for the work. This amount is not known as detailed project expenditure records are not available. Taxes were not paid on construction labor and services as they are exempt per the Public Road Construction Exemption.
- ☑ ○ **Saves operating and maintenance costs.** By constructing an alternate truck route and creating a collector street adjacent to Main Street/US-395, the City of Colville has reduced traffic on a portion of the state highway and thereby reduced state maintenance costs. The project resulted in a **42% reduction in traffic volumes** on the highway, from an average of 12,000 vehicles per day to approximately 7,000 vehicles per day.[2]

State Local Benefits

COMMUNITY & ENVIRONMENTAL Benefits

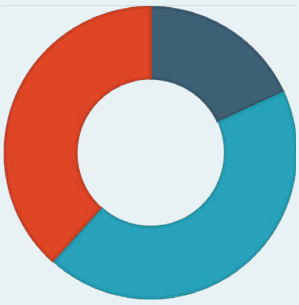
- ○ ☑ **Upgrades utility infrastructure.** In association with the project, the City of Colville replaced aging water and sewer lines and enhanced existing storm drainage.
- ○ ☑ **Restores small-town street atmosphere.** Residents of Colville wanted Main Street to have a pedestrian-friendly and community-oriented atmosphere. The project supported this goal by moving freight traffic to the alternate truck route and moving other vehicles to a collector street adjacent to Main Street. Just six months after the collector street was completed, this alternative route saw a **60% increase in traffic volumes** from 2,500 vehicles per day (VPD) to 4,000 VPD.[2]
- ○ ☑ **Enhances community identity and incorporates art.** The project added roundabouts that serve as gateways to Colville, providing community identification through the sculpture and landscaping they incorporate.
- ☑ ☑ **Improves county fairgrounds.** To construct the alternate truck route, construction teams had to deconstruct a pavilion at the Northeast Washington Fair Grounds. The City of Colville worked with the county commissioners to build an improved and more accessible facility to replace the deconstructed pavilion.

Challenges

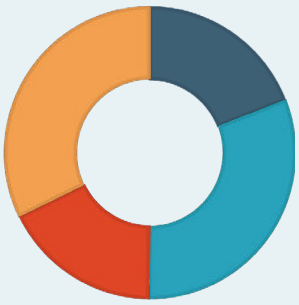
Limited funding. For a community the size of Colville, it was challenging to acquire local match funds to meet funding requirements. Local match amounts were typically in the range of 10-15%.

Conflicts with nearby fairgrounds. As noted in the Community & Environmental Benefits section, construction of the alternate truck route required the deconstruction of a pavilion on the Northeast Washington Fair Grounds. To resolve this impact to the fairgrounds, the City of Colville contributed to construction of a new pavilion.

Funding Sources



Funding Uses



Funding Partners

Federal Contributions (38%) The City received a $5.5 million pass-through grant via state distributions of the Rural Economic Vitality program. The project also received state distributions of federal Surface Transportation Program (STP) grant funds, including $1 million through the statewide competitive program and $630,000 via the STP regional program. The project received grants of $345,000 via the Federal Transportation Enhancement Program and $75,000 in Target Zero federal safety incentive funds, and a direct appropriation for parking improvements at the Colville Federal Building.

State Contributions (43%) The project received $2 million each in competitively-awarded funds from the Freight Mobility Strategic Investment Board and Washington State Department of Transportation (WSDOT) capital budget. The project received three Transportation Improvement Board grants totaling $3.7 million, including matching funds for federal STP dollars, a Small Cities Grant, and Urban Arterial Program funding. The project received $850,000 in a pre-construction loan from the State's Public Works Trust Fund.

Local Contributions (18%) The City of Colville provided $2.6 million via its streets fund, water and sewer reserves, current expense fund, and donated rights of way; $640,000 in local improvement district special assessment bonds; and $380,000 in general obligation bonds. Stevens County and private funders provided nearly $15,000.

Project Prioritization

The business community identified growing traffic and lack of angled parking on US-395 as an inhibition to the viability of the downtown core. The City prioritized this project in order to leverage planned WSDOT improvements on US-395 and City utility improvements.

Sources

1 Interview with Mark Freiberger, City of Colville (former). (March 31, 2020.)
2 Letter from Mark Freiberger, City Engineer at City of Colville to Keith Martin, Eastern Region Local Programs Engineer for Washington State Department of Transportation. (December 21, 2004.)

Photos: Colville Downtown Vitalization Plan: Today, Tomorrow, Together, 2018; Colville 2000 Truck Route Slideshow, 2003.
Map: BERK, 2020.

VANCOUVER WATERFRONT STREET SYSTEM

City of Vancouver

Total Investment	$13.8 million
Timeline	April 2013 Construction begins Early 2014 Complete

Benefits

Transportation

- Improves connectivity
- Improves active transportation opportunities with 15 miles of new trail
- Improves walkability and pedestrian safety

Fiscal

- Generated construction-based tax revenue worth $67,000
- Generates $385 million in ongoing tax revenue
- Leveraged private investment for new infrastructure

Economic

- Created and supported 15,000 construction jobs
- Creates 10,000 permanent jobs
- Supports a major economic driver
- Draws tourism
- Encouraged $1.5 billion in private investment

Community & Environment

- Remediates contaminated soil
- Supports 3,300 new units of housing

Challenges

- Funding coordination
- Project timeline
- Uncertainties in developing brownfield

About the Project

The City of Vancouver constructed a new street system to facilitate Columbia Waterfront LLC's $1.5 billion redevelopment of 35 acres of waterfront property on the Columbia River, including green space, office space, restaurants, residences, and trails. The project is within a five-minute walk of downtown and is the site of a former paper mill, active from the 1940s through 2006. In 2007, the City published a subarea plan with a vision for redevelopment and public access to the waterfront.

Prior to the project, the City and BNSF restored public waterfront access by constructing two underpasses under BNSF's main line and since project completion, Columbia Waterfront LLC has redeveloped the waterfront property. This case study examines the collective benefits of the full project suite, though investment and funding amounts focus on the street system, which was a linchpin in the broader redevelopment.

TRANSPORTATION
Benefits

State	Local	
○	✓	**Improves connectivity.** Prior to the project, there was no public access to the project site. The streets create new waterfront access.
○	✓	**Improves active transportation opportunities.** The project connects the Port of Vancouver's State Route 501/Lower River Road Multi-Use Trail west of the project site to the Waterfront Renaissance Trail east of the project site. The connection creates approximately **15 miles of continuous trail** along the waterfront.[1]
○	✓	**Improves walkability and pedestrian safety.** The new streets incorporate wide sidewalks and ample lighting, including in the railway underpass, to ensure pedestrian safety.

ECONOMIC
Benefits

State	Local	
✓	✓	**Created construction jobs.** The project supported $1.5 billion of private investment in a major redevelopment project which created **15,000 construction jobs**, directly and indirectly.[1]
✓	✓	**Sustains and creates permanent jobs.** The private development project supports approximately **10,000 permanent jobs** at on-site restaurants, offices, and retail locations.[2]
✓	✓	**Supports a major economic driver.** The Port of Vancouver USA owns property directly to the west of the street system, which has increased in value and access as a result of the project. The street system passes through the port property and now provides direct access to areas the Port intends to develop under its current Master Plan. The Port is an important economic driver for Washington, drawing business to the state that may otherwise be lost to the Port of Portland in Oregon.
✓	✓	**Draws tourism.** With the project's location directly across the river from Portland, Oregon, the private development may draw visitors from Oregon and may encourage Washingtonians to spend their recreational time and dollars in-state instead of across the border.
○	✓	**Encouraged private investment.** The street system supports $1.5 billion of private investment in the City of Vancouver.[2]

FISCAL
Benefits

State	Local	
✓	○	**Generated construction-based tax revenue.** Project contractors paid approximately **$67,000 in sales and use tax** to the State and City of Vancouver on all materials purchased or used for the street system work. Based on local tax rates at the start of construction, the State received approximately $48,000 in tax payments. Taxes were not paid on street construction labor and services as they are exempt per the Public Road Construction Exemption. The project also supported sales tax on construction of the private development.
✓	✓	**Generates ongoing tax revenue.** Columbia Waterfront LLC estimates that the development will generate **$385 million in state and local taxes** during the first 20 years following the development's completion.[2] Based on local tax rates as of May 2020, the City will receive $87 million and the State will see $298 million of this revenue.
○	✓	**Leveraged private investment for new infrastructure.** Columbia Waterfront LLC provided all utility infrastructure for the street system.

State Local **Benefits**

COMMUNITY & ENVIRONMENTAL
Benefits

- ✓ ✓ **Remediates contaminated soil.** To construct the street system, the City and developer remediated contaminated soils in the brownfield.
- ○ ✓ **Supports new housing stock.** The private development incorporates **3,300 new housing units**, including condominiums, apartments, and low-income units.[2]

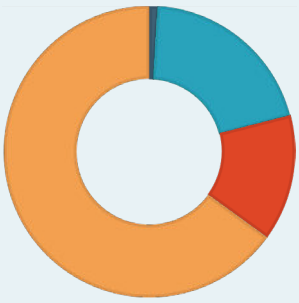
Challenges

Funding coordination. Because the project received funding from both state and federal sources, there were some conflicts between grant requirements that required additional administrative coordination.

Project timeline. The Great Recession interrupted the waterfront development project and required the City and developer to renegotiate their division of labor and funding.

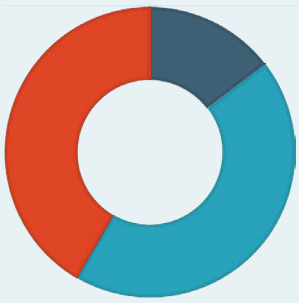
Uncertainties in developing brownfield. The project site has hosted a range of industrial uses, including a paper mill and shipbuilding. This required archaeological and historical preservation efforts both before and during the project.

Funding Sources



- Federal
- State
- Local
- Private

Funding Uses



- Environmental and engineering services
- Right of way
- Construction

Funding Partners

Federal Contributions (14%) The project received a $1.9 million competitive grant from the US Economic Development Administration's Neighborhood Initiative.

State Contributions (20%) The State's Transportation Improvement Board awarded the project a $2.7 million competitive grant.

Local Contributions (1%) The City of Vancouver contributed $185,000 from its City Traffic Impact Fee Program.

Private Contributions (65%) The Developer provided $1.0 million in funds to support the project, as well as in-kind donations of right of way and engineering and environmental work, worth $6 million and $2 million respectively.

Project Prioritization

The City selected this project within the context of an ongoing process of revitalizing the city by transforming the downtown core from a predominantly industrial setting to a vibrant mix of uses. Rather than making trade-offs, the City has tackled several redevelopment projects one at a time. Within the past few decades, hotels, a convention center, multiple office complexes, and multifamily complexes have replaced the industrial facilities that formerly dominated Vancouver's downtown. When the opportunity to redevelop the waterfront property arose, the City acted swiftly to work with developers to envision a master plan for the property.

Sources

1 Interview with Ryan Lopossa, City of Vancouver. (March 12, 2020.)

2 Columbia Waterfront LLC. The Vancouver Waterfront. Retrieved May 5, 2020, from Columbia Waterfront LLC https://thewaterfrontvancouverusa.com/about/

Photos: Still from "Vancouver Waterfront Access Project" Video, City of Vancouver, 2012; City of Vancouver, 2020.
Map: BERK, 2020.

SWIFT II BUS RAPID TRANSIT

Community Transit

Total Investment	$73.7 million
Timeline	December 2015 Design begins
	July 2017 Construction begins
	March 2019 Line opens

Benefits

Transportation

- Improves connectivity
- Reduces travel time by up to 56 minutes
- Improves pedestrian safety
- Improves active transportation
- Improves business access
- Supports demand for public transit
- Supports future and existing transit

Fiscal

- Generated $1.7 million in construction-based tax revenue
- Saves operating and maintenance costs

Economic

- Created 792 construction jobs
- Supports economic activity
- Supports a major economic driver

Community & Environment

- Encouraged development
- Improves transit accessibility

Challenges

- Funding coordination
- Grant application process
- Work windows
- Stakeholder goal alignment

About the Project

Swift II, also known as the Green Line, is an expansion of Community Transit's *Swift* Bus Rapid Transit (BRT) service in Snohomish County, the first BRT service in Washington State. *Swift II* serves Bothell, south Everett, and Mill Creek via a 12.5-mile route, and provides *Swift* transfer service to Edmonds, Everett, Lynnwood, and Shoreline.

The project features 13 new 60-foot articulated BRT vehicles, 30 new BRT stations, and the newly constructed Seaway Transit Center. The project improved road width, curbs and gutters, sidewalks, traffic signals, traffic islands, and the location of utilities; and incorporated new retaining walls, storm drainage, and a Business Access and Transit (BAT) lane.

TRANSPORTATION Benefits

○ ✓ **Improves connectivity.** The Green Line links a major employment site at Boeing Everett with sites including the Mill Creek Town Center, retail centers such as Thrashers Corner, and other population centers and urban villages in Snohomish County. The project improves transit connectivity via its intersections with Interstate 5, Interstate 405, State Route 99, and State Route 527.

○ ✓ **Reduces travel time.** Transit signal priority along the entire route will reduce travel times. Depending on the direction of travel, transit connections between the line's terminuses will be **15-38 minutes faster during the peak commute** periods and **51-56 minutes faster during the midday.**[2]

○ ✓ **Improves walkability and pedestrian safety.** To improve connectivity between the new BRT stations and surrounding neighborhoods, the project incorporates new and improved pedestrian facility connections, including installation of Americans with Disabilities Act (ADA) compliant ramps and new links to complete gaps in the sidewalk network.

○ ✓ **Improves active transportation opportunities.** The Green Line crosses the Interurban Trail, providing a connection between bicycle infrastructure and *Swift* service. While cyclist ridership trends are not yet available for the relatively new Green Line, the Blue Line also intersects the Interurban Trail and its riders are more than **five times as likely to board with a bicycle** than Community Transit riders at large.[3] *Swift* buses have on-board bike racks.

○ ✓ **Improves business access.** Open to all vehicles, a new business access and transit lane at key points along the route helps alleviate congestion.

○ ✓ **Supports increasing demand for public transit.** Within a week after its launch, the Green Line drew more ridership than all other Community Transit lines except the *Swift* Blue Line. Together, *Swift* lines carry approximately **25% of Community Transit's ridership** across a system with about 40 routes.[1] Community Transit anticipates that ridership will continue to increase to nearly **4,000 daily riders by 2035.**[2]

○ ✓ **Supports future and existing transit.** *Swift* supplements, but does not replace, existing local transit service. One primary goal of *Swift* is to connect Snohomish County riders to Sound Transit's future expansion of Link Light Rail into Everett and Lynnwood.

ECONOMIC Benefits

✓ ✓ **Created construction jobs.** This project directly created **792 construction jobs.**

○ ✓ **Supports economic activity.** Since the line's opening, businesses along the route report seeing more pedestrian traffic.

✓ ✓ **Supports a major economic driver.** The Seaway Transit Center at the northern terminus of the Green Line is adjacent to the Boeing Manufacturing Industrial Center, a major concentration of over **30,000 jobs** for Boeing, one of Washington's largest employers.[4]

FISCAL Benefits

✓ ○ **Generated construction-based tax revenues.** Community Transit paid **$1.7 million in sales and use taxes** to the State and Cities of Mill Creek, Everett, and Bothell on materials purchased or used for the work. Based on local tax rates at the start of construction , the State received approximately $1.1-1.3 million of this total. Taxes were not paid on construction labor and services as they are exempt per the Public Road Construction Exemption.

○ ✓ **Saves operating and maintenance costs.** By providing service to a relatively large proportion of Community Transit's ridership, the Green Line is an efficient service.

State Local **Benefits**

COMMUNITY & ENVIRONMENTAL
Benefits

○ ✓ **Encouraged development.** Since the introduction of *Swift*, all jurisdictions on the Blue Line corridor have revised their land use and zoning requirements around the *Swift* stations to identify areas for new development or redevelopment, including transit-oriented development. Jurisdictions on the Green Line corridor are beginning to do the same.

○ ✓ **Improves transit accessibility.** Because station platforms are higher than a standard curb and nearly even with the floor of the bus, the Green Line is fully accessible for people using wheelchairs, passengers with disabilities, cyclists, and people with strollers or carts. Roadway improvements near *Swift* stations include the addition of ADA ramps.

Challenges

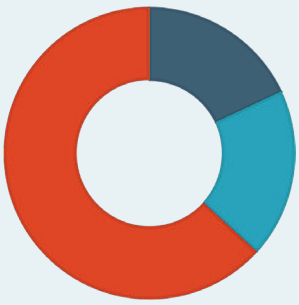
Funding coordination. *Swift II* was identified for $10 million of funding from Connecting Washington, which Community Transit incorporated into the project's funding strategy. However, the funding was delayed until 2021-2028, requiring Community Transit to backfill millions of dollars.

Grant application process. While experienced with acquiring federal funding, project managers encountered a substantial learning curve in applying for a New Starts, Small Starts grant from the Federal Transit Administration's Capital Investment Grant Program. Acquiring funding through this grant was further complicated by a change of presidential administration and a congressional shutdown during the process.

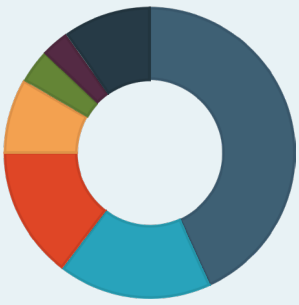
Work windows. The Green Line runs along heavily used roads and station construction and roadway improvements required road closures. Successfully pouring and curing concrete during weekend work windows was challenging and costly.

Stakeholder goal alignment. The Green Line runs through five different jurisdictions, all of which have different requirements. Acquiring support and formal approval for all aspects of the project required substantial effort.

Funding Sources



Funding Uses



Funding Partners

Federal Contributions (63%) The Federal Transit Administration (FTA) contributed a $43.2 million Small Starts grant via its competitive Capital Investment Grants program and an additional $3.4 million in apportioned FTA 5307 funds.

State Contributions (19%) State funding totaled $13.8 million of competitively-awarded funds, including $6.8 million from the Regional Mobility Grant Program for construction of the Seaway Transit Center and $7 million for buses.

Local Contributions (18%) Local funding totaled $13.3 million, and included funding from Community Transit, Snohomish County, and the City of Everett. Community Transit provided $12.6 million to match state and federal funding. Snohomish County provided $400,000 to support pedestrian improvements serving *Swift II* stations. The City of Everett provided $300,000 in donations of public rights of way adjacent to the Seaway Transit Center site.

Project Prioritization

In November 2015, voters in the Snohomish County Public Transportation Benefit Area made the often-difficult decision to increase the sales tax rate. Voters increased the rate in order to support transit in the region, and the expansion of the *Swift* network was a key component of the transit strategy.

Sources

1 Interview with June DeVoll and Martin Munguia, Community Transit. (March 20, 2020.)
2 Environmental Science Associates. (2015, December 7.) Swift II Bus Rapid Transit: NEPA Documented Categorical Exclusion.
3 Community Transit. (August 2014.) Community Transit BRT Corridor Planning and Route Definition Study: Boeing to Canyon Park.
4 Boeing. Everett Production Facility. Retrieved April 24, 2020, from Boeing: https://www.boeing.com/company/about-bca/everett-production-facility.page.

Photos: Community Transit, 2020.
Map: BERK, 2020.