Washington State Department of Commerce

WASHINGTON STATE
PUBLIC WORKS BOARD
INFRASTRUCTURE IS FUNDAMENTAL

Utility Relocation Study

Pursuant to Chapter 474, Laws of 2023 (SB 5200, Sec. 1041 (2023)

December 18, 2024

Report to the Legislature

Kathryn A. Gardow, PE
Public Works Board Chair

WASHINGTON STATE
PUBLIC WORKS BOARD

v3.5

Acknowledgments

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Letter from the Public Works Board Chair

Dear Capital Budget Committee leadership:

Section 1041 of Chapter 474, Laws of 2023 directed the Public Works Board (PWB) to research the scope of utility relocations when removing fish barriers along local or state roads and highways. The budget proviso specifically asked the PWB to identify the number of state and locally owned fish barriers remaining to be corrected; the number of fish barriers that may require relocation of publicly owned utilities; and the estimated cost to relocate publicly owned utility infrastructure.

In 2023, the PWB engaged the Department of Commerce's Research and Development Services to complete the Utility Relocation report. Over 6 months, a steering committee comprised of key state agencies and local government and utility associations gathered data, assisted with collecting information on specific case studies, and discussed findings. What follows in this report are key findings, challenges to understanding the costs associated with utility relocations, suggestions based on input received, and additional data or research that will be needed to fully grasp the scope of the problem the Legislature is trying to resolve.

After undertaking this comprehensive process, local jurisdictions were unable to provide a definitive number of fish passage projects to be completed, nor an exact number of expected utility relocations. Fish passage projects are multi-faceted, requiring careful planning and coordination among multiple agencies to maintain utility services during and after construction. Local jurisdictions reported they are spending $100,000 to several million dollars for a single utility relocation project.

State financing for infrastructure is in short supply. The Legislature appropriated $400 million to the PWB for the 2023-25 biennium. Eligible applicants requested a total of $597 million for local government infrastructure projects, which is $182 million over and above the available funding.

Local jurisdictions need more support to meet fish barrier removal requirements. But the Board respectfully asks the Legislature to consider funding that is distinct and separate from the Public Works Assistance Account. If the Legislature asks the PWB to fund substantial utility relocation work using existing PWAA revenues, the PWB will have to turn down even more applications from local governments, many of which are coping with aging infrastructure in distressed areas of the state.

Finally, after this review, it is the opinion of the Public Works Board that securing federal funding should be considered as a strategy for assisting local jurisdictions with utility relocation for fish passage projects. Local jurisdictions applying for federal funds should include utility relocation expenses in the scope of the project whenever possible.

The mission of the Public Works Board is to empower Washington communities to build and maintain sustainable infrastructure. We remain committed to supporting the needs of local jurisdictions striving to create safe, predictable and resilient infrastructure to support their communities and the residents of our state.

Sincerely,

Kathryn A. Gardow, PE

Chair of the Public Works Board

Overview

Fish passages are areas where fish and other aquatic life travel through water systems in ways that support their life cycles.[1] Many of these fish passages have barriers, which may completely or partially block the water systems that aquatic species need to support their life cycles. Washington has more than 165,000 lane miles of public roads that are owned, operated, and maintained by cities, counties or the state.[2] Many of these public roads pass over streams, creeks, rivers, and other waterways. These crossings require culverts to maintain the waterways underneath, which are life cycle passages for many aquatic species across the state. While these culverts allow for water to pass beneath the roadways, they may limit fish migration as a result of either their design or the degradation of the culvert over time. These culverts are owned by cities, counties, state and federal agencies, tribal governments, and other private entities.

A federal court injunction mandates that state agencies replace fish blocking culverts located on state facilities. State law also mandates that cities and counties in Washington are required to correct or replace fish blocking culverts located on city and county facilities. As such, state and local jurisdictions have undertaken many fish barrier removal projects along roads and highways. When state and local jurisdictions plan for fish barrier removal, utilities (no matter how small) must then comply with franchise agreements that require relocating water, sewer, and electrical assets in the construction area. During the 2023 and 2024 legislative sessions, public utility districts asked the Legislature for direct appropriations to help pay for utility relocations.

Authorizing legislation

The 2023 Washington State Legislature (Chapter 474, Laws of 2023, Section 1041) authorized $300,000 for the Public Works Board (PWB) to examine the need and costs for relocating public utilities associated with fish barrier removal projects on state or local roads and highways. Specifically:

> (1) The appropriation in this section is provided solely for the public works board to enter into a professional services contract for the purpose of estimating the cost to local governments and special purpose districts for relocating publicly owned utility infrastructure due to state-funded fish barrier removal projects associated with roads and highways. The public works board shall consult with the department of transportation, the Brian Abbott fish barrier removal board, the transportation improvement board, the county road administration board, the department of fish and wildlife, the interagency, multijurisdictional system improvement team established in RCW 43.155.150, the municipal research and services center, the department of commerce, and other agencies as necessary, to evaluate the financial impact to local governments and special purpose districts.
>
> (2) The public works board shall report to the governor and the appropriate fiscal committees of the legislature by November 1, 2024, the results of the evaluation, including the estimated:
>
> (a) Number of state and locally owned fish barriers remaining to be corrected;
>
> (b) Number of fish barriers that may require relocation of publicly owned utilities; and
>
> (c) Costs for relocation of publicly owned utilities due to removal of fish barriers along local or state roads and highways.

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[1] U.S. Fish and Wildlife Service, “What is Fish Passage?” (2024), What is Fish Passage? | U.S. Fish & Wildlife Service (fws.gov)
[2] Washington State Department of Transportation, "Annual Mileage and Travel Information," (2024), https://wsdot.wa.gov/about/transportation-data/travel-data/annual-mileage-and-travel-information

Key findings

- State and local agencies are responsible for approximately 11,200 culvert barriers. These culverts represent about 50% of all fish barriers in Washington. Remaining barriers are owned by tribal governments, federal agencies, and private persons and entities.

- The exact number of fish barriers along state or local roadways remaining to be corrected is a moving target. Agencies are still conducting an inventory in much of the state. For the purpose of this report, the current estimate found 420 culverts that would offer significant habitat gain, under state roadways within 14 Washington counties (Appendix A).

- State and local governments each have their own criteria for prioritizing projects, with the permanent injunction determining the states criteria. Some coordinated effort among state and local governments is necessary to develop a comprehensive inventory of which barriers should be corrected and when. This effort could include consideration of basin-wide approaches that promote an expansion of salmon recovery benefits.

- One fish passage project could require up to five utility relocations, while others may have none. Washington state lacks a coordinated inventory of utility franchise agreements to identify where utility assets intersect with culvert barriers. This information is necessary to calculate the number of culvert barriers that would require a public utility relocation to restore fish migration.

- Cost estimates for utility relocations are unique to each project. Each project has sizable cost variations due to different environmental conditions that the individual project planning, design, and construction must incorporate. Combined, these factors make it difficult to accurately estimate the costs of utility relocation projects during fish barrier removal projects, in addition to difficulty in assessing the total cost of all potential utility relocations. Based on the outreach completed during this study, examples of costs to relocate public utilities in fish barrier project areas are described in Appendix B.

- During this study, culvert owners and utilities all endorsed close coordination as a proven tactic for reducing project timelines and thereby reducing overall costs of utility relocation.

Court injunction requires fish barrier removal

In 2001, 21 tribes in Western Washington sued the state to comply with its treaty-based obligation to maintain fish passages. The case, U.S v. Washington, went all the way to the U.S. Supreme Court. In 2018, the Supreme Court left in place a lower-court injunction requiring the state to correct, replace, and maintain culvert barriers under roads owned by state agencies. Specifically, the injunction mandated the state "to repair or replace culverts that impede salmon migration to or from spawning grounds."

The state agencies subject to this injunction are the Washington Department of Transportation (WSDOT), the Washington Department of Fish and Wildlife (WDFW), the Washington Department of Natural Resources (DNR), and State Parks (Parks). The injunction mandated that DFW, DNR, and Parks restore fish passage to their culvert barriers, which they have completed. One of the requirements under the injunction requires WSDOT to restore 90% of fish habitat blocked by significant gain barriers under its roads by March 29, 2030.

Measuring the problem

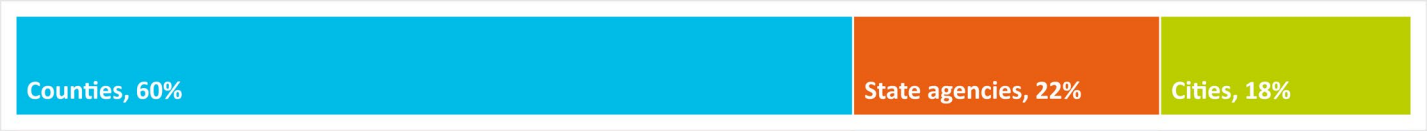
Ownership of culverts is fragmented

The Washington Department of Fish and Wildlife (WDFW) compiles a list of identified fish barriers on fish passages throughout Washington. To maintain the list of fish barriers, WDFW compiles data from cities, counties, state agencies, federal agencies, tribal governments, and private entities. WDFW's data closely tracks all fish barriers across the state, including information on barrier type, fish use, barrier status, owner type, data source, survey data, and barrier correction years. The most common barriers involve physical barriers, including culverts, non-culvert crossings, dams, dikes, or levees.[3] In total, there are more than 23,000 physical barriers on fish passages in Washington.

Multiple programs correct fish barriers

There are nearly 11,200 state or locally-owned culverts on fish passages in the state that are in need of correction or replacement. Specifically, the 39 Washington counties own 6,705 culvert barriers, 281 cities own 1,958 culvert barriers, and state agencies own 2,494 culvert barriers. (Figure 1).

Figure 1: State and locally owned barriers by owner



While we know this total number, we do not know the correction or replacement timelines for state and locally-owned culvert barriers because different programs lead and prioritize the effort.

State Parks, WDFW, and the Department of Natural Resources (DNR), continue to maintain the fish passages on their roads and conduct fish passage programs to meet the maintenance requirements of the court injunction. The DNR created the Family Forest Fish Passage Program, which provides assistance to private owners of culverts in forested areas. This program differs from the other state agencies involved because these culvert barriers are on private lands and not state-owned or locally-owned.[4] WDFW and the Washington State Recreation Conservation Office operate the Brian Abbott Fish Barrier Removal Board (Brian Abbott Board), which was created by the Legislature in 2014.[5] The Board focuses on fish barriers affecting steelhead and salmon migration on state, local, tribal, and privately owned lands. Eligible entities submit a project proposal to the Brian Abbot Board, which analyzes these potential projects using its prioritization methods. The Board then submits a list of projects to the Governor's Office and Legislature to potentially receive grant funding. State grant funds used by the Brian Abbot Board cover the costs of the utility relocation work.

With the authority and responsibility to maintain more than 7,000 miles of state highways, the Washington State Department of Transportation (WSDOT) owns a significant portion of the remaining culverts requiring correction or replacement.[6] Highways cross waterways at 4,000 locations, of which roughly 1,500 block salmon and steelhead migration.[7] Many of these waterways include WSDOT-owned culverts blocking fish

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[3] Washington Department of Fish and Wildlife, "Fish Passage Inventory, Assessment and Prioritization Manual," (2019), Fish Passage Inventory, Assessment, and Prioritization Manual (wa.gov)
[4] Washington Department of Natural Resources, "Family Forest Fish Passage Program," (2023) https://www.dnr.wa.gov/publications/fp_fffpp_report_2023_final.pdf
[5] Washington Department of Fish and Wildlife, "Brian Abbott Fish Barrier Removal Board," https://wdfw.wa.gov/about/advisory/fbrb
[6] Washington State Department of Transportation State Highway Log Planning Report 2020.
[7] Washington State Department of Transportation State Fish Passage Performance Report June 2023.

passages. WSDOT has been working to restore the habitats of salmon and steelhead by fixing these culverts to maximize fish migration. While WSDOT has fish barrier culverts across the state, the agency first focused on the migration waterways in the injunction case area, which is generally adjacent to the Puget Sound of Western Washington. By June of 2024, WSDOT reported the correction of 146 barrier culverts, which opened approximately 570 miles of potential fish habitat.[8] WSDOT is currently working to meet the terms of the injunction to correct or replace 420 culverts by 2030. WSDOT is also required to replace or correct newly identified culverts (those inventoried after 2013), barriers corrected as part of a highway project, or once the culvert reaches the end of its lifespan.

According to WSDOT's Fish Passage Program, its prioritization process incorporates habitat gain, partnership availability, bundling abilities, culvert condition, barriers downstream, tribal input, project readiness, and public impacts. WSDOT estimates that it needs to correct an estimated 420 culverts to open up 90% of habitat blocked by significant gain barriers and is working to identify all the public and private utilities in their right of way.[9] In order to track these culverts, WSDOT assigns each barrier a unique site ID. WSDOT lists the 420 unique culvert projects by the county in which the culvert is located and the status of the project. Because the injunction only includes culvert barriers in Western Washington, there are only 14 counties with culvert barriers affected by these requirements. King County has the most, with 22% of WSDOT culverts subject to the injunction, followed by Snohomish and Kitsap counties, with 13% and 12%, respectively.[10] The breakdown of these culvert barriers by county location is available in Appendix A. It is unknown exactly how many of these culvert barrier projects will require a utility relocation.

Counties and cities are restoring fish blocking culverts, but there is no fixed timeline on their completion. To calculate barriers requiring correction, the state must first consolidate information regarding which of the 11,200 state and locally owned culvert barriers have been prioritized for correction or replacement.

Utility franchise agreements mandate relocations

State law allows utilities to occupy the public right-of-way at virtually no cost to the utility through franchises, which are legally binding agreements between road owners and utility owners. Typically, the utility is obligated to move its assets if the road owner plans construction on its right-of-way. Franchise agreements vary from site to site and between the state, county, or city and the utility. That makes it difficult to summarize expectations and costs to the utility relocating assets due to a fish passage project. To date, a complete examination of all culvert barriers statewide has yet to be completed. However, most culvert barriers have at least one public utility that needs relocation. Relocation of private utilities is somewhat less common. For any given culvert barrier location, many different utility relocations may be required, including but not limited to water, sewer, telecommunications, and electric power.

Washington state as a whole does not track the location of utilities in utility franchise agreements, including where utility assets intersect with culvert barriers. The utility and locality involved in the franchise agreement track this information. We need this information to calculate the number of culvert barriers that would require a public utility relocation to restore fish migration. To be useful, the analysis must include the specific locations of utilities and culverts scheduled for correction or replacement in order to determine which culverts would require utility relocations. Geographical analysis should match the location of the utilities with culverts identified as fish barriers, and then confirm that information with the utility. Each culvert location may have both public and private utilities, thus requiring specific tracking.

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[8] Washington State Department of Transportation State Fish Passage Performance Report June 2023.
[9] Washington State Department of Transportation, "2030 Fish passage project delivery plan," https://wsdot.wa.gov/construction-planning/protecting-environment/fish-passage/2030-fish-passage-project-delivery-plans
[10] Ibid 9

Cost of remediation

The complexity of relocation projects makes predicting costs unknowable. Often, the complete cost is not fully understood or appreciated until the project begins. The PWB contacted more than 50 utility districts for cost estimates to relocate utilities near fish passage projects. Nineteen districts provided project cost estimates ranging from $25,000 to $5.1 million. This information is presented in Appendix B.

Utility relocation projects may have direct and indirect costs. Direct costs are those incurred from the actual construction work and the price of the materials. Public entities may need to pay for dozens of services including, but not limited to, excavating, shoring, dewatering, and inspection.

Direct costs are often subject to variation based on contractor and include:

- contract supervision,
- contractor profit fees,
- contractor overhead fees, and
- material costs that vary based on the length of the sewer, water, or cable line.

Indirect costs include:

- changes in zoning,
- permitting,
- change orders,
- project management fees,
- design-build fees, and
- taxes.

The direct and indirect costs all vary based on multiple factors, including the timeline and environmental landscape of the relocation, making it difficult to create accurate cost estimates for utility relocations.[11]

The type of utility relocation as well as the environmental conditions influences the overall cost. In some areas of the state, such as the Hood Canal, utility relocations may require deep horizontal drilling and boring, leading to below ground infrastructure. Gravity sewer lines situated on a slope may need hundreds of feet of new gravity sewer line constructed due to elevation changes from the original site to the relocation site. In addition, the cost of sewer lines varies. For example, in Alderwood, a sewer pipe can range from $725 to $995 per linear foot, depending on the size and type of pipe. In the same jurisdiction, estimates for water pipe prices range from $350 to $585, also depending on size and type.[12] There are also different costs associated with how the project is constructed, whether it is a Design-Bid or a Design-Build Bid.

These environmental, supply, engineering, and timeline dynamics, among other factors, make it difficult to accurately estimate the costs of utility relocations during fish barrier removal projects. And while our known cost range likely represents an average project's experience, these unique variables can certainly increase project cost beyond it.

[11] Gathered from interviews with public utilities
[12] Emailed by Northshore Utility District

Concluding thoughts and the opportunities for reducing costs

Time is money. During this study, culvert owners and utilities all endorsed close coordination as a proven tactic for reducing project timelines and thereby reducing overall costs of utility relocation.

The entity correcting a culvert should identify affected utilities early in the process — and then notify those utilities early. The initial notification provides the first opportunity for the entity and the utilities to plan communication and coordination strategies for project development and delivery. These strategies should include frequent and timely communication of projected milestones, dates, changes to project timelines, and changes to the project itself. Without strong project coordination and communication among all participants, project costs often escalate significantly due to permitting, subsurface boring, and construction of lift or pump stations. By leveraging the timing of design and construction, and closely coordinating with utilities, culvert owners and their contractors save time and money.

For culvert owners and utilities that expect to work together on many projects in the coming years, drafting an inter-local agreement can produce measurable benefits. These agreements set expectations for notice, consultation, planning, and construction at the highest levels, leading to stronger working relationships and cost savings.

The Washington Utilities Manual (Section 600.4), issued by WSDOT, states: "Fostering a productive environment in which the affected utilities and the department can exchange mutual concerns and establish realistic objectives can yield mutually beneficial results. Avoid setting unrealistic expectations that will be difficult to achieve. Successful facilitation of utility conflict resolution issues involves an understanding that both parties have requirements that need accommodation."[13]

Furthermore, WSDOT's guidance cautions that utility relocations are inherently complex. "WSDOT should not underestimate utility relocation needs. The relocation of even a short section of buried utility line or a small number of utility poles can easily result in a utility construction project whose scope is larger than anticipated by the department. This may in turn have a negative effect upon the project delivery schedule. Provide utility owners enough time to plan and engineer utility relocations; budget funds; comply with environmental and permit requirements; negotiate real estate transactions; order and receive materials; and schedule construction crews. Utility companies often must advertise and award bids for relocation work. As with other construction issues, the project development team should incorporate utility relocation requirements into the overall project schedule to avoid project delays and provide a realistic project schedule."[14]

Project managers should look for opportunities to allow the state or local fish barrier owner to take the lead. Utility owners have found success in allowing the design team for the culvert owner to take control of the overall design and construction of the project. The utility then pays into this effort to cover the costs involving relocation of their utilities. This strategy is one of the most efficient ways to minimize utility relocation costs, while simultaneously providing the culvert owner increased confidence in project timing.

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[13] WSDOT Utilities Manual, M 22-87.10, Sect. 600.4, p. 6-4. (December 2008, included in the February 2019 update).
[14] Ibid.

Appendix A: Fish barriers under state roads

The exact number of fish barriers along state or local roadways remaining to be corrected is a moving target. Agencies are still conducting an inventory in much of the state. For the purpose of this report, the current estimate found 420 culverts that will open up 90% of the habitat blocked by significant gain barriers under state roadways within 14 Washington counties. King County has the largest proportion of unique sites, followed by Kitsap and Snohomish counties, which may each have public utilities that require relocation work at varying cost and complexity.[15]

County	Number of unique site IDs	Percentage of unique site IDs
Clallam	28	7%
Grays	38	9%
Island	1	<1%
Jefferson	23	5%
King	92	22%
Kitsap	52	12%
Lewis	12	3%
Mason	20	5%
Pacific	1	<1%
Pierce	25	6%
Skagit	36	9%
Snohomish	53	13%
Thurston	9	2%
Whatcom	30	7%
TOTAL	**420**	**100%**

[15] WSDOT Delivery plan

Appendix B: Cost estimate examples

The Public Works Board (PWB) contacted more than 50 utility districts for cost estimates to relocate utilities near fish passage projects. Those responses are organized by aggregate costs for the 10-year period from 2021-2031 and by individual utility projects. Approximately 20% of the surveyed utility districts responded with cost estimates. Many of the communities below cautioned that these estimates may not include expanded project phases for which they have yet to evaluate the costs. This dynamic underscores the interdependent and variable nature of the costs to relocate public utilities during fish passage barrier correction projects. The PWB recognizes current estimates are likely underestimates of the actual need.

Utility district current comprehensive cost estimates

Utility district	2021-2031 cost estimates
Mason PUD 3	$5.1 million
Grays Harbor PUD	$4.5 million
Skagit County PUD	$3.4 million
Clallam County PUD	$2.8 million
Thurston PUD	$670,000
Jefferson PUD	$1.5 million
Mason PUD 1	$1.3 million
Whatcom PUD	$652,000
Kitsap PUD	$600,000
Lewis County PUD	$452,500
Kittitas	$25,000

Utility district singular project cost estimates

Utility district	Cost estimates per project
City of Tacoma	$2.1 million
City of Tacoma	$2.3 million
City of Bellevue Utilities Department	$1.1 million
City of Bellevue Utilities Department	$2.5 million
City of Bellevue Utilities Department	$70,000
City of Renton Public Works	$2.3 million
City of Renton Public Works	$136,630
City of Bellingham	$2.0 million
Covington Water District	$281,492

Utility district	Cost estimates per project
Covington Water District	$472,779
Midway Sewer District	$413,308
Lakehaven Water and Sewer District	$250,000
City of Black Diamond	$241,400
Woodinville Water District	$211,000
Hood Canal Communications	$117,000

Appendix C: Participants

The steering committee, facilitated by the PWB Executive Director, included representation from Department of Transportation, the Brian Abbot Fish Barrier Removal Board, the Transportation Improvement Board, the County Road Administration Board, the Department of Fish and Wildlife, the Interagency, Multijurisdictional System Improvement Team (SYNC), the Municipal Research and Services Center (MRSC), the Department of Commerce and other agencies as necessary. In addition to reviewing the draft report, the steering committee members facilitated collection of information and any final agency review and approvals required.

Other agencies and associations such as the Puget Sound Partnership (PSP), Association of Washington Cities (AWC), Washington State Association of Counties (WSAC), Washington Public Utility Districts Association (WPUDA), and the Washington Association of Sewer and Water Districts (WASWD) provided input and allowed access to membership to gather information and recommendations from local jurisdictions.

The Steering Committee met three times from April of 2024 to September 2024 to review the report's structure and to facilitate the collecting of information.