Preliminary Regulatory Analyses:

Including the:

- Preliminary Cost-Benefit Analysis
- Least-Burdensome Alternative Analysis
- Administrative Procedure Act Determinations
- Regulatory Fairness Act Compliance

Chapter 363-116 WAC

Pilotage Rules (Tug Escorts)

Prepared by

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For the

Washington State Board of Pilotage Commissioners in consultation with the Spill Prevention, Preparedness, and Response Program, Washington State Department of Ecology

Olympia, Washington

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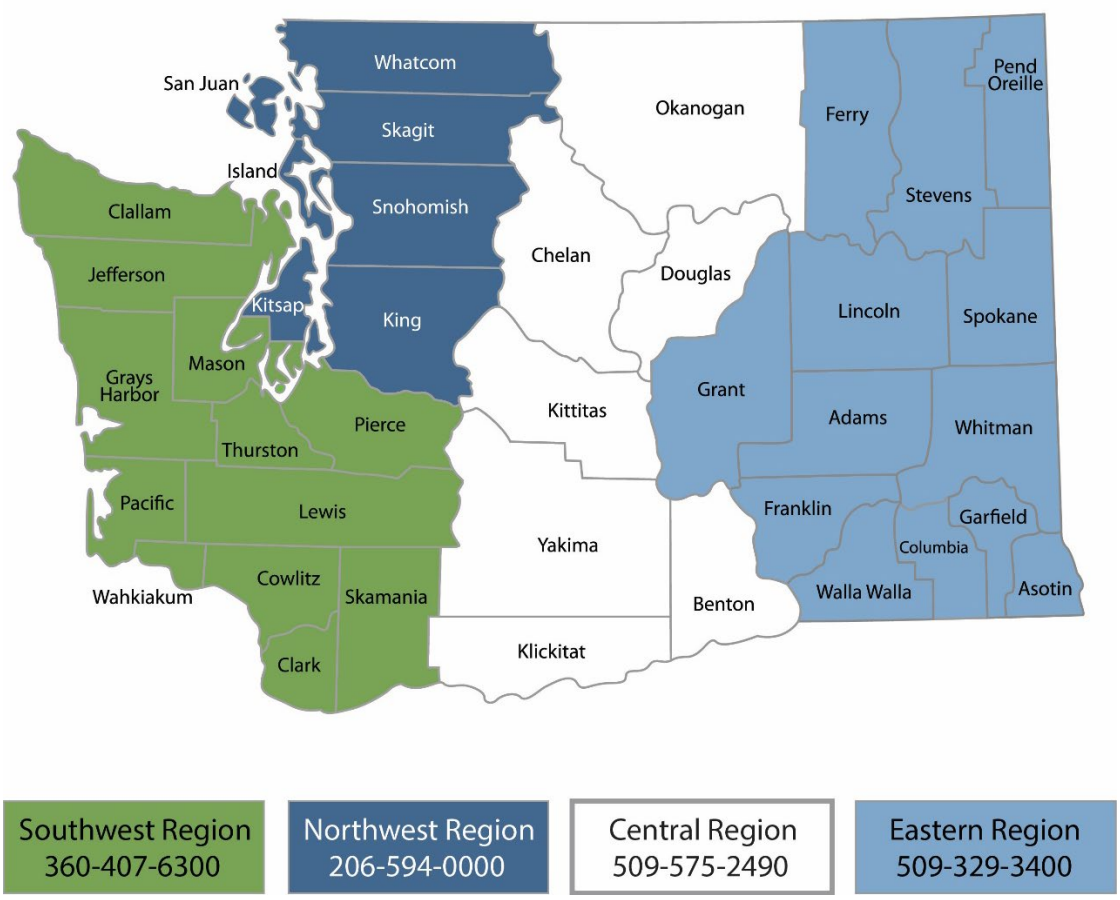

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Preliminary Regulatory Analyses

Including the:

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Chapter 363-116 WAC, Tug Escorts

Washington State Board of Pilotage Commissioners in consultation with the Washington State Department of Ecology

Olympia, WA

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Abbreviations and Acronyms

ATB	Articulated Tug Barge
APA	Administrative Procedures Act
BPC	Board of Pilotage Commissioners
EIS	Environmental Impact Statement
ESA	Endangered Species Act
ESHB	Engrossed Substitute House Bill
OTSC	Oil Transportation Safety Committee
RCW	Revised Code of Washington
SEPA	State Environmental Policy Act
SRKW	Southern Resident Killer Whales
WAC	Washington Administrative Code
WTP	Willingness to Pay

Executive Summary

In 2019 the Washington State Legislature passed Engrossed Substitute House Bill 1578: Reducing Threats to Southern Resident Killer Whales by Improving the Oil Transportation Safety Act. The Act amended existing law and established the current tug escort requirements for small to medium sized oil carrying tank vessels in Rosario Strait, just east of the San Juan Islands, and connected waters east. The requirements have been in place since September 1, 2020.

The law also directs The Board of Pilotage Commissioners, in consultation with the Department of Ecology, to adopt rules by the end of 2025 regarding the bill's requirements, with the option of modifying them.

The Legislature directed that the rule should realize Best Achievable Protection against oil spills, defined as the "highest level of protection" using the best technology and practices, while considering cost and technological achievability.

The proposed rule would:

- Expand by 28.9 square miles the northern edge of the escort area established in 2020 for small to medium sized oil carrying tank vessels (an 11 percent increase in the size of the escort area).
- Require tugs escorting these vessels to have at least twin propellers and require tugs escorting vessels 18,000 deadweight tons and over to have at least 3,000 horsepower.
- Require a pre-escort conference between the escort tug and tank vessel to discuss the operational details of the transit.

The estimated costs of the proposed amendments are:

- Qualitative: slight increase in tug traffic, with moderate additional impacts to Tribal Resources.
- Quantitative: $0.85 million/year in extra tug operating expenses and personnel time.

The estimated benefits of the proposed amendments are:

- Qualitative: realizing legislatively required Best Achievable Protection and reducing oil spill risk, consistent with Washington State's "zero spills strategy."
- Quantitative: Estimates of avoided oil spill costs range from $1.4 million/year to $3,000 /year, depending on assumptions.

Considering both qualitative and quantitative arguments, we estimate the benefits of the proposed rule outweigh the cost.

Chapter 1: Background and Introduction

1.1 Introduction

This report presents the determinations made by the Washington State Department of Ecology as required under Chapter 88.16 RCW, for the proposed Tug Escort rule (Chapter 363-116 WAC; the "rule"). This includes the:

- Preliminary Cost-Benefit Analysis
- Least-Burdensome Alternative Analysis
- Administrative Procedure Act Determinations
- Regulatory Fairness Act Compliance

The Washington Administrative Procedure Act (APA; RCW 34.05.328(1)(d)) requires Ecology to evaluate significant legislative rules to "determine that the probable benefits of the rule are greater than its probable costs, taking into account both the qualitative and quantitative benefits and costs and the specific directives of the law being implemented." Chapters 1 – 5 of this document describe that determination.

The APA also requires Ecology to "determine, after considering alternative versions of the rule…that the rule being adopted is the least burdensome alternative for those required to comply with it that will achieve the general goals and specific objectives" of the governing and authorizing statutes. Chapter 6 of this document describes that determination.

The APA also requires Ecology to make several other determinations (RCW 34.05.328(1)(a) – (c) and (f) – (h)) about the rule, including authorization, need, context, and coordination. Appendix A of this document provides the documentation for these determinations.

The Washington Regulatory Fairness Act (RFA; Chapter 19.85 RCW) requires Ecology to evaluate the relative impact of proposed rules that impose costs on businesses in an industry. It compares the relative compliance costs for small businesses to those of the largest businesses affected. Chapter 7 of this document documents that analysis, when applicable.

For this rulemaking, the authorizing statute also requires the following: "…identified estimates of expected costs and benefits of the rule to:

(i) State government agencies to administer and enforce the rule; and

(ii) Private persons or businesses, by category of type of person or business affected."[2]

These items are addressed within the analysis.

All determinations are based on the best available information at the time of publication. We encourage feedback (including specific data) that may improve the accuracy of this analysis.

1.1.2 Background

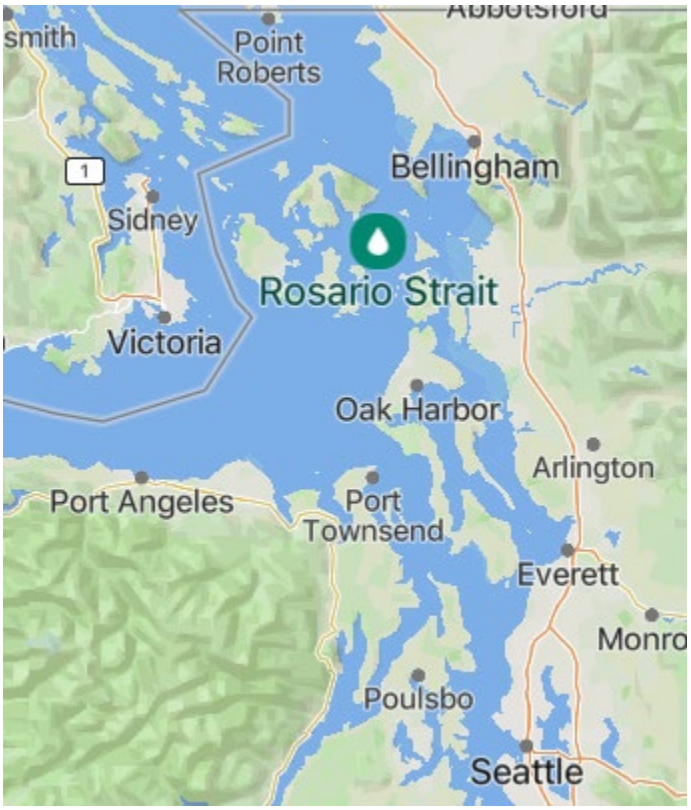
Washington State has adopted a "zero spills strategy", with the objective of preventing *any* oil or hazardous substances from entering waters of the state.[3]

In 2019 the Washington State Legislature passed Engrossed Substitute House Bill (ESHB) 1578: Reducing Threats to Southern Resident Killer Whales by Improving the Oil Transportation Safety Act.[4] The Act amended existing law, specifically Chapters 88.16, 88.46, and 90.56 RCW. It established the current tug escort requirements in Rosario Strait and connected waters east. Those requirements took effect September 1, 2020, mandating, within that area, tug escorts of oil tankers between 5,000 and 40,000 deadweight tons, and barges and articulated tug barges (ATB) larger than 5,000 deadweight tons. We will refer to these as "small to medium sized oil carrying tank vessels," throughout this document.

The Act's changes to Chapter 88.16 RCW also direct the Board of Pilotage Commissioners (BPC), in consultation with Ecology, to adopt rules regarding these tug escort requirements by December 31, 2025. Rosario Strait is indicated in Figure 1 directly below, while the current escort area for these small to medium size oil carrying tank vessels is depicted in more detail in Chapter 2 below.

[2] RCW 88.16.260(2)(e), https://app.leg.wa.gov/RCW/default.aspx?cite=88.16.260
[3] Chapter 90.56 RCW, https://app.leg.wa.gov/rcw/default.aspx?cite=90.56&full=true#90.56.005
[4] ESHB 1578, https://lawfilesext.leg.wa.gov/biennium/2019-20/Pdf/Bills/Session%20Laws/House/1578-S.SL.pdf?cite=2019%20c%20289%20%C2%A7%201

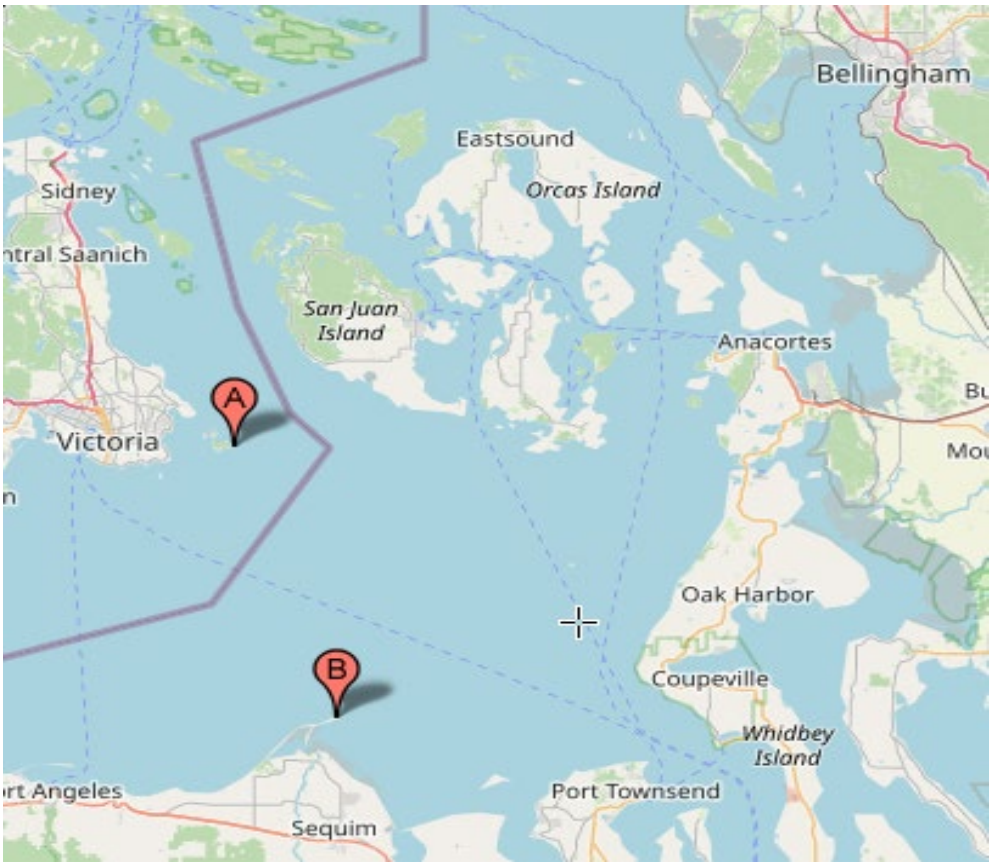
Figure 1: Location of Rosario Strait



Oil tankers larger than 125,000 deadweight tons are not allowed into the eastern Strait of Juan de Fuca or Puget Sound.[5] Oil tankers 40,000 deadweight tons and larger are required to have a tug escort upon passing east of a boundary line, defined by the BPC. The line extends from Discovery Island light south to New Dungeness light.[6] These points are indicated as "A" and "B", respectively, in Figure 2 below.

[5] Chapter 88.16 RCW, https://app.leg.wa.gov/rcw/default.aspx?cite=88.16&full=true
[6] RCW 88.16.190, https://app.leg.wa.gov/RCW/default.aspx?cite=88.16.190

Figure 2. Points defining line for tug escort requirements for large oil tankers.



For the purposes of this rulemaking, the BPC formed the Oil Transportation Safety Committee (OTSC) to advise it. The OTSC has representatives from the Board itself, from Puget Sound Pilots, the environmental community, the oil industry, tug operators, and a Tribal government representative. The U.S. Coast Guard served in an advisory capacity. The OTSC's charter, where it's tasked with making consensus recommendations to the BPC, can be found on the BPC website.[7]

1.1.2.1 Intent of 2019 Legislation, Engrossed Substitute House Bill 1578.

This rulemaking is authorized by 2019's Engrossed Substitute House Bill 1578 (ESHB 1578). The intent of that legislation is to reduce the risk of an oil spill from vessels that carry oil in bulk as cargo. It reads, in part:

"… it is the intent of the legislature to enact certain new safety requirements designed to reduce the current, acute risk from existing infrastructure and activities of an oil spill that could

[7] OTSC Charter, https://nebula.wsimg.com/0887bbf6ebd7b28e5a11ea3a41e76140?AccessKeyId=F86D0A1E7A0091C2061F&disposition=0&alloworigin=1

eradicate our whales, violate the treaty interests and fishing rights of potentially affected federally recognized Indian tribes, damage commercial fishing prospects, undercut many aspects of the economy that depend on the Salish Sea, and otherwise harm the health and well-being of Washington residents."[8]

A significant oil spill could threaten the survival of the Salish Sea's Southern Resident Killer Whales (SRKW). The SRKW were declared endangered in 2005 by the U.S. National Marine Fisheries Service. The designation puts these whales under the protection of the U.S. Endangered Species Act (1973), which provides "…for preparing and implementing plans for their recovery."[9]

Regarding the Endangered Species Act, the US Supreme Court's 1978 decision in *Tennessee Valley Authority v. Hill* held:

"It is clear from the Act's legislative history that Congress intended to halt and reverse the trend toward species extinction -- whatever the cost." [10]

The SRKW are passionately followed, and their plight has drawn international attention, dramatically so in recent years.[11,12,13] The legislation authorizing this rulemaking specifically addresses them and the overwater transportation of oil that might contribute "…to an unacceptable threat to Washington waters, where a catastrophic spill would inflict potentially irreversible damage on the endangered Southern Resident Killer Whales."[14]

ESHB 1578 made various specific directives, including but not limited to:

- Adjust, suspend, or leave unchanged, the 2020 requirements.
- Complete interim milestones to inform the rulemaking, including consulting with Tribes.
- Consult with the U.S. Coast Guard, Tribes, and other relevant stakeholders.
- Design rules with the goal of avoiding or minimizing underwater noise, focusing vessel traffic into established shipping lanes, protecting and minimizing impacts to treaty fishing areas and respecting Tribal treaty-protected interests and fishing rights.

[8] 2019 Session Laws of WA, Ch 289, https://leg.wa.gov/media/jthdgx22/2019pam2.pdf
[9] Endangered Species Act | U.S. Fish & Wildlife Service, https://www.fws.gov/law/endangered-species-act
[10] U.S. Supreme Court, Tennessee Valley Auth. v. Hill, https://supreme.justia.com/cases/federal/us/437/153/
[11] Orca Network, https://www.orcanetwork.org/
[12] Article, Sydney Morning Herald, https://www.smh.com.au/environment/conservation/orca-whale-abandons-her-dead-calf-after-17-days-and-1600-kilometres-20180813-p4zx38.html
[13] Article, The Independent, London, https://www.independent.co.uk/news/orca-carries-dead-calf-tahlequah-b2673202.html
[14] RCW 88.16.190, https://app.leg.wa.gov/RCW/default.aspx?cite=88.16.190

- Specify operational and functional requirements.
- Realize "Best Achievable Protection."[15]

1.1.2.2 Best Achievable Protection

The Legislature has directed that this proposed rule "…be designed to achieve Best Achievable Protection" against oil spills.[16]

Best Achievable Protection, as defined in RCW 88.46.010, means the "highest level of protection that can be achieved" with currently available technology and practices. Costs and effectiveness are to be considered as well. The determination is made by Ecology's Director and "…shall be guided by the critical need to protect the state's natural resources and waters…. "[17]

1.1.2.3 Oil Spill Costs

Oil spill costs are widely acknowledged to be highly variable. Most simply, they consist of two parts: cleanup costs and damage costs. Damage costs have many sub-components, including natural resource damages and lost commercial activity, which includes tourism and recreation.

A brief summary of some modeled estimates of oil spill costs follows. These costs can be difficult to fully quantify and full costs usually aren't immediately known.[18] Generally, the largest available values will be used in this cost benefit analysis to support worst-case planning efforts and due to the remarkable and unique ecosystem of the marine environment around the San Juan Islands. Additionally, some of the studies cited specifically modeled oil spills in this area.

Cleanup costs

In the 1999 paper titled, "Estimating Cleanup Costs for Oil Spills," Dagmar Schmidt Etkin notes:

"The costs associated with cleaning up an oil spill are strongly influenced by the circumstances surrounding the spill including: the type of product spilled; the location and timing of the spill; sensitive areas affected or threatened; liability limits in place; local and national laws; and cleanup strategy. The most important factors determining a per-unit amount (either per-gallon or per-tonne) cost are location and oil type, and possibly total spill amount."[19]

Etkin estimated the average cleanup cost per metric ton of oil in the US, excluding the Exxon Valdez spill, to be $24,451 in 1997 dollars, or roughly $3,500 per barrel. When adjusted for

[15] RCW 88.16.260, https://app.leg.wa.gov/RCW/default.aspx?cite=88.16.260
[16] RCW 88.16.260(3)(d), https://app.leg.wa.gov/RCW/default.aspx?cite=88.16.260
[17] RCW 88.46.010, Definitions, https://app.leg.wa.gov/RCW/default.aspx?cite=88.46.010
[18] Long Term Spill Impacts, https://pmc.ncbi.nlm.nih.gov/articles/PMC7397809/
[19] Etkin, 1999. Estimating Cleanup Costs for Oil Spills, **#168, 1999 International Oil Spill Conference**

inflation to 2024 using the Bureau of Labor Statistics' (BLS) Consumer Price Index (CPI), this is just under $7,000 per barrel.

Other estimates of cleanup costs are higher. In a 2019 study of oil spill cleanup costs for the state of California, consultants considered multiple types of oil spilled in varying environments and estimated a high-cost scenario where medium persistent oil was spilled in a marine environment at $29,539 per barrel ($36,403 per barrel in 2024).[20] Since this more recent study noted the increasingly higher standards for oil cleanup expected by the public, this higher cleanup cost value will be used here.

Estimated oil spill cleanup costs: $36,403 per barrel.

Damage costs

Cleanup costs are just one part of the total cost of an oil spill. A 2004 study for Ecology looked at the broader impacts and estimated the costs related to environmental damage at $424 per barrel and the costs to communities and businesses at $1,540 per barrel, adding up to $1,964 per barrel. [21] Adjusting to 2024 dollars, the natural resource and community impact costs come to $3,250 per barrel. These costs cover lost income from tourism and commercial fishing, including Tribal revenues, along with harm to recreation, shipping, and other commerce.

In 2019, Earth Economics created estimates for spill damages in the San Juan Islands. They modeled estimates for two different spill types and sizes. The first was for a spill of 95,000 barrels of diluted bitumen and the second was for a 24,000 barrel spill of heavy fuel oil. Ecology estimates that diluted bitumen is almost exclusively transported on vessels larger than the vessels this rulemaking applies to. For that reason, we consider the second scenario. Additionally, the heavy fuel oil spill modeled in this study was in the "San Juan Islands and Rosario Strait area."[22]

Estimated Total damages: Estimated between $84.3 million to $243.2 million.

Impact categories: Damages from this spill scenario were assessed across five impact categories.

- Commercial Fishing: $69,438 to $223,468
- Aquaculture: $57,342 to $86,012
- Tourist Spending, Wages, and Local Tax Revenue: $8.6 million to $59.2 million
- Property Values and Taxes: $60.5 million to $135.0 million[23]
- Recreational Use Value: $2.7 million to $18.4 million[24]

[20] Table 45, page 65. California Oil Spill Response Study, 2019, prepared by Catalyst Environmental Solutions, et. al.
[21] Study of Tug Escorts in Puget Sound, 2004, Gloston and Associates
[22] Page 4-6, Study of Tug Escorts in Puget Sound, 2004, Gloston and Associates
[23] San Juan Spill, EE, https://www.eartheconomics.org/all-publications/oilspill
[24] San Juan Spill, EE, https://www.eartheconomics.org/all-publications/oilspill

- Ecosystem Services: $12.3 million to $30.3 million[25]

These estimates assume no cleanup effort, but they are also incomplete as other potential damages were not numerically estimated. These include the potential for long-term lower wild fish catches and decreased market prices due to reputational impacts, though immediate disruption of the industry was considered. Short term revenue loss for marinas, and costs of disruption of vessel traffic were not numerically estimated.[26] By using the high end of the damage cost estimate, $243.2 million, and adjusting the per barrel value to 2024 dollars we obtain a damage cost of $12,578 per barrel.

Damage costs: $12,578 per barrel

Total per barrel costs

By combining this high-end damage estimate, and the high estimate of cleanup costs discussed above, we get a spill cost per barrel estimate of $48,981 per barrel.

- **Cleanup cost per barrel**: $36,403
- **Damage cost per barrel**: $12,578

Total cost used in this analysis: $50,000 per barrel (rounded up from $48,981)

1.1.2.4 The Southern Resident Killer Whale Premium

To these high value estimates of oil spill cost, we add a premium for the protection of the Southern Resident Killer Whales (SRKW). This is justified due to the intent of the authorizing statute (Chapter 88.16 RCW) and an estimate of the willingness to pay (WTP) by Washington households to protect them.

One form of economic value is existence value, which is an example of a non-use value. It is the value people derive from simply knowing something exists, regardless of whether they see or interact with it in any way.

Willingness to pay (WTP) surveys have been used to assess economic existence values since the court decision *Ohio v Department of the Interior (1989).*

An estimate of WTP to preserve the SRKW (move them from "endangered" to "recovered") was established by a contingent valuation survey published in a peer reviewed journal.[27] The study asked respondents to state their WTP to conserve various endangered species, including the SRKW. The survey was implemented nationally in the Fall of 2010 but also had a separate west coast subsample that Washington state was part of. The authors estimated $89 WTP per year

[25] San Juan Spill, EE, https://www.eartheconomics.org/all-publications/oilspill
[26] San Juan Spill, EE, https://www.eartheconomics.org/all-publications/oilspill, Table 2, page 19
[27] Walmo and Lew, 2015. *Public preferences for endangered species recovery: an examination of geospatial scale and non-market values***.** Frontiers in Marine Science, August 2015, Volume 2, Article 55

for ten years for the average Washington household. Adjusting this WTP from 2014 to 2024 dollars and multiplying the value by Washington State's 3 million households we obtain $3.5 billion.[28] This valuation was for moving the SRKW from "endangered" to "recovered." We assume the WTP to prevent further harm to them is equivalent.

The national survey found an average annual household WTP of $84 (for 10 years) for residents of the United States, only slightly lower than the survey of west coast residents. Applying this valuation to the nation's 131 million households and adjusting to 2024 dollars yields a value of $145 billion. We will only use the valuation of Washington residents here.

Additional empirical evidence supports a potentially higher valuation. A 2021 study of WTP to conserve the bears of Katmai National Park's "Fat Bear Contest," found that when people recognized the bears as individuals, WTP for conservation was greater.[29] As mentioned above, the SRKW have received significant international attention in recent years, and every member of the population has a scientific and popular name.[30] They are extensively studied and followed. Major Puget Sound area media report each birth and death.[31]

SRKW premium: $3.5 billion (any size spill)

1.1.2.5 Worst-Case-Spill

RCW 88.46.010 defines a worst-case-spill for a vessel as "a spill of the entire cargo and fuel of the vessel complicated by adverse weather conditions…"[32]

Of the oil carrying tank vessels subject to the proposed rule, the largest has a cargo capacity of 259,000 barrels.

In some of the calculations in this analysis, we estimate the cost of a spill of the largest vessel's entire cargo of heavy fuel oil. This is consistent with various statutory requirements for oil spill protection, which mandate planning for a worst-case-spill.[33]

The $3.5 billion SRKW premium is added independent of the spill size, since it is not known what threshold of spill size would bring significant harm to this population, given its precarious state.

[28] U.S. Census: Washington, https://www.census.gov/quickfacts/fact/table/WA/HSD410223#HSD410223
[29] Richardson, 2022. Getting to know you..., Brown Bear preservation, https://onlinelibrary.wiley.com/doi/10.1111/ajae.12249
[30] Orca Population, https://www.whaleresearch.com/orca-population
[31] New orca calf J62 is a girl, https://www.king5.com/article/tech/science/environment/orcas/new-j62-orca-calf-girl/281-70d11781-6cf1-442b-a328-768707358e0d
[32] Chapter 88.46 RCW: VESSEL OIL SPILL PREVENTION AND RESPONSE, https://app.leg.wa.gov/RCW/default.aspx?cite=88.46&full=true#88.46.010
[33] Chapter 88.46 RCW, https://app.leg.wa.gov/RCW/default.aspx?cite=88.46&full=true#88.46.060

If we assume the entire oil volume of the largest target vessel is spilled, and add the SRKW premium to the cost, the total cost for a worst-case-spill, using the values just discussed, is $16.45 billion,

(259,000 barrels x $50,000/barrel) + $3.5 billion =

Total cost of worst-case-spill: $16.45 billion.

1.1.2.6 Low-probability, High-impact

Our estimates of avoided oil spill costs consider the probability of a drift grounding occurring. We estimate drift grounding probabilities with Ecology's Spill Risk Model, built under legislative mandate contained in 2019's ESHB 1578.[34]

A drift grounding is one specific type of incident that escort tugs are well-suited to addressing. An important assumption of this analysis is that, while drift groundings are rare events, a drift grounding of the vessels considered here can produce a large spill. These vessels carry significant amounts of oil as cargo and as fuel. As a result, a drift grounding of a small to medium sized oil carrying tank vessel is always a serious event.

We conduct our analysis in a manner that highlights the substantial consequences and potential costs associated with these low-probability, high-impact events.

1.1.2.7 Unquantifiable oil spill costs

While this analysis attempts to quantify some damages as economic costs, some impacts can't be expressed as a dollar value. A major oil spill in Puget Sound and the Salish Sea would result in devastating and unquantifiable costs, particularly to the region's fragile ecosystems, cultural heritage, and community well-being. It would also threaten critical habitats for fish, marine mammals, and seabirds, disrupting the delicate balance of life in one of the world's most biodiverse inland seas.

For Tribal nations, whose cultural and spiritual identities are deeply intertwined with these waters, the impacts would be immeasurable. Culturally significant places, archaeological sites, and marine resources that are essential for traditional diets, practices, lifeways, and ceremonies, could be severely affected. Tribes have previously shared with Ecology that these types of cultural and spiritual losses can't be translated into dollars.[35] A major oil spill could also prevent Tribes from safely exercising their Tribal treaty fishing and harvest rights. The exercise of these rights is both a cultural and community practice and supports the nutritional and economic security of many Tribal members. Unlike non-Tribal fishers who could choose to fish elsewhere in the event of a spill, Tribal treaty rights are place-based, limited to their "Usual and

[34] Spill Risk Model, RCW, https://app.leg.wa.gov/RCW/default.aspx?cite=88.46.250
[35] Makah Tribal Council comments on Ecology's Certificate of Financial Responsibility Rulemaking, 2023.

Accustomed" places. This means that an oil spill would disproportionately impact Tribal fishers, exacerbating existing economic and social inequities.

Beyond environmental damage, the loss of irreplaceable natural and cultural resources would ripple through the region, profoundly affecting the cultural fabric, livelihoods, and mental health of Tribal and non-Tribal communities alike. The public health consequences would also be far-reaching, including increased risks of respiratory illnesses, stress-related health conditions, and long-term mental health challenges associated with the devastation of natural and cultural resources. These intangible costs highlight the deep and enduring impacts a major oil spill could have on the ecosystem and the communities that depend on it.

1.1.2.8 Likely spill sizes from marine vessels

The following values are based on historical spill incidents compiled by US and Canadian authorities from 2000–2020 (as reported in Ecology's Summary of Tug Escorts).[36] This data will be used in Chapter 4, for one estimate of the expected benefit of avoided oil spill costs.

Largest Spill: Estimated at 10,000 barrels.

Average Spill Size: Less than 1,000 barrels when combining data from tank ships and barges.

Most Spills: Using the data in Table B-33 of the Summary of Tug Escorts report and assuming spill sizes follow an exponential probability distribution, meaning a pattern where there are many smaller spills and increasingly fewer larger ones, 95% of observed spills were estimated to be 2,000 barrels or smaller.

1.2 Reasons for the proposed rule amendments

The proposed amendments are designed to realize the oil spill risk reduction intent of the legislation authorizing this rulemaking and to advance Washington State's zero spills strategy regarding oil spills. The proposed amendments are also designed to realize Best Achievable Protection against oil spills, as directed by the authorizing statute, RCW 88.16.260(3)(d).

1.3 Summary of the proposed rule amendments

The proposed rule amendments, contained in a new section, WAC 363-116-600, would:

- Expand by 28.9 square miles the northern edge of the escort area established in 2020 for small to medium sized oil carrying tank vessels (an 11 percent increase in the size of the escort area).

[36] Summary of Tug Escorts, Ecology, 2021,
https://apps.ecology.wa.gov/publications/UIPages/documents/2308009.pdf

- Require tugs escorting these vessels to have at least twin propellers and require tugs escorting vessels 18,000 deadweight tons and over to have at least 3,000 horsepower.
- Require a pre-escort conference between the escort tug and tank vessel to discuss the operational details of the transit.

1.4 Document organization

The chapters of this document are organized as follows:

- **Chapter 2 - Baseline and the proposed rule amendments:** Description and comparison of the baseline (what would occur in the absence of the proposed rule amendments) and the proposed rule requirements.
- **Chapter 3 - Likely costs of the proposed rule amendments:** Analysis of the types and sizes of costs we expect impacted entities to incur as a result of the proposed rule amendments.
- **Chapter 4 - Likely benefits of the proposed rule amendments:** Analysis of the types and sizes of benefits we expect to result from the proposed rule amendments.
- **Chapter 5 - Cost-benefit comparison and conclusions:** Discussion of the complete implications of the CBA.
- **Chapter 6 - Least-Burdensome Alternative Analysis:** Analysis of considered alternatives to the contents of the proposed rule amendments.
- **Chapter 7 - Regulatory Fairness Act Compliance:** When applicable. Comparison of compliance costs for small and large businesses; mitigation; impact on jobs.
- **Appendix A - APA Determinations:** RCW 34.05.328 determinations not discussed in chapters 5 and 6.

Chapter 2: Baseline and Proposed Rule Amendments

2.1 Introduction

We analyzed the impacts of the proposed rule amendments relative to the existing rule, within the context of all existing requirements (federal and state laws and rules). This context for comparison is called the baseline and reflects the most likely regulatory circumstances that entities would face if the Board of Pilotage Commissioners (BPC) does not adopt the proposed rule.

2.2 Baseline

The baseline for our analyses generally consists of existing laws and rules. This is what allows us to make a consistent comparison between the state of the world with and without the proposed rule amendments.

For this rulemaking, the baseline includes:

- Chapter 88.16 RCW
- Chapter 88.46 RCW

Chapter 88.16 RCW contains the current tug escort requirements for tank vessels between 5,000 and 40,000 deadweight tons and barges and ATBs over 5,000 deadweight tons in Rosario Strait and connected waters to the east. Throughout this document, we refer to these vessels as “small to medium sized oil carrying tank vessels.” RCW 88.16.190 requires they be escorted by tugs of at least 2,000 horsepower.

2.3 Proposed rule amendments

The proposed rule amendments would:

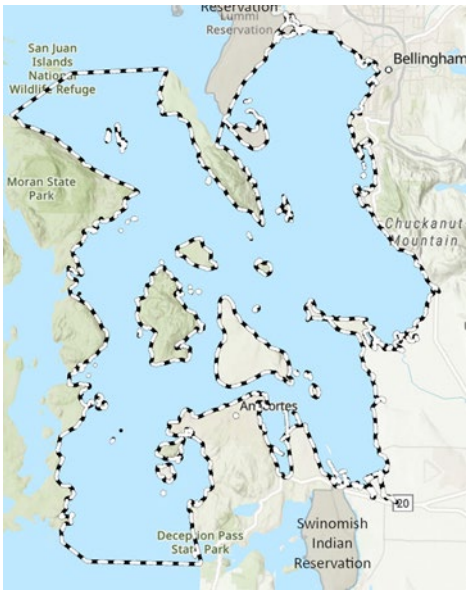
- Expand by 28.9 square miles the northern edge of the escort area established in 2020 for small to medium sized oil carrying tank vessels (an 11 percent increase in the size of the escort area).
- Require tugs escorting these vessels to have at least twin propellers and require tugs escorting vessels 18,000 deadweight tons and over to have at least 3,000 horsepower.
- Require a pre-escort conference between the escort tug and tank vessel to discuss the operational details of the transit.

2.3.1 Expand by 28.9 square miles the northern edge of the escort area established in 2020 for small to medium sized oil carrying tank vessels (an 11 percent increase in the size of the escort area).

Baseline

Current statute requires tug escorts of small to medium sized oil carrying tank vessels in "Rosario Strait and connected waterways to the east." As stated in Chapter 1, these are oil carrying tank ships between 5,000 and 40,000 deadweight tons, and barges and ATBs greater than 5,000 deadweight tons. The area is depicted in Figure 3 below.[37]

Figure 3: Current area requiring tug escorts for small to medium sized oil carrying vessels.



Proposed

The proposed rule would expand the area where tug escorts are required for these vessels. The additional area, consisting of 28.9 square miles would be the in BPC zones Strait of Georgia and Strait of Georgia South.[38] This proposed area extends to the northwest of the existing area and is contiguous with it. It is indicated by the red arrow in Figure 4 below.

[37] see RCW 88.16.190(2)(a)(ii), https://app.leg.wa.gov/RCW/default.aspx?cite=88.16.190

[38] BPC Geographic Zones, https://nebula.wsimg.com/a0c4bc354f3ca9d89232d290d537fcf8?AccessKeyId=F86D0A1E7A0091C2061F&disposition=0&alloworigin=1

Figure 4: Proposed area for expanded tug escorts.

Expected Impact

The proposed rule adds 28.9 square miles to the 273.6 square miles of area already subject to escort requirements.

Providing tug escorts to this additional area will add cost by requiring more tug escort time. We estimate it will also reduce the risk of oil spills from drift groundings in these waters.

2.3.2 Require tugs escorting small to medium size oil carrying vessels to have at least twin propellers and require tugs escorting vessels 18,000 deadweight tons and over to have at least 3,000 horsepower.

Baseline

Under current law, tugs escorting these small to medium size oil carrying vessels must have at least 2,000 horsepower.

The statute RCW 88.16.90 (2)(a)(ii) requires tug escorts have a minimum horsepower "…equivalent to at least five percent of the deadweight tons of a forty thousand deadweight ton oil tanker:"[39] Five percent of 40,000 deadweight tons is: 0.05 x 40,000 = 2,000 horsepower. Twin propellers are not required, but they are the industry standard.

Proposed

The proposed rule would add the following functional requirements:

- 3,000 horsepower for vessels greater than 18,000 deadweight tons.
- Twin propeller ("twin screw") propulsion.

Expected impact

We estimate that existing tug operations in the region already meet both the above requirements and that no additional costs will be incurred.

The benefit derives from having made the proposed rule consistent with current operational practice. We estimate that oil spill risk will remain low by putting into rule assurances that escort tugs have the performance capacity to control potentially adrift vessels.

[39] RCW requirements, https://app.leg.wa.gov/RCW/default.aspx?cite=88.16.190

2.3.3 Require a pre-escort conference between the escort tug and tank vessel to discuss the operational details of the transit.

Baseline

Presently, a pre-escort conference is not required.

Proposed

As an operational requirement, before commencing an escort, the escorted vessel and tug officers in charge shall hold a pre-escort conference to discuss and agree upon the operational details of the transit.

Expected impact

We estimate the two-participant conference will require ten minutes of time per escort assignment, with associated personnel cost. We expect the vessels to be underway and communication to be via radio. The officers in charge of the vessels would be limited in their ability to perform additional tasks during this time.

Chapter 3: Likely Costs of the Proposed Rule Amendments

3.1 Introduction

We analyzed the likely costs associated with the proposed rule amendments, as compared to the baseline. The proposed rule amendments and the baseline are discussed in detail in Chapter 2 of this document.

The Board of Pilotage Commissioners (BPC) presently administers the baseline tug escort requirements of this rulemaking. Ecology has been informed that barring any changes in current enforcement and administration practices, no additional resources will be required as a result of the proposed rule.

The costs estimated below will be borne by the owner/operators for the oil carrying tank vessels.

3.2 Cost analysis

The proposed rule amendments would:

- Expand by 28.9 square miles the northern edge of the escort area established in 2020 for small to medium sized oil carrying tank vessels (an 11 percent increase in the size of the escort area).
- Require tugs escorting these vessels to have at least twin propellers and require tugs escorting vessels 18,000 deadweight tons and over to have at least 3,000 horsepower.
- Require a pre-escort conference between the escort tug and tank vessel to discuss the operational details of the transit.

3.2.1 Expand by 28.9 square miles the northern edge of the escort area established in 2020 for small to medium sized oil carrying tank vessels (an 11 percent increase in the size of the escort area).

Model simulation shows this added area requirement as adding 14,677 minutes of tug underway minutes per year (244.6 hours), or 0.67 underway hours per day.[40] This estimate is an upper end value for vessel traffic developed for use in the Environmental Impact Statement (EIS) to make sure impacts weren't underestimated. For the purpose of this economic analysis, we adjusted the estimate of underway minutes by the ratio of observed data to the simulated

[40] Ecology Workshop #10, slide 12, presented to OTSC 11/14/24.

traffic for the current tug escort area. The estimated additional tugboat operation time then becomes: (800 escort jobs/1537 escort jobs) x 244.6 hours = 127.3 hours/yr.[41,42]

- **Hourly rate (R):** The lowest hourly rate from the most recent price sheets from an operator whose boats meet or exceed the 3,000 horsepower requirement is at $4,375/hr.[43] It should be noted that the price sheet currently adds a 50% fuel surcharge to that rate ($2,187.50), bringing the total hourly cost to $6,562.50.

The annual cost of expanding the area is calculated as:

$$T_{extra} \; x \;\; R = \underline{\text{Total cost of expanding the area}}$$

Substituting in values:

(127.3 hr/yr x $6,562.50/hr) = **$0.835 million per year**

Over 20 years, we estimate the present value (PV) cost of this part of the proposed rule as follows.

Ecology uses a 20-year average of the interest rate on US Treasury I-bonds, which are inflation protected, as a real discount rate. As of November 2024, that value was 0.41 percent.

We calculate the present value using the following standard formula, where C_{year} is the estimated annual cost calculated above, i the real discount rate and n the number of years of annual cost:[44, 45]

$$PV = \frac{C_{year}}{i}\left(1 - \frac{1}{(1+i)^n}\right)$$

Substituting in the stated values above, we obtain for a present value cost (PV) over 20 years of:

$PV = \$16$ million.

[41] Vessel Traffic Trend Synopsis,Chttps://nebula.wsimg.com/17056ac82adb868022291ad1d8dae1b9?AccessKeyId=F86D0A1E7A0091C2061F&disposition=0&alloworigin=1.Data from Table EX-1, and Communications with Spills program, 11/15/24-11/20/24. This assumes 2/3 of Rosario target vessel traffic is laden

[42] Ecology, Environmental Impact Statement, Vessel Traffic, 2025.

[43] Foss Maritime Company rate sheet, effective January 2025.

[44] EPA discounting primer, https://www.epa.gov/system/files/documents/2024-12/chapter-6-guidelines-for-preparing-economic-analyses_final_508-compliant.pdf

[45] Present value - Wikipedia, https://en.wikipedia.org/wiki/Present_value, see equation 1.

3.2.2 Require tugs escorting small to medium size oil carrying vessels to have at least twin propellers and require tugs escorting vessels 18,000 deadweight tons and over to have at least 3,000 horsepower.

Twin Propellers

Contacts with the tug industry indicate the twin propeller requirement is already in practice. We regard this as an instance where the proposed rule is catching up with industry practice.[46] We estimate no significant costs associated with this requirement.

3,000 horsepower for vessels greater than 18,000 deadweight tons

We estimate the 3,000 horsepower requirement for tugs escorting tank vessels larger than 18,000 deadweight tons will produce no additional cost.

Ecology is aware of two escort tugs operating in the region that are between 2,000 and 3,000 horsepower. These tugs are both owned and operated by Centerline Logistics (Centerline). Centerline uses these tugs to escort their own assets. With one exception, Centerline's oil carrying assets are under 18,000 deadweight tons. Centerline also operates tugboats rated at 3,000 horsepower or more.

Ecology's review of escort tug data indicates that the escort tugs between 2,000 and 3,000 horsepower have only been escorting tank vessels under 18,000 deadweight tons.

The current distribution of vessel sizes is not expected to change significantly in the foreseeable future.

Therefore, we do not anticipate any additional costs resulting from the 3,000 horsepower requirement for escorting tank vessels larger than 18,000 deadweight tons. Existing tug operations in the region already meet this requirement, allowing for compliance without the need for new equipment, modifications, or additional resources.

3.2.3 Require a pre-escort conference between the escort tug and tank vessel to discuss the operational details of the transit.

We estimate the quantitative costs of the addition of functional and operational requirements (FORs) as follows:

[46] OTSC minutes 6/5/24, https://nebula.wsimg.com/848a7bc58d4535505c461fdc4a16f212?AccessKeyId=F86D0A1E7A0091C2061F&disposition=0&alloworigin=1

- Time spent per tug escort (T), which is 10 minutes of radio communication between two ship operators.
- Number of escorts per year (N), estimated to be 800. [47]
- Hourly wage of the captains, mates, and pilots (W) at $59.44 (75th percentile of wages).

We then calculate the total cost per year for two employees as:

(($T_{minutes}$/60 min/hr x **W**) x 2) x **N** = total cost per year

Substituting in values:

((**10**/60 x $**59.44**) x 2) x **800** = $15,851 per year

Over 20 years, we estimate the present value cost of this requirement of the proposed rule as follows:

For a real discount rate, Ecology uses a 20-year average of the fixed interest rate on US Treasury I-bonds, which are inflation protected.[48] As of November 2024, the 20-year average of the fixed rate was 0.41 percent.

Using the discounting formula described in Section 3.2.1, over 20 years, the PV of the discounted sum equals:

$$PV = \$303{,}773.$$

3.2 Environmental justice costs

An Environmental Justice Assessment was not required for this rulemaking since it was initiated prior to July 1, 2023.

However, the potentially adverse environmental impacts of the proposed rule brought it under Washington's State Environmental Protection Act. An EIS was conducted in compliance with that Act. The EIS includes an analysis of potential environmental justice outcomes from the proposed rule, which was developed under the guidance of Ecology's Office of Equity and Environmental Justice. Impacts were assessed to Tribal communities (Native American people affiliated with an American Indian Tribe, regardless of whether they live off or on a reservation), U.S. Census block groups where the percentage of households of color was above the statewide average, and block groups where the percentage of households with incomes at or below twice the federal poverty level was greater than the Washington state average.[49]

Numerous possible impacts were considered and thoroughly evaluated over the course of rule development. The proposed area expansion for tug escorts represents an 11 percent increase

[47] Vessel Traffic Trend Synopsis,https://nebula.wsimg.com/17056ac82adb868022291ad1d8dae1b9?AccessKeyId=F86D0A1E7A0091C2061F&disposition=0&alloworigin=1.Data from Table EX-1, and Communications with Spills program, 11/15/24-11/20/24. This assumes 2/3 of Rosario target vessel traffic is laden.

[48] I bonds — TreasuryDirect, https://www.treasurydirect.gov/savings-bonds/i-bonds/

[49] A Census block group is the smallest geographic unit for which the Census publishes sample data.

in area relative to baseline. We modeled escort tug underway time associated with various alternatives in the more broadly scoped EIS. We found that for the proposed rule, escort tug underway time associated with small to medium sized oil carrying tank vessels would comprise less than one percent (0.99%) of historical vessel traffic.[50] This would be a minor increase from baseline, where escort tug underway time represents 0.96% of historical vessel traffic. Consequently, the impacts would be quite limited.[51]

More specifically, we estimate escort tug traffic associated with the small to medium sized oil carrying tank vessels increasing 2.4% relative to baseline.

The small increase in vessel traffic might disproportionately impact Tribes, however. Some Tribes have identified that baseline levels of vessel traffic in the EIS Study Area already impact Tribal treaty fishing and other Tribal resources. For example, the Swinomish Tribe has previously stated that "We are at a point where the current amount of vessel traffic interferes with Swinomish treaty fishing in important fishing areas."[52] The Swinomish Tribe has identified that approximately 27% percent of the waters of the Salish Sea, all of which are a Tribal Usual and Accustomed Areas, are designated shipping lanes and anchorages. Under the proposed rule, the increase in escort tug underway time would result in moderate negative impacts to Tribal resources within and near the expansion area. This includes moderate increases in existing adverse impacts to the quality and operation of Tribal fishing areas including, but not limited to, boat launches, other fishing access points, negative interactions with commercial vessel traffic in fishing areas, physical and vessel safety elements, and gear loss.

Tribal treaty fisheries provide both income and subsistence which support tribal economies and nutritional security. For example, in the Swinomish Tribe, almost every household depends on a commercial fisher for their livelihood. Fishing and sharing fish are essential to Tribal culture, spirituality, sharing of inter-generational knowledge, and community events and ceremonies.[53] The cost of these impacts are likely impossible to quantify. However, some costs can be quantified: the Swinomish Tribe estimates that they experience between $80,000 to $100,000 in gear loss each year.[54]

Communication with Tribal government representatives was maintained throughout rule development, and a Tribal government representative is on the Oil Transportation Safety Committee, which advises the BPC for this rulemaking.

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[50] Here, historical vessel traffic means vessel traffic that carries Automatic Identification System (AIS). In both the U.S. and Canada, the requirement to carry AIS applies to most commercial vessel traffic. Vessels that don't carry AIS are typically smaller recreational and/or fishing vessels. We used 2023 historical AIS data for this analysis.
[51] Ecology, EIS Vessel Traffic
[52] Loomis and Swinomish Tribe, 2021, https://mcusercontent.com/8d7d0ac4383c61f0e886586e7/files/58492b9b-1d68-c077-c411-1d0548fc7dca/Treaty_Fishing.pdf
[53] Loomis and Swinomish Tribe, 2021, https://mcusercontent.com/8d7d0ac4383c61f0e886586e7/files/58492b9b-1d68-c077-c411-1d0548fc7dca/Treaty_Fishing.pdf
[54] Swinomish Indian Tribal Community representative to H. Kennard, personal communication, September 23, 2024)

Additionally, there is an increased risk of hazard incidents involving tugs, estimated at less than one per year. Hazard incidents constitute a broad category and do not necessarily involve spilling of oil.

Aside from the just discussed impact on Tribes from vessel traffic, we did not identify any other environmental justice concerns. [55]

[55] Tug Escort Rulemaking Draft EIS, Environmental Justice Discipline Report

Chapter 4: Likely Benefits of the Proposed Rule Amendments

4.1 Introduction

We analyzed the likely benefits associated with the proposed rule amendments, as compared to the baseline. The proposed rule amendments and the baseline are discussed in detail in Chapter 2 of this document.

The benefits estimated below would be realized by all Washingtonians. Those living in close proximity to the rulemaking area, recreators, and nearby Tribes would likely enjoy the extra protection from oil spill risk more than those farther away.

4.2 Benefits analysis

The proposed rule amendments would:

- Expand by 28.9 square miles the northern edge of the escort area established in 2020 for small to medium sized oil carrying tank vessels (an 11 percent increase in the size of the escort area).
- Require tugs escorting these vessels to have at least twin propellers and require tugs escorting vessels 18,000 deadweight tons and over to have at least 3,000 horsepower.
- Require a pre-escort conference between the escort tug and tank vessel to discuss the operational details of the transit.

4.2.1 Expand by 28.9 square miles the northern edge of the escort area established in 2020 for small to medium sized oil carrying tank vessels (an 11 percent increase in the size of the escort area).

4.2.1.1 Qualitative benefits

Best Achievable Protection

As noted in Section 1.1.2.2, the authorizing statute (RCW 88.16.260(3)(d)) requires that this rulemaking realize "Best Achievable Protection" against oil spills. [56]

We consider the expansion requirement a key part of realizing Best Achievable Protection.

[56] RCW 88.46.010, Definitions, https://app.leg.wa.gov/RCW/default.aspx?cite=88.46.010

We determine that the proposed rule reduces oil spill risk with currently available equipment and technology. Commercial availability of effective technology is one consideration in determining Best Achievable Protection. The proposed rule's reduction in spill risk is also consistent with the intent of the authorizing legislation, and with Washington state's zero spill strategy.

Ecology's risk model estimates the chance of a drift grounding being reduced to a 189 year event, down from a 186 year event as a result of expanding the area where tug escorts are required. This estimate is for the Environmental Impact Statement (EIS) Study Area, which extends beyond the rulemaking tug escort boundaries, including all of Puget Sound, and waters eastward of roughly fourteen miles west of Port Angeles up to the 49th parallel.

Of the four rule alternatives considered in the EIS, this area expansion requirement achieves the lowest modeled drift grounding risk. The Oil Transportation Safety Committee (OTSC) recommended by consensus its adoption to the Board of Pilotage Commissioners (BPC).[57]

Local geography and ecosystem

The waters and shorelines included in and around the rulemaking area are cherished by Washington residents and visitors alike. This qualitative valuation is something quantitative potential damage estimates likely don't capture. Additional reduction in oil spill risk brings the benefit of further protection of the region's prized natural resources, which we consider here.

Puget Sound and surrounding waters of the Salish Sea support a range of marine mammal species. In addition to being key indicators of environmental and ecosystem health, species of these waters are also culturally and socially significant.

Regarding the region's attributes, Earth Economics notes:

> "A wide diversity of shoreline and marine habitats can be found throughout the [San Juan] islands, including marine mammal habitat, waterfowl nesting sites, feeding, rearing, and spawning habitat for fish, and a rich diversity of intertidal and subtidal invertebrate communities. The shorelines throughout San Juan County are equally diverse, ranging from exposed rocky shores on the west side of San Juan Island to sheltered beaches and marshes on the more protected interior shorelines."[58]

Southern Resident Killer Whales

Marine mammals, particularly the cetaceans, are at greatest risk of impacts associated with this rulemaking. Southern Resident Killer Whales (SRKW) are considered a cultural icon, part of the identity of Washington State, and are also known for their cultural and spiritual importance to coastal Tribes.[59] SRKW critical habitat is found throughout the Environmental Impact Study

[57] OTSC meeting, 3/6/2025
[58] SJ oil spill, EE, https://www.eartheconomics.org/all-publications/oilspill
[59] NOAA Fisheries, 2024

Area and rulemaking boundary. While SRKWs have been observed throughout the Environmental Impact Study Area, SRKWs utilize certain areas in higher concentrations, such as Haro Strait along the west side of San Juan Island, Boundary Pass and Swanson Channel, the area of Puget Sound proper between Admiralty Inlet and Vashon Island, the northern side of the Strait of Juan de Fuca, Rosario Strait, and the Fraser River mouth.[60] Studies have shown that SRKWs use Haro Strait for foraging and shallow areas of the Strait of Juan de Fuca, Boundary Pass, and Swanson Channel for traveling.[61] Additionally, the valuation placed on the SRKW population is based on a willingness to pay study survey mailed out in 2010. In the intervening years, attention regarding their plight has increased considerably. This is highlighted by the national and international headlines made in 2018 as one member, J35, carried her dead calf at the surface for 17 days.[62] These headlines appeared again in 2025 when J35 once again carried a dead newborn calf at the surface for 11 days.[63]

Suitability of extending geographic area

The authorizing statute for this rulemaking, specifically RCW 88.16.260(3)(d) also requires consideration of "the characteristics of the waterways."[64]

The Strait of Georgia South zone is adjacent to the current Rosario Strait and waters east escort area. The Ecology model showed that in the expansion area, total escort tug underway time went up, but both the time spent commuting and the proportion of time spent commuting was reduced. This suggests that this expansion alternative makes more efficient use of escort underway time than the other alternatives. The OTSC pilot representatives agreed that the characteristics of this zone make it a good candidate for an escort requirement.[65] The Environmental Impact Statement (EIS) Vessel Traffic Discipline Report found that hazards for the small to medium sized oil carrying vessels in this area include Alden Bank and Clements Reef. Clements Reef in particular is in a high-current area and was the site of a tank barge grounding resulting in an oil spill in 1994. This incident spilled over 27,000 gallons (643 barrels) of oil. These existing safety risks highlight the potential benefit of escort tugs in the expansion zone.

In addition, the February 28, 2024 Ecology presentation to the OTSC identified that extending the Rosario and waters east requirements to Strait of Georgia South was a relatively small potential expansion. Simulations showed that the addition of tug escorts prevented drift

[60] (Fisheries and Oceans Canada [DFO], 2021; Olson et al., 2018)
[61] (DFO, 2021).
[62] Washington Post article, https://www.washingtonpost.com/news/animalia/wp/2018/08/10/the-stunning-devastating-weeks-long-journey-of-an-orca-and-her-dead-calf/
[63] Seattle Times article, https://www.seattletimes.com/seattle-news/climate-lab/mother-orca-tahlequah-still-carries-dead-calf-after-11-days/
[64] RCW 88.16.260(3)(d)(iii) https://app.leg.wa.gov/RCW/default.aspx?cite=88.16.260
[65] March 11, 2024, OTSC minutes f4fc9932c91cb5c8df73cd5988a6a0f4

groundings at comparatively high rate in these waters. In the March 11, 2024 meeting, Committee members unanimously voted to include this option. [66]

In addition, the EIS evaluated the potential impacts of expanding the geographic area and found the following potential benefits:

Oil pollution

The proposed rule reduces the overall risk of a drift grounding of vessels subject to this rulemaking within the EIS Study Area by 1.6% and provides larger risk reduction benefits to the expansion area. Within the expansion area itself, Ecology's Spill Risk Model estimates a 22% lower risk of a drift grounding compared to baseline.

In absolute terms, the addition of the expansion zone reduces the overall risk of a drift grounding by a small to medium sized oil carrying tank vessel within the EIS Study Area from a recurrence interval of 186 years (baseline) to a recurrence interval of 189 years. There is also an international relations benefit to the oil risk reduction provided by escorts in the expansion area.[67] The expansion area is the escort area in closest proximity to the Canadian border and depending on the size and weather conditions, a spill there could threaten Canadian waters. Escorts in the expansion area help reduce that risk.

Tribal resources

The proposed rule would expand tug escort requirements to include a portion of the Strait of Georgia South and would contribute to some beneficial impacts to Tribal resources in this area. These impacts include a decrease in drift groundings and therefore a decreased risk of oil spills, resulting in a lower risk of catastrophic impacts to coastal Tribal resources, fishing, Usual and Accustomed areas, and Traditional Cultural Places, and coastal archaeological sites along the coast of the EIS Study Area. The decreased risk of oil spills would also result in a decreased risk of water quality impacts to wildlife species and habitat of cultural significance to Tribes and Tribal treaty fishing.

Recreation

Expanding the tug escort requirements may result in additional protection against longer-term impacts to recreation from a catastrophic oil spill from a target vessel. The San Juan Islands are a major tourist destination, and a catastrophic spill could have longer lasting reputational impacts for the area than reflected in the estimated costs to tourism and recreation used in the cost estimates above. The San Juan Islands as a region have been identified as an area with risk of conflict between commercial and recreational vessels.[68] There is also significant seasonal

[66] Page 6 of 3/11/24 OTSC Notes
[67] January 9, 2025 OTSC meeting comments from the BPC Public Member of the OTSC
[68] USCG Safety Report, https://navcen.uscg.gov/sites/default/files/pdf/pawsa/FinalReport/2017%20Puget%20Sound%20PAWSA.pdf

variation in recreational vessel traffic in this region, with peaks in the summer months. The islands along the expansion area border, Patos, Sucia, and Matia, are designated as State Parks and National Wildlife Refuge areas. Recreation in this area is typically only accessible by boat with dispersed onshore camping.[69]

4.2.1.2 Quantitative Benefits

We estimate the quantitative benefits of this requirement by considering the oil spill costs prevented. We consider avoided costs under four different methods, presented in the order of least likely to most likely:

1. Prevention of a worst-case spill
2. Prevention of a worst-case spill, taking into consideration the probability of a drift grounding.
3. Prevention of a worst-case spill, taking into consideration the probability of a drift grounding ***and*** the likelihood of a spill should a grounding occur.
4. Prevention of a spill of median size, taking into consideration the probability of a drift grounding ***and*** the likelihood of a spill should a grounding occur.

Variables:

- The difference in the odds **(O)** of drift grounding occurring under the proposed rule: the Spill Risk Model estimates the odds of a drift grounding falling from 1/186 to 1/189 per year.
- Probability **(P)** of spill occurring if a drift grounding happens based on historical data: 0.73%.[70,71, 72]
- Possible damage cost to vessels from grounding (**D**): $10 million.[73]
- Total cost per barrel spilled **(C)** as described in Section 1.1.1.3: $50,000.
- Added premium for SRKW protection as described in Section 1.1.1.4: $3.5 billion.

Method 1: Assumes a drift grounding will occur and that it will result in a worst-case spill

In this instance, we assume a drift grounding will occur and that it will result in a spill. The spill is a worst-case scenario involving a spill volume of 259,000 barrels of oil. We do not account for the probability of a drift grounding (O), or the probability of a subsequent spill (P), or the most likely spill size. This method presents the spill cost as a total number for a catastrophic incident

[69] Vessel Traffic EIS Discipline Report
[70] Summary of Tug Escort Analysis Results. Ecology, September 2023, Publication 23-08-009
[71] Communications with Spills Program, 11/22/24
[72] This value represents an estimate of the percentage of tank vessel groundings in the US and Canada that were associated with an oil spill between 2000 and 2020.
[73] Average cost of 4 incidents for target vessels with NSTB reports, inflation adjusted to Nov. 2024.

rather than as a cost per year. It is a reiteration of the worst-case spill estimate of Section 1.1.2.5, with the addition of the estimated damage to the vessel involved.

Methods 2, 3, and 4 below incorporate sequences of probabilities and estimate expected avoided oil spill costs as annual values.

Using the variables described above, we calculate the benefit of the avoided cost of a worst-case incident as follows:

(**D**+ (**259,00**0 X **C**)) + **SRKW** = Benefit

Substituting in values:

$10,000,000 + (**259,000 barrels** x **$50,000/barrel**) + **$3.5 billion** =

$16.46 billion total cost of a worst-case incident.

Method 2: Assumes a drift grounding will result in a worst-case spill

In this analysis, we consider the likelihood of a drift grounding and assume it will result in a worst-case spill of 259,000 barrels of oil. In so doing we focus solely on preventing a drift grounding and its potential worst-case consequences.

The following equation is used to calculate the benefit of avoided oil spill cost:

O X ((**D** + (**259,000** X **C**)) + **SRKW**) = Benefit

Substituting in values:

(**1/186 – 1/189**) x ((**$10,000,000**+(**259,000 barrels** x **$50,000/barrel**)) + **$3.5 billion**) =

$1.4 million/yr.

The change in odds expressed by the first term in the equation above are estimates from Ecology's Spill Risk Model, described in Section 1.1.2.6.

Using the discounting method describe in Section 3.2.1 and 3.2.3 we obtain the following present value for the benefits for the next 20 years using Method 2:

PV = $26.8 million.

Method 3: Assumes a drift grounding has a 0.73 percent chance of a spill and that the spill would be a worst-case spill.

For Method 3, we consider the odds of a drift grounding and a 0.73% probability that a spill will result. In this event, we assume the spill is a worst-case scenario involving a spill volume of 259,000 barrels of oil. [74]

The following equation is used to calculate the benefit of avoided oil spill cost:

(**O** x **D**) + **O** x **P** x ((**259,000** x **C**) + **SRKW**) = Benefit

Substituting in values:

((**1/186 – 1/189**) x **$10,000,000**) + (**1/186-1/189**) x **0.0073** x ((**259,000 barrels** x $**50,000/barrel**) + $**3.5 billion**) = $11,101 /yr.

Using the discounting method described in Section 3.2.1 and 3.2.3 we obtain the following present value for the benefits for the next 20 years using method three:

PV = $213,000.

Method 4: Assumes a drift grounding has a 0.73 percent chance of a spill, and the spill would be of median spill size.

Finally, we consider the likelihood of a drift grounding, the 0.73 percent probability of a spill, and estimate the median spill size from recent spill data.

The median spill size documented in a survey of incidents from 2000 to 2020 in US and Canadian waters from tank ships was 24 barrels, while the mean spill size was 1,113 barrels. The largest spill size was 10,000 barrels.[75] It should be added that during this time window, double-hulled requirements for oil carrying vessels were still being phased in. The last exceptions to the requirement ended in 2015.

Using the median spill size value, the following equation is used to calculate the expected benefit of avoided oil spill cost:

(**O** x **D**) + **O** x **P** X ((**24** X **C**)) + **SRKW)** = Benefit

Substituting in values:

((**1/186 – 1/189**) x **$10,000,000**) +(**1/186-1/189**) x **0.0073** x ((**24 barrels** x **$50,000/barrel**) +**$3.5 billion**) = $3,035 /yr.

[74] Synopsis of Changing Vessel Traffic Trends, Appendix O, Board of Pilotage Commissioners, 2021
[75] Summary of Tug Escorts, https://apps.ecology.wa.gov/publications/documents/2308009.pdf

It should be noted that a 24-barrel spill in this Method is likely to be much less impactful (damaging) to the SRKW population than the 259,000-barrel spill assumed in Methods 1, 2, and 3. This is not accounted for in the calculation above.

Using the discounting method described in Sections 3.2.1 and 3.2.3 we obtain the following present value for the benefits for the next 20 years using method four:

PV = $58,164.

4.2.2 Require tugs escorting small to medium size oil carrying vessels to have at least twin propellers and require tugs escorting vessels 18,000 deadweight tons and over to have at least 3,000 horsepower.

Tug escorts enhance spill prevention by accompanying certain ships through high-risk areas, providing immediate assistance during steering or propulsion failures or navigational errors to prevent spills. [76] They also mitigate risk through "scout" and "auxiliary bridge" functions.[77] Beyond these community-wide qualitative assurances, the benefits of the selected functional and operational requirements were reviewed in detail by the members of the OTSC.

Twin propeller propulsion

A twin propeller requirement was selected by the OTSC as a functional requirement to recommend to the BPC as they considered it to provide assurance the escort tug would have adequate maneuverability to prevent a drift grounding and possible subsequent oil spill.[78] Tugs that have twin independent propellers are called twin screw tugs. Twin screw propulsion systems have more maneuverability than single screw systems. In 2004, the authors of the Study of Tug Escorts in Puget Sound recommended that Washington's escort requirements should at a minimum, contain provisions that require that the escort tugs be twin propeller vessels.[79, 80] The Massachusetts escort rule requires, among other things, escort tugs to have twin propellers with a separate power system for each.[81]

3,000 hp for vessels greater than 18,000 DWT

A 3,000 hp requirement was selected by the OTSC as a functional requirement to recommend to the Board to provide a higher level of confidence that the escort tug will have sufficient power to successfully intervene to prevent a drift grounding and subsequent spill.[82]

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[76] Nuka Research & Planning Group, LLC, 2013 p. 20.
[77] Report of Vessel Traffic and Vessel Traffic Safety: Strait of Juan de Fuca and Puget Sound Area
[78] June 18, 2024, OTSC meeting notes – Operational and Functional recommendations to the Board
[79] Report of Vessel Traffic and Safety, https://apps.ecology.wa.gov/publications/documents/1908002.pdf
[80] Gray, D.L, & Hutchison, B.L. (2004). Study of tug escorts in Puget Sound (File no. 04075). Report prepared for Washington State Department of Ecology by Glosten Associates.
[81] Mass. Gen. Laws ch..21M §§ 1,6 (2017); 314 CMR 19.00, 2010
[82] June 18, 2024 OTSC meeting notes, https://nebula.wsimg.com/34ec7e26cce4ecd31cc0eff7b472d5c4?AccessKeyId=F86D0A1E7A0091C2061F&disposition=0&alloworigin=1

Horsepower is a measure of tug power and high horsepower is desirable in an escort tug for tank vessels. [83] Massachusetts' escort rule requires, among other things, a minimum of 4,000 hp for escort tugs.[84] It should be noted that by Washington statute, tank vessels between 40,000 and 60,000 DWT (outside the scope of this rulemaking) are allowed to use escort tugs with less than 3,000 hp, however these tank vessels are piloted, and the pilots would typically not accept an escort tug with less than 3,000 hp.

4.2.3 Require a pre-escort conference between the escort tug and tank vessel to discuss the operational details of the transit.

The pre-escort conference benefits all parties potentially impacted by an oil spill. Professional opinion considers it an effective means of realizing the full protective benefit of a tug escort.

A pre-escort conference was unanimously recommended by the OTSC to ensure that the escorted and escorting vessel have a shared understanding of the key elements of the escort operation.[85] Other jurisdictions, such as California and Alaska, have pre-escort conference requirements in their own tug escort rules.[86] Single hull laden tankers, though now banned, had to conduct a pre-escort conference for the purpose of planning and discussing the particulars of the escort transit.[87] The last exceptions to the double hull requirement ended in 2015, however the concept of a pre-escort conference as a preventative safety measure is still relevant.

This proposed operational requirement was reviewed in detail by the members of the OTSC. The OTSC is a chartered committee of the BPC responsible for conducting analysis and providing recommendations for the Board concerning the responsibilities outlined in ESHB 1578. The OTSC membership consists of a chair, three members of the BPC, a Puget Sound Pilot, an oil industry representative, a tug industry representative, an environmental community representative, and at least one Tribal government representative. [88] Members of the OTSC, by consensus, recommended the pre-escort conference requirement to the BPC.

4.2. Environmental justice benefits

An Environmental Justice Assessment was not required for this rulemaking since it was initiated prior to July 1, 2023.

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[83] Report of Vessel Traffic and Vessel Traffic Safety: Strait of Juan de Fuca and Puget Sound Area
[84] Mass. Gen. Laws ch..21M §§ 1,6 (2017); 314 CMR 19.00, 2010
[85] June 18, 2024, OTSC meeting notes, https://nebula.wsimg.com/34ec7e26cce4ecd31cc0eff7b472d5c4?AccessKeyId=F86D0A1E7A0091C2061F&disposition=0&alloworigin=1
[86] Report on Vessel Traffic and Safety, https://apps.ecology.wa.gov/publications/documents/1908002.pdf
[87] This was a Federal requirement, 33 CFR 168.60
[88] OTSC charter, https://nebula.wsimg.com/0887bbf6ebd7b28e5a11ea3a41e76140?AccessKeyId=F86D0A1E7A0091C2061F&disposition=0&alloworigin=1

However, the potentially adverse environmental impacts of the proposed rule brought it under Washington's State Environmental Protection Act. Environmental Impact Statements (EIS) were conducted in compliance with that Act. The EIS includes an analysis of potential environmental justice impacts from the proposed rule, which was developed under the guidance of Ecology's Office of Equity and Environmental Justice. Impacts were assessed to Tribal communities (Native American people affiliated with an American Indian Tribe, regardless of whether they live off or on a reservation), U.S. Census block groups where the percentage of households of color was above the statewide average, and block groups where the percentage of households with incomes at or below twice the federal poverty level was greater than the Washington state average.[89]

Communication with Tribal representatives was maintained throughout rule development, and a Tribal representative is on the OTSC, which advises the BPC for this rulemaking.

The EIS found the tug escort requirements under the proposed rule would reduce the risk of drift groundings of small to medium sized oil carrying tank vessels.[90] This means a lower risk of catastrophic oil spill impacts to Tribal resources, Tribal treaty fishing, Usual and Accustomed areas, Traditional Cultural Places, and coastal archaeological sites in the EIS Study Area. The decreased risk of oil spills would also result in a decreased risk of water quality impacts to wildlife species and habitat of cultural significance to Tribes and treaty fishing. See Section 1.1.2.7, Unquantifiable Oil Spill Costs, for further discussion.

Chapter 5: Cost-Benefit Comparison and Conclusions

5.1 Summary of costs and benefits of the proposed rule amendments

As stated in Chapter 1: "The authorizing statute (RCW 88.16.260(3)(d)) requires that this rulemaking 'be designed to achieve Best Achievable Protection' against oil spills." The stated intent of the legislation which established the baseline for this proposed rule is to reduce oil spill risk. As also mentioned in Chapter 1, Washington State has adopted a "zero spills strategy."[91]

The Oil Transportation Safety Committee, with its diverse representation (see Section 1.1.2) and formed to advise the Board of Pilotage Commissioners (BPC) in this rulemaking, made a consensus recommendation to the BPC to adopt the proposed rule amendments.[92]

[89] A Census block group is the smallest geographic unit for which the Census publishes sample data.
[90] Dept. of Ecology, Environmental Impact Statement, *Environmental Justice Discipline Report.*
[91] RCW 90.56.005(2), https://app.leg.wa.gov/RCW/default.aspx?cite=90.56.005
[92] OTSC meeting, 3/6/2025

Consistent with legislative direction, the proposed rule realizes our assessment of Best Achievable Protection, reduces oil spill risk, and in so doing, advances Washington State's "zero spills strategy."

Table 1 below summarizes the costs and benefits of the proposed rule.

Table 1 Cost/Benefit Summary of proposed rule

Topic	Estimated Costs	Qualitative Benefits	Quantitative Benefits
Area Expansion	$0.84 million /yr	Quantified oil spill risk reduction, realizes Best Achievable Protection	$1.4 million - $3.0 thousand/yr, depending on assumptions.[93]
Horsepower requirement and Twin Propellers	No additional cost to regulated entities.	Minor oil spill risk reduction, realizes Best Achievable Protection	Not estimated
Pre-escort conference	$15.8 thousand/yr	Minor oil spill risk reduction, realizes Best Achievable Protection	Not estimated

5.2 Conclusion

We conclude, based on a reasonable understanding of the quantified and qualitative costs and benefits likely to arise from the proposed rule amendments, as compared to the baseline, that the benefits of the proposed rule amendments are greater than the costs.

[93] See Section 4.2.1.2.

Chapter 6: Least-Burdensome Alternative Analysis

6.1 Introduction

RCW 34.05.328(1)(c) requires Ecology to "…[d]etermine, after considering alternative versions of the rule and the analysis required under (b), (c), and (d) of this subsection, that the rule being adopted is the least burdensome alternative for those required to comply with it that will achieve the general goals and specific objectives stated under (a) of this subsection." The referenced subsections are:

> (a) Clearly state in detail the general goals and specific objectives of the statute that the rule implements;
>
> (b) Determine that the rule is needed to achieve the general goals and specific objectives stated under (a) of this subsection, and analyze alternatives to rulemaking and the consequences of not adopting the rule;
>
> (c) Provide notification in the notice of proposed rulemaking under RCW 34.05.320 that a preliminary cost-benefit analysis is available. The preliminary cost-benefit analysis must fulfill the requirements of the cost-benefit analysis under (d) of this subsection. If the agency files a supplemental notice under RCW 34.05.340, the supplemental notice must include notification that a revised preliminary cost-benefit analysis is available. A final cost-benefit analysis must be available when the rule is adopted under RCW 34.05.360;
>
> (d) Determine that the probable benefits of the rule are greater than its probable costs, taking into account both the qualitative and quantitative benefits and costs and the specific directives of the statute being implemented.

In other words, to be able to adopt the rule, we must determine that the requirements of the rule are the least burdensome set of requirements that achieve the goals and objectives of the authorizing statute(s).

We assessed alternative proposed rule content and determined whether they met the goals and objectives of the authorizing statute(s). Of those that would meet the goals and objectives, we determined whether those chosen for inclusion in the proposed rule amendments were the least burdensome to those required to comply with them.

6.2 Goals and objectives of the authorizing statute

The authorizing statute for this rule is Chapter 88.16 RCW, Pilotage Act. Its goals and objectives are to:

- Realize Best Achievable Protection against oil spills. Best Achievable Protection, as defined in RCW 88.46.010, means the "highest level of protection that can be achieved with currently available technology and practices."

- Prevent the loss of human lives, loss of property and vessels, and to protect the marine environment of the state of Washington through the sound application of compulsory pilotage provisions in certain of the state waters.
- Enact new safety requirements designed to reduce the current, acute risk from existing infrastructure and activities of an oil spill that could eradicate our whales, violate the treaty interests and fishing rights of potentially affected federally recognized Indian tribes, damage commercial fishing prospects, undercut many aspects of the economy that depend on the Salish Sea, and otherwise harm the health and well-being of Washington residents.
- Consult with the United States coast guard, the Puget Sound harbor safety committee, potentially affected federally recognized Indian treaty fishing tribes, other federally recognized treaty tribes with potentially affected interests, ports, local governments, state agencies, and other appropriate entities before adopting tug escort rules applicable to any portion of Puget Sound.
- Design the rules with a goal of avoiding or minimizing additional underwater noise from vessels in the Salish Sea, focusing vessel traffic into established shipping lanes, protecting and minimizing vessel traffic impacts to established treaty fishing areas, and respecting and preserving the treaty-protected interests and fishing rights of potentially affected federally recognized Indian tribes.
- Consider the 2020 requirements, with the option of adjusting, suspending or leaving them unchanged.

6.3 Alternatives considered and why they were excluded

We considered the following alternative rule requirements, and did not include them in the proposed rule amendments. Each section below explains why we did not include these alternatives.

- Maintain without change the requirements in effect since September 1, 2020.
- Add functional and operational requirements for the current tug escort rulemaking area only.
- Remove the requirements which took effect September 1, 2020.
- Add tug escort requirements for all Board of Pilotage Commissioners Zones.
- Remove the 2020 escort requirements in Bellingham Channel and Waters East Zone.
- Maintain geographic escort area in effect since September 1, 2020 but remove requirements for barges and ATBs.
- Expand 2020 escort requirements to include the Haro Strait and Boundary Pass Zone.
- Expand 2020 escort requirements to include Haro Strait and Boundary Pass Zone and the expansion Area.

- Require use of a minimum of 3,000 horsepower escort tug.
- Require bollard pull and bollard pull testing for escort tugs.
- Require escort and auxiliary equipment for escort tugs.
- Require certification for escort tugs.
- Require tethering between escorted vessels and escort tugs.
- Require deck fittings for escort tugs.
- Require escort provider training and drills for escort tugs.

6.3.1 Maintain without change the requirements in effect since September 1, 2020.

We considered leaving the current tug escort requirements for the Rosario Strait and connected waters east unchanged. We determined this did not meet the Best Achievable Protection goal of the authorizing statute. The Spill Risk Model (Section 1.1.2.6) estimates a reduction in drift grounding and oil spill risk from the additional area requirements of the proposed rule. The added pre-escort conference and horsepower requirements were assessed by the expert opinion of the Oil Transportation Safety Committee (OTSC) to reduce oil spill risk as well.

6.3.2 Add functional and operational requirements for the current tug escort rulemaking area only.

We considered only adding functional and operational requirements and not expanding the area where tug escorts are required. We determined this did not meet the Best Achievable Protection goal of the authorizing statute. Expanding the tug escort zone, as in the proposed rule, further reduces oil spill risk, as estimated by Ecology's Spill Risk Model (see Section 1.1.2.6).

6.3.3 Remove the requirements which took effect September 1, 2020.

We considered suspending the requirements in effect since September 1, 2020 for Rosario Strait and connected waters east. For this alternative as well, we determined this did not meet the Best Achievable Protection goal of the authorizing statute. Ecology's Spill Risk Model (see Section 1.1.2.6) indicates an increased chance of a drift grounding and oil spill from removing the tug escort requirements currently in place (See Chapter 4 for discussion.)

6.3.4 Add tug escort requirements for all Board of Pilotage Commissioners Zones.

We considered requiring tug escorts for target vessels across all Board of Pilotage Commissioners (BPC) Zones. This alternative represented the full scope of potential rulemaking

and offered the highest oil spill risk reduction. However, this proposed alternative was eliminated because it likely had the highest potential for conflicts with treaty fishing, the largest increase in underwater noise impacts to SRKWs, and added the most vessel traffic. The OTSC also expressed concerns about applying the same requirements to Puget Sound's diverse geography. This alternative was determined to be more burdensome for covered parties after finding Ecology's risk model results showed varied benefits across zones, making a blanket requirement inefficient.

6.3.5 Remove the 2020 escort requirements in Bellingham Channel and Waters East Zone.

We considered removing tug escort requirements just in the Bellingham Channel Zone, based on model results showing a lower benefit in that zone. Pilots on the OTSC opposed removing the zones due to high currents and dangerous terrain in the Bellingham Channel Zone. The BPC agreed, concluding that removing the requirement would raise navigational risks and potential spill risk, contradicting the rulemaking's objectives. This alternative would not have met the statutory goal of realizing the Best Achievable Protection against oil spills.

6.3.6 Maintain geographic escort area in effect since September 1, 2020 but remove requirements for barges and ATBs.

We considered keeping the same geography as the 2020 requirements but removing the requirement for ATBs and barges. Our modeling showed that the highest oil spill risk benefit came from tankers. This alternative was eliminated because oil tankers represent only a small fraction of overall target vessels and therefore it would not meet the goal of realizing the Best Achievable Protection against oil spills.

6.3.7 Expand 2020 escort requirements to include the Haro Strait and Boundary Pass Zone.

We considered adding tug escort requirements to Haro Strait and Boundary Pass Zone. The model identified the highest potential for risk reduction in terms of oil volume at risk and escort efficiency in this zone. However, this risk reduction could be related to the high volume of vessel traffic in this zone. OTSC members highlighted the environmentally sensitive nature of this zone and risky areas for vessel traffic. However, feasibility concerns were raised regarding transboundary issues that would require the U.S. Coast Guard to work with Canada and agree on an approach. The BPC eliminated this alternative due to implementation challenges, potential avoidance of the escort requirements, and navigational safety. We also evaluated an alternative that included this geography as well as the expansion zone outlined in the proposed rule, but it was also eliminated for the same reason. Including this alternative rule content would not as effectively meet the goals of realizing Best Achievable Protection if we were to pursue them during this rulemaking. RCW 88.46.260 requires the effects of the proposed rule

be assessed by October 1, 2028. Any necessary updating of the proposed rule will be determined at that time.[94]

6.3.8. Expand 2020 escort requirements to include Haro Strait and Boundary Pass Zone and the expansion area.

We also evaluated an alternative that included the Haro Strait and Boundary Pass Zone as well as the expansion zone outlined in the proposed rule. This alternative was also eliminated due to implementation challenges, potential avoidance of the escort requirements, and navigational safety concerns. Including this alternative rule content would not as effectively meet the goals of realizing Best Achievable Protection if we were to pursue them during this rulemaking.

6.3.9 Require use of a minimum of 3,000 horsepower escort tug.

The Oil Transportation Safety Committee considered a minimum 3,000 hp for tugs escorting all small to medium sized oil carrying tank vessels. However, this would have been expensive to implement and the more nuanced approach of applying it only to oil carrying tank vessels larger than 18,0000 deadweight tons was chosen. This option would have been more burdensome to the regulated community. It would have restricted some operators of smaller oil carrying tank barges from their current practice of escorting those vessels with tugs of less than 3,000 horsepower.

6.3.10 Require bollard pull and bollard pull testing for escort tugs.

We considered a requirement for minimum bollard pull and/or ongoing bollard pull testing for tugs providing escort services required by this rulemaking. Bollard pull is a measure of the pulling power of a tug that is often used as a proxy for a tug's ability to control a ship. Bollard pull testing is the process of verifying that the tug can produce the bollard pull it is expected to. The OTSC noted that indirect bollard pull is a helpful indicator for escort tugs but that it is influenced by tug hull design and isn't defined in tug specifications. This requirement was eliminated because there are logistical and practical challenges with bollard pull testing and verification and bollard pull testing is already a Harbor Safety Committee Standard of Care. This alternative would have been more burdensome for covered parties.

6.3.11 Require escort and auxiliary equipment for escort tugs.

We considered a requirement for certain escort equipment on tugs providing escort services required by this rulemaking. Escort equipment such as high-performance render-recovery towing winches were discussed and found to be expensive and unnecessary for regional conditions. Firefighting equipment was discussed and was found to be more suitable for a sentinel tug. Space constraints and crew training requirements also make a requirement for

[94] RCW 88.46.260, https://app.leg.wa.gov/RCW/default.aspx?cite=88.46.260

firefighting equipment implementation impractical. The OTSC noted that escort tugs in the region already adhere to industry best practices, making equipment requirements redundant. This alternative would have been more burdensome for covered parties.

6.3.12 Require certification for escort tugs.

We considered a requirement for third party certifications to verify operational compliance with industry standards on escort capability and underwater vessel noise. This requirement was deemed too costly, and the number of escort-certified vessels in the region would be limited. This alternative would have been more burdensome for covered parties.

6.3.13 Require tethering between escorted vessels and escort tugs.

A requirement for escort tugs to remain tethered (connected to the escorted vessel by a tow line) at all times was considered to ensure immediate response capability. The OTSC eliminated this idea due to concerns about operational feasibility particularly in varying weather conditions and waterway constraints. There was also concern that this requirement could pose a safety risk by restricting the maritime operator's ability to use their expert discretion on safe operation and navigation of the vessel. This alternative would not have met the goal of preventing the loss of human lives, loss of property and vessels, and protecting the marine environment of the state of Washington through the sound application of compulsory pilotage provisions in certain of the state waters.

6.3.14 Require deck fittings for escort tugs.

Deck fitting requirements refer to the locations where the tow line between the tug and the escorted vessel attach. Deck fittings were not pursued as a tug escort requirement due to challenges in assessment, compliance, and enforcement. Their strength varies by vessel age, requiring extensive inspections. Additionally, setting minimum standards would impose significant engineering burdens. Existing industry practices already provide a more feasible approach. This alternative would have been more burdensome for covered parties.

6.3.14 Require escort provider training and drills for escort tugs.

The OTSC considered pursuing escort provider training and drills. This alternative was eliminated due to challenges with standardization, feasibility, and cost as well as industry variability. Pilots and escort providers already conduct impromptu and simulator-based training, but setting enforceable standards would be more burdensome to covered parties. Additionally, some escorted vessels operate under charter agreements, limiting the ability to conduct preplanned drills. The OTSC determined that voluntary training efforts and industry best practices were a more practical approach.

6.4 Conclusion

After considering alternatives, within the context of the goals and objectives of the authorizing statute, we determined that the proposed rule represents the least-burdensome alternative of possible rule requirements meeting the goals and objectives.

Chapter 7: Regulatory Fairness Act Compliance

We analyzed the compliance costs of the proposed rule amendments in Chapter 3 of this document. We determined that they did not impact small businesses (those with 50 or fewer employees at the highest level of ownership and/or operation). Of the small to medium sized oil carrying tank vessels identified as being subject to the proposed rule, all appear owned or operated by entities with fifty or more employees.

Based on this analysis, Ecology is exempt from performing additional analyses under the Regulatory Fairness Act. Specifically, RCW 19.85.025(4) reads: "This chapter does not apply to the adoption of a rule if an agency is able to demonstrate that the proposed rule does not affect small businesses."[95]

[95] RCW 19.85.025, https://app.leg.wa.gov/RCW/default.aspx?cite=19.85.025

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Appendix A: Administrative Procedure Act (RCW 34.05.328) Determinations

A. RCW 34.05.328(1)(a) – Clearly state in detail the general goals and specific objectives of the statute that this rule implements.

See Chapter 6.

B. RCW 34.05.328(1)(b) –

1. Determine that the rule is needed to achieve the general goals and specific objectives of the statute.

See chapters 1 and 2.

2. Analyze alternatives to rulemaking and the consequences of not adopting this rule.

Under state law, the Board of Pilotage Commissioners is required to engage in formal rulemaking to implement Section 3 of Engrossed Substitute House Bill 1578 (2019), as codified in Chapter 88.16.260 RCW. The Legislature directed the Board, in consultation with the Department of Ecology, to adopt tug escort rules for certain tank vessels operating in Puget Sound by December 31, 2025. Ecology received funding through the Legislature beginning in the 2023-2025 biennium to support this rulemaking.

Chapter 88.16.190 RCW includes provisions for tank vessels covered under this rulemaking, effective since September 1, 2020 (RCW 88.16.190(2)(a)(ii)). RCW 88.16.260 specifically directs the Board to engage in rulemaking to suspend or expand the 2020 requirements and to address the unique operational challenges of Puget Sound through consultation with appropriate entities. It also mandates that the rulemaking process be designed to ensure best achievable protection, minimize additional underwater noise, focus vessel traffic into established shipping lanes, and protect treaty-protected fishing rights.

Alternatives such as interpretive policies or voluntary industry standards fall short of establishing the comprehensive, enforceable framework mandated by RCW 88.16.260 that can only be accomplished through rulemaking. Not pursuing formal rulemaking could result in significant regulatory gaps and inconsistent safety and environmental standards.

Please see the Least Burdensome Alternative Analysis, Chapter 6 of this document, for discussion of alternative rule content considered.

C. RCW 34.05.328(1)(c) - A preliminary cost-benefit analysis was made available.

When filing a rule proposal (CR-102) under RCW 34.05.320, Ecology provides notice that a preliminary cost-benefit analysis is available. At adoption (CR-103 filing) under RCW 34.05.360, Ecology provides notice of the availability of the final cost-benefit analysis.

D. RCW 34.05.328(1)(d) – Determine that probable benefits of this rule are greater than its probable costs, taking into account both the qualitative and quantitative benefits and costs and the specific directives of the statute being implemented.

See Chapters 1 – 5.

E. RCW 34.05.328 (1)(e) - Determine, after considering alternative versions of the analysis required under RCW 34.05.328 (b), (c) and (d) that the rule being adopted is the least burdensome alternative for those required to comply with it that will achieve the general goals and specific objectives stated in Chapter 6.

Please see Chapter 6.

F. RCW 34.05.328(1)(f) - Determine that the rule does not require those to whom it applies to take an action that violates requirements of another federal or state law.

The proposed rule does not require those to whom it applies to take an action that violates the requirements of another federal or state law. Under RCW 88.16.260, the Board has the authority to establish minimum tug escort requirements for certain vessels in Puget Sound. This rule amendment aligns with state directives issued during the 2019 legislative session.

This rule amendment also aligns with federal requirements, specifically United States Coast Guard regulations in 33 CFR Part 168, Escort Requirements for Certain Tankers. The federal requirements that apply to Puget Sound and certain associated waters, as defined in 33 CFR § 168.40(b), apply only to single hull, laden tankers of 5,000 gross tons or more (33 CFR § 168.20). However, all tankers operating in Puget Sound are double hull, making these federal requirements inapplicable to tank vessels in the region where these state requirements apply.

In 1992, the International Convention for the Prevention of Pollution from Ships (MARPOL) adopted a rule requirement to make it mandatory for tankers greater than or equal to 5,000 DWTs to be fitted with double hulls.[96] In alignment with this international requirement, federal law also mandates double hulls for certain vessels designed to carry oil in bulk when operating on U.S. waters (46 U.S.C. § 3703a).[97]

G. RCW 34.05.328 (1)(g) - Determine that the rule does not impose more stringent performance requirements on private entities than on public entities unless required to do so by federal or state law.

The rule applies equally to both private and public entities and does not impose stricter performance requirements on either. The proposed rule under Chapter 363-116 WAC will apply to all entities subject to the rule, regardless of ownership or operator.

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[96] International Maritime Organization. *Construction Requirements*.
https://www.imo.org/en/OurWork/Environment/Pages/constructionrequirements.aspx
[97] 46 U.S.C. § 3703a Tank vessel construction standards:
https://uscode.house.gov/view.xhtml?req=granuleid:USC-prelim-title46-section3703a&num=0&edition=prelim

H. RCW 34.05.328 (1)(h) Determine if the rule differs from any federal regulation or statute applicable to the same activity or subject matter.

Yes

- If **yes**, the difference is justified because of the following:

  ☐ (i) A state statute explicitly allows Ecology to differ from federal standards.

  ☒ (ii) Substantial evidence that the difference is necessary to achieve the general goals and specific objectives stated in Chapter 6.

The proposed rule amendment is necessary to align with the statutory changes enacted during the 2019 legislative session. Through ESHB 1578 and codified in RCW 88.16.260, the Legislature directed the Board to engage in rulemaking to address the significant risks posed by existing infrastructure and activities. Specifically, the Legislature's intent is to enact safety measures aimed at reducing the acute risk of an oil spill that could, "eradicate our whales, violate the treaty interests and fishing rights of potentially affected federally recognized Indian tribes, damage commercial fishing prospects, undercut many aspects of the economy that depend on the Salish Sea, and otherwise harm the health and well-being of Washington residents."

While federal regulations under 33 CFR § 168 set escort requirements for certain tankers, they are limited in scope—specifically applying only to single-hull tankers in Puget Sound and its associated waters. These regulations do not apply to the broader range of vessels operating in Puget Sound today, including double hull tank vessels, leaving a critical safety gap that this proposed rule amendment seeks to fill.

The Board, under the authority granted by Chapter 88.16 RCW, has the discretion to adopt rules that are more stringent or broader in scope than federal requirements. The additional escort tug regulations proposed in this rule amendment are designed to mitigate the risk of oil spills from vessels that are currently in operation in Washington waters, including those not covered by federal law.

This rule amendment aligns with the Legislature's mandate and takes a proactive step to further reduce the risk of oil spills in Puget Sound, safeguarding its dependent communities from avoidable environmental and economic damage.

I. RCW 34.05.328 (1)(i) – Coordinate the rule, to the maximum extent practicable, with other federal, state, and local laws applicable to the same subject matter.

Under RCW 88.16.260, the Board is required to consult with the Department of Ecology, the U.S. Coast Guard, the Puget Sound Harbor Safety Committee, potentially affected federally recognized Indian treaty fishing Tribes, other Tribes with relevant interests, ports, local governments, state agencies, and other key stakeholders before adopting tug escort rules for Puget Sound.

To help facilitate this process, the Board established the Oil Transportation Safety Committee (OTSC), which provides analysis and recommendations on the rulemaking. The OTSC includes members from diverse maritime interests in the Salish Sea.

In collaboration with Ecology, the Board has actively engaged with the OTSC, federal, state, and local agencies, Tribes, and other stakeholders to gather input throughout the rulemaking process