Newport Commercial Marina Section 107 Navigation Project

Draft Integrated Feasibility Report and Environmental Assessment

Appendix B – Economics Appendix

US Army Corps of Engineers ®
Portland District

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CONTENTS

TABLES

FIGURES

1 Executive Summary

The economic analysis presented in this appendix evaluates an array of four alternatives for improving navigation at the Port of Newport Commercial Fishing Marina. Each alternative is some combination of seven measures defined by the Project Development Team (PDT), that will each serve to improve the navigability of a portion of the Marina. Locations of the measures are the: 1. West Entrance Channel, 2: Port Dock (PD) 5 Channel, 3. Hoist Dock Access Channel, 4. Hoist Dock Moorage Area, 5. PD 7 Channel, 6. PD 7 Moorage Area, and 7. East Entrance Channel.

Based on National Economic Development (NED) analysis, the recommended plan is Alternative 3. This will construct the West Entrance Channel, PD 5 Access Channel, PD 7 Access Channel, Hoist Dock Access Channel, Hoist Dock Moorage Area, and will deepen the PD 7 Moorage Area. It has average annual equivalent benefits (AAEQ) of $642,000, a median benefit-cost ratio (BCR) of 1.1, and a median annual net benefit of $77,000. All costs and benefits presented are at the Oct. 2024 price level with a 3% discount rate.

Table 1: Summary of Costs and Benefits by Alternative (JUN 2025 Price Level, 3% Discount Rate, $1000s)

Alternative	Present Value Benefits*	AAEQ Benefits	Present Value Costs	AAEQ Costs	Net AAEQ Benefits	Benefit-Cost Ratio
2	$13,714	$533	$14,056	$546	-$13	1.0
3	$16,519	$642	$15,546	$565	$77	1.1
4	$12,994	$505	$20,425	$794	-$289	0.6
5	$15,798	$614	$20,933	$814	-$200	0.8

*This table shows benefits for the median benefit scenario considered, which was estimated through simulations using Palisades' @Risk, a Microsoft Excel Add-In.

Table 2: Sensitivity Analysis for Recommended Plan (JUN 2025 Price Level, 3% Discount Rate, $1000s)

Scenario*	Present Value Benefits	AAEQ Benefits	Present Value Costs	AAEQ Costs	Net AAEQ Benefits	Benefit-Cost Ratio
Low	$14,203	$552	$15,546	$565	-$13	1.0
Q1	$16,107	$626	$15,546	$565	$61	1.1
Median	$16,519	$642	$15,546	$565	$77	1.1
Q2	$16,905	$657	$15,546	$565	$92	1.2
High	$19,015	$739	$15,546	$565	$174	1.3

*Based on @Risk simulations.

2 Introduction

The purpose of this economic analysis is to evaluate whether the proposed navigation improvements at the Port of Newport Commercial Fishing Marina are economically justified. This analysis is conducted from a NED perspective where NED benefits are defined as the change in value of goods and services that accrue to the Nation as a whole as a result of constructing the project. National Economic Development costs are defined as the total economic costs of constructing and maintaining the project. The average annual equivalent economic benefits of the project are divided by the average annual equivalent economic costs to calculate a range of benefit-cost ratios (BCR). A project with a BCR greater than 1.0 is considered economically justified under NED evaluation framework.

All prices listed in this appendix are reported in current (FY25) dollars. Guidance is contained in USACE Engineering Regulation (ER) 1105-2-103, ER 1105-2-100 Appendix D: Economic and Social Considerations, Engineering Pamphlet (EP) 1105-2-58: Continuing Authorities Programs, as well as recent Economic Guidance Memoranda (EGMs) issued by Headquarters USACE.

2.1 Project Location and Description

Newport is located in Lincoln County, Oregon (Figure 1), on the state's central coast. The city lies at the mouth of the Yaquina River, where it empties into the Pacific Ocean. Most of the City of Newport lies between river miles 1 and 2 within the Yaquina Bay estuary and is located on both its north and south shore. It is the most populous city in Lincoln County and the County Seat. Nine river miles to the east of Newport sits Toledo, the third most populous city in the County. The Port of Toledo is home to a shipyard frequently used by Newport's fleet.

The study area includes the portion of Yaquina Bay bounded to the west by US-101 and to the east by the Port of Newport's International Terminal (Figure 2). The estuary covers approximately 2,000 acres at MLLW and 4,000 at MHHW. The Federal Navigation Channel (FNC) in the Yaquina River includes a turning basin and reaches 14 miles upriver. USACE also maintains an FNC within the Port of Newport's Recreational Marina. Other USACE projects in the Yaquina Bay Estuary include the North and South Jetties at the Bay's entrance, as well as breakwaters at both the recreational marina and commercial marina.

The Port of Newport incorporated and began commercial fishing operations on the north shore of the Yaquina Bay Estuary in 1932. Construction of a breakwater protecting the commercial fishing marina was authorized in 1946 as a 2,650-foot-long timber structure; this project allowed the Port to expand their commercial fishing marina, and it developed over the years into the facility that exists today.

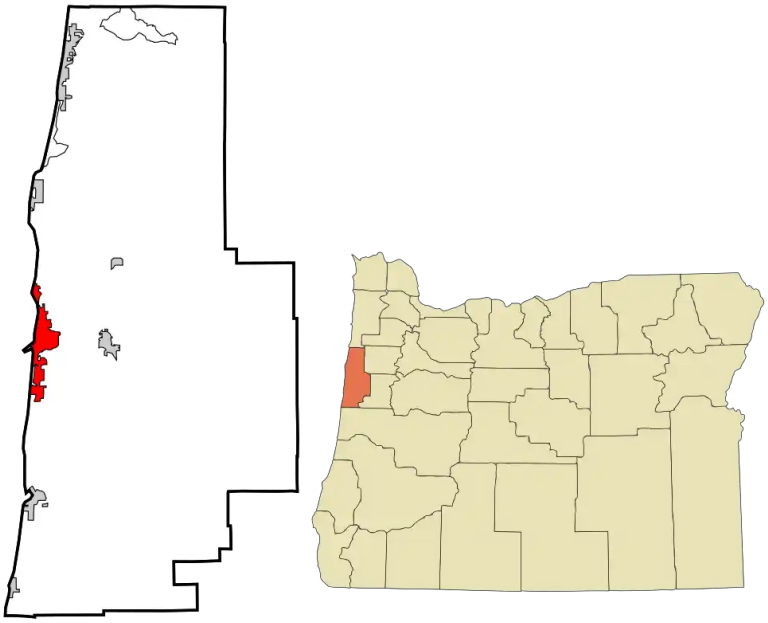

Figure 1. Location of Lincoln County within Oregon to the right and The City of Newport within Lincoln County to the left

The marina has 98-34-foot slips, 26–42-foot slips, 2–44-foot slips, and 22 slips for vessels 65 to 80 feet in length. There is a hoist dock at the rear of the marina with four hoists, only two of which are operational. Also at the rear of the marina is a maintenance dock. Pacific Seafoods operates a fish processing facility within the marina, just past the west entrance, and live seafood purchasing business is mostly conducted at the hoist dock.

The Commercial Fishing Marina is owned and operated by the Port of Newport. It is a part of the larger Port of Newport system which includes the Recreational Marina on the south shore of the Yaquina Bay Estuary and the International Terminal which lies on the north shore just past the Commercial Marina. The Port's International Terminal was built by a private company in 1948 that mainly dealt in timber exports. The Port of Newport purchased the International Terminal in 1982 – during a time of declining business – and timber shipping operations from the terminal ceased in 1999. Since then, the International Terminal has instead been used as a moorage area and staging site for vessels too large to moor within the Commercial Marina itself.

The Marina offers a range of services and facilities to commercial fishing vessels. An east-west breakwater bounds the marina to the south and separates it from the rest of the Yaquina Bay Estuary. Vessels can access the marina through two access channels at the west and east end of the breakwater. Three moorage areas are available to users; Port Dock 3 is the westernmost dock within the breakwater, Port Dock 5 is to the east of Port Dock 3, and Port Dock 7 is to the east of Port Dock 5, with the East Access channel of the Marina lying just beyond it. Between Port Dock 5 and 7 there is a dock with hoist cranes and a maintenance dock.

Figure 2: The Study Area at Newport

2.2 Purpose, Problems and Opportunities

The purpose of the project is to improve access to and maneuverability within the Commercial Marina for the existing and emerging commercial fishing fleet. Current trends in commercial fishing indicate that existing vessels are being enlarged and will continue to grow larger in coming years – this will be covered in more depth in the next section.

The existing navigation channels, berthing, and moorage areas serving the Newport Commercial Marina have had no significant modification or updates since construction in the 1940s and are now too shallow and narrow for the existing fleet and this emerging larger commercial fishing fleet. As a result, vessels encounter navigational and operational inefficiencies. These negative impacts will only get worse as the fleet continues to consolidate and convert to larger vessels. Federal investment is necessary to improve navigation conditions, dock layout, and moorage areas in order to remediate current operational inefficiencies.

Below are some of the problems arising from the current state of the Newport Commercial Fishing Marina, as well as the opportunities this CAP 107 project would create.

Problems:

- Increased costs
- Increased risk of vessel damages
- Decreased operational safety
- Decreased availability of safe harbor moorage

Opportunities:

- Promote and support regional economic development
- Improve efficiency of current and future fleet
- Improve waterway safety
- Improve navigability of the marina
- Beneficial use of dredged material
- Minimize marina maintenance expenditure

3 Marine Resources

Newport is home to the second largest commercial fishing operation in the State of Oregon and is consistently a top 15 port nationwide in terms of catch volume (National Oceanographic and Atmospheric Administration). Approximately 15-20% of the state's catch volume is landed at Newport, but its prolific Dungeness crab fisheries help it carve out a 30-40% share of the state's ex-vessel catch value (Oregon Sea Grant, 2024). Newport's commercial fishing marina, and the Dungeness crab fishery in particular, is a strong driver of the local economy. Lincoln county has the highest rate of employment in the commercial fishing industry state-wide (State of Oregon Employment Department, 2024). This section discusses the fisheries, historical landings, and future outlook of the commercial fishing industry at Newport.

3.1 Commercial Fisheries Overview

Commercial fishing industries first emerged in Coastal Oregon during the 1860s. The earliest Oregon Coast commercial fisheries were primarily for oysters and salmon. The first commercially harvested oyster fisheries were developed at the mouth of the Yaquina River in Newport. Within several decades, the unchecked growth of the new industry had severely depleted both oyster and salmon populations down the Oregon Coast. Commercial harvesting of the Olympia Oyster nearly wiped out the entire species and it is still considered functionally extinct in the wild (Oregon History Project).

In modern times, most of the value generated at Newport comes from the Dungeness crab and pink shrimp fisheries. Weight-wise, Newport brings in roughly ten times more hake year over year than its next biggest catch. Other notable fisheries at Newport are sole, rockfish, chinook salmon, and albacore. (ODFW 2024).

3.2 Historical Catch and Value

The table below shows the past 10 years of total landings at Newport. Most variation in catch value is due to changes in high value species catches such as Dungeness and pink shrimp, while variation in total weight is usually due to changes in hake catches. Newport is consistently ranked in the (NOAA 2015-2024).

Table 3: Commercial landings at Newport Marina 2015-2024

Year	Rank (national, by weight) *	Millions of Pounds	Millions of Dollars	Millions of Dollars, Adjusted†
2015	21	67.7	$33.2	$43.7
2016	13	84.9	$48.0	$62.9
2017	12	114.9	$52.7	$68.5
2018	11	124.9	$62.4	$79.2
2019	12	123.1	$58.2	$71.8
2020	10	118.8	$59.8	$72.0
2021	14	114.5	$74.4	$88.0
2022	11	101.5	$47.7	$53.8
2023	-	97.2	$62.0	$64.6

Year	Rank (national, by weight) *	Millions of Pounds	Millions of Dollars	Millions of Dollars, Adjusted†
2024	-	50.0	$59.4	$59.4

*NOAA has not published their *Fisheries of the United States* report since 2022 †FY24 dollars, PPI adjusted

3.3 Commercial Fisheries Outlook

Newport's commercial fishing fleet is strong and that is expected to remain true across this study's 50-year period of analysis. It is reasonable to expect that the total number of vessels at Newport will grow with improvement to marina facilities. The current trend in vessels indicates that the physical size of ships using the facilities at Newport will also grow. Widening is a popular modification amongst vessel owners as increasing breadth does not incur the additional registration fees that come along with lengthening. Newport is one of the top commercial fishing marinas on the Oregon coast, near some of the best crabbing waters in the West, it is expected to remain one of the most popular marinas for commercial fishermen.

3.4 Socioeconomics

The City of Newport is the largest city in and county seat of Lincoln County. It is the third largest city on the Oregon coast, behind Astoria and Coos Bay. It stretches from the Pacific Coast to approximately river mile 3 on the Yaquina River on the north bank of the Yaquina Bay Slough. A small part of Newport also extends over the Yaquina Bay Estuary to the south bank of the Yaquina River – this part of the city is commonly called South Beach. South Beach is home to the Port of Newport Recreational Marina, the NOAA Pacific Marina Operations Center, the Hatfield Marine Science Center, the Oregon Coast Aquarium, and several other tourist attractions.

Table 4: Population

Area	% Change 2010-2020	2010	2020
Newport	2.7%	9,989	10,256
Oregon	10.7%	3,831,074	4,240,137
United States	7.7%	309,349,689	333,287,562

*2010 and 2020 Censuses

Table 5: Population by Race

	Newport	Oregon	United States
Total	10,256	4,240,137	333,287,562
White	80.6%	74.5%	60.9%
Black or African American alone	0.3%	1.8%	11.9%
American Indian and Alaska Native alone	3.6%	0.7%	0.5%
Asian alone	1.3%	4.5%	5.8%
Native Hawaiian and Other Pacific Islander alone	0.2%	0.4%	0.2%

	Newport	Oregon	United States
Two or more races	9.7%	11.9%	12.5%
Hispanic or Latino	9.6%	14.4%	19.1%
White alone, not Hispanic or Latino	78.4%	71.6%	57.7%

*2020 Census

Similar to most of Oregon outside of the Portland Metro Area, the vast majority of the Coos Bay area's population is white, at 80.6%.

3.5 Employment and Income

As of 2022, 87% of the Coos Bay area's population is over 16 years old at 8,952; of those, 4,556 are in the labor force and 4,208 of them are employed. These numbers put the unemployment rate in Newport at 7.6%. Of the employed population, 79% work in service, business, or sales occupations. 6% of the population in the Coos Bay area works in construction and extractive industries, it is within that 6% that people working in the fishing industry would be working. This code includes sectors such as logging, mining, construction, etc. Census data do not break down the industry into more granular segments that would allow the total number of people working in the commercial fishing industry to be parsed out.

Table 6. Employment Statistics

	Newport	Oregon	United States
Civilian employed population 16 years and older	4,208	2,095,363	162,590,221
Occupation			
Management, business, science, and arts occupations	1,482 [35%]	906,473 [43%]	69,122,191 [43%]
Sales and office occupations	914 [22%]	397,607 [19%]	32,236,485 [20%]
Service occupations	905 [22%]	361,183 [17%]	26,256,366 [16%]
Construction and extraction occupations	256 [6%]	98,557 [5%]	7,951,879 [5%]
Production, transportation, and material moving occupations	651 [15%]	247,417 [12%]	21,207,794 [13%]

*ACS 5-Year Estimates Subject Tables

Median household income in the Coos Bay area was $57,213 in 2023, well below the Oregon median of $80,160 and the national median of $77,719. Household incomes by percentage of

total population are shown below. Worth noting is that about half of the working age population of Newport is not currently in the labor market. This might explain the significantly lower median income in the area.

Table 7: Family Income Statistics

	Newport	Oregon	United States
Households	4,796	1,752,050	125,736,353
Less than $10,000	5.6%	5.0%	4.9%
$10,000-$14,999	5.5%	3.4%	3.8%
$15,000-$24,999	6.0%	6.4%	7.0%
$25,000-$34,999	9.8%	6.2%	7.4%
$35,000-$49,999	16.4%	9.9%	10.7%
$50,000-$74,999	19.6%	16.0%	16.1%
$75,000-$99,999	10.0%	13.5%	12.8%
$100,000-$149,999	15.0%	18.4%	17.1%
$150,000-$199,999	6.4%	9.4%	8.8%
$200,000 or more	5.7%	11.8%	11.4%
Median	$57,213	$80,160	$77,719

*ACS 1-Year Estimates Data Profiles

4 Economic Analysis

4.1 Purpose and Scope

The purpose of this economic analysis is to evaluate the economic impacts of each plan presented in the final array of alternatives. The analysis evaluates economic impacts on each of the four P&G accounts: National Economic Development, Regional Economic Development (RED), Environmental (EA), and Other Social Effects (OSE), each aiming to improve navigation conditions withing the Newport Commercial Marina.

4.2 General Methodology

Economic analysis for this project can be broken down into several steps. The first step was to identify the NED benefit category for the project. NED benefits in this study are vessel operating cost (VOC) reductions that are expected to occur with the successful completion of the recommended plan. VOC reductions come from two sources in this project: First is a reduction in moorage and equipment storage fees due to increased annual moorage capacity arising from the dredging of the PD 7 Moorage Area and the Port's concurrent local service facility (LSF) improvement rearranging and updating the PD 7 facilities to accommodate more and larger vessels; second is transportation time savings resulting from defined access channels and greater width and depth throughout the Marina. In order to collect accurate figures on operational conditions of vessels, the team worked closely with marina staff and boat captains. Data was collected primarily through personal interviews with vessel captains and meetings with Port staff. Captains provided information on their transportation inefficiencies and regular operations, Port staff provided information on the fleet and moorage rates.

NED benefits in this report are calculated in compliance with the USACE Engineer Regulation 1105-2-103: Policy for Conducting Civil Works Planning studies, and other relevant planning guidance. All future costs and benefits are adjusted to FY 2025-dollar values by discounting – adjusting future values to reflect the time value of money – using the current FY 2025 federal discount rate of 3%. Values are then converted to an average annual equivalent (AAEQ) – an amortized value over the period of analysis of the present worth of costs and benefits in the base year. A range of AAEQ costs and benefits are calculated for a range of outcomes in order to account for uncertainty. The AAEQ costs and benefits are then used to calculate a range of benefit cost ratios (BCRs), an important tool in evaluating the economic justification of each alternative. Generally, the BCR maximizing plan is the NED maximizing, and therefore preferred, plan. NED benefits were extrapolated using information collected from vessel captains and Port staff.

5 Existing Conditions

5.1 Tidal Range

Tides at Newport follow a mixed semi-diurnal pattern. Semi-diurnal means there are two high tides and two low tides in a lunar day, and mixed means that the two sets of daily tides are of different heights. The National Oceanic and Atmospheric Association maintains their Marina Operations Center – Pacific (MOC-P) in the South Beach area of Newport. It is one of three such MOCs in the United States. Tide data at Newport are continuously collected at this South Beach center. The below table shows the current tidal datums relative to the MLLW at Newport (NOAA Tides and Currents).

Table 8. Newport Tidal Datums

Datum	Value
Highest Observed Tide	12.43
Mean Higher High Water (MHHW)	8.34
Mean High Water (MHW)	7.64
Mean Sea Level (MSL)	4.45
Mean Low Water (MLW)	1.38
Mean Lower Low Level (MLLW)	0.00
Lowest Observed Tide	-3.34

*From NOAA Currents and Tides data

5.2 Current Marina Characteristics

Newport's Commercial Fishing Marina is home to one of the largest commercial fishing fleets in Oregon. According to documents from the Port, 151 vessels moor at Newport on an annual or semi-annual basis. Total vessels delivering catch to Newport is generally over 300 in a calendar year.

It is the second largest port by catch volume and value in the state and is adjacent to the most crabbed waters in Oregon. The marina is home to a large homeport fleet and serves many transient vessels that travel to harvest fisheries in the waters surrounding Newport – mainly Dungeness crab and pink shrimp. Transient vessels come from all up and down the West Coast, from Alaska to California. Conditions in the marina are such that transient vessels often do not have a dedicated slip to tie at. Captains report transient vessels rafting four or five ships deep in and around the marina during busy seasons – particularly during crab and squid seasons.

Newport's Commercial Fishing Marina is divided into three odd-numbered moorage areas called "Port Docks" 3-7. Most of Newport's home fleet moors at Port Dock 5; Port Dock 3 is just one float and only offers side-tie moorage, while Port Dock 7 lacks sufficient depth and maneuverability to host the larger vessels that make up the Newport home fleet. A channel runs between Port Docks 5 and 7, allowing access to facilities at the back of the marina.

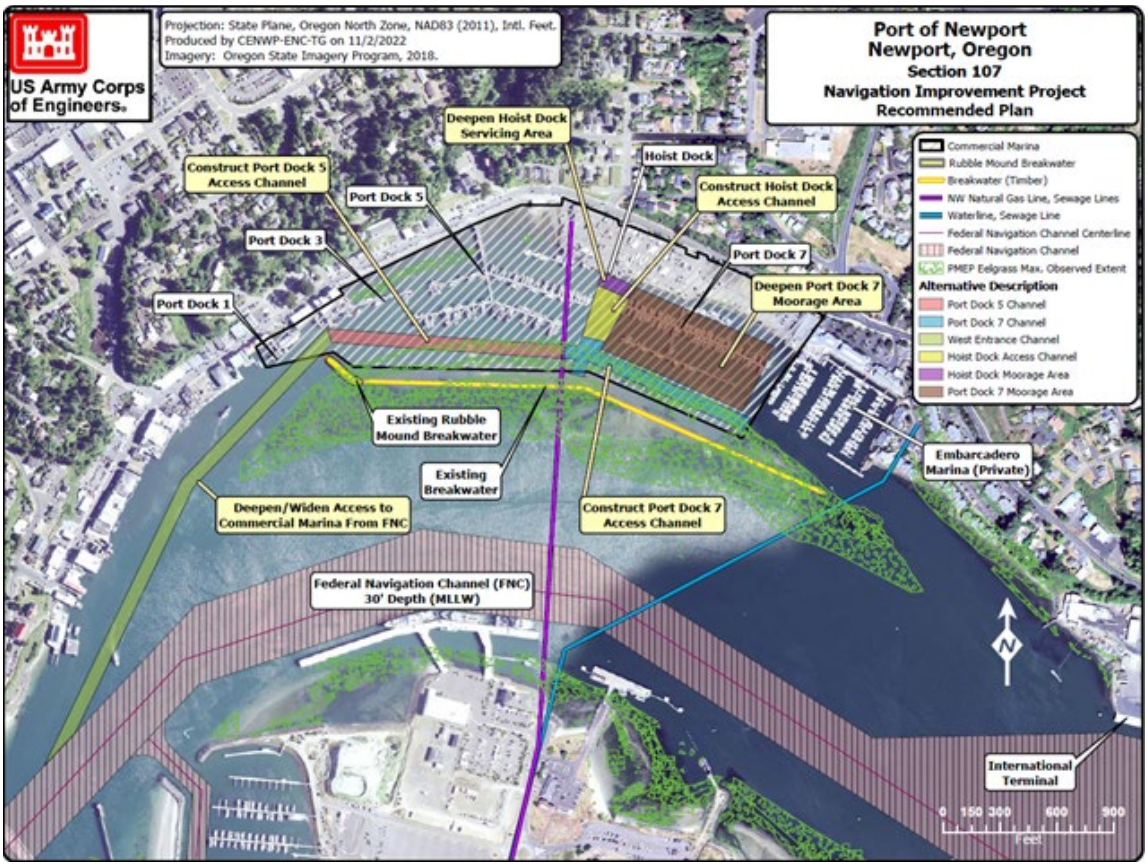

Figure 3. Map of Marina Facilities

At the back of the marina, there is a dock with hoist cranes – the “hoist dock” – and a maintenance dock called “Swede’s dock.” There are two operational hoists at the hoist dock and two older swing cranes that are inoperable. Current depths in the hoist dock access channel make it difficult or impossible for larger vessels in the Newport fleet to access the hoists and Swede’s dock. Some vessels cannot make it back to those two facilities at all while others have to wait for a high tide in order to have the necessary depth to reach them. Vessels that are unable to reach the hoists have to truck their gear to and from the International Terminal for loading and offloading. Vessels that cannot access Swede’s dock have to conduct maintenance that can be done in their slip in their slip or otherwise at the International Terminal. In both cases, vessels do not have access to shore power that would be available to them at Swede’s dock and must use fuel powered generators for electricity. Also only accessible by way of the Hoist Dock Access Channel is the Marina’s Fuel Dock. If there is inadequate depth in the Hoist Dock Access Channel for vessels to reach the fuel dock, they instead have to move to the International Terminal and wait for the fuel dock to send a fuel truck over in order to fuel their ship.

With the closure of Bornstein’s processing plant at Newport in 2024, Pacific Seafood’s plant at Newport is the only major commercial seafood processor at the marina. Their plant is located on the north shore of the marina, just past the western breakwater entrance between Port Dock 1 and Port 3. Besides the major processor, fishermen can also sell their catch to smaller seafood dealers located at and around the hoist dock facility. These operators mainly deal in live catch and have limited capacity to produce or sell on seafood to be used as a final processed

commodity.

Figure 3 above shows the marina with all port properties labeled, the Pacific Seafood processing plant is the collection of buildings on the north shore sitting between Port Docks 1 and 3. Port Dock 1 is has a small side-tie area that can fit 2-3 vessels but mainly serves as a haul out area for sea lions and is mostly a tourist attraction colloquially known as the “Sea Lion Docks.”

Currently, the Port of Newport does not dredge the entrance channels to the marina or the access channels within the marina at all. Neither the entrance nor the access channels have defined boundaries besides those set by the breakwater and dock structures within the marina and their depths are inconsistent throughout. Due to this, there are limited aids to navigation in and around the marina. Only a buoy marking the split between the FNC and the western access channel to the marina and aids at the western entrance exist.

Due to the lack of maintenance dredging and poorly defined boundaries, depth is not guaranteed throughout navigation channels in the marina. Depth within the western entrance channel is generally at least -20 feet MLLW but has relatively steep edges sloping up to -10 feet MLLW near the western marina entrance (Figure 4). Channels within the marina are generally at least -16 feet MLLW, but there are shoals in several places throughout the marina that make navigation difficult.

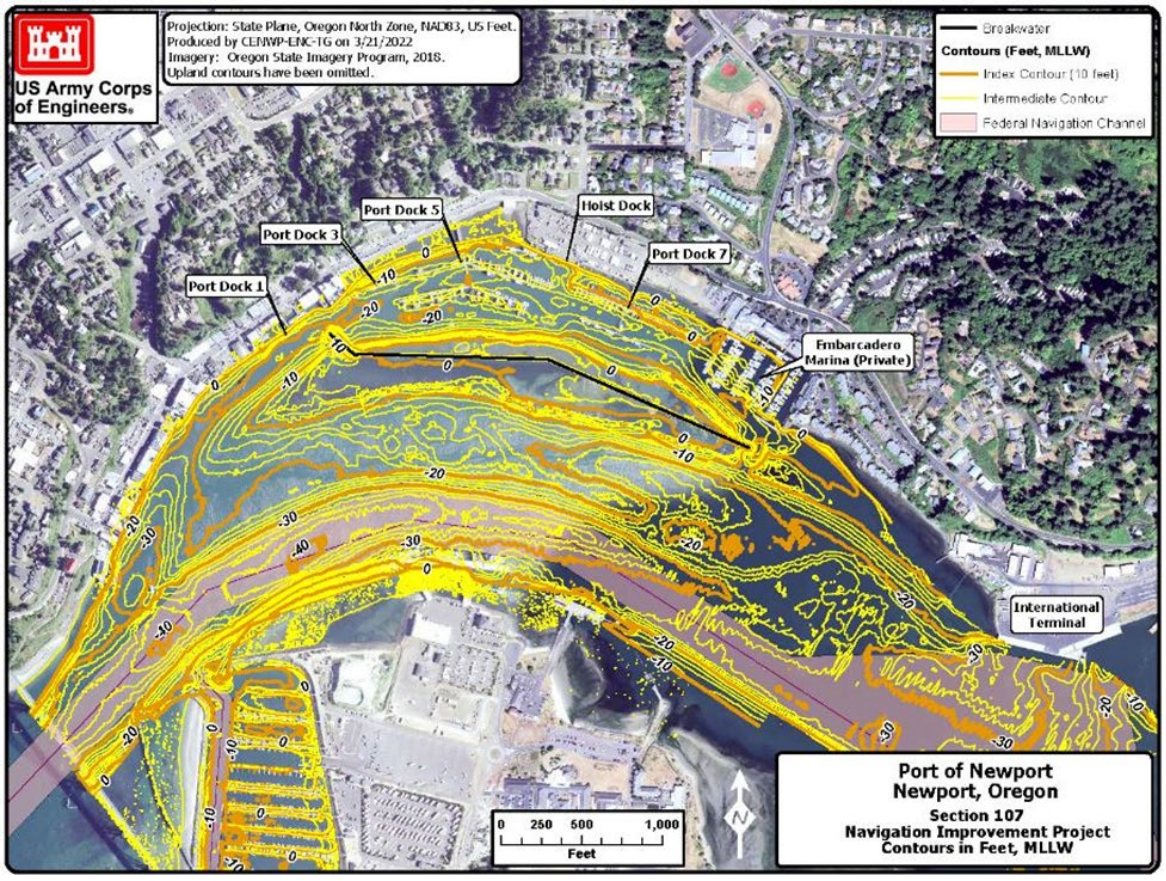

Figure 4. Contour map of the Commercial Marina

5.3 Fleet Characteristics

This section discusses the makeup of Newport's commercial fishing fleet and their operations. The homeport fleet at Newport is composed of 149 vessels. For the purpose of this study, vessels are broken up into different length classes with similar operational costs. A summary of vessels by length class is presented in Table 9 below.

Table 9. **Vessel Population Summary**

Length	Count	Percent
21-27	3	2%
28-36	23	15%
37-45	38	26%
46-60	53	36%
60+	32	21%

Publicly available information on commercial fishing vessels in Oregon is very limited; all detailed information in this study comes directly from vessel captains.

Newport is a major hub of shrimping and crabbing in Oregon, no other port in the state lands as much Dungeness crab as the Port of Newport. Vessels come from all up and down the West Coast to crab waters around Newport. Annual Dungeness landings at Newport are often double those of Astoria or Charleston. Aside from Dungeness, Newport is also a popular port for vessels fishing pink shrimp and Pacific hake (whiting).

There is also a subset of Newport's home fleet that spends most of its year fishing off the coast of Alaska. Many of the larger vessels over 90 feet in length that homeport at Newport fish Alaskan waters about nine months out of the year and moor at Newport in their off-season. There are roughly a dozen vessels in this fleet known as the "distant waters fleet." The size of these ships means they cannot moor safely in the Marina, and they are forced to moor full time at the Port's International Terminal. Often, they raft 3-4 vessels deep there.

5.4 Summary

The Commercial Fishing Marina at Newport and the facilities inside of it are only accessible by using poorly marked and non-maintained natural channels. Depth constraints and poor navigability to and within the marina has created conditions in which vessels in the Newport home fleet are unable to use the moorage, hoist, and maintenance facilities within the marina. Those vessels are forced to load, unload, tie up, and perform maintenance at the Port of Newport's international terminal. Even for vessels that are able to enter and navigate within the marina, poor navigation conditions make maneuvering difficult, inefficient and often cause traffic and delays.

6 Without - Project Conditions

6.1 Assumptions

In order to conduct this analysis, there must be several simplifying assumptions. First, it must be assumed that the number of vessels in the commercial fishing fleet at Newport will remain relatively stable over the study period. The marina is already at capacity, absent any improvement there is no reason to assume the fleet at Newport might grow. Across Oregon, the commercial fishing fleet has remained relatively stable over the last 25 years, with landing size and value having slightly increased over the same time period. On the other side, the fleet at Newport is not expected to shrink either. Employment in Oregon's maritime sector has consistently seen growth over the past three years; this includes employment in fishing and fishing support services. As of 2024, the State of Oregon expects the sector to continue growing and adding new jobs (Oregon's Maritime Sector Analysis, OED 2024). The waitlist for annual moorages at Newport provides evidence of a healthy fleet maintaining its size. There is no reason to expect statistically significant change in the fleet size present at Newport.

Without-project conditions also assume that vessels currently on the waitlist will not be able to obtain annual moorages. The marina is currently at capacity for annual moorage and there is no reason to expect that the wait would shorten absent additional accessible slips. In addition to vessels currently on the waitlist for annual moorages, it is not expected that any of the vessels currently having to use the International Terminal for moorage will be able to transition using traditional moorage within the marina. These vessels are depth constrained and will not be able to access the marina without the federal dredging problem. The only moorage rates available to vessels that moor at the International Terminal are at daily rates double the daily rate charged to vessels that are able to moor in the marina, and about ten-fold the costs of monthly moorage charges. Vessel operators will continue to bear the financial burden of paying the International Terminal's moorage rate in the without-project condition.

In the without project condition, it is expected that the inefficiencies caused by poor navigability in and around the Newport Commercial Fishing Marina will continue. Absent federal investment and dredging by the Army Corps of Engineers, the entrance channels to the marina as well as the channels within the marina basin will continue to exist in their current state. Existing sediment flow will continue to worsen navigation conditions in and around the marina and vessels will continue to have inadequate access to marina facilities. Without a federal project, the Port of Newport's planned reorganization of Port Dock 7 will have minimal benefits as there will not be sufficient depth in the marina to serve the larger, deeper drafting vessels the reorganization is designed to serve. Depths at Port Dock 7 are presently between -1 foot and -18 feet MLLW.

The analysis also assumes that all transit delays are borne equally by vessels of all sizes. Transit inefficiency data are collected from vessels of multiple length classes, but sample sizes for each individual length class are not large enough to simulate individual distributions for transit delays for each length class. Instead, all delays, regardless of length class, are used to simulate a distribution of delay times that is used across all length classes. Granular enough data to differentiate by length class are not available.

Regard less of project status, it is expected that the physical size of individual vessels that call on Newport will continue to increase over the study's 50-year period of analysis. As previously discussed, widening vessels is a popular modification in the commercial fishing industry and it is

expected that that trend will hold. As vessels become wider, this will exacerbate navigation issues for vessels of all length classes. Lack of adequate depth in and around the marina will continue to cause traffic and other transit inefficiencies as vessels increase in gross tonnage and draw more water.

6.2 Summary of Future Without-Project Conditions

In the without-project condition, it is expected that transit inefficiencies and annual moorage space shortages will continue to cause undue economic burdens on vessel operators at Newport. Lack of depth, lack of navigational aids, and lack of protected in-harbor moorage will also continue to pose a threat to ships, equipment, and the safety of crewmembers. In the without-project condition, none of the factors causing these issues will be mitigated, so it can be assumed that these harms will not just continue, but actively become worse absent federal intervention. There is no expectation that the Port of Newport will be able to perform the dredging necessary to improve navigation conditions at Newport without this project.

7 With-Project Conditions

7.1 Moorage Demand

The Port of Newport Commercial Fishing Marina does not currently have enough moorage space nor marina depth to accommodate all vessels that are seeking moorage within the marina. The Port keeps a waitlist of vessels that currently moor at the marina on a semi-permanent basis that are seeking to switch over to annual moorage. These vessels either rent slips or side ties in dedicated semi-annual, monthly, or transient moorage areas; or they rent slips behind vessels with annual moorage while they are out as sea. For example, a fishing vessel with annual moorage might have a planned two-month fishing trip during which another vessel can rent their slip at a monthly rate. These vessels are kept from renting annual moorages by the lack of slips at the Marina. Information on vessels currently on the waitlist and their current moorage rates can be found in Table 10.

Table 10. **Waitlist Vessel Summary**

Length	Count	Semi-Annual	Monthly	Transient	N/A
60+	11	8	1	1	1
46-60	11	9	0	1	1
37-45	5	4	1	1	0
28-36	3	3	0	0	0

There is also the group of fishermen that currently moor at the International Terminal on a semi-permanent or transient basis that would moor in the marina if there was adequate depth and space to maneuver their larger ships. These vessels almost exclusively come from Newport's distant waters fleet. Fishermen in this fleet spend most of the year fishing waters off Alaska but reside primarily in Newport. They spend their off seasons in Newport, moored full time at the International Terminal. Vessels from the distant waters fleet spend most of December, November, and April moored at the International Terminal, along with a couple dozen sporadic days of transient moorage throughout the rest of the year. Although these vessels will moor at the International Terminal for several months at a time during the year, they are charged a daily rate about two times that of the transient rate in-marina. There is no official record of the size of Newport's distant waters fleet as it fluctuates, and the International Terminal does not keep track of daily moorages. Interviews with vessel captains and the director of the international terminal indicate that the distant waters fleet has been as large as 30 vessels in the past, but is most likely in the 12 to 20 vessel range presently.

7.2 Assumptions

The assumptions made in the with-project condition are similar to the assumptions made in the without-project condition.

Just as in the without-project condition, it is assumed that there will not be any substantial change in the composition or total population of the commercial fishing fleet that calls on Newport in the with-project condition. Vessels are assumed to continue widening modifications, but the total number of vessels and general operations at Newport and in fisheries near Newport

are expected to remain relatively the same. Similar enough that any small changes will not impact this analysis. What is expected to change is that vessels waitlisted for annual moorage and vessels that are currently forced to moor at the International Terminal will be able to obtain annual or otherwise regular recurring moorage at the improved Port Dock 7 within the marina.

7.3 Project Alternatives

The final array of alternatives includes the no-action alternative and four action alternatives. Each of the four action alternatives includes a deepening of the Port Dock 7 area to at least -20 feet MLLW. This measure is common amongst all plans as it is necessary for the port's planned realignment and renovation of the current structures at that facility. The measures each represent different reaches to be dredged. Presently, no maintenance dredging is done in any of these reaches. The channels are all the result of natural water and sediment flows. Each measure that makes up the action alternatives can be seen in Figure 5 below.

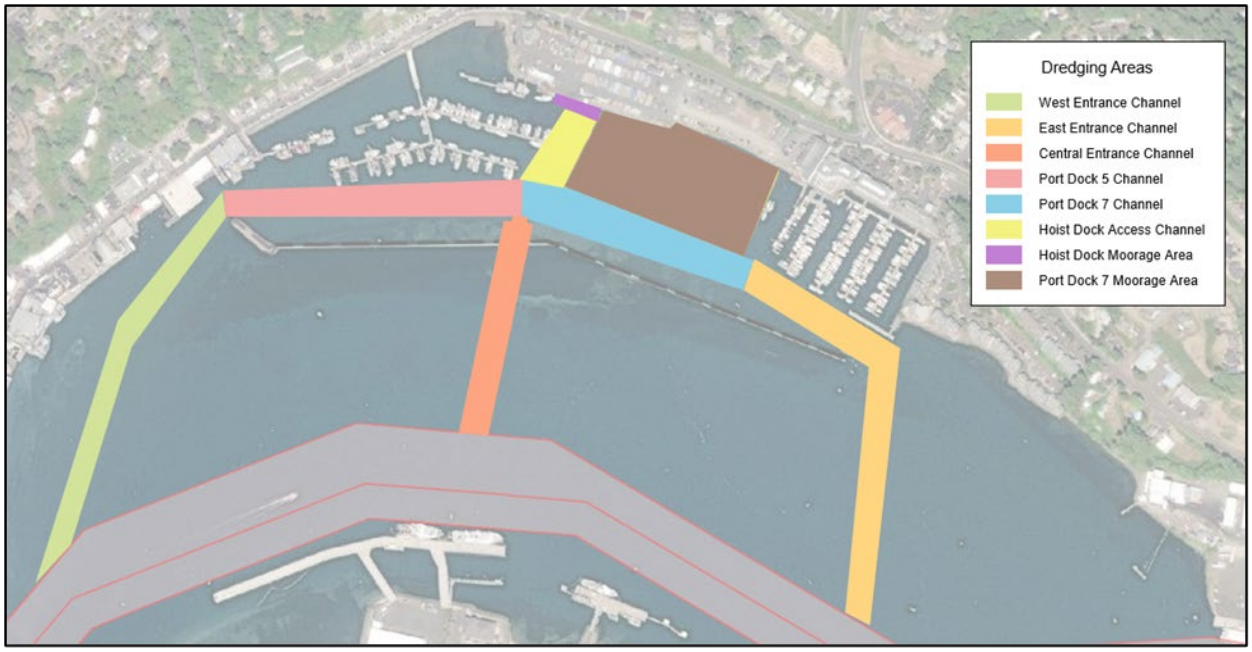

Figure 5. Study area map with measure locations

Table 11. Alternatives

Alternative	Measures Included
1	None – No Action
2	West Entrance Channel, PD 5 Channel, PD 7 Channel, PD 7
3	West Entrance Channel, PD 5 Channel, PD 7 Channel, PD 7, Hoist Dock Access Channel, Hoist Dock Moorage Area
4	East Entrance Channel, PD 7 Channel, PD 7
5	East Entrance Channel PD 7 Channel, PD 7, Hoist Dock Access Channel, Hoist Dock Moorage Area

7.3.1 1 No-Action

Alternative 1 is the no-action alternative. In this alternative, it is assumed that all status quo conditions will continue as they have been.

7.3.2 2 West Entrance

Alternative 2 would deepen and widen the natural West Entrance Channel to -22 feet MLLW, along with creating the Port Dock 5 and 7 Channels dredged to -20 feet MLLW, and the deepening of Port Dock 7. Presently, parts of the West Entrance Channel lack sufficient width and depth for efficient maneuver in and out of the marina. Port Dock Channels 5 and 7 experience shoaling in several critical areas, most notably a shoal at the southeasternmost point of Port Dock 5. This shoal is preventing efficient transit into the channel that runs north into the marina, towards the Hoist Dock, Swede's Dock and portions of both Port Dock 5 and 7.

7.3.3 3 West Entrance with Hoist Dock Access

Alternative 3 would include all measures in Alternative 2, with the addition of dredging the Hoist Dock Access Channel and the Hoist Dock Moorage Area. Current depths in the area called the Hoist Dock Access Channel prevent larger ships from accessing the Hoist Dock at lower tides, and some even larger vessels from accessing the Hoist Dock at all. Depth constraints in this area also restrict access to the inner portion of PD 5 and 7 as well as Swede's Dock. Vessels unable to use these facilities instead have to transit upriver to use the International Terminal.

7.3.4 4 East Entrance

Alternative 4 would deepen and widen the East Entrance Channel to -22 feet MLLW as well as create the Pot Dock 7 Channel and dredge the Port Dock 7 Area. The East Entrance Channel is presently not usable by any vessels except for the smallest amongst the Newport fishing fleet. Vessels headed to or coming back from upriver must go around and use the West Entrance Channel for access to the interior of the marina. Dredging the East Entrance Channel would require relocating an iron water supply pipe that runs along the north shore of the Yaquina River to Embarcadero Marina.

7.3.5 5 East Entrance with Hoist Dock Access

Alternative 5 includes each measure from Alternative 4, as well as dredges the Hoist Dock Access Channel and the Hoist Dock Moorage Area.

7.4 Summary of Future With Project Conditions

Each of the Alternatives in the Final Array have been determined to meet the project goal of restoring accessibility and efficiency at the Newport Commercial Fishing Marina. Issues that would continue in the without-project condition will be effectively remediated in the with-project condition.

8 Project Benefits

Benefits for this project mainly accrue from VOC savings arising from vessels currently forced to moor at the International Terminal on a daily rate being able to move into the marina and pay less costly monthly fees or the marina daily fee which is roughly half that of the daily fee charged at the International Terminal. Similarly, benefits will accrue from vessels that currently moor in the marina at daily, monthly or semi-annual rates switching over to annual moorage rates. The port has indicated that they will be able to accommodate all vessels currently on their annual moorage waitlist as well as the larger vessels that currently moor at the International Terminal. This is an assumption made in the analysis.

Vessels that moor regularly at the International Terminal will also experience maintenance savings from moving into a dedicated slip sheltered by the Marina breakwater. Captains of vessels that moor at the International Terminal indicate that wave conditions and the frequency at which they are forced to raft alongside other vessels at the terminal significantly increases damage to their ships and equipment, raising annual maintenance costs.

Benefits also accrue through time savings resulting in reduced transportation costs. Deeper and better-defined channels will reduce VOCs by reducing the time it takes to enter and exit the Marina, as well as allowing vessels to use the Hoist Dock instead of the International Terminal. Currently, the largest vessels at Newport cannot access the Hoist Dock area due to depth and width constraints. This also inhibits their access to Swede's Dock (maintenance dock) and the Marina's fuel dock. Vessels unable to access these facilities have to make a 30 to 45-minute trip upriver to the International Terminal to use its hoists or perform maintenance there. Vessels unable to fuel in Marina's only option is to call the fuel dock to drive a fuel truck over to the International Terminal.

8.1 Moorage and Storage Benefits

Most of the benefit in this project accrues from the deepening of the PD 7 Moorage Area and the Port's concurrent LSF improvements that will allow for more and larger vessels to moor at PD 7. According to Port staff, they expect to have capacity to provide annual moorage to all vessels currently waitlisted. The Port also expects that there will be sufficient width and depth within the improved PD 7 Moorage Area to provide vessels from the distant waters fleet monthly and transient moorage as needed, such that there will no longer be commercial fishing vessels moored at the International Terminal.

Determining the benefits of waitlisted vessels obtaining annual moorage was a straightforward process. It is assumed that all vessels currently on the waitlist for annual moorage at the Commercial Fishing Marina would accept an offer for permanent moorage at Newport if it was extended to them. Most of the vessels that are on the waitlist are vessels that already homeport at Newport, there just is not sufficient space for them to have a dedicated slip or side-tie area year-round. They might have to rent behind an annual moorage holder on a monthly or semi-annual rate or use transient vessel side-tie areas at the monthly, semi-annual, or transient rate. Refer to Table 10 for a summary of vessels on the waitlist and their current moorage plans.

Table 12. Moorage Rates (JUN 2025)

Moorage Type	**Rate**
Annual	$81.13
Semi-Annual	$60.85
Monthly	$16.76
Transient	$0.92
International Terminal (Transient)	$1.81

For vessels that homeport at Newport, an annual moorage provides a cheaper rate and a dedicated slip. VOC savings from this can be calculated by subtracting their annual moorage fee from their current semi-permanent moorage fee. Moorage fees are charged by the foot based on length. Savings from switching to annual moorage plans total to $107,678.

Table 13. Annual Moorage benefit by Length

Length	Count	Benefit
60+	10	$49,639
46-60	10	$32,536
37-45	5	$21,770
28-36	3	$3,732

Calculating the benefits of moving the distant waters fleet off of the International Terminal was not as simple as the annual waitlist benefits calculation. Because the International Terminal is not technically a moorage area for commercial fishing vessels and is operated under a different authority within the Port structure than the Commercial Fishing Marina, there are no records kept of what ships use the international terminal for moorage nor when they use it. The only information the Port could provide was the rate - $1.81 per day – and the amount of equipment that is stored at the Terminal – approximately 50,000 pounds of gear at a charge of $0.43 per pound. The International Terminal manager did indicate that the distant waters fleet is somewhere between 12 and 15 vessels.

Interviews with two captains at the international terminal provided more information on the distant waters fleet and the nature of their activities in Newport. They reported ranges of 12-15 vessels and 12-20 vessels currently in the distant waters fleet, saying in the past it has been as large as 30 vessels, but having to moor at the Terminal has caused some vessels to exit the fleet at Newport. These vessels in the distant waters fleet at Newport are generally owned and operated by people that live in Newport but spend most of the year fishing off the coast of Alaska. During their off-season, these vessels return to Newport to be home and conduct maintenance on their ships. The off-season is usually November-December and March-April. Captains indicated that they spend 45-60 moored at the Terminal in November and December

and 30-45 days moored at the Terminal in March and April. Throughout the year, they might use the terminal to moor an additional 20-30 transient days. In addition to the increased moorage costs, captains also indicated extra wear and tear on their boat due to rafting and not being behind the protection of the Commercial Fishing Marina's breakwater. They indicated an annual maintenance bill increased by $3,500 to $7,000 but that it could increase by as much as $20,000 at the maximum end of a reasonable range.

The nature of data collected on the International Terminal necessitated using Palisades' @Risk Microsoft Excel Add-In to run a Monte Carlo simulation of potential benefits. Assumed in the model and corroborated by vessel captains is that the distant waters fleet would moor in Marina at a monthly rate during November-December and March-April if space and depth were available to them. They would moor in Marina at the transient rate on the 20-30 additional days per year. The November-December period in the with-project condition is assumed to be two monthly payments. A uniform distribution of 30-45 was created for March-April and sampled from. If vessels only stayed 30 days, they paid for one month, any longer is a two month stay. Transient days were sampled from a discrete normal distribution bounded by 20 and 30. This gives the total VOC savings in moorage costs.

Maintenance was also included in the international terminal. VOC savings on maintenance resulting from moving to traditional moorage within the marina was modelled as a triangular distribution bounded at $3,500 and $20,000, with $7,000 being the most likely value to be conservative.

$2,500 were added to the benefits as the savings from moving the 50,000 of equipment stored at the International Terminal to the Commercial Fishing Marina.

These distributions were sampled from 50,000 times in each year of the 50-year period of analysis to create a standard normal distribution of benefits. The simulation resulted in a median AAEQ benefit from vessels moving off the International Terminal of $397,000 at the median. It can also be said that these benefits accrue to the PD 7 Moorage Area improvements measure. Vessels are only able to move off the International Terminal due to the improvements at PD 7. Below is a five-number summary of these benefits. 25% of possible outcomes lie between each quartile, with the minimum and maximum being the extreme low and high results.

Table 14. International Terminal/PD 7 Moorage Area Benefits (JUN 2025 Price Level, 3.0% Discount Rate, $1000s)

Quartile	Minimum	First Quartile	Median	Third Quartile	Maximum
AAEQ Benefit	$331	$385	$397	$409	$470

8.2 Transit Benefit

Transit benefits are measured as time savings benefits arising from increased navigability in and around the Newport Commercial Fishing Mariana. In this analysis, time savings benefits are monetized as fuel cost savings. The cost of fuel is a three-year average of fuel costs at the Newport Commercial Fishing Marina fuel dock collected by the Pacific States Marine Fisheries Commission. Over the three years sampled, the average fuel cost at Newport was $3.94 per gallon with a three year high of $6.14 and low of $3.11 (PSMFC, 2024).

Fuel use values are pulled from several Alaska District small boat harbor studies. Fleets down the Pacific Northwest coast are similar in composition so it is reasonable to assume that vessels of similar sizes in Alaska and Oregon will use propulsion systems that burn fuel at comparable rates. Fuel use is quantified in gallons consumed per hour and is measured at high, medium and low usage values for each length class. Below is a table of hourly fuel usage and costs.

Table 15. Fuel Cost per Hour (JUN 2025 Price Level)

	21-27	28-36	37-45	46-60	>60
Low	$23.65	$19.71	$39.41	$39.41	$51.24
Med	$35.47	$37.44	$74.88	$74.88	$110.35
High	$47.29	$55.18	$110.35	$110.35	$169.47
Weighted Average*	$37.84	$40.99	$81.98	$81.98	$122.18

*Weights come from POA studies, they find vessels spend 50% of their time at med, 35% at high, and 15% at low.

Vessels are assigned an average hourly fuel use rate assuming that they spend 35% of their time at the high, 15% at the low, and the remaining 50% of their time on the water at the medium usage rate. These values come from previous Alaska District USACE small boat harbor studies at Petersburg Harbor, Craig Harbor and Port Valdez. A weighted average using these values captures vessels' hourly fuel use.

In order to turn these fuel costs into project benefits, the nature of transportation inefficiencies at Newport had to be determined. Information was collected by phone calls with 9 captains whose contact information was furnished by the Port. 6 captains of 9 vessels were able to be reached. Based on information provided, ranges of delay times experienced transiting the marina entrance and within the marina were constructed. Captains generally had a difficult time being precise regarding delays – or rather they had a hard time identifying inefficiencies as they have operated with them for such a long time. The access channels and in-harbor channels have never been regularly dredged. Interviewed captains reported their delays as an estimate of how many fishing hours they might lose in a year due to navigation inefficiency. They identified the Western Entrance Channel and the Hoist Dock Access Channel as choke points.

At the Western Entrance Channel, wider vessels experience delays as two-way traffic is not possible or very difficult to safely achieve, especially when there are vessels making deliveries to Pacific Seafood. Only captains of larger vessels saw the entrance as a significant problem, but as the fleet at Newport continues to widen, it will become a bigger issue. All captains spoke to identified the Hoist Dock area as a problem area. Lack of channel width between PD 5 and PD 7 and lack of depth near the Hoist Dock make it difficult for most vessels in the 46'-60' and >60' to enter through traffic or when there is a low tide. Some of the larger vessels are completely unable to access the Hoist Dock area, this includes the fuel dock and Swede's dock. In the event that a vessel cannot access the Hoist Dock and surrounding facilities, they are forced to go 30-45 minutes upriver to the international terminal to load and unload gear, fuel up, or perform maintenance on their ship in an area not designed for it in open water.

Captains reported annual delays ranging from 10 to 100 hours. If the number of fishing trips is set at 63 – the median number of trips in a previous NWP small boat harbor study – that comes out to about 10 to 90 minutes of delay per trip. To keep estimates conservative, delay time was capped at the next highest response of 72 hours in a year. Interviewed captains fell exclusively in the 46'-60' and >60' ranges. Based on identified problem areas, it was assumed that only

vessels in the >60' length range would experience delays at the entrance as they are also the widest. Widths of those vessels are generally between 25 and 40 feet with a steep drop-off into the mid-teens for vessels 46'-60' in length. Shorter length classes are assumed to be unaffected by both width and draft restrictions.

In total, 85 vessels in Newport's 151 vessel fleet are assumed to be effected by width and draft constraints present in the without project condition. 32 of those vessels are expected to experience difficulty entering and exiting the Marina. All vessel captains indicated that 'most' of their delay comes from not being able to access the Hoist Dock. When asked to estimate what percentage of delay they might attribute to various features, no captains were able to answer with a number, so 'most' is interpreted as 51-100% of delay.

This delay data was used to calculate benefits in a spreadsheet model created using @Risk once more. Delay, fuel usage, and percent of delay attributable to the Hoist Dock vs. the Western Entrance were inputs to creating a standard normal distribution of benefits using a Monte Carlo simulation.

Vessels in the 46'-60' length class are assumed to accrue all benefits from improved Hoist Dock access. These captains also indicated much shorter delays, ranging from 10-15 hours per year exclusively due to waiting to enter the Hoist Dock or rerouting to the International Terminal. A uniform distribution of 10-15 hours with whole hour bins was sampled from, multiplied by fuel costs, and summed over the 53 vessels in that length class to give their Hoist Dock benefit. The same process was repeated for the larger vessels, adding in a uniform probability distribution of .51 to 1 to represent the proportion of delay that comes from the Western Entrance vs. the Hoist Dock Access Channel. All fuel burn rates are assumed to be at the lowest rate due to these delays taking place in and at the entrance of the Marina.

Annual benefits were converted into net present value and annualized over the 50-year period of analysis. This process was repeated 100,000 times in a Monte Carlo simulation, sampling each annualized benefit value into a standard normal distribution of results. Below are the five number summaries of the AAEQ benefits of each feature.

Table 16. **Five Number Summaries of Delay Benefits (JUN 2025 Price Level, 3.0% Discount Rate, $1,000s)**

	Minimum	First Quartile	Median	Third Quartile	Maximum
Entrance	$16	$26	$28	$26	$39
Hoist	$97	$107	$109	$111	$122

In every benefit scenario except the minimum – based on the Monte Carlo simulations – alternative 3 will be above unity (BCR>1). Total benefit results from the Monte Carlo simulation are presented below as a five number summary.

These benefits all arise from the estimation of the amount of VOC saved by mitigating delays and moving vessels off the International Terminal.

Table 17. **Total AAEQ Benefits (JUN 2025 Price Level, 3.0% Discount Rate, $1000s)**

Quartile	Minimum	First Quartile	Median	Third Quartile	Maximum
AAEQ Benefit	$552	$626	$642	$657	$739

There are likely additional benefits arising from increased life safety, but self-reported incident data are not robust enough to use in this analysis. Contacts at the Port indicated that underkeel strike incidents are rarely reported and that it would be difficult to parse them out based on operator error vs. lack of navigable depth/width.

9 Project Costs

Each project alternative includes dredging the PD 7 Moorage Area and constructing the PD 5 and 7 access channels. Alternatives 3 and 5 include both Hoist Dock measures and 2-3 include the West Entrance while 4-5 include the East Entrance. All costs are annualized at the JUN 2025 price level using the federal discount rate of 3.0%. Operations and maintenance (O&M) costs will be incurred every 5 years over the 50-year period of analysis and are assumed to be the same across all considered alternatives. The entrance channel measures both dredge to a depth of -22 feet MLLW and all in-Marina construction dredges to a depth of -20 feet MLLW. All costs are converted to present values and annualized based on a 50-year period of analysis.

Table 18. Total Costs (JUN 2025 Price Level, 3% Discount Rate, $1000s)

	Alt. 2	**Alt. 3**	**Alt. 4**	**Alt. 5**
First Cost	$12,985	$13,475	$19,354	$19,862
IDC	$63	$67	$192	$197
Total Construction Cost	$13,048	$13,542	$19,546	$20,259
AAEQ Construction Cost	$505	$524	$752	$771
AAEQ O&M Cost	$41	$41	$41	$41
AAEQ Total Cost	$546	$565	$794	$814

10 Net Benefits and Benefit-Cost Ratio

The preferred plan is the plan that maximizes net benefit in the NED account, provided that it has a benefit-cost ratio (BCR) greater than one. The BCR is equal to the total AAEQ benefits divided by the total AAEQ costs. All alternatives with a BCR greater than or equal to one are considered economically justified, but the one that maximizes net benefits is the recommended alternative. The selected NED plan in this study is Alternative 3. Alternative 3 has the highest BCR and is the only plan with net benefits greater than zero. AAEQ net benefits for the selected plan are $77,000 with a BCR of 1.1.

Table 19. Cost Benefit Analysis Results (JUN 2025 Price Level, 3% Discount Rate)

Alternative	Initial Cost	AAEQ Initial Cost	AAEQ O&M	Total AAEQ Cost	AAEQ Benefits	Net AAEQ Benefit	BCR
Alternative 2	$12,985	$505	$41	$546	$533	($13)	1
Alternative 3	$13,475	$524	$41	$565	$642	$77	1.1
Alternative 4	$19,354	$752	$41	$794	$505	($289)	0.6
Alternative 5	$19,862	$772	$41	$814	$614	($200)	0.8

11 Risk and Sensitivity

There are several assumptions that had to be made to conduct this analysis – all covered in section 7.2 titled “Assumptions.” In this section, the limitations of each assumption are discussed.

11.1 Fleet Characteristics Assumptions

This analysis assumes a constant number of vessels in the Newport fleet due to the uncertainty inherent in forecasting future fleet changes. Generally, there are more reasons to believe the fleet might grow rather than shrink. As with all natural resource markets, fisheries are vulnerable to changes in the regional climate. If there was a sudden drastic decrease in fisheries populations, there would probably be a decrease in the Newport fleet. This is unlikely as the current fisheries being harvested by the Charleston fleet are not seeing much change year-over-year, with the largest – Dungeness crab – being very healthy. Vessels come from all up and down the West Coast to crab in Newport’s waters. Lack of adequate moorage and navigation issues could also cause fleet shrinkage, but with the completion of this project there should not be any attrition due to these issues as they will be ameliorated.

There is also potential that the fleet at Newport might grow. The Port’s concurrent LSF improvements will create additional moorage space and could make Newport more attractive to transient and semi-permanent fleets. In spite of this, it is not permissible to make “if we build it, they will come” assumptions.

Most likely is that smaller vessels are modified to larger lengths and beams in order to carry more catch and fish more fisheries in a year. The fleet at Newport is more likely to grow in individual vessels dimensions than to grow or shrink in total number of vessels.

12 Regional Economic Development Analysis

The Regional Economic Development (RED) account contains all benefits accrued to the immediate region surrounding the project area that are not considered a part of the NED account. RED analysis considers local impacts such as employment, income, and population changes.

12.1 Regional Analysis

RED analysis is conducted using the USACE certified Regional Economic System (RECONS), a model developed by the Institute for Water Resources (IWR). The RECONS Civil Works Spending module estimates the regional impacts of USACE direct investment and operational expenditure. Analysis for this study uses RECONS' pre-defined Port of Newport county-based local impact area. Regional impact analysis of each of the five alternatives was conducted. Results from RECONS for each alternative are attached in the tables below. All impacts in the below tables can be considered RED benefits

Table 20. Alternative 2 RED analysis

Area	Local Capture	Output	Jobs	Labor Income	Value Added
Local					
Direct Impact		$7,451,322	31.5	$3,346,621	$4,271,206
Secondary Impact		$3,484,179	22.8	$1,113,608	$1,929,012
Total Impact	$7,451,322	$10,935,502	54.3	$4,460,229	$6,200,218
State					
Direct Impact		$8,429,481	36.7	$4,102,833	$5,198,396
Secondary Impact		$7,365,533	39.6	$2,698,025	$4,263,145
Total Impact	$8,429,481	$15,795,014	76.3	$6,800,859	$9,461,541
US					
Direct Impact		$12,364,231	69.3	$6,156,425	$7,562,537
Secondary Impact		$19,004,021	81.2	$6,139,227	$10,332,253
Total Impact	$12,364,231	$31,368,252	150.4	$12,295,653	$17,894,790

Table 21. Alternative 3 RED analysis

Area	Local Capture	Output	Jobs	Labor Income	Value Added
Local					
Direct Impact		$7,732,504	32.7	$3,472,909	$4,432,383
Secondary Impact		$3,615,658	23.6	$1,155,631	$2,001,805
Total Impact	$7,732,504	$11,348,162	56.3	$4,628,539	$6,434,188
State					

Area	Local Capture	Output	Jobs	Labor Income	Value Added
Direct Impact		$8,747,575	38.1	$4,257,657	$5,394,562
Secondary Impact		$7,643,477	41.1	$2,799,838	$4,424,019
Total Impact	$8,747,575	$16,391,052	79.2	$7,057,495	$9,818,580
US					
Direct Impact		$12,830,806	71.9	$6,388,743	$7,847,916
Secondary Impact		$19,721,154	84.2	$6,370,896	$10,722,149
Total Impact	$12,830,806	$32,551,960	156.1	$12,759,640	$18,570,065

Table 22. Alternative 4 RED analysis

Area	Local Capture	Output	Jobs	Labor Income	Value Added
Local					
Direct Impact		$11,106,114	47	$4,988,102	$6,366,185
Secondary Impact		$5,193,131	33.9	$1,659,820	$2,875,172
Total Impact	$11,106,114	$16,299,245	80.9	$6,647,922	$9,241,357
State					
Direct Impact		$12,564,049	54.7	$6,115,228	$7,748,152
Secondary Impact		$10,978,246	59	$4,021,377	$6,354,171
Total Impact	$12,564,049	$23,542,295	113.7	$10,136,605	$14,102,323
US					
Direct Impact		$18,428,751	103.3	$9,176,084	$11,271,879
Secondary Impact		$28,325,285	121	$9,150,451	$15,400,109
Total Impact	$18,428,751	$46,754,036	224.2	$18,326,535	$26,671,989

Table 23. Alternative 5 RED analysis

Area	Local Capture	Output	Jobs	Labor Income	Value Added
Local					
Direct Impact		$11,397,625	48.2	$5,119,028	$6,533,283
Secondary Impact		$5,329,440	34.8	$1,703,387	$2,950,639
Total Impact	$11,397,625	$16,727,064	83	$6,822,415	$9,483,922
State					
Direct Impact		$12,893,828	56.2	$6,275,739	$7,951,524
Secondary Impact		$11,266,401	60.5	$4,126,930	$6,520,954
Total Impact	$12,893,828	$24,160,228	116.7	$10,402,669	$14,472,478
US					

Area	Local Capture	Output	Jobs	Labor Income	Value Added
Direct Impact		$18,912,465	106	$9,416,936	$11,567,741
Secondary Impact		$29,068,762	124.1	$9,390,630	$15,804,328
Total Impact	$18,912,465	$47,981,227	230.1	$18,807,567	$27,372,070

13 Summary of Accounts and Plan Comparison

Below is a brief summary of impacts to each of the four P&G accounts. Impacts to each account are discussed generally, and alternative specific impacts are summarized in Table 19.

13.1 National Economic Development

Alternative 3 was selected as the NED plan for this project. The plan has a median net AAEQ benefit of $77,000 and a median BCR of 1.1. A five number summary of the probability distribution of potential benefits was calculated and all but the minimum possible outcome are above unity. Alternative 2.1 maximizes net benefit and is economically justified.

13.2 Regional Economic Development

RECONS was used to quantify RED effects of each project alternative and summaries can be found in the preceding section. Each alternative will bring increased value to the local economy not captured in the NED accounts. The more expensive and the longer the duration of the construction, the greater amount of RED benefit an alternative brings to the local economy.

13.3 Environmental Quality

The EQ benefits from this project come from GHG emissions due to shorter vessel operation times that arise from eliminating transportation inefficiencies.

Improving access to the Commercial Fishing Marina for vessels of all sizes will also mitigate vessels' need to travel upriver to use the facilities at the International Terminal, this will reduce the footprint of the fleet.

13.4 Other Social Effects

OSE benefits in this project accrue from the elimination of uncertainty surrounding Marina operations and accessibility and resulting satisfaction in the fishing community. Decreased reliance on the international terminal and eliminating delay times at the Marina have the potential to facilitate greater community cohesion. A Commercial Fishing Marina that can provide reliable access to all services offered will result in more regular work schedules, fewer disruptions, and therefore greater worker satisfaction and a more harmonious community.

Improved navigation conditions also have the potential to improve life safety in and around the Marina. Vessels will have more width and depth to maneuver in, decreasing risks of collision and underkeel strikes.

13.5 Four Accounts Evaluation Summary

The preferred plan has positive effects on all four of the accounts. As the NED maximizing plan, it must have positive net benefits to the national account. Any spending in the study area will provide for RED benefits, along with the project potentially opening up opportunities for enhanced use of regional facilities. Navigation improvements reduce vessels' operating times and therefore GHG emissions, accruing benefits to the EQ account. Reliable access to Marina facilities and services will promote more regular schedules and smoother operations, increasing fisherman satisfaction and community cohesion. Improved navigability will also reduce any life

safety risk present in the without-project condition. These benefits accrue to the OSE account.

As most benefits to navigation and facility access accrue from the Hoist Dock features, alternatives that do not improve Hoist Dock access will not see as much benefit in the EQ, RED, or OSE accounts, just as they do not access that benefit in the NED account. Alternatives that do not include the West Entrance Channel also see little improvement as there is no benefit that accrues to the East Entrance Channel.