Interstate BRIDGE Replacement Program

APPENDIX A

INTERSTATE BRIDGE REPLACEMENT PROGRAM RESEARCH SINCE U.S. COAST GUARD ISSUANCE OF 2022 PRELIMINARY NAVIGATION CLEARANCE DETERMINATION

Prepared by the IBR Program

For the

Washington Department of Transportation

and

Oregon Department of Transportation

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INTRODUCTION

Coordination to Produce a Revised Navigation Impact Report

In November 2021, the Interstate Bridge Replacement (IBR) Program submitted a Navigation Impact Report (NIR) to the U.S. Coast Guard (USCG) to precede a Bridge Permit application for the proposed replacement of the existing Interstate Bridge spanning the Columbia River between Portland, Oregon, and Vancouver, Washington. The NIR provided analysis of current and future navigational use of the Columbia River at the bridge location.

The USCG responded by issuing Navigation Only Public Notice (NOPN) No. 02-22 in March 2022 and a Preliminary Navigation Clearance Determination (PNCD)[1] in June 2022, concluding that the proposed 116-foot vertical navigation clearance (VNC) would "*…create an unreasonable obstruction to navigation for vessels with a VNC greater than 116 feet and in fact would completely obstruct navigation for such vessels for the service life of the bridge which is approximately 100 years or longer*." The June 2022 PNCD also summarized 13 comments received in response to the NOPN.

The IBR Program understands the gravity of the USCG's response and acknowledges that the USCG has been directed by the U.S. Congress to prevent unreasonable navigation impairments on all U.S. navigable waters. Accordingly, since the NIR was submitted, the IBR Program has continued to conduct extensive analyses, outreach, and coordination with local governments and agencies, businesses, the USCG, and river users—defined herein as all vessels that transit the Columbia River under the Interstate Bridge and businesses that rely on such vessels—to better understand the impacts of a proposed 116-foot VNC. **These efforts allowed the IBR Program to carefully respond to the concerns that the USCG identified in the June 2022 PNCD and conclude that the proposed 116-foot fixed-span bridge would meet existing and potential reasonable needs of navigation on the Columbia River and would not obstruct vessel passage beyond impacts that will be mitigated.**

This document appends the IBR Program's Revised NIR (October 2025) that addresses the USCG's concerns regarding reasonable needs of navigation and incorporates the latest information, outreach, and guidance. **This white paper accompanies the Revised NIR to present the six concerns (five identified in the June 2022 PNCD and one through IBR Program–USCG coordination) identified by the USCG since issuing the June 2022 PNCD and explain how each has been analyzed and addressed.** Table 1 presents a high-level summary of the IBR Program–USCG coordination to develop the Revised NIR and address the USCG's concerns.

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[1] U.S. Coast Guard. 2022. Letter from Thomas D. Goldstein, PE to IBR Program Oversight Manager. Available at: <https://www.dco.uscg.mil/Portals/9/IBR%20Prelim%20Nav%20Clr%20Determination%2017Jun2022.pdf>. Accessed July 16, 2025.

Table 1. IBR Program–USCG Coordination Timeline to Produce a Revised Navigation Impact Report

November 2021–June 2022	June 2022–September 2024	September 2024–October 2025
In November 2021, the IBR Program submitted an initial NIR to the USCG. In March 2022, the USCG issued NOPN No. 02-22 seeking navigation-related comments regarding current and future VNC requirements greater than 116 feet. **The USCG issued a PNCD in June 2022, concluding that the proposed 116-foot VNC replacement bridge would not meet reasonable needs for navigation and summarizing NOPN-response comments.**	The IBR Program coordinated with the USCG, including convening monthly meetings regarding navigation topics considered for the Revised NIR preceding the Bridge Permit application. Additional data were analyzed, including: • Conducting deep-draft ship and shallow-draft vessel simulations in the fall of 2023. • Reviewing 2022–2024 Interstate Bridge lift logs. • Analyzing potentially height-restricted vessels. Additional outreach included: • Coordinating with potentially height-restricted river users. • Meeting with the Columbia River High, Wide, and Heavy Corridor Coalition. • Meeting with the Ports of Portland and Vancouver to understand current and future navigational needs. **In September 2024, the IBR Program prepared a Revised NIR to resolve the June 2022 PNCD issues and NOPN comments and incorporate updated data and outreach results. The USCG responded that they would not review this version until all impacted river user agreements were finalized. This, along with a request to switch to the BPAG format, prompted development of a third NIR version.**	The IBR Program continued monthly USCG meetings. Additional data were analyzed, including: • Navigation-related comments from the IBR Program Draft Supplemental Environmental Impact Statement (SEIS) public comment period that closed in November 2024. • Interstate Bridge lift logs through July 2025. • Analyzing potentially height-restricted vessels. Additional outreach included: • Contacting river users who commented on the Draft SEIS. • Conducting a marina and yacht club survey, especially inquiring about recreational vessels. The USCG issued an updated BPAG in March 2025. In August 2025, the IBR Program prepared an updated Revised NIR to follow the formatting requirements of the BPAG and incorporate updated data, outreach, and impacted river user agreements and coordination and submitted a draft to the USCG. **The IBR Program submitted the final Revised NIR to the USCG in October 2025.**

BPAG = Bridge Permit Application Guide; IBR = Interstate Bridge Replacement Program; NIR = Navigation Impact Report; NOPN = Navigation Only Public Notice; ODOT = Oregon Department of Transportation; PNCD = Preliminary Navigation Clearance Determination; SEIS = Supplemental Environmental Impact Statement; USCG = U.S. Coast Guard; VNC = vertical navigation clearance

Summary of IBR Program Responses Since the USCG 2022 PNCD

To support USCG review of the Revised NIR, this white paper summarizes the five primary factors considered in the June 2022 PNCD, as well as the additional topic of recreational vessels that emerged after the USCG issued the June 2022 PNCD, and the IBR Program's responses to these topics (see Table 2). The six topics addressed herein are (1) Present Governing Structure, (2) Waterway Characteristics, (3) Emergency Services, (4) Commercial Navigation Trends, (5) Unique Maritime Manufacturing/Service Facilities, and (6) Recreational Vessels.

Table 2: IBR Program Response Summary

USCG PNCD Category	PNCD Category Summary	IBR Program Further Analysis for the Proposed Design	IBR Program Response Summary
Present Governing Structure	The USCG does not approve bridge proposals with VNC below the "present governing structure" unless there is a compelling navigational reason to do so.	The proposed design: • Avoids and mitigates impacts to affected river users. • Meets river, air, and land navigational needs. • Meets the required USCG Bridge Program Reasonable Needs of Navigation. • Would alter the federal navigation channel; the increased horizontal clearance allows for safer river transit.	The compelling navigational reason for the proposed replacement bridges is the need to balance marine, air, and land navigation in this key economic corridor. The 116-foot fixed-span bridge design option provides the highest clearance that (1) meets both river and land navigation needs while allowing reasonable landside connections, (2) results in a safe gradient to highway traffic, (3) reduces intrusion into protected airspace, and (4) avoids the significant investment of public money for a movable span that would only be required for four impacted river users. River users and vessels have been identified whose current or future operations would be impacted by a 116-foot VNC bridge, and agreements have been reached with the four impacted river users that address their known business operations impacted from a 116-foot VNC.
Waterway Characteristics	The waterway can support navigation for vessels with VNC up to 178 feet. Vessels and cargo are trending larger, so the waterway could be improved to support them.	The proposed design: • Accommodates passage of large cargo originating from upstream fabricators and large vessels. • Assumes that additional dredging east of the bridge is unlikely.	Fabricators and owners of large vessels will be able to maintain their future use of the waterway. The existing navigation channel is maintained at 17 feet deep, though it is authorized for deeper dredging to 27 feet. Although the channel is authorized to operate at and be maintained at that depth, the permitting process for completing the dredging is extensive and does not guarantee that the permit will be obtained. Furthermore, this depth would not accommodate most oceangoing vessels and container ships. Larger oceangoing vessels would typically require more than the 27-foot authorized depth. Authorization to deepen the channel upriver of the bridge to greater than 27 feet is also not likely to occur due to prohibitive cost, time, and legal hurdles. Moreover, current physical limitations do not support large vessel transit upriver of the Interstate Bridge.
Emergency Services	The waterway is uniquely equipped to stage maritime support for port recovery efforts with immediate access to rail, highway, and heavy maritime/terrestrial fabrication and repair.	The proposed design: • Does not constrain emergency or national security response vessel usage or mooring. • Allows for the Columbia River to be	U.S. Maritime Administration (MARAD), U.S. Department of the Navy, and USCG vessels that may be used in recovery efforts would not be impacted by the proposed 116-foot fixed-span bridge. The proposed 116-foot fixed-span bridge would not interfere with the Columbia River serving as an aircraft ditch site as, per summer 2024 communications between the IBR Program and the

USCG PNCD Category	PNCD Category Summary	IBR Program Further Analysis for the Proposed Design	IBR Program Response Summary
	Currently, national security assets transit from the Pacific Ocean, up the Columbia River, and enter the Vigor Shipyard for service. Portland International Airport (PDX) must be able to respond in the event of an emergency. The Columbia Business Center (CBC) could support ship building during conflict with little improvement.	used as an aircraft ditch site. • Does not impact Vigor Industrial, which has redeveloped its business model at the CBC such that it will be downsizing its complex fabrication business and no longer require a VNC higher than 116 feet. The Vigor Shipyard at Swan Island is downstream of the Interstate Bridge and would not be limited by the 116- foot VNC. All home-ported MARAD vessels in the region would use the Swan Island facility for long-term safe lay berthing. • Accommodates natural disaster response mooring.	Port of Portland. There are no standards or protocols related to specific aircraft emergency landing sites in the Columbia River. In addition, alternative emergency response vessels are in place near PDX. Therefore, emergency services could continue operations and plans without impact from the proposed 116-foot fixed-span bridge. It is unlikely that the CBC would be used as a location for future shipbuilding during a conflict. Significant site improvements and dredging would need to be implemented to facilitate shipbuilding at this location. Importantly, though, the CBC, as a Columbia River-adjacent landlord, would be able to continue its (nonemergency-services-related) operations downriver of the bridge. Additional information about the CBC that does not pertain to emergency services is detailed in Section 5 of this white paper.
Commercial Navigation Trends	Large commercial ships have historically used the Ports of Portland and Vancouver, and there is a global trend for vessels to increase in size. The example of JT Marine, Inc., investing in a drydock was provided.	The proposed design: • Does not prevent the *MV Navios Unite* or the *Caribbean Princess* from continuing business as usual downstream of the bridge. • Does not change anticipated future conditions — there is no anticipated demand for large vessel travel upriver of the Interstate Bridge location. • Maintains marine commerce activities for shipping grain.	Larger ships using the waterway in the future would require the appropriate marine infrastructure for homeporting, docking, and repairs. Additional development of these facilities upstream of the Interstate Bridge location is unlikely, as there is little viable industrial land present. Buildable industrial land is available downstream, where there is also access to a strong workforce and existing deepwater infrastructure. The *MV Navios Unite* and *Caribbean Princess* would continue mooring downriver of the replacement bridges at the Vigor facility at Swan Island, so they would not need to travel upriver. Additional dredging of the channel to support larger ships is also infeasible, as discussed in Section 2 of this white paper. Furthermore, the maritime movement of grain would not be impacted by the proposed 116-foot VNC bridge design.

USCG PNCD Category	PNCD Category Summary	IBR Program Further Analysis for the Proposed Design	IBR Program Response Summary
Unique Maritime Manufacturing/ Service Facilities	The main maritime facilities east of the existing Interstate Bridge, including the CBC, are uniquely suited to support larger vessels with greater than 116 feet VNC.	The proposed design: • Does not impact foreseeable upriver marine commerce development. • Allows the CBC to continue operations as a landowner • Maintains maritime capabilities of the U.S. government. • Allows forecast downriver land development to continue. • Mitigates anticipated impacts to vessels supporting marine commerce.	The only facility currently supporting maritime-based manufacturing of large equipment upstream (east) of the Interstate Bridge is the CBC. The IBR Program acknowledges that the CBC is a landowner and should be engaged as such. The CBC's land use rights do not include use of the Columbia River. The IBR Program considered impacts of the 116-foot fixed-span bridge specific to the priorities outlined in Executive Order 14269 after it was issued in April 2025 and concluded that the proposed design would not impact U.S. maritime capabilities because it would not impact upriver marine commerce development or existing marine commerce operations. Furthermore, Locations downriver of the Interstate Bridge that do not require additional investments in rebuilding facilities or authorizing new dredging and already have access to a larger workforce are better suited for ship construction The IBR Program has reached mitigation agreements that satisfy the businesses that are tenants of the CBC, which include Greenberry Industrial and Thompson Metal Fab. Vigor Industrial, another CBC tenant, will no longer move large fabrications along the Columbia River near the Interstate Bridge and so would not be impacted by a height restriction of 116 feet.[a]
Recreational Vessels	Not applicable; the issue of potential impacts to recreational vessels was raised by the USCG as warranting additional research after issuance of the June 2022 PNCD.	The proposed design: • Does not impact known recreational vessels on the Columbia River.	The IBR Program conducted additional research on recreational vessels in the area and found that no known recreational vessels, including sailboats, would be impacted by a 116-foot fixed-span bridge design.

a According to communications between the IBR Program and Vigor Industrial, as well as a 2024 article in the *Portland Business Journal*, "Large Portland industrial employer plans layoffs," Oregon Iron Works (now Vigor) is undergoing a change to cease fabrication of steel girders and other large complex components; thus, Vigor Industrial's business would not be impacted by a 116-foot VNC.

CBC = Columbia Business Center; IBR = Interstate Bridge Program; MARAD = U.S. Maritime Administration; PNCD = Preliminary Navigation Clearance Determination; PDX = Portland International Airport; USCG = U.S. Coast Guard; VNC = vertical navigation clearance

1. PRESENT GOVERNING STRUCTURE

The existing Interstate Bridge is the "governing structure" on the Columbia River west of the Glenn L. Jackson Memorial Bridge (Glenn Jackson Bridge) serving Interstate 205 (I-205), and, therefore, there must be a "compelling navigational reason" to reduce its VNC. Currently, the Interstate Bridge structure governs access to 6.5 miles of river with limited marine facilities and few affected river users below the Glen Jackson Bridge at

river mile (RM) 112.4. The PNCD issued on June 17, 2022, documents the recommended VNC and horizontal navigation clearance (HNC) and cites a recommended minimum HNC requirement for the replacement bridges as being greater than or equal to that of the current or future permitted U.S. Army Corps of Engineers (USACE) federal navigation channel (FNC) projects.

The IBR Program proposes a reduction of the existing bridge's VNC from its maximum opened VNC of 178 feet to a fixed height of 116 feet. The IBR Program would also alter the existing FNC by shifting locations to align with the HNCs of the spans of the replacement bridges, thus improving navigation between the Interstate Bridge (RM 106.5) and the downstream BNSF Railway Bridge (RM 105.6) (based on ship simulations). This proposed design is the result of a comprehensive analysis to address transportation and critical safety needs, including those relevant to highway, public transit, active transportation, marine navigation, and air navigation, while also minimizing impacts to the community and the environment.

The 116-foot fixed-span bridge would: (1) avoid and mitigate impacts to affected river users; (2) meet river, air, and land navigation needs; and (3) meet existing and forecast USCG Bridge Program requirements for Reasonable Needs of Navigation,[2] while, (4) altering the FNC; the increased horizontal clearance allows for safer river transit.

1.1 Avoids and Mitigates Impacts to Affected River Users

The 116-foot fixed-span bridge is the best option to improve the Interstate Bridge when impacts to affected river users can be mitigated. The 116-foot fixed-span bridge design was originally identified in the 2012 Columbia River Crossing NIR after the effects of 95- to 125-foot bridge heights were analyzed in increments of 5 feet. This analysis remains applicable for the IBR Program as it is a similar bridge design that accounts for similar impacts to vessels and their cargo, as well as landslide impacts. Ultimately, the 116-foot fixed-span bridge design would avoid or minimize impacts to nearly all river users and would provide mitigation for impacted river users and their vessels, resulting in a bridge that would meet the reasonable needs of navigation.

The IBR Program reviewed and analyzed Oregon Department of Transportation (ODOT) Interstate Bridge lift logs for the existing Interstate Bridge from 2007 through 2024, and these data are attached to the Revised NIR as Appendix E.[3] Also included in Appendix E are the Interstate Bridge lift logs from January 2025 through July 2025. No newly impacted vessels have been identified through July 31, 2025, that are not addressed elsewhere in the NIR. Until a Bridge Permit has been issued for a bridge design, the IBR Program will continue to monitor Interstate Bridge lift data during coordination for the proposed replacement bridges to identify any potentially impacted vessels.

Through extensive research, including review of Interstate Bridge lift logs spanning 17 years and comments from river users and the community, **the IBR Program found that a 116-foot VNC would impact a total of four river users, as follows:**

- One river user owns vessels that would be directly impacted. These vessels are the Advanced American marine contracting company's *DB 4100* and *DB Millenium*. The *DB 4100* would only be restricted when river levels are within 2 feet of the ordinary high water mark (OHWM) at 16 feet above 0 feet Columbia River Datum (CRD), which is projected to occur only 1.2% of the time over the course of one year. This vessel has accommodations to lower crane booms/gantries and could implement them to transit during OHWM

[2] U.S. Coast Guard. 2012. USCG Bridge Program. Reasonable Needs of Navigation: White Paper. Version 1.1, October 5, 2012.

[3] The IBR Program also reviewed Interstate Bridge lift logs from January through April 2025 and did not identify any vessels that would be newly impacted by a 116-foot VNC.

conditions of 16 feet CRD. The *DB Millenium* would be restricted at all times of the year and has accommodations to lower the crane boom and mast for transit.

- A second river user, the JT Marine, Inc. (JT Marine) shipyard services company, has potential future business operations that would be impacted by a bridge with a 116-foot VNC. Specific details regarding these impacts are confidential. As described in Section G.1.1 of the Revised NIR, JT Marine's known existing operations would not be adversely impacted.
- The two remaining river users, Greenberry Industrial and Thompson Metal Fab, fabricate large structures that would be impacted by a 116-foot VNC.

Separately, the *USAV Yaquina* dredge, owned by the USACE, would temporarily be impacted during construction only.

The IBR Program has reached agreements with the four impacted river users (Advanced American, JT Marine, Greenberry Industrial, and Thompson Metal Fab) that address impacts to their known operations from the proposed 116-foot VNC, as described in Section S.1 of the Revised NIR.

Discussions were conducted with all impacted river users to identify and evaluate options to address potential impacts to their operations and to reach formal settlement agreements. The IBR Program worked with all four companies to identify appropriate strategies to allow them to continue to pursue current and future anticipated markets following construction of the replacement bridges. In addition, the IBR Program engaged independent experts to assess the potential impacts on these impacted river users based on industry data and information provided directly from them. Specifically, the two states leading the IBR Program, Oregon and Washington, in coordination with both state legal offices, conducted a comprehensive valuation process that engaged experts to evaluate the current and projected business conditions. This evaluation included a thorough review of operations, vessels characteristics, site capabilities, employment data, financial statements, and future revenue forecasts. It also considered potential business losses resulting from lost market opportunities and potential effects from relocating their operations. An additional independent assessment was conducted, which validated that the process supporting negotiations was appropriate and adequate. Negotiations occurred under confidentiality agreements for the purpose of preserving proprietary company financial information. The four agreements were reached and would involve payments to the companies that can be used at their businesses' direction and control. The compensation provided through these agreements will allow these impacted river users to operate successfully after construction of the proposed replacement bridge and continue to advance the regional economic vitality.

Notably, the IBR Program conducted extensive research, outreach, and coordination to determine that JT Marine's future business operations would be impacted by a 116-foot VNC bridge and that its current operations would not be adversely impacted. One vessel operated by JT Marine, the *DB Taylor*, is currently height-restricted for travel under the existing Interstate Bridge. Present conditions require the vessel to be disassembled or modified, or to use mobile cranes mounted on barges upriver of the bridge for travel under the existing bridge. These conditions would not change with a replacement 116-foot VNC bridge, and the vessel would still require modifications for transit. Therefore, the IBR Program found that a 116-foot VNC bridge would not impose new adverse impacts on business operations for this vessel. Furthermore, in response to the IBR Program's Draft Supplemental Environmental Impact Statement (SEIS), JT Marine stated that up to 13 vessels operated by its customers would be impacted by a 116-foot fixed-span bridge. The IBR Program coordinated directly with JT Marine and conducted additional research, as documented in Section G.1.1 of the Revised NIR, to understand potential impacts to its business. As evidenced by this research, no impacts to current business operations were identified.

Table 3 summarizes the impacted users and the mitigations for the impacts.

Table 3: Impacted Vessels/River Users and Proposed Mitigation

Vessel	Owner	Vessel Type	Air Draft (feet)	Trip Frequency	Proposed Mitigation
Impacts to Vessels					
DB 4100	Advanced American Construction	Marine contractor vessel	92	1 to 2 times per month, any time of year	An agreement has been reached that would result in no known adverse impacts to Advanced American's current operations. The proposed mitigation entails modifying the vessel or using mobile cranes mounted on barges upriver of the bridge.
DB Millenium	Advanced American Construction	Marine contractor vessel	155	Not identified	An agreement has been reached that would result in no known adverse impacts to Advanced American's current operations. The proposed mitigation action entails lowering the crane boom and lowering the mast.
Impacts to Future Shipments and Operations					
N/A; future marine contractor business operations requiring greater than 116' VNC	JT Marine	Not identified/ confidential	Not identified/ confidential	Any trips requiring clearance over 116 feet	An agreement has been reached that would result in no known adverse impacts to JT Marine's future business operations. Specific mitigation actions are confidential.
N/A; impact to fabricator's tallest future shipment	Greenberry Industrial	Barge with fabricated materials	136	Less than 1 trip per year, any time of year	An agreement has been reached that would result in no known adverse impacts to Greenberry Industrial's current operations. Specific mitigation actions are confidential.
N/A; impact to fabricator's tallest future shipment	Thompson Metal Fab	Barge with fabricated materials	165	Less than 1 trip per year, any time of year	An agreement has been reached that would result in in no known adverse impacts to Thompson Metal Fab's current operations. Specific mitigation actions are confidential.
Construction Impacts Only					
Yaquina [b]	USACE	Hopper dredge	92	2 times per month in October through July; 4 times per month in August and September	The *Yaquina* would be impacted during the construction period only. The IBR Program would pay the cost for the USACE to modify the mast to allow lowering of the antenna for construction or travel when river levels permit.

a Impacts to JT Marine's future business operations are presented generally since specific impacts are confidential.
b General mitigation actions to address impacts are presented in this table because specific agreement actions are confidential.
c It is anticipated that the *Yaquina* would not be permanently impacted; however, temporary impacts may occur during construction.

1.2 Meets River, Air, and Land Navigation Needs

Acknowledging that all bridges impact travel on navigable waters, the IBR Program analysis results indicate that the 116-foot bridge is the best option for enabling both river navigation and land transportation. The IBR Program understands that the USCG is tasked with providing reasonable navigation on all U.S. navigable waters. As such, the IBR Program carefully considered the definition of "reasonable navigation" presented in 33 Code of Federal Regulations (CFR) 116.01. Specifically, 33 CFR 116.01 states that "[a]ll bridges are obstructions to navigation and are tolerated only as long as they serve the needs of land transportation while allowing for the reasonable needs of navigation." Similarly, a presentation given on October 6, 2023, by the USCG Office of Bridge Programs Permits and Policy Division, CG-BRG-2, titled "Navigation Impact Reports, Navigation Evaluations and Preliminary Navigation Clearance Determinations" states the following regarding "reasonable navigation":

> *All bridges are obstructions to some extent. Bridges do not have to accommodate all existing or prospective navigation…. Bridges do not have to accommodate absolutely every possible existing or prospective navigation on a waterway. Rather, it is our job to ensure that the bridge meets the reasonable needs of navigation while facilitating other modes of transportation.*

The IBR Program is considering the CFR within the context of historic water and land navigational uses, existing conditions and trends, availability of facilities to accommodate navigation, and local, state, and national sustainable development goals.

1.3 Meets USCG Bridge Program Reasonable Needs of Navigation

The 116-foot fixed-span bridge meets the USCG Bridge Program requirements for Reasonable Needs of Navigation. The USCG Bridge Program Reasonable Needs of Navigation[4] document outlines 14 questions that assist the USCG in determining whether a proposed project will meet the reasonable needs of existing and potential navigation. At a high level, the questions regarding vessel transit ask whether the proposed bridge would:

- Establish a new navigational limiting factor on the waterway.
- Impact existing, planned, or prospective commercial and industrial facilities and, if so, what the anticipated economic impacts would entail.
- Impact river navigation, operations, or functions of USACE, USCG, cruise ships, commercial freighters, or other types of vessels.
- Obstruct navigation and, if so, what the economically feasible mitigation options would entail.

As described below, the 116-foot fixed-span bridge would facilitate existing uses with mitigation for impacted river users (Table 3) and provide a comprehensive approach to other modes of transportation. The 116-foot fixed-span bridge could accommodate or reach agreed-upon mitigation for vessel traffic as the navigation obstruction could be feasibly mitigated. Importantly, the percentage of affected river users would be extremely small, and other navigational limiting facilities exist in the waterway. There are no sources of data that directly compare the number of potentially impacted users with all river activity because the only

[4] U.S. Coast Guard. 2012. USCG Bridge Program. Reasonable Needs of Navigation: White Paper. Version 1.1, October 5, 2012.

recorded transits under the bridge are those that require an opening of the existing bridge. However, between 2015 and 2020, 1% of the estimated 19,636 total trips that required an opening of the BNSF Railway Bridge would be potentially impacted by a 116-foot fixed-span bridge, a majority of which would only be impacted during high-water events. Based on impacted vessels identified in the NIR and the subsequent analysis of Interstate Bridge lift log data that identified additional potentially impacted vessels, only two known vessels (*DB 4100* and *DB Millenium*) would be impacted by the reduced 116-foot VNC.

Ultimately, the IBR Program's analysis indicates that the 116-foot fixed-span bridge design option meets both river and land navigation needs while allowing landside connections, creating less intrusion on airspace than the existing bridge, maintaining appropriate highway and transit gradients, and avoiding the significant investment of public funds for construction and operation of a movable span that would only be required for four river users (Advanced American, Greenberry Industrial, JT Marine, and Thompson Metal Fab). The IBR Program asserts that a fixed-span bridge with 116 feet of vertical clearance best balances the competing needs of water, air, and land and provides the best solution for the greatest number of river users and broader navigational needs. The IBR Program is aware that marine navigational needs may change in the future and that, if approved, the 116-foot fixed-span bridge could be modified to accommodate a higher VNC in the future.

There are limited facilities between the Interstate Bridge and the I-205 river crossing that would be an origin or destination for vessels in addition to other marine traffic that transits beyond I-205. The next limiting facility for river users is the Bonneville Lock and Dam, approximately 39 miles upstream of the Interstate Bridge at RM 145.3, which limits the HNC and river depth, restricting the size of ships that can transit beyond that location. Other nearby limiting facilities beyond the lock and dam are the Bridge of the Gods (135-foot VNC, RM 148.3), the Hood River–White Salmon Interstate Bridge (148-foot VNC with span open, RM 169.8) and the Celilo Bridge (79-foot VNC with span open, RM 201.2).The Celilo Bridge, located downstream of the primary upriver ports for grain and other goods, restricts river access and capacity to those ports.

1.4 Alters the Federal Navigation Channels

The IBR Program would alter the existing FNC by shifting locations to align with the HNCs of the spans of the replacement bridges. The existing Interstate Bridge has nine in-water pier sets, whereas the new bridges would be built on six in-water pier sets. The IBR Program is currently seeking the USACE's permission for the proposed changes, which include alterations to the FNCs and the Upper Vancouver Turning Basin via the Section 408 Program review process. To date, Section 408 Civil Works authorization has been delegated to the USACE Portland District under a nationwide permit (NWP), and it is anticipated that no changes to existing Congressional authorization will be needed to enable construction; interagency coordination is ongoing. As with the existing bridge, the new Columbia River bridges would provide three navigation channels.

With the IBR Program, the Primary Channel would be shifted south approximately 500 feet to align with the highest VNC and to clear the span of the replacement bridges; the centrally located existing Barge Channel would shift to the northernmost position and would be renamed the North Barge Channel. Slight centerline adjustments would be made to the existing southernmost Alternative Barge Channel to clear the span of the replacement bridges, which would be renamed the South Barge Channel. Each of the three proposed altered navigation channels would have HNCs equal to or greater than existing conditions. The proposed HNC width includes a 300-foot navigation channel plus a 50-foot channel maintenance buffer on each side (400 feet total). The increased HNC allows for safer navigation of vessels on the waterway. In 2023, the IBR Program conducted a real-time vessel simulation for deep-draft navigation and shallow-draft navigation based on characteristics of the existing navigation channels, modified channels, and maneuvering areas during construction sequencing, and the proposed navigation channels following construction of the replacement

bridges. Modeling results indicated that the wider channels and higher bridge elevation in the proposed channel and bridge design allow for higher safety and visibility and are an improvement over the existing conditions for navigation. Additional details are provided in section N of the Revised NIR. The Upper Vancouver Turning Basin would also be altered to clear the replacement bridges by shifting its location downstream. The current dimensions and northwest orientation would be maintained. The alteration of the three navigation channels was analyzed during ship simulations, and the safe navigability of vessels was verified, as discussed further in the Revised NIR.

Although the governing structure VNC would be reduced by the 116-foot fixed-span bridge, this bridge design meets the existing and potential reasonable needs of navigation on the Columbia River by mitigating impacts to three of the four impacted river users (with discussions still ongoing with the fourth) and allowing passage for all other vessels. It is the best design option for balancing river and landside navigation needs.

2. WATERWAY CHARACTERISTICS

Waterway characteristics of the Columbia River east of the Interstate Bridge have historically supported marine fabricators, and the June 2022 PNCD mentions that additional dredging east of the Interstate Bridge could occur to accommodate larger vessels up to a depth of 27 feet. As identified in the IBR Program's NIR and in the USCG June 2022 PNCD, this waterway has served as a corridor for specific marine fabricator shipments with a VNC of up to 178 feet. However, the IBR Program analysis, and communications with the river users and community noted below, verifies that the 116-foot fixed-span bridge (1) accommodates marine fabricator and marine contractor vessel passage and (2) allows current dredging (by the *Yaquina*) upstream of the bridge to continue to allow passage of vessels and assumes that additional dredging to deepen the channel east of the bridge is unlikely.

2.1 Accommodates Marine Passage of Fabricator Shipments and Marine Contractor Vessels

Marine fabricators and marine contractor vessels would be able to navigate under a 116-foot fixed-span bridge. The IBR Program's analysis found that the proposed bridge would impact two marine fabricators and a marine contractor company (see Table 3), and agreements between the IBR Program and these companies have been reached to address known impacts to their operations in a way that keeps those businesses operating within the region.

- **Marine fabricators:** The IBR Program's analysis of vessel traffic identified two marine fabricators with vessels transiting with height-limited cargo that would be impacted by the 116-foot fixed-span bridge—Greenberry Industrial and Thompson Metal Fab. Specific mitigation actions have been identified, and agreements have been reached between these marine fabricators and the IBR Program. Modifications of other impacted vessels have been identified that would result in the safe transit of these vessels. Vigor Industrial was originally identified as an impacted marine fabricator with height-limited cargo; however, as discussed in Section 5 of this white paper, Vigor Industrial is no longer fabricating steel girders and other large complex components at the CBC and would not be impacted by a 116-foot VNC.
- **Marine contractor vessels:** The IBR Program's analysis of vessel traffic further identified one marine contractor company, Advanced American Construction, as owning vessels with height-constricted appurtenances that limit passage under a 116-foot bridge. Specific mitigation actions have been identified, and agreements have been reached between this company and the IBR Program.

2.2 Allows Current Dredging Upstream of the Bridge to Continue and Assumes Additional Dredging East of the Bridge is Unlikely

The *USAV Yaquina* dredge, owned by the USACE, currently maintains the channel downstream of the Interstate Bridge and transits annually under the Interstate Bridge. Per communications with the USACE, the *Yaquina* would be able to maintain passage under a 116-foot fixed-span bridge after construction. It would be impacted during construction but would be modified for passage. The IBR Program considers this to be an impacted vessel, though it is acknowledged that impacts would be temporary following modifications, as presented in the Revised NIR.

The deep-draft navigation channel currently does not extend east (upstream) of the Interstate Bridge, and the need for additional deeper dredging is unlikely. Near-term vessel usage is unlikely to include oceangoing deep-draft ships that would require a higher VNC traveling upriver of the Interstate Bridge because the channel depth will not accommodate those vessels. The largest vessels currently transiting the bridge do not require more than a 17-foot depth. Although the channel is authorized for deeper dredging to 27 feet, this depth would not accommodate most oceangoing vessels and container ships.

Future dredging upstream of the Interstate Bridge is not foreseeable for the reasons listed below.

- **Economically unfeasible and time-prohibitive process:** When the USACE deepened the navigational channel downstream of the Interstate Bridge by 3 feet in 2010, the cost was $190 million to first deepen the channel as documented in a 2012 article in *The Columbian*.[5] In addition, the USACE pays an annual $80 to $90 million per year for maintenance dredging to manage the 43-foot channel depth.[6] There are currently no existing plans for future dredging east of the Interstate Bridge. The USACE confirmed that it has no plans to maintain the Columbia River channel east of the Interstate Bridge to -27 feet, and the Port of Portland reemphasized this when communicating with the IBR Program. If requests were made to do so, the USACE would need to consider them in context of all other dredging programs and would need an assessment proving that economic benefits from navigation outweigh the costs to improve and maintain deeper depths. This would require a detailed study and environmental approval process, as well as U.S. Congressional approval.

  It took approximately 20 years for the process to design, permit, and then dredge the Columbia River by an additional 3 feet in 2010. Documentation of this 20-year timeline confirms that it began in 1989 and required the USACE to assess the feasibility of deepening the Columbia River channel, obtain U.S. Congressional approval to deepen the river, obtain National Marine Fisheries Service authorization, complete project design, and then dredge.[7] Approximately 15 years of this timeline was spent on permitting and design; final approval to dredge was obtained in 2004, and dredging began in 2005 and took approximately 5 years to complete.
- **Legal challenges regarding potential impacts to cultural and other environmental or social resources:** Following the 2010 dredging process, interest groups and others voiced their concern regarding implications of dredging on area cultural resources and species listed under the Endangered

[5] *The Columbian*. 2012. Deeper channel has economic benefits. January 14, 2012. Available at: <https://www.columbian.com/news/2012/jan/14/deeper-channel-has-economic-benefits/>. Accessed August 2024.

[6] U.S. Army Corps of Engineers. 2025. Direct email communication from U.S, Army Corps of Engineers (C. O'Donnell) to the IBR Program. "RE: Annual dredging cost to maintain 43 ft foot channel depth." June 4, 2025.

[7] *The Oregonian*. 2010. Columbia River dredging ends this year, benefits end mixed. April 25, 2010. Available at: <https://www.oregonlive.com/business/2010/04/columbia_river_dredging_ends_t.html>. Accessed August 2024

Species Act, along with their habitats, resulting in the NW Environmental Associates suing the USACE.[8] Ultimately, the court ruled in favor of the USACE, and the lawsuit was dismissed; however, significant public opinion against dredging in this area persists. An additional cultural resources study to ensure compliance with Section 106 of the National Historic Preservation Act and assessments of other environmental and social impacts would be legally required to determine potential impacts of dredging east of the Interstate Bridge.

- **Lack of need to move large cargo requiring deeper dredging:** A primary consideration for the need to move larger cargo, requiring a bridge that can accommodate larger vessel or cargo travel, is the potential for growth in the wind energy market. However, the Port of Vancouver emphasized that there is not a need to move wind energy components along the Columbia River near Interstate 5 (I-5) because there are no nearby manufacturing plants; wind energy equipment production facilities are growing elsewhere (Alberta, Montana, and eastern Oregon). The Port of Vancouver anticipates that the only market that could grow, requiring larger vessel travel under the Interstate Bridge, is the oil exploration market but believes there is no planned development. They informed the IBR Program that no other fabricators would require a bridge larger than the 116-foot fixed-span bridge to move large cargo.
- **Unlikely need for future larger vessels:** The IBR Program met with representatives of the Columbia River High, Wide, and Heavy Corridor Coalition (the Coalition), consisting of ports (Portland, Longview, Vancouver, and Morrow), agencies, businesses, and business associations to understand the need for future large vessel travel. A main objective of this group is to promote and develop the region as the leading destination for cargoes to support industry and the regional economy. When meeting with the IBR Program in 2024, the Coalition stated it does not anticipate high, wide, and heavy cargo movement upriver of the Interstate Bridge. The IBR Program also met with the Port of Vancouver's High, Wide, and Heavy Corridor working group in July 2024 to better understand whether the Port of Vancouver needs to deliver high, wide, and heavy loads to inland destinations from Columbia River ports.[9] They stated that there is no need for high, wide, and heavy cargo movement upriver of the Interstate Bridge, and furthermore, they do not anticipate a need for investments in high, wide, and heavy cargo upriver from the Interstate Bridge at this time. It should also be noted that, the Columbia River Gorge National Scenic Area land protections east of the Portland-Vancouver metropolitan area do not allow for the development that would be necessary to support future deep-draft maritime upriver of the Interstate Bridge. Further to the lack of a need for future large vessel transit, the Columbia River's current physical conditions upstream of the Interstate Bridge are incompatible with the required conditions that would allow ocean-going and other large vessels to transit the river. Regardless of the replacement bridge height, the following physical barriers – the existing channel depth, locks, and ports – do not allow upriver transit of large vessels:
  - **Shallow channel depth:** The channel depth upriver of the Interstate Bridge is too shallow to accommodate the 35 to 45 foot drafts typically required of ocean-going container ships.
  - **Locks designed for barge traffic:** The locks upriver of the Interstate Bridge, including Bonneville, The Dalles, and John Day, are designed for barges rather than large, deep-draft cargo ships. Their depth and width constraints currently prohibit ocean-going or similarly large ships.

[8] Department of the Army, Office of the General Counsel. 2006. Memorandum for Chief Counsel, U.S. Army Corps of Engineers, "Northwest Environmental Advocates v. U.S. Army Corps of Engineers." May 11, 2006. Available at: <https://www.usace.army.mil/Portals/2/docs/NWEnvironmental_AdvocatesRFC.pdf>. Accessed September 2024.

[9] Port of Vancouver. 2024. High, Wide & Heavy Corridor. Available at: <https://www.portvanusa.com/marine/hwh-corridor/>. Accessed August 2024.

- **Lack of suitable ports:** There are currently no ports east of the Interstate Bridge capable of accommodating container ships, and port upgrades to support larger vessels would require major overhauls, including deepening channels and developing turning basins.

A full analysis of Columbia River waterway characteristics is provided in the Revised NIR, Section C.

3. EMERGENCY RESPONSE

The June 2022 PNCD discussed emergency response vessel usage of the waterway. Accordingly, the IBR Program conducted further analysis and communicated with potentially affected emergency response users, resulting in the following conclusions.

The 116-foot fixed-span bridge: (1) does not constrain national security event response vessels; (2) allows for the Columbia River to be used as an aircraft ditch site as alternative emergency responses are in place near Portland International Airport (PDX); (3) does not preclude Vigor Shipyard tenants' (downriver of the Interstate Bridge location) operations related to emergency services; and (5) accommodates natural disaster response mooring. These topics are summarized below, along with responses from the IBR Program.

The June 2022 PNCD also describes how the waterway east of the Interstate Bridge was historically used to build naval ships at the World War II Kaiser Shipyard, and the June 2022 PNCD states that this shipyard, now known as the CBC, could support future shipbuilding. The IBR Program also acknowledges that the CBC, which has been owned by Killian Pacific since 2006, currently serves river users. The IBR Program has conducted additional research and outreach on the CBC's current and future operations to respond to these points. The IBR Program's analysis of the CBC's current use of the area as a landowner rather than as a river user, and potential impacts to the CBC's tenants, are provided in Section 5 of this white paper regarding unique manufacturing/service facilities, as this information does not pertain to emergency services.

3.1 Does Not Constrain National Security Response Vessels

The June 2022 PNCD notes that, in the event of a national security event (humanmade, natural disaster, or protracted conflict), federal government vessels from the U.S. Department of the Navy (U.S. Navy), USCG, and U.S. Maritime Administration (MARAD) may be deployed in support of the Captain of the Port Maritime Transportation System Recovery Unit or other such contingency requirements. However, in response to a request from the IBR Program on May 15, 2024, MARAD stated that the MARAD vessels that use the Columbia River waterway would not be impacted by the proposed 116-foot fixed-span bridge, noting that all home-ported vessels in the region are below I-5 and west of the Interstate Bridge, and there are no plans to transit vessels upriver. Similar requests made to the U.S. Navy and USCG for vessel information did not reveal any vessels that would be constrained by a 116-foot fixed-span bridge. Furthermore, the Columbia River's channel under the Interstate Bridge is not deep enough to accommodate MARAD vessels, even with a 178-foot bridge (the maximum bridge height considered during planning efforts).

3.2 Allows for the Columbia River to be Used as an Aircraft Ditch Site as Alternative Emergency Responses Are in Place near the Portland International Airport

As stated in the June 2022 PNCD, PDX is located east of the Interstate Bridge and uses a portion of the Columbia River at Lemon Island as a predetermined aircraft ditch site, 1 nautical mile from the Interstate Bridge, per the USCG Marine Safety Unit Portland Mass Rescue Operation Plan. The IBR Program contacted

the Port of Portland to discuss emergency operations related to PDX. The IBR Program asked the Port of Portland whether heavy lift cranes and barges would need to transit the Columbia River east of the Interstate Bridge in the event of an emergency, necessitating a VNC greater than 116 feet. The Port of Portland indicated that no such scenario would occur. The Port of Portland emergency and planning staff specifically said that there are no standards or protocols related to aircraft in the Columbia River, such as specific sites for emergency landings in the river. They noted that the following existing Port of Portland emergency services could continue without impact of a 116-foot fixed-span bridge:

- Because PDX is located next to the Columbia River, Port of Portland emergency response plans and training include responding to an incident in the water. However, initial emergency response activities would include small craft operated by local law enforcement and emergency response agencies.
- The City of Portland Fire & Rescue (PF&R) provides firefighting, emergency medical services, technical rescue, and support to shoreline emergencies from the waterside and could provide emergency services for an aircraft water incident with a 116-foot fixed-span bridge in place. PF&R has three stations along the Willamette and Columbia Rivers that deploy fireboats and smaller rescue boats.[10]
- The Port of Portland's fleet of water rescue vessels that would respond to aircraft water incidents (operated by the Port of Portland Fire Department) would all be able to navigate through the proposed 116-foot VNC. Equipment is available to respond to potential emergencies that is not height-constrained, and floating cranes or construction equipment, when needed, would be selected based on availability and characteristics that could be accommodated by the waterway. Much of this information is documented in an email message dated December 14, 2023, from Rob Mathis, Port of Portland Fire Chief, to Brian Carrico, IBR Program USCG Bridge Permit Lead. Additional details are provided in the Revised NIR, Section E.8.

3.3 Does Not Preclude Vigor Shipyard Tenants' Operations Related to Emergency Services

Vigor Shipyard tenants related to emergency services do not transit under the Interstate Bridge. It is documented in the June 2022 PNCD that national security assets from the Military Sealift Command Hospital Ships *USNS Mercy* (which requires a VNC of 135 feet) and *T-AKE* and *T-AO* (dry cargo and tanker) routinely transit from the Pacific Ocean, up the Columbia River, and south on the Willamette/Columbia confluence to enter the Vigor Shipyard at Swan Island within 5 miles downriver of the Interstate Bridge. The IBR Program confirmed that these vessels do routinely transit up the Columbia River to Swan Island for service. However, they do not transit underneath the Interstate Bridge and have no plans to transit upriver. For example, the lay berth requirements for the *T-AVB SS Curtiss 14* are a draft of 30 feet, a dock with truck access, and sewer/water/shore power at the dock. There are no facilities with these features upriver of the Interstate Bridge. The Vigor facility at CBC is located upstream from the Interstate Bridge. However, the company has restructured its business model at this location and will be downsizing its complex fabrication business. As a result, it would no longer require shipments with higher than 116-foot VNC and, therefore, would not be impacted.

3.4 Accommodates Natural Disaster Response Mooring

Natural disaster response mooring would be accommodated with a 116-foot bridge. The June 2022 PNCD states that a replacement bridge would prevent other Department of Defense salvage and diving assets from

[10] Portland Fire & Rescue. 2022. Service Delivery and Staffing Study, Section 6.5.1. Available at: <https://www.portland.gov/fire/documents/service-delivery-and-staffing-study-volume-1-technical-report/download>. Accessed in August 2024.

mooring upstream (east) of the Interstate Bridge during a natural disaster response, thus straining the U.S. Maritime Transportation System due to limited anchorages/berths in the area. However, per discussions with the Port of Portland, as noted in Sections 3.2 and 3.4, the equipment and vessels that would be deployed in the event of a natural disaster would not be impeded by the 116-foot fixed-span bridge. Rather, salvage and diving equipment, including floating cranes, would be selected based on availability and characteristics that could be accommodated by the waterway. Further, such selection could include a derrick barge that either is not height constrained or has a collapsible boom to accommodate lower clearances. PF&R has three stations along the Willamette and Columbia Rivers that deploy fireboats and smaller rescue boats,[11] and communication with PF&R indicates that these emergency vessels would not be constrained by a 116-foot bridge. Similarly, the Port of Portland has a fleet of water rescue vessels that would respond to aircraft water incidents during a natural disaster emergency event, none of which have heights that would be constrained by the proposed 116-foot fixed-span bridge. Notably, liquefiable soils upriver of the Interstate Bridge limit use of non-stable land for emergency response facilities as it would not be usable after a Cascadia zone earthquake.[12]

A full description of emergency vessel usage of the waterway is included in Section E of the Revised NIR.

4. COMMERCIAL NAVIGATION TRENDS

The June 2022 PNCD cites concerns over commercial navigation trends. Specifically, it suggests that large commercial ships have historically used the Ports of Portland and Vancouver, and there is a global trend for vessels to increase in size, including the *MV Navios Unite* (a Post-Panamax vessel) and the *Caribbean Princess* cruise ship. The June 2022 PNCD also notes that JT Marine invested in a new drydock facility that is the largest dry dock in its facility. Further analysis by the IBR Program found that the cited ships (*MV Navios* and *Caribbean Princess*) have not neither transited nor have a reason to transit east of the Interstate Bridge, and larger-trending container ships are serving other areas and do not have a current or projected need to travel upstream of the Interstate Bridge. Therefore, a 116-foot fixed-span bridge: (1) allows the *MV Navios Unite* and *Caribbean Princess* to continue business as usual downstream of the Interstate Bridge; (2) meets vessel travel demands, acknowledging that large vessel travel upstream of the Interstate Bridge is not anticipated; and (3) maintains marine commerce of activities for shipping grain.

4.1 Allows the *MV Navios Unite* and *Caribbean Princess* to Continue Business as Usual

As described in Section G.2.1 in the Revised NIR, a 116-foot VNC would not impact cruise ships that require frequent passage under the Interstate Bridge. Travel east of the Interstate Bridge is not expected for the *MV Navios Unite* or the *Caribbean Princess*. There are no facilities capable of handling container ships, nor is there sufficient draft to accommodate vessels east of the Interstate Bridge. Significant improvements would be needed to develop the required facilities and drafts for these vessels. Recent call records for these vessels are detailed below.

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[11] Portland Fire & Rescue. 2022. Service Delivery and Staffing Study, Section 6.5.1. Available at : <https://www.portland.gov/fire/documents/service-delivery-and-staffing-study-volume-1-technical-report/download>. Accessed August 2024.

[12] Multnomah County. 2023. Multnomah County Multi-Jurisdictional Natural Hazards Mitigation Plan. Available at: <https://www.multco.us/em/natural-hazards-mitigation-planning>. Accessed September 2024.

- ***MV Navios Unite***: The *Navios Unite*—the largest container ship to call on the Columbia River at 1,100 feet long, 173 feet wide, and with a 43-foot draft—called on the Port of Portland's Terminal 6, located downriver of the Interstate Bridge, and did not travel east of the Interstate Bridge.
- ***Caribbean Princess***: The *Caribbean Princess*, which has a 183-foot air draft, which would not clear the existing bridge, has called on Swan Island Shipyard but did not transit east of the Interstate Bridge. Other cruise ships of similar size also call on Swan Island Shipyard and do not travel above the Interstate Bridge.

4.2 Meets Vessel Travel Demand, Acknowledging There Is No Anticipated Demand for Large Vessel Travel Upriver of the Interstate Bridge

Larger-trending container ships are serving other areas, such as Terminal 6, and do not have a current or projected need to travel upstream of the Interstate Bridge. Recent discussions with the Port of Portland confirmed that container ships are trending larger, beyond the ability of the existing lower Columbia River navigation channel. However, deepening the navigation channel upriver of the Interstate Bridge to accommodate larger vessels, even if receiving facilities were present, is economically impracticable and technically complex (see Section 2.2 of this white paper). Furthermore, container ships in the area are not increasing in height per the Interstate Bridge lift logs.

- **Interstate Bridge Lift Logs:** A compilation of Interstate Bridge lift log data from 2007 to 2024 shows that Interstate Bridge lifts are not increasing in height due to changes in vessel size.[13] The height of bridge lift requests vary widely based on daily fluctuations in water levels. Vessel size is also limited by other governing structures east of the Interstate Bridge.
- **Development Opportunities:** The vast majority of development opportunities are west of the Interstate Bridge with established ports due to constraints east of the bridge. Several factors limit development opportunities along the Columbia River east of Portland and Vancouver, including shallow channel depth, dams, locks, and land use restrictions (e.g., Columbia River Gorge National Scenic Area).

Impacted river users and agreed-upon mitigation are summarized in Section 1 of this white paper. This information is also provided in Section S of the Revised NIR, and prospective commercial navigation is discussed in Sections G.1 and G.2 of the Revised NIR.

4.3 Maintains Marine Commerce Activities for Shipping Grain

Although not specifically noted in the June 2022 PNCD, the IBR Program conducted research specifically on grain shipments along the Columbia River. Past coordination with MARAD had initially focused on concerns that a 116-foot VNC fixed bridge span could impact MARAD-operated ships. However, it was later clarified that their vessels are home-ported west of the Interstate Bridge and would not be affected by the proposed replacement. While MARAD has recently been active in supporting marine highway initiatives on the Columbia River, particularly through grants to the Port of Morrow, including a 2024 award for equipment supporting barge container movements, these efforts appear unrelated to containerized cargo movement by sea. Additionally, the Port of Morrow is located upriver of the BNSF bridge at Celilo, which already has a VNC of 79 feet, further suggesting that MARAD-supported operations in that area would not be impacted by the proposed 116-foot VNC.

[13] Bridge lift data were also reviewed through July 2025; no newly impacted vessels were identified since 2024.

Furthermore, the IBR Program's analysis of potential impacts to grain shipping resulted in understanding the following points:

- *The most common methods for shipping grain on the Columbia River can be accommodated by a fixed-span bridge.* Grain is typically shipped on the river by hopper barge or tug and barge systems, rather than oceangoing container vessels, as it is more cost effective and is better supported by existing facilities east of the Interstate Bridge. The grain is put into grain elevators, then loaded onto bulk carriers (not container ships) before being shipped to international markets. There is no indication that this approach is shifting along the Columbia River.
- *If there were a shift to move grain through barges, these would continue to be accommodated by a 116-foot VNC fixed-span bridge.* Container shipping is not currently supported by ports east of the Interstate Bridge. For the ports with facilities that could service container ships, the physical conditions of the river's depth and lack of turning basins prevent them from accessing the ports. The identified facilities are:
  - Port of Vancouver (~2 miles west of the Interstate Bridge) and Port of Longview (~40 miles west of the Interstate Bridge), which is able to service containers but mainly services other forms of shipping.
  - Port of Portland (~5 miles east of the Interstate Bridge), which is phasing out its container service.
  - Port of Lewiston (~335 miles east of the Interstate Bridge), which suspended its container on barge service.
  - Smaller ports within 200 miles east of the Interstate Bridge (Pasco, Benton, Morrow), which do not have container terminals.
- *The volume of grain shipped by barge on the Columbia-Snake River system has been in a long-term decline.* In recent years, five shuttle-train loading facilities have been built in eastern Washington. These significantly reduce the cost of shipping grain by rail and have taken market share from the barge system.
- *Shallow channel depth prevents upriver transit.* The majority of oceangoing container ships require at least 35 to 45 feet of draft, making upriver transit impossible. These vessels require deeper drafts than the authorized channel depth of up to 27 feet that exists east of the Interstate Bridge.
- *Multiple locks (Bonneville, The Dalles, John Day) limit the size of vessels moving upriver*. These conditions prevent deep-draft cargo ships, especially container vessels, to transit beyond the lower river system, regardless of bridge height. The locks along the Columbia River are compatible with barge traffic but not deep-draft container ships, such as the Panamax (draft of 39 to 45 feet) and the Handymax/Supramax (draft of 32 to 38 feet). The Bonneville lock sill, for example, is at +51 feet mean sea level (MSL), with the navigation pool held at +73 to +75 feet MSL, limiting maximum upstream vessel draft to only 22 to 24 feet with no buffer.

In addition to the above, additional factors limit development and shipping along the Columbia River east of Portland-Vancouver, including land-use parameters, (e.g., the Columbia River Gorge National Scenic Area, as noted in Section 5 of this white paper).

5. UNIQUE MARITIME MANUFACTURING/SERVICE FACILITIES

The IBR Program notes that future marine commerce development of manufacturing and service facilities upriver of the Interstate Bridge is unlikely for multiple reasons. There is little viable industrial land east of the Interstate Bridge, and land downriver of the Interstate Bridge is more likely to undergo development because viable industrial land is available with access to a workforce and deeper draft (43 feet). Two vessels that

support marine commerce are expected to be impacted; see Section 1.1 of this white paper for details about a mitigation agreement has been reached with the owner of those vessels in a way that will continue to support their unique economic pursuits within the region unimpeded by the IBR Program.

Thus, the IBR Program found that a 116-foot fixed-span bridge: (1) does not impact upriver marine commerce development; (2) allows the CBC to continue operations as a landowner; (3) maintains maritime capabilities of the U.S. government; (4) allows forecast downriver land development to continue; and (5) mitigates anticipated impacts to vessels supporting marine commerce.

Additional details regarding these four points are below.

5.1 Does Not Impact Upriver Marine Commerce Development

There is little viable industrial land east of the Interstate Bridge, and land that could be considered for marine commerce development upriver is nonviable. For the land that is available upriver of the Interstate Bridge, superfund sites are present, and most of the parcels are noncontiguous. The IBR Program reviewed the vacant buildable industrial lands within 0.25 miles of the Columbia River using the Clark County Vacant Buildable Lands Model (VBLM). Of the 663 acres of industrial lands upriver that are vacant or underutilized, approximately 8% (or about 51 acres) are not constrained by local critical areas regulations or in environmentally sensitive areas that restrict development. Upriver industrial lands include the CBC, Port of Camas-Washougal, and Columbia Vista Corporation properties. It should be noted that the VBLM analyzed industrial properties based on proximity to the river (0.25 miles or 1,320 feet) and did not evaluate whether each property has direct access to the Columbia River. See Figure 1 for an illustration of vacant or underutilized land upriver of the Interstate Bridge.

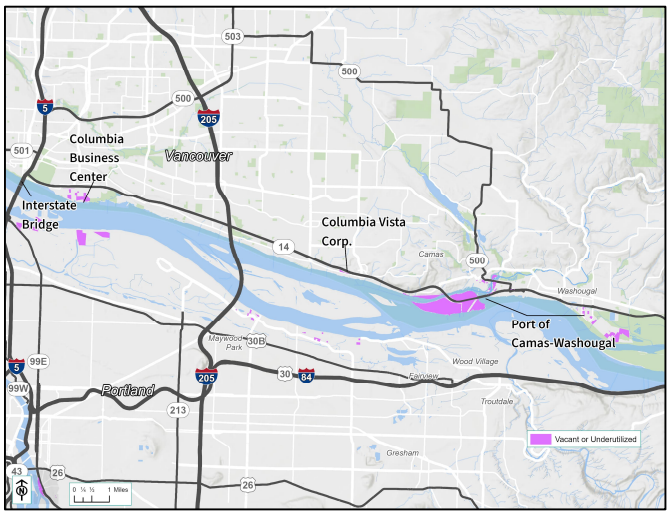

Figure 1. Vacant/Underutilized Parcels Upriver of the Interstate Bridge Within 0.25 Miles of Navigable Columbia and Willamette Rivers

5.2 Allows the Columbia Business Center to Continue Operations as a Landowner

The CBC, owned by Killian Pacific, is an approximately 80-year-old, 220-acre waterfront industrial park upriver of the Interstate Bridge with buildings, outside storage, and access to multimodal transportation (rail, ground, and water). The CBC does not own or operate vessels or engage in maritime activities that depend on Columbia River navigable waters. Rather, the CBC rents its facilities to various tenants that are river users, including vessel owners and operators, fabricators, and providers of maritime products and services that use the Columbia River to transport goods and services. As such, the IBR Program identified the CBC as a landowner with a right of access to the Columbia River. The IBR Program is not taking or damaging any right that CBC has regarding river access. Furthermore, the Washington Constitution vests sole ownership in the beds and shores of all navigable waters to the state (up to and including the line of OHWM), and the right of access to and use of the navigable channel is a public right. To address potential impacts to current

operations, the IBR Program identified and contacted the CBC's tenants that are river users (Greenberry Industrial and Thompson Metal Fab) as noted in Section 1.1. Although Killian Pacific stated in correspondence with the USCG that it would lose significant revenue from its inability to lease the CBC to major industrial companies without a vertical bridge clearance of at least 178 feet, the IBR Program disputes this claim. Additionally, the IBR Program notes that neither the CBC nor Killian Pacific qualify for mitigation of purported impacts to navigation like those impacting a river user.

Notably, Killian Pacific submitted a formal request to the City of Vancouver, Washington, in May 2025, requesting a change from the CBC's existing light and heavy industrial comprehensive plan designation to a Regional Activity Center (RAC) designation for the entire site. An RAC designation would, as indicated by Killian Pacific in the request, "transition CBC from an underdeveloped legacy of industrial uses to a new vibrant waterfront district" to promote long-term mixed-use on the site and "transition to a new mix of economic activities." [14] This request is indicative of Killian Pacific's intention to shift its business model to pursue mixed commercial development rather than focus on industrial use that would require the movement of large goods on the Columbia River.

5.3 Maintains Maritime Capabilities of the U.S. Government

Although not discussed in the June 2022 PNCD, the IBR Program considered how the proposed 116-foot fixed-span bridge could impact maritime capabilities specific to those outlined in the April 2025 Presidential Executive Order 14269, "Restoring America's Maritime Dominance."[15] Ultimately, the proposed bridge aligns with the priorities of this Executive Order because it would not impact upriver marine commerce development or existing marine commerce operations.

Due to the CBC's history of hosting the Kaiser Shipyard that produced and serviced military vessels during the 1940s, the IBR Program reviewed the site's past use and current conditions in order to consider its future maritime capabilities. While a proposed 116-foot VNC would not preclude naval shipbuilding, the CBC is an unlikely site for future production due to the investments needed to upgrade the facilities. With regard to past production, most of the vessels that were constructed for the U.S. Army during the 1940s would not be constrained by a 116-foot VNC. As detailed in Section I of the Revised NIR, Table I.1-1, of the six vessel types that were produced at the Kaiser Shipyard from 1942 through 1946, only one (the S4-S2-BB3 ship type) would be impacted by a 116-foot VNC. In addition, there are no known currently designed military vessels that would be height-constrained by the proposed 116-foot VNC. However, while a 116-foot VNC would not preclude the CBC site from being redeveloped as a naval shipyard, as noted in Section 3, significant investments in infrastructure and dredging planning, design, authorization, and funding would be required before it could support rebuilding operations. Locations downriver of the Interstate Bridge that do not require additional investments in rebuilding facilities or authorizing new dredging and already have access to a larger workforce (described in Section 5.4) are better suited for ship construction.

[14] Slick, M. and Killian Pacific, letter to City of Vancouver Community Development, May 10, 2025.

[15] U.S. Federal Register. 2025. Presidential Executive Order 14269, "Restoring America's Maritime Dominance." April 9, 2025. Available at: <https://www.federalregister.gov/documents/2025/04/15/2025-06465/restoring-americas-maritime-dominance> Accessed April 2025.

5.4 Allows Forecast Downriver Land Development to Continue

Land downriver of the Interstate Bridge is more likely to undergo development because viable industrial land is available with access to a workforce, and viable land for marine commerce development is located downriver. The VBLM for Clark County shows a greater availability of vacant and underutilized industrial land, not constrained by critical areas, downriver of the Interstate Bridge than upriver of the bridge (Figure 1). Of the downriver industrial lands, 883 acres are vacant and underutilized, of which 19% (or about 221 acres) are not constrained by critical or sensitive areas. It should be noted that the VBLM analyzed industrial properties based on proximity to the river (0.25 miles or 1,320 feet) and did not evaluate whether each property has direct access to the Columbia River. Although it is not classified as vacant or underutilized land, a downriver parcel that could experience future marine industrial development is Terminal 6 at the Port of Portland, which covers about 420 acres. Terminal 6 is set up for the movement of goods, primarily automobiles, containers, and break bulk, like wind turbines. In addition, a parcel of approximately 17 to 22 acres is situated on the east side of Terminal 6 and is available for further development to support marine commerce. See Figure 2 for an illustration of vacant or underutilized land downriver of the Interstate Bridge. During the IBR Program's conversations with the Port of Portland, Port officials indicated that there is no maritime functionality upriver of the current Interstate Bridge, so the new Columbia River bridges pose few—if any—impacts to Port activity.

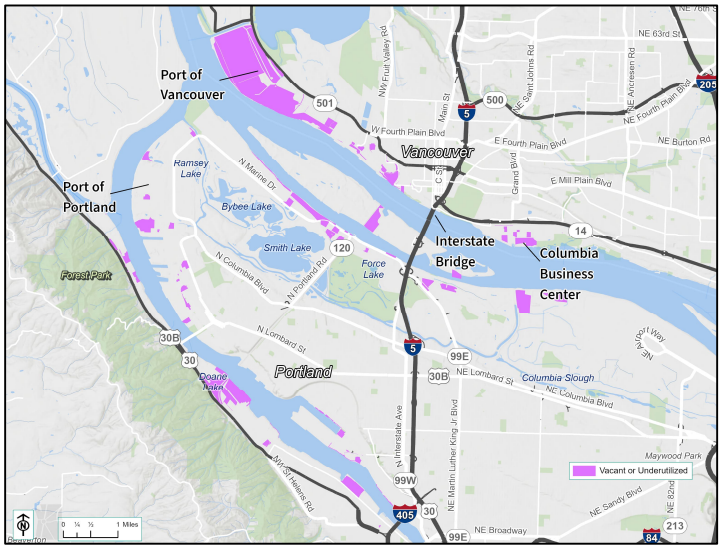

Figure 2. Vacant/Underutilized Parcels Downriver of the Interstate Bridge Within 0.25 Miles of Navigable Columbia and Willamette Rivers

Height-constrained work will continue to be supported by the numerous existing facilities that already support river commerce west of the existing bridge. The river west of I-5 is deep enough for large deep-draft vessels, and multiple existing facilities and infrastructure continue to support vessel fabrication. Other locations in the region with marine industrial land west of I-5 on the Columbia and Willamette Rivers will continue to support the growth of commerce along the river, including Port of Vancouver, Port of Portland, Port of Longview, Astoria, Tongue Point, Point Westward, and Port of Kalama.

5.5 Mitigates Impacts to Vessels Supporting Marine Commerce

Some vessels that support marine commerce, including two fabricators (Greenberry Industrial and Thompson Metal Fab), one vessel owned by the Advanced American marine contractor company, and the future business operations of the JT Marine shipyard services company, are expected to be impacted and addressed as detailed in Table 3. The CBC tenants identified as impacted by the 116-foot fixed-span bridge in the NIR are Greenberry Industrial, JT Marine, and Thompson Metal Fab. As a tenant of CBC as well, Vigor Industrial owns marine service facilities near the CBC and previously supported commercial and government projects that required the subject waterway and current VNC to transport their products. However, Vigor will no longer be fabricating these and similar products for the Folsom Spillway for Folsom Dam, launch towers for the National Aeronautics and Space Administration, or wheel gates for a dam on the Ohio River and will have no need for a

VNC beyond 116 feet. Because Vigor is shifting its business model, per verbal communications in spring 2025 with the IBR Program as well as a 2024 article in the *Portland Business Journal,* "Large Portland industrial employer plans layoffs," it will no longer be transporting large cargo requiring a VNC higher than 116 feet, and its business would not be impacted by the proposed fixed-span bridge.[16] The *Portland Business Journal* article stated that Oregon Iron Works (now Vigor) is ceasing the fabrication of steel girders and other large complex components formerly fabricated at the CBC, which means the business would not be impacted by a 116-foot fixed-span bridge. Impacted river users and proposed mitigation are summarized in Table 3, and future commercial use is discussed in Section S of the Revised NIR.

6. RECREATIONAL VESSELS

Although not discussed in the June 2022 PNCD, the IBR Program considered recreational vessels that transit upriver of the Interstate Bridge that could be impacted by the proposed 116-foot fixed-span bridge. To date, the IBR Program has not identified any recreational vessels that would be impacted by a 116-foot VNC.

The IBR Program's additional research and outreach conducted to arrive at this conclusion is described in this section. For further information regarding how the IBR Program has investigated each potentially impacted pleasure craft, refer to the Revised NIR. The Revised NIR's Section F contains present and prospective recreational navigation details, and Appendix H documents the research conducted for each vessel. User and survey data on these vessels are included in Appendices C and D.

6.1 Does Not Impact Known Recreational Vessels on the Columbia River

As described in the Revised NIR, Section F.1, the IBR Program concluded that the majority of recreational vessels using the waterway, according to 2007 through 2024 Interstate Bridge lift logs, are small powerboats and sailboats that would not be impacted by bridge heights and widths. To determine if a vessel could be potentially impacted by a 116-foot VNC, the IBR Program identified every recreational vessel from 2007 through 2024 recorded in the Interstate Bridge lift logs that required a lift of 78 feet or greater.

Powerboat air drafts ranged from 20 to 25 feet, almost never required a bridge opening, and none were found to be impacted by a 116-foot VNC. However, some sailboats and private yachts were identified as potentially height-restricted, and additional research was conducted on these vessels.

Sailboats and private yachts are the tallest types of recreational vessels transiting under the Interstate Bridge and are, therefore, the types of pleasure crafts traveling on the Columbia River that are most likely to be height-restricted. Sailboats and private yachts that were considered potentially impacted generally had air drafts of 50 to 90 feet, with an average of approximately 70 feet. The IBR Program conducted additional recreational vessel-specific research and outreach to obtain more information about these vessels and identify any other potentially impacted vessels to ensure that none would be height-restricted or otherwise impacted by a 116-foot VNC.

[16] *Portland Business Journal.* 2024. Large Portland industrial employer plans layoffs. December 24, 2024. Available at : <https://www.bizjournals.com/portland/news/2024/12/24/vigor-layoffs-portland-oregon-complex-fabrication.html>. Accessed April 2025.

In 2021, an online survey to collect river user data was prepared and distributed to the general public, including owners of pleasure crafts. Surveys were distributed via local newspapers and specialty publication public notices, as well as on the IBR Program website and social media accounts.

Subsequently, outreach specifically targeting the recreational community was conducted from late 2024 through early 2025. Efforts included investigating comments received as part of the IBR Program Draft SEIS public comment period, coordinating with the USCG to request additional individual vessel information, searching vessel specifications through the USCG Maritime Information Exchange, and searching vessel details through BoatScope, a marine title database.

In addition, in the spring of 2025, IBR Program staff called and spoke individually with 28 different marinas and yacht clubs within a 3-mile radius of the Interstate Bridge, as well as one boat repair and construction company that had submitted a comment during the Draft SEIS public comment period, to understand boat slip specifications, the dimensions of vessels that dock at these locations, the dock and boat servicing sizes, and other details that could help the IBR Program better understand how pleasure crafts could potentially be impacted. Standard questions asked during these calls in order to understand potentially impacted recreational vessels included:

- *Do you keep track of vessel information and, if so, can it be shared?*
- *What is your largest slip size? What is the largest vessel that your facility can accommodate?*
- *Does the facility host any sailboats greater than 80 feet in length? If so, can you share their names or any other information about those vessels?*
- *Are there circumstances in which a vessel's height would change, such as boat modifications, defined mast heights, cargo that vessels could tow, or other factors that would impact vertical clearance?*

Also in the spring of 2025, the IBR Program created and distributed another river user survey to 16 yacht clubs and marinas that moor recreational vessels that transit the Interstate Bridge. The IBR Program received responses from five organizations. All responses confirmed that no vessels within their fleets were taller than 80 feet, thereby confirming that they would not be impacted by the 116-foot VNC. Additionally, it was confirmed that marinas within a 3-mile radius of the Program area do not have slips that would support mooring larger recreational vessels. See Appendix B of the Revised NIR for river user survey responses and additional details about where river users moor their vessels.

The IBR Program's research and outreach have led to the dismissal of some recreational vessels from further consideration as potentially impacted. This was achieved by verifying the vessel dimensions, learning that they no longer transit the Columbia River, confirming directly with owners that their vessels would not be impacted, or otherwise ensuring that they would not be height restricted. Despite extensive research and outreach, impacts on some vessels that required at least one lift of over 78 feet between 2007 through 2024 remain unknown because their dimensions could not be confirmed. In spring 2025, the IBR Program sent a list of 14 potentially impacted recreational vessels for which vessel dimensions could not be confirmed to the USCG. To date, no impacts to these vessels have been confirmed per the above research and outreach and communications with USCG. Ultimately, no height-restricted pleasure crafts were identified during the IBR Program's research and outreach efforts.

PROJECT PRIORITY

The IBR Program emphasizes the critical importance of the bridge design option to replace the Interstate Bridge to the transportation systems of Oregon, Washington, and the region at large. Among other reasons that underline its significance as a component of the United States' transportation infrastructure, it is vital to

the regional transportation network and economic development, critical for the movement of freight, and essential to supporting the maritime use of the river system.

- **Vital to regional transportation and economic development.** The I-5 corridor is a critical lifeline for the region and the nation, connecting Oregon and Washington to support jobs and move billions of dollars in goods each year. To meet the needs of today's travelers and tomorrow's growth, the IBR Program is proposing a modern, earthquake-resilient bridge across the Columbia River. The new multimodal structure and I-5 corridor improvements will enhance mobility for freight, transit and drivers — strengthening the connection between our communities.

  This is the most important freight corridor on the West Coast (as further emphasized below), and replacing and modernizing the aging bridge is essential to support nationally and internationally significant commerce, as well as to address the needs of a vibrant and rapidly growing region well into the future. A fixed span bridge eliminates the I-5 stoplight, removing the potential of automobile crashes caused by traffic stopping at the bridge during lifts, and improving travel time reliability and reducing congestion for the 175,000 vehicles expected to cross the bridge daily by 2045. The Interstate Bridge is a high commuter corridor with thousands of travelers commuting across the bridge to the region's major employers such as four regional hospitals, Intel Corp, Nike, Fred Meyer stores, and the U.S. Department of Veterans affairs, among others. Each of these businesses depends on the region's transportation system to provide reliable movement of goods and services, customers, and employees to and from their business locations. The I-5 corridor is one of the most critical components of the region's transportation network, as it provides the only uninterrupted north-south freeway corridor connecting Oregon and Washington with Mexico, California, and British Columbia, Canada.

- **Critical for freight movement.** Elimination of the stop light is critical for freight, which is projected to make up nearly 15% of bridge traffic, ensuring smoother movement of goods and services and supporting regional economic vitality. In the Portland-Vancouver metro region, overall trade volumes are anticipated to double by 2040, with approximately 75% being dependent on trucks. Over $132 million in freight commodity value crossed the Interstate Bridge daily in 2020. The bridge and program area provide direct connections to the Port of Portland and Port of Vancouver, located along the Columbia River, as well as the majority of the area's freight consolidation facilities and distribution terminals.

- **Maritime community importance.** The states of Oregon and Washington are committed to supporting the growth of the maritime community. Delays on I-5 resulting from a lift adversely impact our trade viability, on both the river and the road, by preventing freight shipments from moving across the bridge and throughout the region.

CONCLUSION

As described in the introduction to this white paper, the IBR Program acknowledges the critical importance of selecting a bridge design option to replace the Interstate Bridge that meets navigational needs for river users within the larger context of water, air, and land uses; existing conditions and trends; availability of facilities to accommodate navigation; and local, state, and national development goals. The IBR Program also understands the importance of the Columbia River system and its role in local, national, and global economics and recognizes that the USCG has been directed by Congress to provide reasonable navigation on all U.S. navigable waters.

As demonstrated in this white paper, the IBR Program's 116-foot fixed-span bridge design meets the existing and potential reasonable needs of navigation on the Columbia River by mitigating impacts to impacted river users and allowing passage for all other vessels. It is the best Interstate Bridge design option for balancing river and landside navigation needs for all transportation modes.

The IBR Program remains confident that the 116-foot fixed-span bridge design meets the reasonable needs of navigation for the Columbia River navigable water of the U.S. This white paper summarizes six concerns raised by the USCG since the June 2022 PNCD and addresses them as follows.

- As the **present governing structure** west of the Glenn Jackson Bridge, there is a compelling navigational reason for the proposed bridge design to alter the FNC because it is needed to balance marine, air, and land navigation needs. Moreover, the proposed design meets river, air, and land navigational needs, and meets the USCG Bridge Program Reasonable Needs of Navigation.
- Responding to the points raised **regarding waterway characteristics**, the design would not impact future dredging as it was found that additional dredging east of the bridge is unlikely, and impacts to upstream fabricators would be addressed through agreements that have been reached with the IBR Program.
- The waterway would remain equipped to support **emergency services**, and the proposed design does not constrain emergency or national security response vessel usage or mooring and allows CBC operations to continue as a Columbia River-adjacent landlord.
- **Commercial navigation** would continue on the Columbia River, and the proposed design would allow for business as usual for commercial vessels.
- The Columbia River's **unique maritime manufacturing/service facilities** would continue operations. The proposed design does not impact foreseeable upriver marine commerce development and allows forecast downriver land development to continue, and impacts to fabricators have been mitigated.
- **Recreational vessel** use of the river would continue, and the proposed design meets the reasonable needs of navigation for known recreational vessels on the Columbia River.

This document complements the October 2025 Revised NIR, which contains more details.