Assessment of Massachusetts Designated Port Areas

July 2025

Massachusetts Office of Coastal Zone Management

MassDEP
Commonwealth of Massachusetts
Department of Environmental Protection

ERG

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Massachusetts Office of Coastal Zone Management (CZM)
CZM Voicemail: (617) 626-1200
CZM Website

Massachusetts Department of Environmental Protection (MassDEP)
MassDEP Phone: (617) 292-5500
MassDEP Website

Components of this report were originally prepared for CZM by Eastern Research Group, Inc. (ERG). CZM and MassDEP revised and augmented this information and developed additional material to address requirements in the Mass Leads Act (Ch. 238 of the Acts of 2024).

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Commonwealth of Massachusetts

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Kimberley Driscoll, Lieutenant Governor

Executive Office of Energy and Environmental Affairs

Rebecca L. Tepper, Secretary

Massachusetts Office of Coastal Zone Management

Alison Brizius, Assistant Secretary and Director

Massachusetts Department of Environmental Protection

Bonnie Heiple, Commissioner

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Acknowledgement and Disclaimer

We thank the many stakeholders who took the time and effort to provide thoughtful input and perspectives. Your contributions are crucial to this assessment.

This report is based in substantial part on work conducted by Eastern Research Group, Inc. (ERG), on behalf of the Massachusetts Office Coastal Zone Management (CZM) and the Massachusetts Department of Environmental Protection (MassDEP). The team worked to ensure that the information contained in this assessment is accurate and complete and was obtained from reliable sources. The assessment contains extensive input and information from stakeholder interviews, outreach, and discussions and may reflect the perceptions of the individual sources. A reference to stakeholder statements or input does not necessarily constitute or imply its endorsement or recommendation by the Commonwealth.

List of Abbreviations

BPDA: Boston Planning and Development Agency

CBP: Census County Business Patterns

CMR: Code of Massachusetts Regulations

DPA: Designated Port Area

EDIC: Economic Development & Industrial Corporation

EJ: environmental justice

ENOW: Economics: National Ocean Watch

EPA: U.S. Environmental Protection Agency

ERG: Eastern Research Group, Inc.

GDP: gross domestic product

CZM: Massachusetts Office of Coastal Zone Management

MassDEP: Massachusetts Department of Environmental Protection

Massport: Massachusetts Port Authority

MHP: Municipal Harbor Plan

NAICS: North American Industry Classification System

NOAA: National Oceanic and Atmospheric Administration

PCBs: polychlorinated biphenyls

RLFMP: Raymond L. Flynn Marine Park

SER: State Enhanced Remedy

WDI: water-dependent industrial

Chapter 1 - Introduction

Massachusetts has long recognized that water-dependent industrial (WDI) activity is important to the economic and cultural vibrancy of the Commonwealth, but that this activity depends on the availability of land with a rare and diminishing set of characteristics. Without protection, the few areas appropriate for WDI use would soon transition to inconsistent uses, resulting in a loss of WDI activities and their associated businesses, jobs, and other benefits.

In 1978, Massachusetts acted to address this problem by establishing the Designated Port Area (DPA) program. The purpose of the DPA program is to identify the unique lands and waters critical for supporting Water-Dependent Industrial (WDI) activities and to encourage the development of these areas for WDI uses while prohibiting inconsistent uses. Generally, WDI uses, including those enumerated at 310 CMR 9.12(2)(b), require direct access to or location in marine or tidal waters. Today, the DPA program includes 10 DPAs: Gloucester Inner Harbor, Salem Harbor, Lynn, Mystic River, Chelsea Creek, East Boston, South Boston, Weymouth Fore River, New Bedford-Fairhaven, and Mount Hope Bay. The 10 DPAs in Massachusetts constitute approximately 2 percent of the Commonwealth's coastline and provide critical infrastructure for water-dependent industries.

Historically, the program has facilitated and preserved uses such as commercial fishing, fish-processing facilities, goods transfer between ship and shore, and operations requiring substantial water volumes for discharge or withdrawal. DPAs now also play a crucial and growing role in manufacturing, processing, marine transportation, offshore renewable energy, supply chains, marine technology research, robotics, and commercial aquaculture. These areas benefit the Commonwealth and local and regional communities through the jobs and industries within DPAs, as well as by supporting businesses reliant on goods moved through DPAs. WDI businesses are essential to the economic, environmental, and cultural vibrancy of the Commonwealth and play an increasing role in renewable energy options critical to environmental goals and energy independence, as well as other emerging industries. However, DPAs face increasing pressure from commercial and residential development of the coastline, increased interest in shoreline and water recreation and access, shifting economic demands, and increasing risks from coastal flooding, storm events, and other climate impacts. Since most of the Massachusetts coastline is either developed with other uses or protected for ecological and recreational functions, any reduction or loss of DPAs would reduce the suitable lands and waters available for current and future WDI uses in Massachusetts.

The Massachusetts Office of Coastal Zone Management (CZM) commissioned Eastern Research Group, Inc. (ERG) to assess the economic impact and the effectiveness of the DPA program across five focal areas: infrastructure and land use, regulatory framework, funding and financing, community impacts, and coastal resilience. The assessment sought to: estimate a baseline evaluation of economic importance of WDI uses in the state as a whole, as well as within the DPAs; understand the program's strengths and current and emerging challenges; and identify improvements that will enable the program to better meet its goals while considering climate change, community and state objectives, and future economic demands. This report includes the analysis and results produced through ERG's work.

This assessment also includes the review required by the Mass Leads Act (Ch. 238, § 295(c) of the Acts of 2024), which directed the Massachusetts Department of Environmental Protection (MassDEP), in consultation with CZM, to "complete a review of existing designated port area criteria and use restrictions." MassDEP and CZM assessed the eight areas specified in the act (subsections A through H), conducted two stakeholder listening sessions on the eight areas, and incorporated stakeholder feedback from the ongoing assessment outreach and analysis to inform the review required by the Act.

The remainder of this chapter describes the project approach and provides background on the Massachusetts DPA program and regulatory framework.

Approach and Report Overview

The goal of this assessment was to understand the strengths of the DPA program and its ongoing and emerging challenges, and to identify improvements that will enable the program to better meet its goals while considering climate change, community objectives, and future economic demands. It was also intended to meet the requirements of the Mass Leads Act.

The assessment included:

(1) Developing an overview of all 10 DPAs. This analysis used a combination of existing data and research on WDI uses, as well as stakeholder engagement, and is presented in Chapter 2 - DPA Profiles.

(2) Analyzing the economic impact of WDI uses across the Commonwealth and within the DPAs. This included an economic analysis of current WDI uses in the Commonwealth overall, as well as specifically in the DPAs. The DPA-level analysis included estimates of the direct, indirect, and induced impacts of WDI uses in the DPAs on employment, wages, gross domestic product (GDP), revenue, and taxes. The approach for the economic analysis is described in more detail in Chapter 3 - Economic Analysis.

(3) Engaging stakeholders to assess the DPA program across five focal areas (infrastructure and land use, regulatory framework, funding and financing, community impacts, and coastal resilience) to understand the strengths and challenges of the DPA program and to identify improvements to better meet program goals while accommodating climate change resilience and addressing issues raised by community members. The team conducted six phases of stakeholder engagement to ensure that the assessment considered multiple perspectives. Table 1 summarizes the phases of engagement, which are described in more detail in Appendix B. Results of this part of the assessment are discussed in Chapter 4 - Key Findings from Stakeholder Engagement.

(4) Researching practices and approaches from other U.S. ports that address challenges identified by Massachusetts DPA stakeholders, with summaries provided in Chapter 5 - Relevant Practices from Other U.S. Ports.

(5) Reviewing the DPA criteria identified in the Mass Leads Act and gathering stakeholder input on the specific areas listed in the Act, as described in Chapter 6 - Mass Leads Act Review.

(6) Developing recommendations for enhancing the effectiveness of the Massachusetts DPA program based on key findings from stakeholder engagement, the review of DPA current conditions, the economic analysis, and research on practices used in other U.S. ports. The recommendations are provided in Chapter 7 - Recommendations and Conclusion.

Table 1. Summary of Stakeholder Engagement

Engagement Phase	Purpose
Kickoff meetings	• Share information, assess awareness, and build a shared understanding of major uses and issues. • Confirm and refine the focus of the analyses. • Widen stakeholder contact network through participant recommendations.
Online survey	• Collect quantitative information specific to individual DPAs on experiences with and perceptions of DPA regulations, infrastructure, economic impacts, community impacts, and climate change resilience. • Inform the economic assessment and the development of a semi-structured interview guide, to be used during the next phase of engagement.
Interviews	• Fill information gaps related to existing conditions and planned changes within each of the 10 DPAs. • Enhance understanding of key needs, conflicts, and emerging opportunities for WDI uses.
Focus groups	• Ensure broad representation of stakeholders and elevate perspectives on current conditions, barriers, and opportunities to enhance the DPA program from the following groups central to DPA policy: o WDI users involved in fishing and vessels o Other WDI users o Community-based organizations
Listening sessions	• Gather public feedback through a four-week written comment period and two listening sessions on the Mass Leads Act's eight areas (subsections A through H) specified for inclusion in the assessment.
Final engagement	• Provide an update on the assessment results with those involved in the assessment process. • Review the key findings from the assessment with stakeholders and solicit their suggestions on recommendations. • Review the recommendations of the assessment with stakeholders.

Background on the Massachusetts Designated Port Area Program

This section briefly discusses the purpose of the Massachusetts Designated Port Area program, origins of this program in federal and state legislation and policy, DPA boundary determination and review procedures, approaches to regulating uses within DPAs, and the Municipal Harbor Planning and DPA Master Planning process.

The Coastal Zone Management Act and Establishment of Massachusetts DPA Policy

In 1972, Congress passed the Coastal Zone Management Act (CZMA), which establishes a national policy to "preserve, protect, develop, and where possible, to restore or enhance, the resources of the nation's coastal zone for this and succeeding generations" and to "encourage and assist the states to exercise effectively their responsibilities in the coastal zone through the development and implementation of management programs to achieve wise use of the land and water resources of the coastal zone…" 16 U.S.C. 1452, also known as CZMA section 303. The CZMA establishes national policy elements and encourages states to develop coastal management programs to address these interests.

Massachusetts was first in the nation to develop an approved coastal management program. National Oceanic and Atmospheric Administration (NOAA) approved the Massachusetts coastal zone management program plan in 1978 after years of consultation and program development led by CZM and implemented by MassDEP and other EEA offices and agencies. EEA, then known as the Executive Office of Environmental Affairs, established CZM by regulation, and the legislature formalized it and endowed it with regulatory authority with the passage of Chapter 589 of the Acts of 1983—An Act Relative to the Protection of the Massachusetts Coastline. Since then, CZM has remained the Commonwealth office primarily responsible for maintaining the state coastal management program, while MassDEP maintains important responsibilities for implementation through its permitting programs. The coastal zone management program plan, as amended, contains the coastal policies and underlying state statutory and regulatory authorities that together articulate Massachusetts priorities for protection and management of its coastal resources.

Protecting and managing working waterfronts is a core objective of the CZMA and of the Massachusetts coastal management program. The CZMA promotes economic uses of coastal resources, including through "priority consideration being given to coastal-dependent uses," and by developing processes for the siting and preservation of port,

transportation, and other commercial and industrial development "in or adjacent to areas where such development already exists." Coastal Zone Management Act section 303, 16 U.S.C. 1452. Since its inception in 1978, the Massachusetts coastal program has also recognized the importance of waterfront industry and the need for this limited resource to be protected. The Designated Port Area policy was established in the initial Massachusetts coastal zone management plan to address this interest and has been maintained consistently since then.

Purpose and Scope of the DPA Program

The maritime economy is an important and expanding sector of the overall Massachusetts economy, and water-dependent industries make up a significant share of this sector. The purpose of the DPA program is to identify the areas critical to these industries, to encourage these industries, and to prevent the loss of areas that have key characteristics for water-dependent industrial uses. The DPA program is a collaborative effort of CZM, MassDEP, and municipalities in which each collaborator has a distinct, but important role.

Today, there are 10 DPAs in Massachusetts: Gloucester Inner Harbor, Salem Harbor, Lynn, Mystic River, Chelsea Creek, East Boston, South Boston, Weymouth Fore River, New Bedford-Fairhaven, and Mount Hope Bay.

The 10 Massachusetts DPAs have particular physical and operational features important for marine industrial facilities and have historically supported commercial fishing operations, fish-processing facilities, the transfer of goods between ship and shore, and operations requiring large volumes of water for withdrawal or discharge. DPAs are increasingly supporting manufacturing, processing, and production activities that require marine transportation, including the growing offshore renewable energy industry, supply chains, research and development of marine technologies and robotics, and commercial aquaculture.

It has long been recognized that economic, environmental, and social factors pose prohibitive challenges to intensive port development in areas where it does not already exist—effectively making DPAs a non-renewable resource. At the same time, there is a significant demand to convert port areas to other uses which have been considered incompatible with DPA activities, such as office space, recreation, dense commercial development or luxury housing. Once converted, the Commonwealth loses the associated port capacity and associated economic and cultural benefits. Loss of DPAs thus limits the potential for future water-dependent industrial development in Massachusetts.

Boundary Determinations and Review

The physical boundaries of DPAs in Massachusetts were first set out in the Massachusetts coastal zone management program in 1978. The legal framework governing DPAs was developed through a succession of regulatory measures. In 1979, MassDEP incorporated DPA rules into its Waterways regulations under M.G.L. Chapter 91. In 1994, CZM issued its Designation of Port Area regulations at 301 CMR 25.00 to set forth the procedure and standards for establishing and modifying DPA boundaries. These regulations remain in effect today.

CZM DPA boundary determinations are conducted in accordance with regulatory criteria governing the suitability of contiguous lands and waters to accommodate water-dependent industrial use, as appropriate to the harbor in question. As authorized by its regulations, CZM typically applies DPA boundary review criteria within the context of groups of parcels that form coherent planning units within a DPA to ensure that the DPA characteristics of associated parcels in the same general vicinity are accurately reflected and all relevant factors affecting overall suitability to accommodate water-dependent industrial use are considered.

Table 2. DPA Designation Criteria

Land Area Criteria	Water Area Criteria
• Include, or be contiguous with other DPA lands that include, a substantially developed shoreline that has piers, wharves, bulkheads, or other structures that create a functional connecting with a water area that meets designation standards. • Be within reasonable proximity to water and sewer facilities capable of supporting general industrial use and established road or rail links that connect to major trunk or arterial routes. • Exhibit a topography conducive to industrial use or reasonably capable of becoming conducive to industrial use. • Exhibit a use character that is predominantly industrial or reasonably capable of becoming so.	• Include, or be contiguous with other DPA waters that include, a navigable entrance or main channel with a design depth of 20 feet or deeper and a substantially developed shoreline that establishes a functional connection with a land area that meets designation standards. • Be of an appropriate configuration, size, and location for the maneuvering or berthing of vessels, placement of intake/outfall structures, or other activities involving direct utilization of the water.

When conducting a DPA boundary review, CZM applies specific criteria (see Table 2 above) governing physical suitability to accommodate water-dependent industrial use to the DPA water and land boundaries that are under review. The reviewed planning units must exhibit all the specified criteria for water or land to remain in or be included within the DPA. Land in a DPA that meets all the criteria must remain in the DPA. However, if the planning unit does not meet one or more of the physical suitability criteria, the boundary is changed to remove that area from the DPA. Alternatively, if an area is reviewed that is currently outside a DPA boundary but that exhibits the relevant physical suitability criteria, the DPA boundary would change to include that area.

For more information on DPA boundary reviews, see the Designation of Port Areas regulations at 301 CMR 25.00.

Regulating Uses in DPAs

MassDEP, CZM, and the municipalities in which the DPAs are located each play a role in regulating DPAs, as described below.

MassDEP Chapter 91

The Commonwealth's primary tool for protection and promotion of public use of its tidelands and other waterways is Chapter 91 of the Massachusetts General Laws and the associated MassDEP Waterways regulatory program. MassDEP implements the DPA standards through Chapter 91 licensing. Any regulated activity that takes place within Chapter 91 jurisdiction requires authorization from MassDEP. Areas subject to Chapter 91 jurisdiction include flowed tidelands, which includes any project in, on, over, or under tidal waters seaward of the present mean high water shoreline extending seaward three miles to the state limit, as well as all projects on filled tidelands, which are former submerged lands and tidal flats which are no longer subject to tidal action due to the presence of fill.

The Chapter 91 Waterways regulations include standards that are specific to projects that are within a DPA. The DPA program is designed to support water-dependent industry; therefore, the standards require a large majority of DPA tidelands to be used or reserved for WDI or limited temporary uses. As a general rule, 75 percent of a project site within Chapter 91 jurisdiction is required to be developed or reserved for WDI uses. Table 3 shows the allowable use categories as well as some, but not all, examples of those uses.

Public access that is compatible with WDI use can also be licensed within the DPA but must be designed to be safe and avoid impacting the function of the WDI use(s).

For more information, see the Massachusetts Public Waterfront Act (MGL Chapter 91) and the Waterways regulations (310 CMR 9.00).

Table 3. DPA Allowable Use Categories

Use Category	Description	Example Uses
Water-dependent industrial	Industrial uses and facilities that require access to or location in tidal waters and that therefore cannot be located or operated away from tidal waters.	Commercial fishing, marine terminals, boatyards, water-dependent power infrastructure, offshore energy infrastructure
Accessory	Uses authorized because they are directly associated with and part of a WDI use.	Accessways, parking, administrative offices, employee cafeteria
Temporary	A non-water-dependent industrial and/or transportation use may be licensed for 10 years or less when there are vacant spaces and facilities that do not have current or prospective WDI uses.	Parking, warehousing, trucking
Supporting	Commercial or industrial uses that provide direct economic or operational support to WDI uses in the DPA. Supporting uses may be licensed on up to 25 percent of a project site, provided they comply with standards to avoid impacts/interference with WDI uses.	Machine shops, retail/supply stores, restaurants, or any other industrial or commercial use that does not inherently conflict with port operations or require excessive consumption of port space

CZM Federal Consistency Review

The CZMA gives states the authority to review federal projects to ensure that they meet state standards articulated in their coastal zone management plans through a process called federal consistency review. Specifically, the federal consistency requirement of the CZMA holds that federal actions that have reasonably foreseeable effects on any land or water use or natural resources of the Massachusetts coastal zone must be consistent with the enforceable policies of the Commonwealth's federally approved coastal management program. CZM reviews federal actions affecting coastal uses and/or resources to ensure that such activities are consistent with CZM's enforceable program policies. Through this federal consistency review process, CZM ensures that projects and actions within DPAs are consistent with the relevant enforceable policies, including to preserve and enhance

the capacity of DPAs to accommodate water-dependent industrial uses and prevent the exclusion of such uses, as well as to ensure that DPAs are given the highest priority in the allocation of resources for channel dredging.

For more information on CZM's enforceable coastal policies, see the Massachusetts Office of Coastal Zone Management Policy Guide (2011).

Municipal Zoning Authority

Local zoning bylaws and ordinances also apply to uses within DPAs. These zoning requirements apply to all areas within the DPA. While some areas within DPAs are regulated by both Chapter 91 and municipal zoning requirements, DPA boundaries can extend beyond Chapter 91 jurisdiction. In areas where the DPA boundary extends beyond Chapter 91 jurisdiction, municipal zoning is the primary regulatory tool for managing DPA uses. Zoning requirements vary and are determined by the municipality.

More information about specific municipal zoning requirements is available through the zoning authority for each DPA municipality.

Wetlands Protection Act

DPAs are a defined resource area protected under the Massachusetts Wetlands Protection Act (WPA). Due to the developed nature of these areas, the regulations presume that only Land Under Ocean (LUO) is likely to be significant to marine fisheries, storm damage prevention, and flood control and provide specific performance standards to ensure that projects within LUO in DPAs are designed and constructed to minimize adverse effects on these functions. Other resource areas within DPAs are presumed to be unlikely to provide these functions. Local conservation commissions are the primary authority for administering the WPA and regulations, and permit review and approval occur at the municipal level. MassDEP oversees the administration of the WPA at the state level.

For more information on the regulatory requirements of the WPA and the wetlands regulations, see MGL Ch. 131 Section 40 and 310 CMR 10.00.

Municipal Harbor Planning and DPA Master Planning

The Municipal Harbor Planning regulations establish the voluntary process by which cities and towns may develop and submit a Municipal Harbor Plan (MHP) to the Secretary of the Executive Office of Energy and Environmental Affairs for approval, followed by incorporation by MassDEP into the Waterways regulations. A state-approved MHP establishes a community's objectives, standards, and policies for guiding public and private use of land and water within the proposed planning area. Under CZM's Municipal

Harbor Plan regulations, cities and towns may seek approval for alternative management strategies for uses within a DPA that are consistent with the underlying principles for protecting and promoting WDI uses and with the Chapter 91 standards. A DPA Master Plan is the part of the MHP that covers the uses and activities within the DPA.

DPA Master Plans must comply with a series of standards found within the Municipal Harbor Plan regulations that include measures to preserve and enhance the capacity of the DPA to accommodate water-dependent industrial use. In a DPA Master Plan, a municipality may request flexibility for certain use standards but must balance that flexibility with elements that ensure that DPA interests are still protected and enhanced.

For more information on the MHP and DPA Master Plan process, see Review and Approval of Municipal Harbor Plans at 301 CMR 23.00.

Chapter 2 - DPA Profiles

At the time of earliest European contact (around CE 1500), tens of thousands of Indigenous people lived in the territory that is now Massachusetts, including in coastal areas. They formed many communities, including the Massachusett, Wampanoag, Pennacook, Mahican (Stockbridge), Pocumtuck, and Nipmuck.[1] Their settlements and hunting grounds were spread across the entire state, from easternmost Cape Cod waters to the western mountains. After European settlement, the ports of Massachusetts became grounds for a thriving trading and fishing industry. Over hundreds of years, these ports have evolved to be major seaports on the East Coast, with facilities that can handle large vessels carrying billions of dollars in cargo and thousands of passengers.

The Commonwealth established a coastal management program, which was approved by the National Oceanic and Atmospheric Administration (NOAA) in 1978. That same year, DPA policy was established after extensive consultation with state agencies, elected officials, municipal planners, non-governmental organizations, the business community, local residents, and others. The two central principles of the DPA policy are to (1) promote water-dependent industry as an important sector of the state's economy, and (2) prevent the loss of areas that have certain key characteristics that make them particularly well suited to water-dependent industrial (WDI) uses.

Next is a brief summary of each of the 10 Massachusetts DPAs.

[1] Secretary of the Commonwealth of Massachusetts, "Historical Sketch of Massachusetts."

Gloucester Inner Harbor DPA

The approximately 215-acre Gloucester Inner Harbor DPA is located in the innermost part of Gloucester Harbor on the south side of Cape Ann in Essex County. The DPA was established in 1978, and its boundaries (shown in Figure 1) were last modified in 2014.[2] The Gloucester Inner Harbor DPA includes the waters of the Gloucester Harbor Federal Navigation Project, which consist of a 300-foot-wide entrance channel and two access channels along the north and south sides of the Jodrey State Fish Pier at the head of the harbor. Each channel has a design depth of 20 feet. The North Channel is 200-250 feet wide, and the South Channel is 200 feet wide. The land area of the DPA encompasses the area along Harbor Cove and the Inner Harbor's North Channel. On its south shore, the DPA includes a 4.5-acre peninsula comprising a large cold storage facility on the west side of the South Channel, as well as a portion of the Rocky Neck peninsula adjacent to Smith Cove even further southwest. The Jodrey State Fish Pier divides the North and South Channels at the eastern head of the harbor.[3] The northwest boundary of the DPA runs

[2] Massachusetts Office of Coastal Zone Management, "Boundary Review of the Gloucester Inner Harbor Designated Port Area, Gloucester MA."
[3] Massachusetts Office of Coastal Zone Management, "Boundary Review of the Gloucester Inner Harbor Designated Port Area, Gloucester MA."

along Rogers Street, Main Street, and East Main Street, connecting the DPA to Route 127A and Route 128.[4]

In 1623, English settlers established a settlement on Gloucester harbor due to its abundance of codfish. By the 18th century, Gloucester emerged as one of New England's shipbuilding capitals.

Throughout the 19th century, Gloucester's economy thrived on fishing and trade, furthered by the arrival of Portuguese and Italian immigrants who brought new ideas and techniques.[5]

The WDI uses in the Gloucester Inner Harbor DPA include seafood-processing facilities, cold storage facilities, an ice supply facility, boat repair facilities, the multi-use Jodrey State Fish Pier, and marine safety facilities in the form of Coast Guard and Harbormaster offices. WDI uses such as whale watches, excursion vessels, and passenger vessels enhance public access to the water. The Gloucester Inner Harbor DPA continues to support the Massachusetts seafood industry. A 2021 study found that Gloucester's "blue economy" has been responsible for about 20 percent of the City's job base since 2013. Gloucester is among the nation's top seafood-processing locations by number of employees,[6] and it has one of the highest wage bases in the seafood industry.[7] In recent years, fishing activity has shifted from large-scale groundfishing to smaller-scale operations like lobstering, reflected in a decrease in landing weight and an increase in landing value from 2013 to 2019. This change coincides with the shrinking of Atlantic cod populations and with a northward shift in populations of American lobster.[8]

Planning for the DPA occurs in the broader context of planning for Gloucester Harbor, as reflected in the recent 2025 *Gloucester Municipal Harbor Plan and DPA Master Plan* (2025 Plan).[9] The City's Marine Industrial zoning generally reflects the Commonwealth's use requirements, which helps to ensure successful project development and permitting for WDI uses in the DPA.

The two primary long-term flood risks facing Gloucester Inner Harbor DPA with sea level rise and increasing coastal storms are coastal flooding due to storm surge and high tide

[4] Massachusetts Office of Coastal Zone Management, "Boundary Review of the Gloucester Inner Harbor Designated Port Area, Gloucester MA."
[5] Cape Ann Museum, "History of Cape Ann."
[6] City of Gloucester, "Gloucester Municipal Harbor Plan Update: Economic Strategy Baseline Summary."
[7] NOAA Office for Coastal Management, "The Economic Contribution of Working Waterfronts: Local Estimation and Case Studies."
[8] City of Gloucester, "Gloucester Municipal Harbor Plan Update: Economic Strategy Baseline Summary."
[9] City of Gloucester, "2025 Gloucester Municipal Harbor Plan and DPA Master Plan."

flooding. Though WDI users within the DPA may not have recently experienced significant flooding, the best available flood models indicate they are at risk. A 2021 study by the Massachusetts Office of Coastal Zone Management (CZM) found that 91 percent of WDI buildings within the DPA would be at risk of exposure to storm surge today in a 1 percent annual chance flood.[10] Exposure to current high tide flooding is more limited, with 52 percent of WDI buildings in Gloucester exposed, but high tide flooding is likely to be a widespread issue for buildings in Gloucester Inner Harbor in the near term.[11]

[10] Arcadis U.S., Inc., "Building Resilience in Massachusetts Designated Port Areas: Resilience for Water Dependent Industrial Users in the Chelsea Creek and Gloucester Inner Harbor Designated Port Areas."
[11] Arcadis U.S., Inc., "Building Resilience in Massachusetts Designated Port Areas: Resilience for Water Dependent Industrial Users in the Chelsea Creek and Gloucester Inner Harbor Designated Port Areas."

Figure 1. Gloucester Inner Harbor DPA boundary

Salem Harbor DPA

The Salem Harbor DPA encompasses approximately 112 acres[12] within and adjacent to Salem Harbor (Figure 2) in Essex County. The eastern and northern boundary of the Salem Harbor DPA is formed in part by, and includes portions of, Blaney Street, Derby Street, and Fort Avenue. The southern and eastern boundary is Salem Harbor. The DPA includes the North Commercial Waterfront extending from Hawthorne Cove Marina to the ferry facilities and commercial marina of the Salem Wharf, and the Industrial Port adjacent to the deepwater channel that leads into Salem Harbor. The Industrial Port encompasses the Salem Harbor Station and the 42 acres surrounding it, the deepwater berth, a filled jetty pier that is approximately 1,380 feet long, the Federal Channel, and an 18-acre turning basin extending 500 feet into Salem Harbor. The channel and turning basin have a design depth of 32 feet.[13]

Historically, Salem was a center of maritime commerce, linking to international trade in the early 19th century. By the mid-19th century, imports shifted from bulk cargo to coal, which was shipped inland by rail. A coal-fired power plant, the Salem Harbor Generating Station, was constructed in the mid-1900s within the area that would become the Salem Harbor DPA.[14] The Salem Harbor DPA was established in 1978 and has not undergone any boundary changes since that time.

[12] Massachusetts Office of Coastal Zone Management, "Salem Harbor Designated Port Area."
[13] Fort Point Associates, Inc., "Salem Wind Port, Salem, Massachusetts: Single Environmental Impact Report." Prepared for the Executive Office of Energy and Environmental Affairs, 2023.
[14] City of Salem, "2023 Salem Municipal Harbor Plan and Designated Port Area Master Plan."

The Salem Harbor DPA consists primarily of WDI uses. The City-owned Salem Wharf on the west end of the DPA was completed in 2017 and hosts a seasonal ferry service to Boston and a commercial marina with 11 slips.[15] In 2008, the Salem Harbor Generating Station, with coal fuel supplied by ship to its waterfront wharves, was dismantled and replaced by the Salem Harbor Station gas-fired power plant. This transition from the coal-fired plant to the current gas-fired plant in 2018 started a major shift for uses in the Salem DPA. The gas-fired plant occupies a much smaller footprint than the 66 acres previously occupied by the coal plant, which opened 43 acres of land for new development.[16] This area is now being developed for use as an offshore wind marshalling port. The Salem Harbor Port Authority and the Massachusetts Clean Energy Center (MassCEC) identified the Salem Harbor DPA as a port that could support offshore wind development, due to sufficient upland area and a deepwater, federally maintained navigation channel with no air draft or width limitations.[17]

Development of the Salem Harbor DPA has been guided by the municipal harbor planning process, as reflected in the recent *2023 Salem Municipal Harbor Plan and Designated Port Area Master Plan* (2023 Plan), which updates the overall vision for the DPA and broader Salem waterfront from the original 2000 master plan and a 2008 amendment and renewal.[18] The 2023 Plan provides a community vision to guide the industrial port area into the 21st century. Specifically, the 2023 Plan supports development of the port to accommodate the rapidly expanding offshore wind industry in a manner that is consistent with the goals and objectives of the City and surrounding neighborhoods. Additionally, the 2023 Plan presents "guiding principles" developed through a public process to ensure that development in the DPA will minimize impacts on the surrounding community. Specific considerations for community protection include noise abatement, visual protections, and climate resilience.[19] The 2023 Plan envisions continued development of the Salem Wharf to encourage additional passenger vessel services, pursue new pedestrian-related improvements, and develop strategies for climate resilience.

The City plans to continue to explore approaches for adapting upland portions of the industrial port area to enhance flood resilience and protect abutting neighborhoods, while preserving waterfront access for water-dependent uses.[20]

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[15] Castelluccio, "Waterfront Transformed in Salem."
[16] City of Salem, "2023 Salem Municipal Harbor Plan and Designated Port Area Master Plan."
[17] Executive Office of Energy and Environmental Affairs. "Decision on The City of Salem's Request for Approval of the Salem Municipal Harbor Plan Renewal and Designated Port Area Master Plan."
[18] City of Salem, "2023 Salem Municipal Harbor Plan and Designated Port Area Master Plan."
[19] City of Salem, "2023 Salem Municipal Harbor Plan and Designated Port Area Master Plan."
[20] City of Salem, "2023 Salem Municipal Harbor Plan and Designated Port Area Master Plan."

Figure 2. Salem Harbor DPA boundary

Lynn DPA

The Lynn DPA includes approximately 166 acres adjacent to and within Lynn Harbor in Essex County. The land area of the Lynn DPA lies northeast of Riley Way and southwest of Bubier Street. Lynn DPA waters include a navigable entrance channel with a design depth of 22 feet, a width of 300 feet, and a length of 2.7 miles.[21] As shown in Figure 3, the entrance channel extends from an area west of Bass Point in Nahant to the head of the Lynn Harbor. The federal turning basin at the head of the harbor has a design depth of 22 feet and is 550 feet wide. A municipal channel with an approved design depth of 22 feet extends 0.5 miles along the Lynn waterfront from the western side of the federal turning basin and provides access to the Lynn public landing, a ferry terminal, a commercial dock, and a liquified natural gas (LNG) storage facility.[22]

CZM established the original boundary of the Lynn DPA concurrently with the initial development of the Commonwealth's DPA policy in 1978. In 1994, the Massachusetts Legislature amended the boundary configuration through special legislation.[23] In March of 2021, the Lynn Planning Department requested that CZM initiate a review of the entire

[21] Massachusetts Office of Coastal Zone Management. "Boundary Review of the Lynn Harbor Designated Port Area, Lynn MA."
[22] Massachusetts Office of Coastal Zone Management, "Boundary Review of the Lynn Harbor Designated Port Area, Lynn MA."
[23] Massachusetts Office of Coastal Zone Management, "Boundary Review of the Lynn Harbor Designated Port Area, Lynn MA."

boundary of the Lynn DPA, as well as the adjacent municipal and federal channels. The boundary review process resulted in a recommended modification, authorized by legislation in 2022, that excluded a landfill area located on four parcels south of Riley Way and added the Lynn municipal navigation channel, federal entrance channel, and federal turning basin, increasing the overall size of the DPA from approximately 49 acres to approximately 166 acres.[24]

From the colonial period through the 20th century, the City of Lynn was known for its tannery and shoemaking industries. Industrial activities emerged along the waterfront in the late 19th century, specifically gas manufacturing (from coal), dairy, textile and electrical manufacturing. In the mid-to-late 20th century, the Lynn shoreline became more mixed-use, with automobile dealerships, scrap iron storage, fast food restaurants, a landfill, and utility facilities emerging in the area.[25]

The DPA is currently a mix of industrial manufacturing and WDI uses. These uses include a Boston Gas (d/b/a National Grid) LNG facility, a Massachusetts Electric Company (d/b/a National Grid) electric substation, and the Blossom Street Ferry Terminal, which is run by the Economic Development & Industrial Corporation (EDIC) of Lynn and includes infrastructure for docking and parking. A currently vacant EDIC parcel is planned for development as a harbormaster facility that will also likely include operation facilities for the ferry and other passenger vessel uses needing water access.[26] A significant portion of the DPA land area is owned and managed by National Grid, which uses one parcel for its operations facility and leases other parcels for WDI uses, general industrial uses, and commercial uses. Public access to the water is available through an EDIC-owned public and commercial boat ramp adjacent to the Blossom Street facility. The waterfront northeast of Riley Way is improved with a stone seawall, a steel sheet pile bulkhead, and an EDIC-owned commercial docking facility. Three EDIC properties adjacent to the docking facility provide waterfront access, vessel storage, parking, and other related storage and support functions for the commercial passenger vessel service, while also hosting a boat-building company.[27]

[24] Massachusetts Office of Coastal Zone Management, "Boundary Review of the Lynn Harbor Designated Port Area, Lynn MA."
[25] Economic Development & Industrial Corporation of Lynn, "2020 Lynn Municipal Harbor Plan Amendment and Designated Port Area Master Plan."
[26] Massachusetts Office of Coastal Zone Management, "Boundary Review of the Lynn Harbor Designated Port Area, Lynn MA."
[27] Massachusetts Office of Coastal Zone Management, "Boundary Review of the Lynn Harbor Designated Port Area, Lynn MA."

The City manages the DPA through implementation of a DPA Master Plan developed as part of the *2020 Lynn Municipal Harbor Plan Amendment and DPA Master Plan* approved by the Secretary of Energy and Environmental Affairs in November 2020.[28]

The *Lynn Coastal Resiliency Assessment* (2016) identified coastal surge flooding, tidal back-up flooding, and stormwater flooding as threats to the Lynn shoreline.[29] The *Lynn Waterfront Open Space Master Plan* (2019) corroborates these risks and recommends repairing deteriorating seawalls and creating protective barriers with more open space as resilience strategies.[30]

[28] Economic Development & Industrial Corporation of Lynn, "2020 Lynn Municipal Harbor Plan Amendment and Designated Port Area Master Plan."
[29] Economic Development & Industrial Corporation of Lynn, "Lynn Coastal Resiliency Assessment."
[30] Brown, Richardson + Rowe, "Lynn Waterfront Open Space Master Plan."

Figure 3. Lynn Harbor DPA boundary

Mystic River DPA

The Mystic River DPA, shown in Figure 4, runs along almost 2 miles of shoreline belonging to the Mystic River, Island End River, Inner Confluence, and Little Mystic Channel.[31] The Mystic River is an offshoot of the Boston Main Channel, with Boston's Charlestown neighborhood on its south shore and Everett and Chelsea on its north shores. The Mystic River DPA comprises approximately 357 acres of land within the municipalities of Boston (Charlestown), Everett, and Chelsea. Direct access to deep water (-20 feet MLW or deeper) and a channel width of up to 1,000 feet are available at all DPA properties on the Mystic River.[32]

Uses include petroleum storage and distribution, recent shifts from manufacturing to clustered warehouses, the 54-acre Chelsea Produce Market (a wholesale food distributing facility, heavy freight operations with dedicated truck routes, Boston Autoport, and LNG import terminals (the only LNG terminals in New England), some connecting to regional pipelines. The port area reflects over 300 years of shipping history, with numerous historical buildings standing as testament to its past.[33]

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[31] Massachusetts Office of Coastal Zone Management, "Boundary Review of the Mystic River Designated Port Area, Charlestown Shore."
[32] Massachusetts Office of Coastal Zone Management, "Boundary Review of the Mystic River Designated Port Area, Charlestown Shore."
[33] Boston Harbor Now, "Boston's Working Port: A Foundation for Innovation—Planning a 21st Century Harbor."

The Chelsea portion of this DPA contains petroleum storage and distribution facilities. The Everett portion is characterized by gas and oil facilities and hosts one of only three LNG import terminals in New England. Other WDI uses on the Everett side include logistics companies (e.g., cold storage), concrete manufacturing, a yacht building company, and scrap metal recycling. The Charlestown portion is dominated by the Boston Autoport. The Boston and Maine Railroad, formerly the Boston and Lowell Railroad, runs through the southern portion of the DPA parallel to Medford Street.

The most recent boundary review, conducted in 2002, reviewed several properties to determine whether they met the criteria to remain in the DPA. The review ultimately resulted in the removal of one property (Schrafft's Center, located in the Charlestown portion).

On November 20, 2024, Governor Healey signed the Mass Leads Act into law. The Act provided that a parcel of land located at 173 Alford Street in Boston "shall be removed from, and not be considered to be within, the boundaries or a part of the Mystic River designated port area."[34] The Act further provided that such "removal shall only be for the purpose of converting the parcel into a professional soccer stadium and a waterfront park."

The Mystic River DPA faces vulnerabilities due to sea level rise and coastal storms. Several initiatives have looked at ways to manage these risks in the DPA area and surrounding municipalities.[35]

[34] 2024 Mass Acts Ch. 238, Sec. 295.
[35] City of Chelsea and City of Everett, "Island End River Flood Resilience Project."

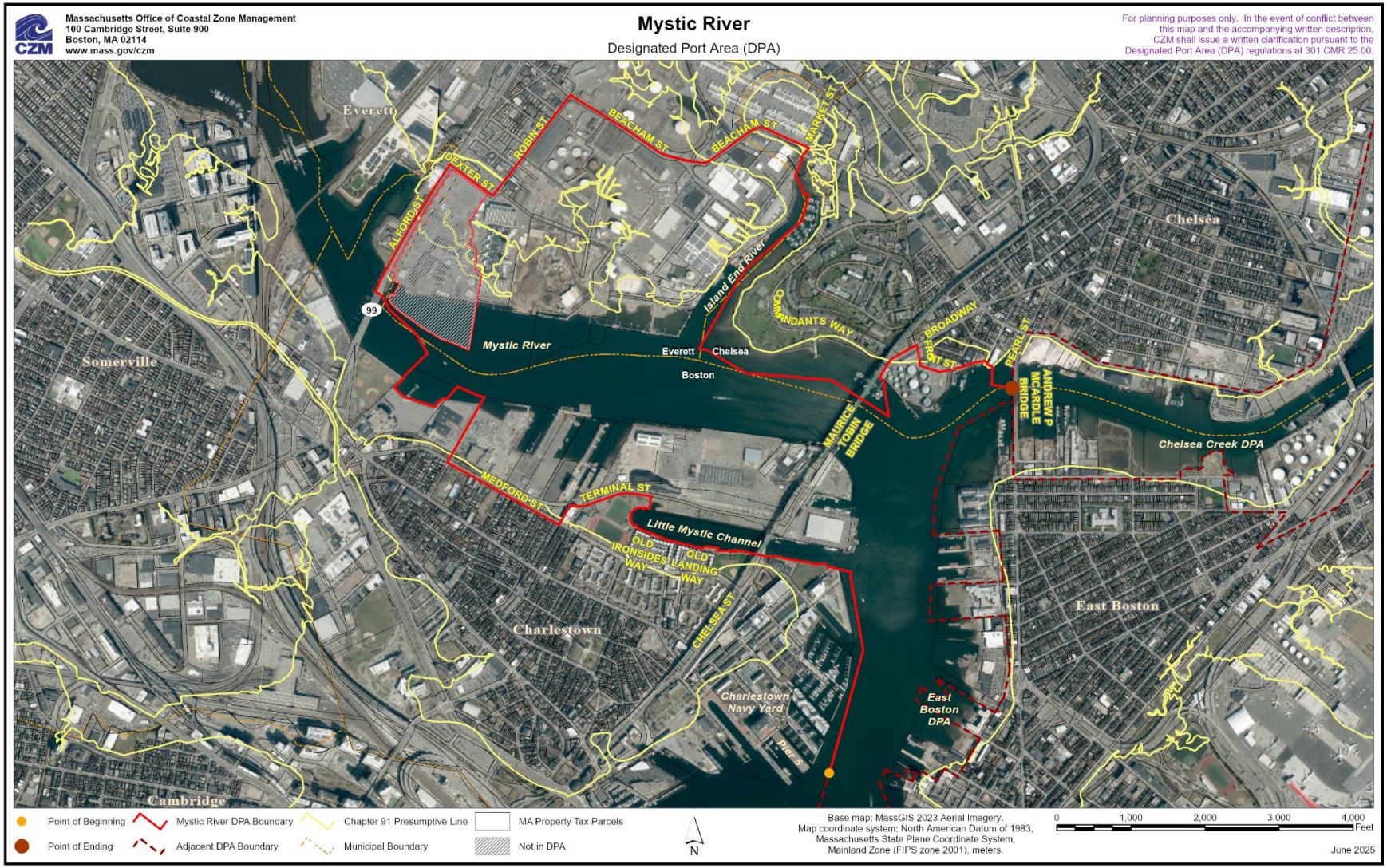

Figure 4. Mystic River DPA boundary

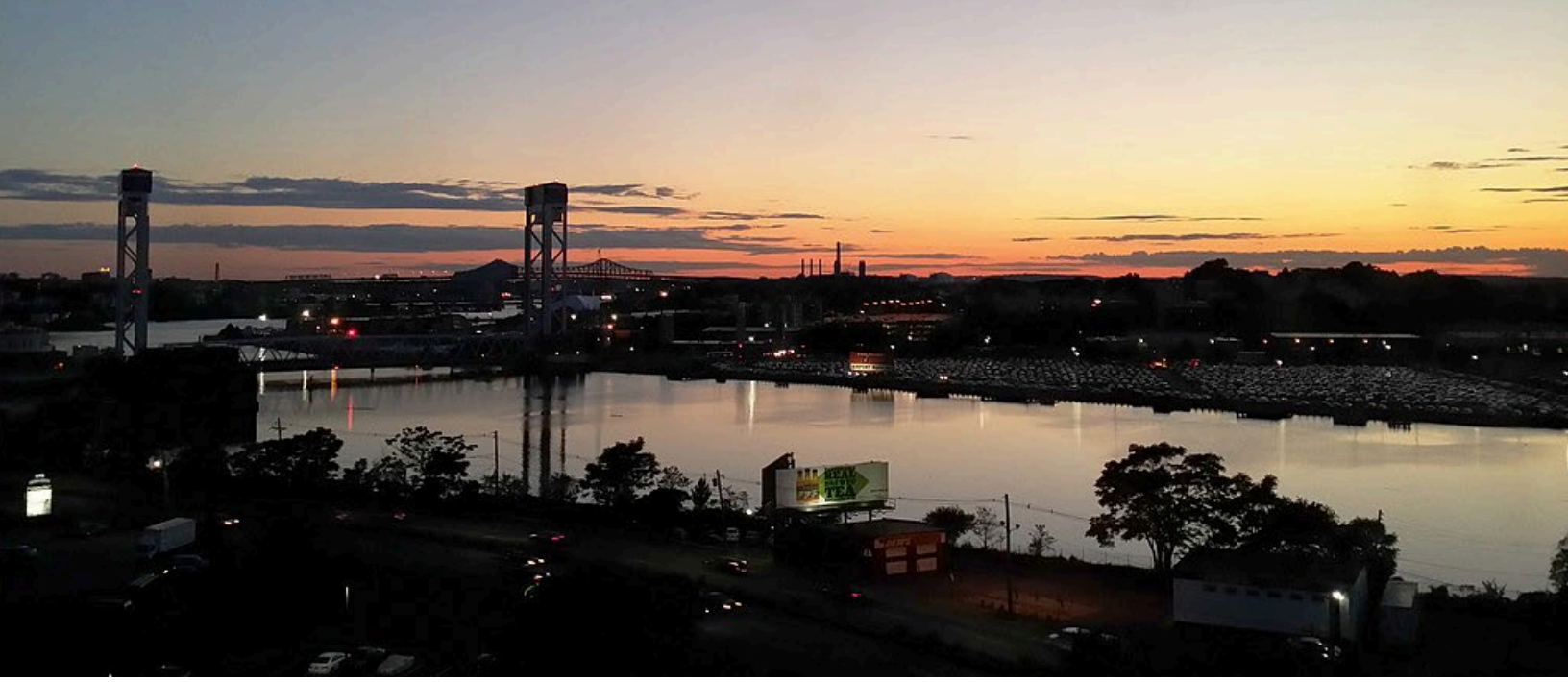

Photo taken by Eric Friedebach, CC BY 2.0 via Wikimedia Commons

Chelsea Creek DPA

The Chelsea Creek DPA, shown in Figure 5, is located along Chelsea Creek and is comprised of 487 acres of land and water, including 261 acres of land in the cities of Boston, Chelsea, and Revere.[36] The DPA is adjacent to two other DPAs: the Mystic River DPA and the East Boston DPA. Waters of the Chelsea Creek DPA include a 38-foot-deep federal navigation channel.[37] In most places, the water's edge consists of coastal banks or beaches, riprap slopes, and bulkheads.

The area encompassed by the Chelsea Creek DPA has a rich historical legacy.[38] In the 1800s, East Boston was a leading port and shipbuilding area, and then during World War II, the area along Chelsea Creek became a fuel depot annex for Boston's Naval Shipyard.[39]

Today, the proximity of the Chelsea Creek DPA to the densely populated Boston metro area and Logan Airport, and its established waterfront systems, have made it suitable for energy resource distribution. The area is characterized by fuel storage and distribution facilities, parking lots, and industrial facilities. Chelsea Creek's fuel terminals collectively supply 70 to 80 percent of Massachusetts's refined petroleum products, such as home heating oil and gasoline, and all jet fuel for Logan Airport is transported through the

[36] Massachusetts Office of Coastal Zone Management, "Designation Decision of the Chelsea Creek Designated Port Area."
[37] Massachusetts Office of Coastal Zone Management, "Designation Decision of the Chelsea Creek Designated Port Area."
[38] City of Chelsea and Chamber of Commerce, "400 Years of History."
[39] Massachusetts Office of Coastal Zone Management, "Designation Decision of the Chelsea Creek Designated Port Area."

Chelsea Creek DPA.[40] Some of the DPA's other water-dependent uses include seafood processing, marine freight, and supplying road salt to approximately 350 public safety entities across Massachusetts that is shipped to and stored in the DPA.[41]

The DPA's land and waterways support operations at the fuel terminals. Planning for the DPA has been informed by the *Chelsea Creek Municipal Harbor Plan and Designated Port Area Master Plan* completed in 2022 by the City of Chelsea (2022 Plan), as well as the 2016 and 2022 DPA boundary reviews.

Coastal hazards such as storm surge and tidal flooding present long-term flood risk. As sea levels rise, Chelsea Creek will experience increased exposure to these coastal hazards. By the 2050s, all WDI buildings within the Chelsea Creek DPA are expected to face storm surge during a 1 percent annual chance flood.[42] The percentage of WDI buildings likely to be affected by high tide flooding is anticipated to reach 90 percent in Chelsea Creek by the 2050s.[43]

[40] Massachusetts Office of Coastal Zone Management, "Designation Decision of the Chelsea Creek Designated Port Area."
[41] Arcadis U.S., Inc., "Building Resilience in Massachusetts Designated Port Areas: Resilience for Water Dependent Industrial Users in the Chelsea Creek and Gloucester Inner Harbor Designated Port Areas."
[42] Arcadis U.S., Inc., "Building Resilience in Massachusetts Designated Port Areas: Resilience for Water Dependent Industrial Users in the Chelsea Creek and Gloucester Inner Harbor Designated Port Areas."
[43] Arcadis U.S., Inc., "Building Resilience in Massachusetts Designated Port Areas: Resilience for Water Dependent Industrial Users in the Chelsea Creek and Gloucester Inner Harbor Designated Port Areas."

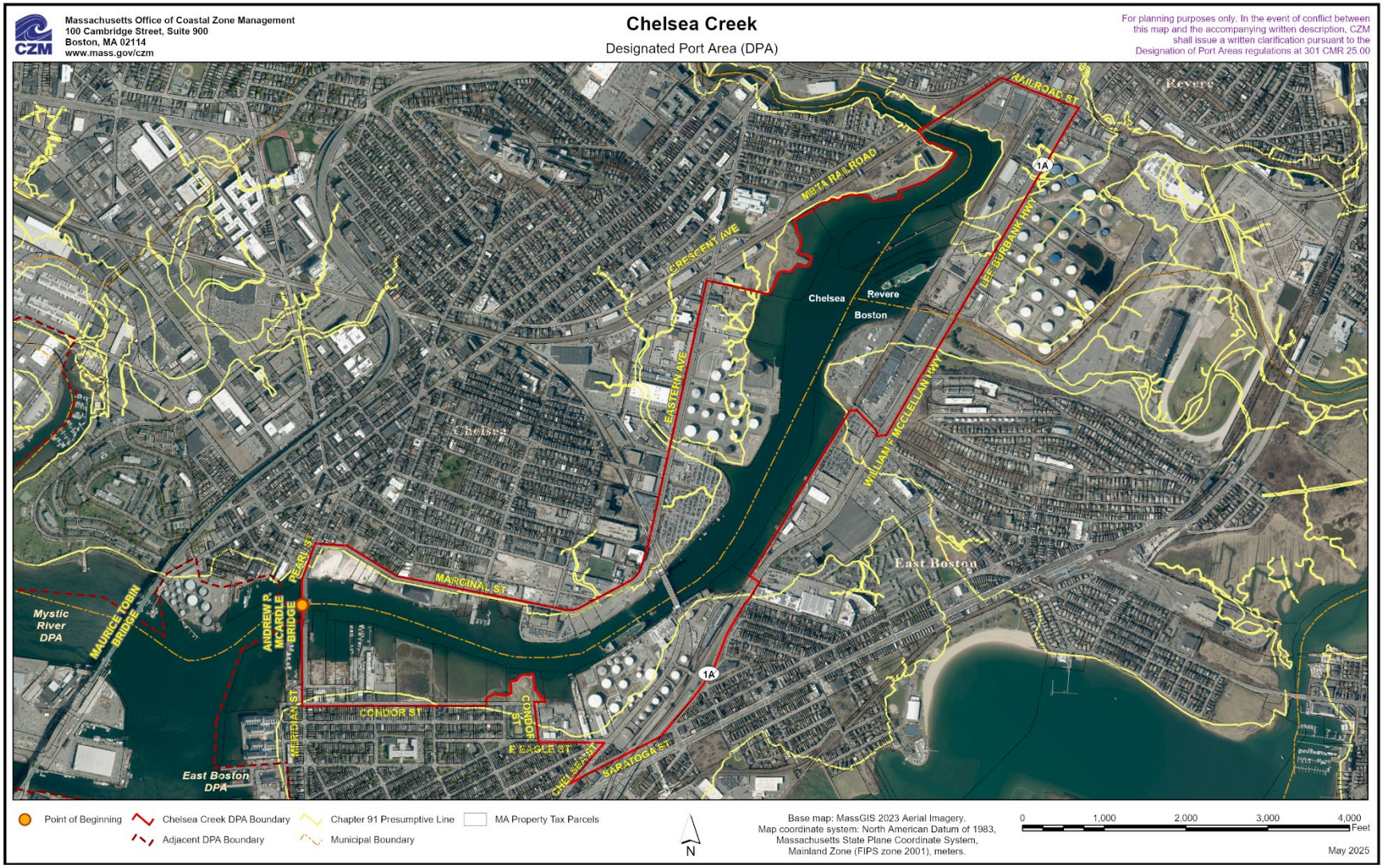

Figure 5. Chelsea Creek DPA boundary

Photo captured from Google Street View

East Boston DPA

The East Boston DPA encompasses 89 acres spread across four distinct waterfront areas, extending from the McCardle Bridge to Jeffries Point, as shown in Figure 6.[44] The four waterfront areas are: (1) approximately 8 acres of land and 7 acres of water situated between 330 and 404 Border Street, adjacent to the Mario Umana Academy and South Shore Plaza; (2) 22 acres of land and water situated between 170 and 282 Border Street, including the area commonly known as Liberty Plaza; (3) an area of approximately 14 acres situated between the Boston East and Eddy developments; and (4) a sub-area of the DPA containing the East Boston Shipyard, which formerly included Jeffries Point.[45] The area around the East Boston DPA has a long history as a site of maritime commerce and industry. The DPA currently hosts various water-dependent industrial activities, such as barge and water transportation services, construction staging, material fabrication, tugboat operations, small vessel supply and repair, and marine robotics.[46] Some areas have a mix of uses. For example, the Boston Harbor Shipyard and Marina hosts a full-service shipyard and maritime and marine services, as well as businesses such as restaurants, cafes, and cultural institutions, including the Institute of Contemporary Art and the Nantucket Lightship.[47]

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[44] Massachusetts Office of Coastal Zone Management, "Boundary Review of the Mystic River DPA, Charlestown Shore."
[45] Massachusetts Office of Coastal Zone Management, "Boundary Review of the East Boston Designated Port Area, Boston, MA."
[46] Boston Harbor Now, "Boston's Working Port: A Foundation for Innovation—Planning a 21st Century Harbor."
[47] Boston Harbor Shipyard and Marina, "Homepage."

The most recent East Boston DPA boundary review, in 2022, removed a portion of the Jeffries Point area from the DPA because it did not exhibit predominantly industrial characteristics, as it featured a dense concentration of residential and recreational uses.[48] Planning for the future of the East Boston DPA is currently underway as part of broader planning efforts for this section of Boston. The City recently adopted a zoning update for East Boston, and in January 2024, the Boston Planning and Development Agency (BPDA) Board of Directors adopted PLAN: East Boston, a comprehensive plan for the East Boston neighborhood that was developed by BPDA in collaboration with various city and state agencies.[49] The city-wide initiative strives to incorporate coastal resilience planning along the East Boston shoreline. Several flood pathways have been identified in East Boston, and multiple planning initiatives are currently underway to address climate adaptation concerns.

[48] Massachusetts Office of Coastal Zone Management, "Boundary Review of the East Boston Designated Port Area, Boston, MA."
[49] Boston Planning and Development Agency, "PLAN: East Boston."

Figure 6. East Boston DPA boundary

South Boston DPA

The South Boston DPA, shown in Figure 7, covers 140 acres.[50] The South Boston DPA shares boundaries with the East Boston DPA and the Mystic River DPA and includes portions of the Boston Main Channel, which supports marine industry on either side of its waters across multiple DPAs. The South Boston DPA also completely encompasses the Reserved Channel, an offshoot of the Boston Main Channel. On the south side of the Reserved Channel, the Paul W. Conley Container Terminal, also known as the Conley Terminal, serves as New England's largest full-service container terminal.[51] It is the only deepwater access terminal in the Port of Boston, with two existing deepwater berths.[52]

The Commonwealth, working with the U.S. Army Corps of Engineers and other federal agencies, completed the Boston Harbor Deep Draft Navigation Improvement project in 2022, which deepened the Harbor to support larger ships.[53] The north-side portion of the DPA is located within the Raymond L. Flynn Marine Park (RLFMP), which is an industrial park with various maritime WDI uses.[54] The Flynn Cruiseport Boston receives deep-draft

[50] Massachusetts Office of Coastal Zone Management, "Boundary Review of the South Boston Designated Port Area, Boston, MA."
[51] Port of Boston, "Port of Boston: Conley Terminal."
[52] Massachusetts Office of Coastal Zone Management, "Boundary Review of the South Boston Designated Port Area, Boston, MA."
[53] Massachusetts Office of Coastal Zone Management, "Boundary Review of the South Boston Designated Port Area, Boston, MA."
[54] Boston Harbor Now, "Boston's Working Port: A Foundation for Innovation—Planning a 21st Century Harbor."

cruise ships in addition to naval and public vessels.[55] Further north, the South Boston DPA is home to Boston Fish Pier, which is listed on the National Register of Historic Places and serves as a symbol of Boston's longstanding seafood industry.[56] This DPA is also home to the Boston Harbor Lobsterman's Cooperative, City of Boston Harbormasters office, and additional important docking areas.

The 2018 CZM boundary review Designation Decision for the Haul Road North and Haul Road South areas increased the amount of land in the DPA by 3 acres.[57] The boundary review also noted several improvement projects that have since been completed, such as the Boston Harbor Deep Draft Navigation Improvement Project and a modernization project for the Conley Terminal to accommodate larger ships and improve landside facilities (completed in 2021).

Climate resilience in the South Boston DPA has been guided by Boston's resilience plans—namely the Climate Ready Boston initiative and the Coastal Resilience Solutions for South Boston report, issued in 2018,[58] which acknowledges South Boston's susceptibility to flooding and sea level rise and recommends flood protection strategies. Currently, all projects proposed within the RLFMP must address climate resilience concerns and meet green building requirements for greenhouse gas emission reduction.[59]

[55] Massachusetts Office of Coastal Zone Management, "Boundary Review of the South Boston Designated Port Area, Boston, MA."
[56] Boston Harbor Now, "Boston's Working Port: A Foundation for Innovation—Planning a 21st Century Harbor."
[57] Massachusetts Office of Coastal Zone Management, "Designation Decision for the South Boston Designated Port Area, Boston, MA."
[58] City of Boston, "Coastal Resilience Solutions for South Boston 2018 Final Report."
[59] Boston Planning and Development Agency and City of Boston, "Raymond L. Flynn Marine Park Master Plan Update."

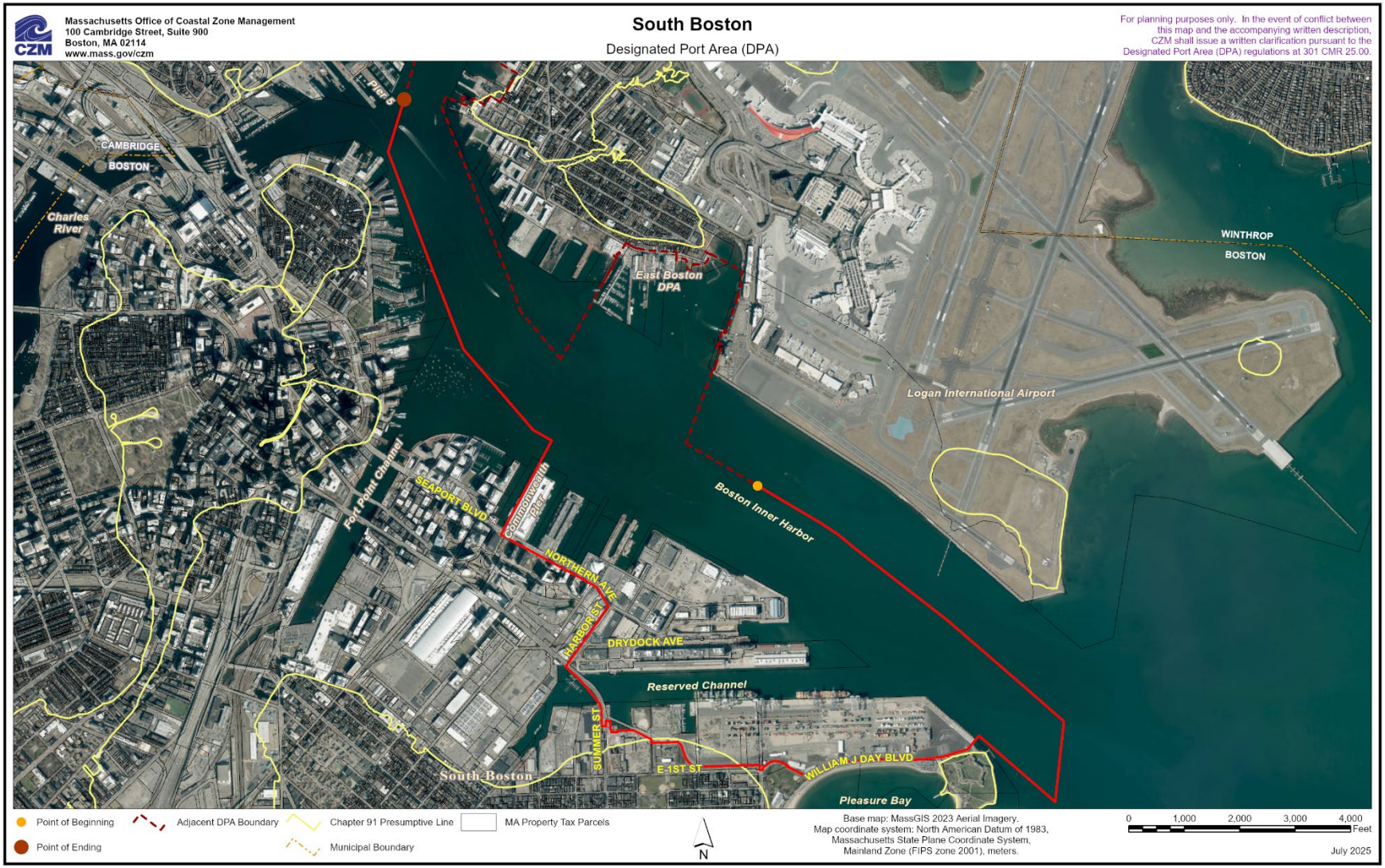

Figure 7. South Boston DPA boundary

Photo by Todd Van Hoosear, CC BY SA 2.0 via Wikimedia Commons

Weymouth Fore River DPA

The Weymouth Fore River DPA encompasses approximately 652 acres within and adjacent to the Weymouth Fore River and Town River Bay Inlet (Figure 8) in Norfolk County.[60] The DPA lies within the municipalities of Weymouth, Quincy, and Braintree. The DPA includes a dredged channel that is typically 35 feet deep and varies between 300 and 500 feet in width.[61] At its northeast end, the DPA begins approximately between Raccoon Island in Quincy and Fort Point in Weymouth. From there, the DPA follows the navigational channel south and west until it branches off into two distinct areas: one following the Weymouth Fore River south under the Fore River Bridge, and the other following the Town River west to the Broad Meadow salt marsh. Most of the DPA's landside acreage is located within the City of Quincy, with a small portion in Braintree, and with another portion located across the Fore River Bridge in the City of Weymouth. The DPA was established in 1978, and its boundaries have not been modified since that time.

The Weymouth Fore River DPA has a rich history of shipbuilding. The region has been a shipbuilding center since the 1880s. The Fore River Shipyard, constructed in 1901, was

[60] Massachusetts Office of Coastal Zone Management, "Weymouth Fore River Designated Port Area."
[61] U.S. Army Corps of Engineers New England District, "Boston Harbor and Weymouth Fore River Federal Navigation Channel Rock Removal."

once among the nation's largest shipbuilding enterprises. Naval vessels were constructed at the shipyard during World War II. Shipbuilding operations at the shipyard ceased in 1986.[62]

The former Fore River Shipyard, now the Quincy Shipyard, covers a large portion of the DPA's acreage in Quincy and currently serves as a vehicle storage and distribution facility for a large car dealership. The DPA now serves as a commercial/industrial district with a diversity of uses, including recycling facilities, the Baystate Fertilizer plant, and dredging companies. The DPA also functions as an energy port, housing terminals operated by Citgo Petroleum Corporation and Sprague Energy. The surrounding cities are planning for future growth, focusing on innovative technologies such as marine robotics as well as other drivers of the "blue economy."

Replacement of a temporary Fore River Bridge started in 2012 and was completed in 2017.[63] Funded through the Accelerated Bridge Program, the project increased the width of the navigable channel from 175 feet to 250 feet to accommodate larger marine freighters and provide improved access to the DPA.[64]

The South Quincy/Fore River region faces both inland/riverine and coastal flooding risks. Several properties in this area have suffered significant losses due to repeated flooding between 1979 and November 2017. [65]

[62] Toppan, "The MPS Program at Quincy Shipbuilding."
[63] Massachusetts Department of Transportation, "Fore River Bridge, Longfellow Bridge: MassDOT Board of Directors Update."
[64] J.F. White Contracting Co., "Fore River Bridge Replacement."
[65] City of Quincy, "South Quincy/Fore River Hazard Vulnerability Summary."

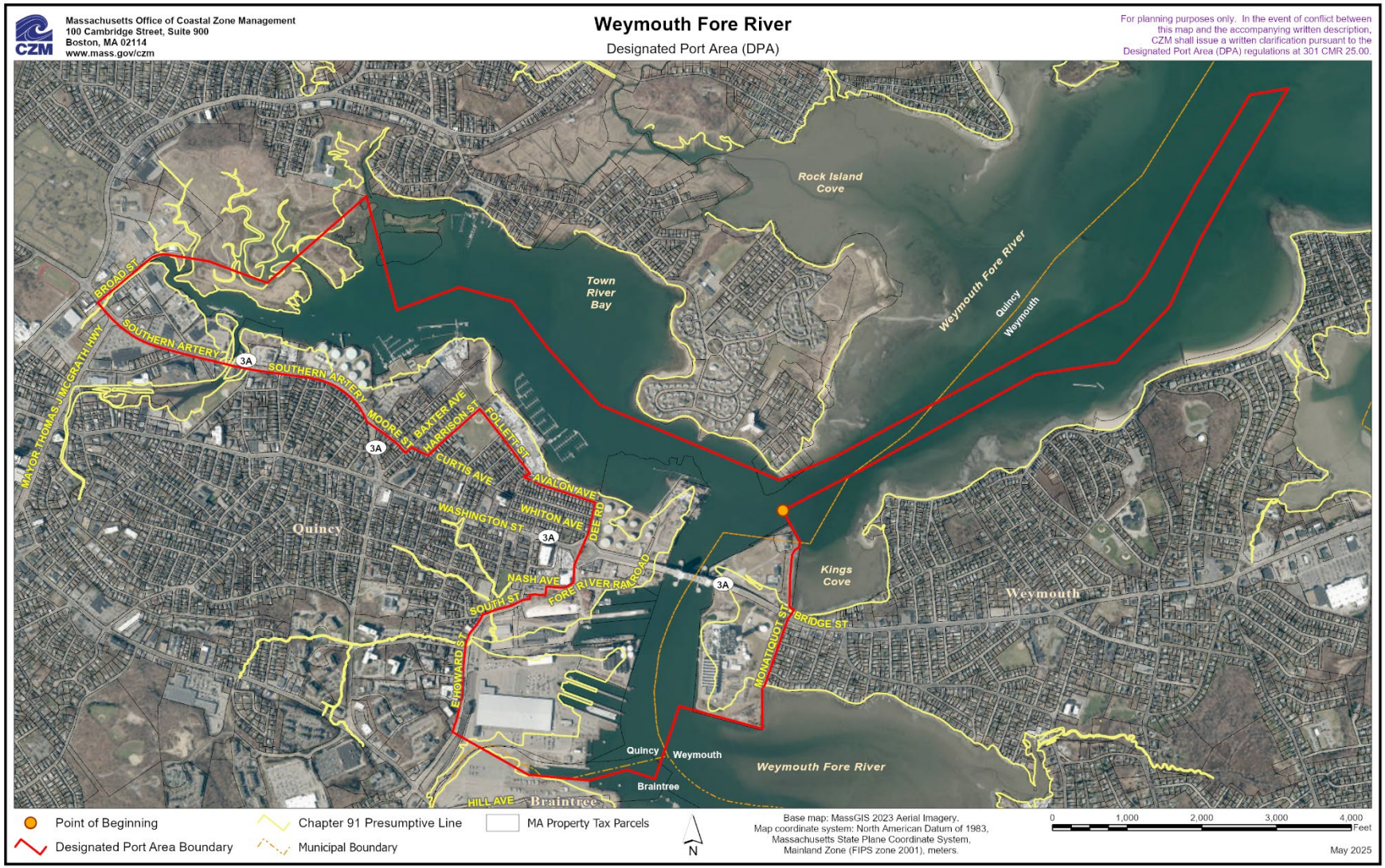

Figure 8. Weymouth Fore River DPA boundary

Photo by Mike Estabrook, Massachusetts Office of Travel and Tourism, Flickr.

New Bedford-Fairhaven DPA

The New Bedford-Fairhaven DPA is located in Bristol County and spans the Acushnet River where it meets Buzzards Bay (see Figure 9). The area of water within the DPA is approximately 366 acres in size and includes a 30-foot-deep and 350-foot-wide navigational channel as well as several smaller dredged channels.[66] The landside portion of the DPA is approximately 232 acres in size. Most of the DPA land area is located within New Bedford, including Fish Island and a portion of Popes Island, which are connected to the mainland by the Route 6 bridge. A small portion of the DPA land is located within Fairhaven and lies between the water and the east side of Water Street.[67] The boundaries of the DPA remain unchanged since its establishment in 1978.

New Bedford Harbor began as a fishing and whaling port in the mid-1700s, and by the 1800s had emerged as the global center of the whaling industry. Along with berthing the whaling ships themselves, New Bedford hosted many supporting industries that supplied

[66] U.S. Army Corps of Engineers New England District, "New Bedford and Fairhaven Harbor Navigation Project."
[67] City of New Bedford and Town of Fairhaven, "New Bedford/Fairhaven Municipal Harbor Plan."

the whaling fleet with materials, tools, food, and other products.[68] This cultural heritage is still highlighted as part of the history of the harbor today.

The U.S. Environmental Protection Agency declared the harbor and its tidal estuary as a Superfund site in 1983 due to the presence of sediments that were highly contaminated with polychlorinated biphenyls (PCBs) and heavy metals. A major environmental cleanup project has been ongoing within the harbor for nearly 20 years and is expected to be complete by 2025.[69] Full-scale subtidal dredging of contaminated sediments began in 2004 under the Superfund program and accelerated in 2014 with funding from a settlement with the responsible party.[70] Over 1 million cubic yards of contaminated soil/sediment have been removed and disposed of off-site.[71] The State Enhanced Remedy (SER) allows for further cleanup by the Commonwealth, which can perform navigational dredging and disposal activities.[72] The SER targets removing sediment in the lower harbor, including areas within the DPA.

Municipal Harbor Plans were developed in 2002 and 2010, and the 2010 plan is still the governing document. In February 2025, New Bedford started the process of amending their Municipal Harbor Plan by submitting a Request for a Notice to Proceed to the Executive Office of Energy and Environmental Affairs (EEA). The comprehensive planning effort will assess the Harbor's strengths and challenges and identify opportunities for promoting ongoing economic growth, improving environmental quality, and strengthening connections to the New Bedford and Fairhaven communities.

The New Bedford-Fairhaven DPA supports a diverse range of maritime and industrial operations. The port is recognized nationally for its importance to the fishing and fish-processing industry. In addition to commercial fishing, the port supports a diverse market of cargo transport and handles more than $230 million in shipping of bulk commodities and breakbulk cargo.[73] Barge operations move aggregate and breakbulk cargo to the islands of Martha's Vineyard and Nantucket. Recently, offshore wind has become a major part of the DPA's marine economy. The New Bedford Marine Commerce Terminal offers marshalling facilities that can handle the heavy components used for construction and assembly of wind turbines.[74] The terminal is currently supporting construction of the

[68] New Bedford Whaling National Historical Park, "New Bedford's Whaling Heritage."
[69] U.S. Environmental Protection Agency, "General Information about the New Bedford Harbor Cleanup."
[70] U.S. Environmental Protection Agency, "General Information about the New Bedford Harbor Cleanup."
[71] U.S. Environmental Protection Agency, "General Information about the New Bedford Harbor Cleanup."
[72] U.S. Environmental Protection Agency, "New Bedford Harbor Cleanup Plans, Technical Documents and Environmental Data."
[73] Port of New Bedford, "Economic Impact: Port of New Bedford."
[74] Jacobs Engineering Group Inc., "New Bedford Blue Lane Working Waterfront Connector Feasibility Study."

Vineyard Wind 1 project south of Cape Cod. The DPA also provides other support and maintenance services for the offshore wind industry.

Since 1966, the New Bedford Hurricane Protection Barrier, which spans the New Bedford and Fairhaven Harbor, has protected the DPA from coastal flooding associated with storm surge.[75] The barrier includes a 4,500-foot-long earthen fill dike with a gated opening for navigation, Clarks Cove Dike, and Fairhaven Dike, along with various conduits and gates for water control.[76]

To address the projected impacts from sea level rise, the City of New Bedford has developed the NB Resilient climate action and resilience plan.[77] This document acts as a guide for protecting existing infrastructures, as well as for building new developments with sea level rise and storm surges in mind.[78]

[75] U.S. Army Corps of Engineers New England District, "New Bedford Hurricane Protection Barrier."
[76] U.S. Army Corps of Engineers New England District, "New Bedford Hurricane Protection Barrier."
[77] City of New Bedford, "NB RESILIENT, New Bedford's Plan for Community Climate Action + Resilience."
[78] City of New Bedford, "NB RESILIENT, New Bedford's Plan for Community Climate Action + Resilience."

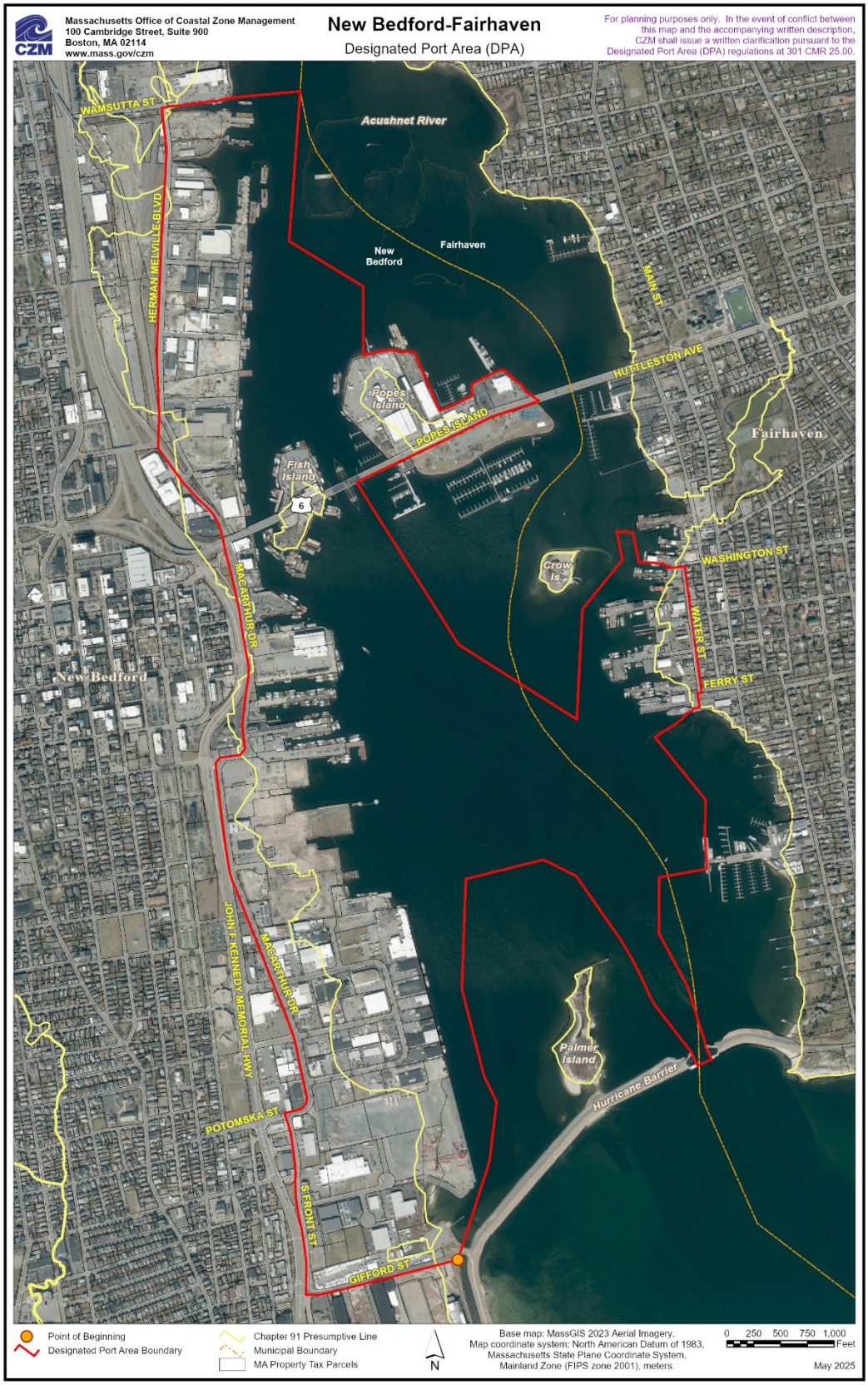

Figure 9. New Bedford-Fairhaven DPA boundary

Photo by Commercial Development Company, Inc.

Mount Hope Bay DPA

The Mount Hope Bay DPA encompasses approximately 964 total acres within and adjacent to Mount Hope Bay (Figure 10) in Bristol County.[79] The DPA falls within the municipalities of Fall River and Somerset and is located at the mouths of the Taunton River and Lees River. The DPA contains a dredged navigational channel 35 feet deep and 400 feet wide. At its northeast end, the DPA includes a 35-foot-deep turning basin, about 1,100 feet wide and 850 feet long,[80] with adjacent landside acreage at the former Weavers Cove energy facility in Fall River and at the former industrial facilities in Somerset. The DPA also includes landside acreage in Fall River to the south of the Route 195 Braga Bridge, between Broadway Street and Ferry Street, as well as frontage on portions of Draper Street and Atlantic Boulevard. Additional acreage in Somerset includes the area of Brayton Point. The Mount Hope Bay DPA was established in 1978, and the boundaries have not changed since that designation.

[79] Massachusetts Office of Coastal Zone Management, "Mount Hope Bay Designated Port Area."
[80] U.S. Army Corps of Engineers New England District, "Fall River Harbor Navigation Project."

Fall River's industrial history is marked by the establishment and growth of textile mills and manufacturing during the late 19th and early 20th centuries.[81] The Mount Hope Bay DPA also has a long history of supplying energy to Massachusetts and other states. The port area was once home to bulk fuel storage facilities and the Brayton Point Power Station, a coal-fired plant.

Energy export cables currently make landfall at an existing substation of the New England Power Company (d/b/a National Grid), and the DPA has the potential to support the offshore wind industry going forward. The DPA also contains the Fall River State Pier, which is used for general cargo, the breakbulk industry, ferry service, and the cruise ship industry.[82] In addition, the port contains dock and mooring space, fueling stations, and launch ramps to support commercial fishing operations.[83]

Due to its geographic location, the Mount Hope Bay DPA has historically not experienced coastal storm damage to the same extent as some other parts of the Massachusetts coastline. However, given the projections for rapid sea level rise, increasingly severe storms, and increased precipitation events, the DPA needs to plan for and adapt to these future climate issues. During its 2019 Municipal Vulnerability Preparedness planning effort, the City of Fall River listed flooding and severe storms as the top natural hazards impacting their municipality.[84]

[81] Brooks, "History of Fall River, Massachusetts."
[82] Massachusetts Clean Energy Center, "Fall River State Pier."
[83] Massachusetts Division of Marine Fisheries, University of Massachusetts Boston Urban Harbors Institute, and Cape Cod Commercial Fishermen's Alliance, "Massachusetts Commercial Fishing Port Profiles: Fall River."
[84] Woodard & Curran, "Community Resiliency Building Workshop: Summary of Findings."

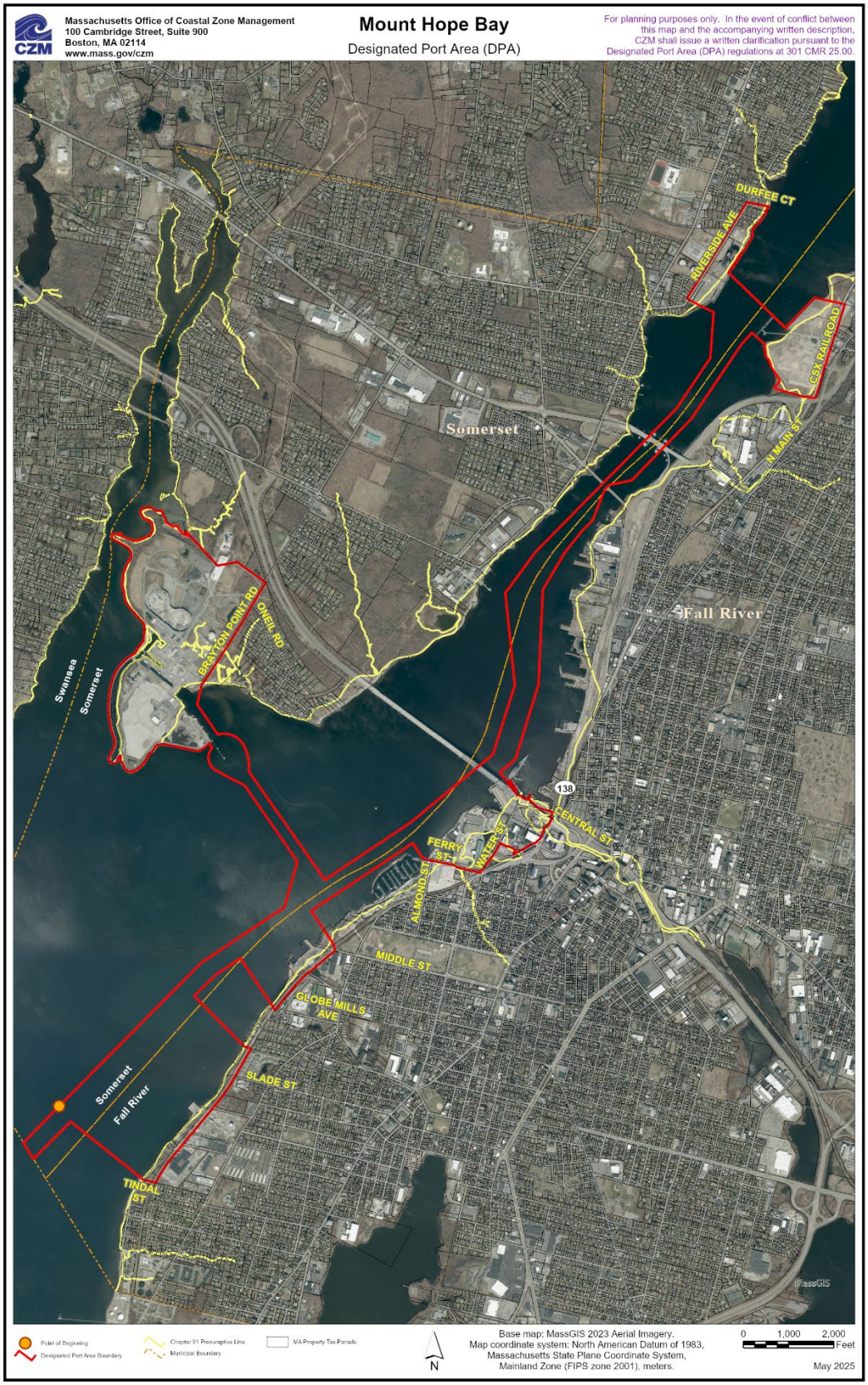

Figure 10. Mount Hope Bay DPA boundary

Chapter 3 - Economic Analysis

The purpose of this economic analysis is to provide a snapshot of the existing water-dependent industrial (WDI) uses and estimate the economic impact of WDI uses both within the DPAs and across the Commonwealth. Presented below is the economic state of WDI uses in Massachusetts from two different perspectives—starting with an analysis of WDI uses within DPAs, and then broadening to an assessment of the WDI-affiliated sectors statewide. The economic analysis supports the overall DPA program assessment by illustrating the economic value of WDI uses to the Commonwealth. In combination with the information in Chapter 2 (DPA Profiles) and Chapter 4 (Key Findings from Stakeholder Engagement), the economic analysis demonstrates the importance of protecting lands and waters for WDI uses that otherwise could lose critical access to the water.

The first component of the economic impact analysis presents the jobs, revenue, gross domestic product (GDP), and wages *directly* tied to businesses with addresses located within the DPAs. Additionally, it shows those metrics based on the ripple effect those businesses and employees have locally and across the Commonwealth. This analysis is tied to jobs and how money flows throughout the regional (i.e., county) and state economy. Previous studies have been conducted to estimate the economic impacts of Massachusetts ports and coastal areas.[1,2,3] However, those studies differ from this analysis in scope and methodology and therefore answer different questions. Most notably, this study does not estimate economic impacts related to goods that pass through the DPAs.

The report includes two different types of analysis, resulting in two distinct estimates that should not be compared. The first analysis is a focused "DPA level" estimate of economic activity within DPA boundaries. The DPA-level analysis is presented here as an aggregate across all 10 DPAs, and presented for each individual DPA in Appendix A. The second analysis broadens to present data that reflect the contribution of WDI sectors to the Commonwealth's economy. This level of analysis captures a wider range of employment across WDI sectors, including related employment (e.g., water-based businesses) not captured due to limitations of the DPA level analysis.

The results of the economic analysis indicate that WDI uses in the DPAs, and their associated sectors in Massachusetts overall, are important contributors to state and local economic activity. Highlights include:

- Within the DPAs, WDI uses directly account for an estimated 283 establishments with 4,650 employees. In terms of the total economic impact, after considering the ripple effect of how WDI uses impact other industries, WDI uses in the DPAs account for an estimated 7,675 jobs, $690 million in wages, and $2.6 billion in total revenue.
- More broadly, it is estimated that for Massachusetts as a whole (i.e., both inside and outside of DPAs), sectors associated with WDI uses account for over 1,500 establishments, over 35,000 jobs, and over $3.7 billion in wages.

The DPA-level and statewide analyses are presented below with additional detail regarding analytical approaches and limitations.

Water-Dependent Industrial Uses Within the DPAs

As discussed above, the first component of the economic analysis is a focused DPA-level estimate of economic activity within DPA boundaries. The purpose of this approach was to help determine how DPAs are currently being used for water-dependent industry and to better understand the economic benefits provided by the DPAs.

Economic Impact Analysis Approach

The following steps were taken to conduct the DPA-level estimate of economic activity (see Figure 11):

- Used a geographic database of businesses (Data Axle),[85] including employment data, to identify businesses within each DPA.

[85] Data Axle, "Business Data."

- Filled gaps in Data Axle data with a review of assessment records and Google Maps.
- Characterized whether businesses are WDI uses as defined in the Chapter 91 Waterways regulations.
- Identified associated employment (number of jobs) for any of those businesses or entities through municipality reports, information available from the Secretary of State's office, or direct communication with the business.
- Input employment into IMPLAN to estimate the total impact on the economy.

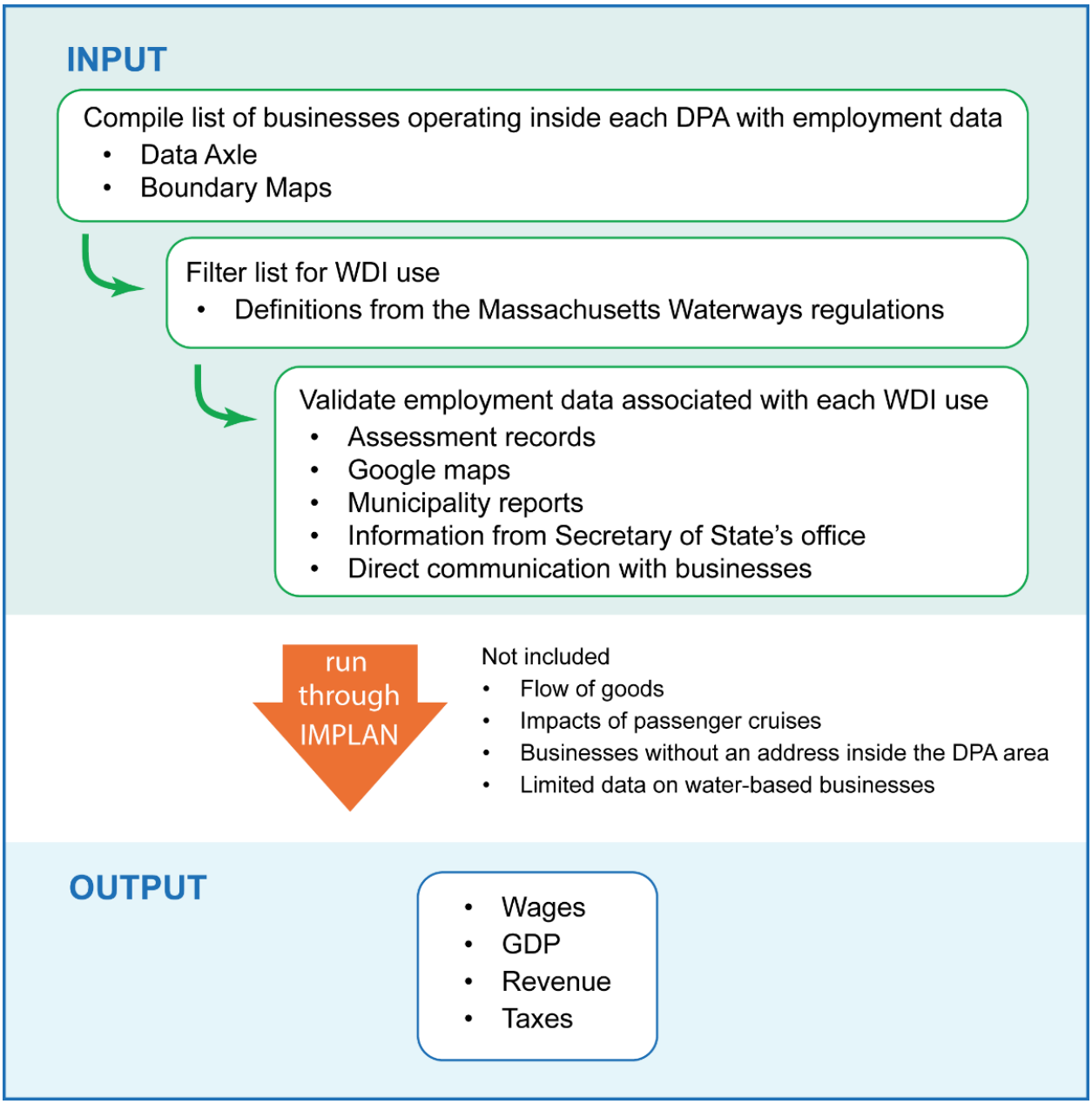

Figure 11. Economic analysis approach

The input-output analysis estimated how increased spending or employment ripples through the economy of a defined geographic area. Input-output modeling with IMPLAN uses multipliers to estimate industry-level economic impacts, which refer to economic activity including direct, indirect, and induced impacts that would not exist in the absence of the DPA activity being studied.

Here, the IMPLAN economic impact model was used to calculate direct, indirect, and induced impacts related to employment in the DPA. IMPLAN estimated impacts on employment, labor income (wages), value added (GDP), revenue, and taxes. Impacts were calculated at the county and state levels.

Table 4 presents the number of businesses/organizations that have WDI uses within each DPA. The six categories presented across the top (energy, living resources, manufacturing, marine construction, marine transportation and warehousing, and ship and boat building/repair) were developed to provide a better sense of the characteristics of each DPA, as the DPAs vary to some degree in the types of WDI uses that currently operate in each.

Table 5 presents the number of employees from the entities represented in DPAs

Table 4. Number of Entities with WDI Uses, by DPA and Category

DPA	Energy[a]	Living Resources[b]	Manufacturing[c]	Marine Construction[d]	Marine Transportation/ Warehousing[e]	Ship and Boat Building/ Repair[f]	Total
Gloucester Inner Harbor	-	19	1	2	16	2	40
Salem Harbor	1	-	-	-	1	-	2
Lynn	-	1	-	-	2	-	3
Mystic River	7	-	1	1	8	2	19
Chelsea Creek	3	3	-	-	14	-	20
East Boston	-	-	3	1	3	-	7
South Boston	-	24	-	-	14	3	41
Weymouth Fore River	1	-	-	4	4	-	9
New Bedford-Fairhaven	2	50	3	4	12	16	87
Mount Hope Bay	1	-	4	-	3	-	8
Grand Total	**15**	**97**	**12**	**12**	**77**	**23**	**236**

[a] *Energy includes drilling, energy transport, energy infrastructure, offshore wind, cement/limestone, and manufacturing.*

[b] *Living Resources include commercial fishing and seafood processing.*

[c] *Manufacturing includes other manufacturing entities that rely on water for cooling or large shipments from marine transportation.*

[d] *Marine Construction includes dredging; construction of docks, piers, bulkheads, or seawalls; and operation/repair of piers/docks.*

[e] *Marine Transportation and Warehousing include shipment of goods; movement of people (e.g., sightseeing, whale watching, ferries); entities that ensure safety for marine transport; fuel for marine transport (if the entity does not also provide boat repair); warehousing for marine shipments (but not if exclusively for residents); and cold refrigeration/warehousing for seafood caught.*

[f] *Ship and Boat Building/Repair includes ship and boat building as well as repair and installation of ships and boats.*

Table 5. Number of Employees at Entities with WDI Uses, by DPA and Category

DPA	Energy	Living Resources	Manufacturing	Marine Construction	Marine Transportation / Warehousing	Ship and Boat Building / Repair	Total
Gloucester Inner Harbor	-	538	3	4	184	17	746
Salem Harbor	9	-	-	-	20	-	29
Lynn	-	15	-	-	1	-	16
Mystic River	59	-	75	20	135	18	307
Chelsea Creek	45	16	-	-	209	-	270
East Boston	-	-	6	33	137	-	176
South Boston	-	463	-	-	340	97	900
Weymouth Fore River	10	-	-	69	258	-	337
New Bedford-Fairhaven	11	761	30	25	156	254	1,237
Mount Hope Bay	8	-	81	-	21	-	110
Grand Total	**142**	**1,793**	**195**	**151**	**1,461**	**386**	**4,128**

IMPLAN Outputs

Direct Economic Impact: The approximate annual direct employment, wages, GDP, and revenue from all WDI jobs within DPAs in Massachusetts are shown below. (See the Limitations section at the end of this chapter for more on interpreting these results.)

Employment: 4,650

Wages (labor income): $444 million

GDP (value added): $916 million

Revenue: $1,945 million

Total Economic Impact Including Ripple Effects in Massachusetts: The total economic impact includes direct impacts described above, as well as induced impacts, which is the increase in economic activity based on spending of employees who make money within the DPA, and indirect impacts, which is the increase in economic activity of the businesses that supply entities within the DPA. Finally, these businesses produce tax revenue. These data provide some perspective on how the DPAs are tied to the rest of the Massachusetts economy. The output does not include how the flow of goods shipped through DPAs also are tied to jobs outside of DPAs, which is another significant contribution of DPAs not included below. The IMPLAN outputs with ripple effects are shown below.

Employment: 7,675

Wages (labor income): $690 million

GDP (value added): $1,317 million

Revenue $2,600 million

Sales Tax: $62 million

Property Tax: $104 million

Additional details on the economic impacts within each DPA are presented in Appendix A.

Water-Dependent Industrial Uses Across the Commonwealth

The statewide estimate analyzes a broader selection of entities associated with WDI sectors across the Commonwealth to help address potential underestimates in the DPA-level analysis and to assess the broader economic benefits of WDI use. Specifically, the analysis estimates the economic impact of entire sectors associated with WDI use, and in doing so, accounts for water-based employment (e.g., people employed by fisheries) and

supporting businesses to WDI uses located outside the DPAs. The inputs for this analysis come from a more comprehensive selection of WDI-affiliated entities inside and outside DPAs and should therefore not be directly compared to results from the DPA-level analysis.

For the statewide estimates of WDI use, the project team used the following steps:

- Determined industries that are considered WDI under Massachusetts Waterways regulations.[86]
- Mapped WDI uses to corresponding sectors in the National Oceanic and Atmospheric Administration's (NOAA) Economics National Ocean Watch (ENOW) data.[87]
- For WDI uses with no corresponding sector in ENOW, WDI use was mapped to North American Industry Classification System (NAICS) codes used in County Business Patterns (CBP) data.[88]

A table presenting the list of WDI uses and their corresponding NOAA ENOW sectors and NAICS codes used for this analysis can be found in Appendix D.

To estimate the number of establishments, number of employees, and total wages earned in each sector associated with WDI use, 2020 data from ENOW and CBP were used. NOAA's ENOW data set presents economic data on six ocean-dependent sectors: Living Resources, Marine Construction, Marine Transportation, Offshore Mineral Extraction, Ship and Boat Building, and Tourism and Recreation.[89,] Of the 22 WDI uses defined by the Massachusetts Waterways regulations, 12 were mapped to the six ENOW sectors.

The CBP data from 2020 were used to estimate establishments, employment, and total wages in eight of the remaining 10 WDI uses. CBP provides economic indicators by industry (by NAICS code) and employment size at the national, state, county, metropolitan/micropolitan statistical area, combined statistical area, zip code, and congressional district levels.[90] WDI uses that did not align with an ENOW sector were matched with their corresponding industry in CBP. The majority of these WDI uses fell

[86] Massachusetts Department of Environmental Protection, Massachusetts Waterways Regulation (310 CMR 9.00).
[87] NOAA Office for Coastal Management, "Frequent Questions: Economics—National Ocean Watch (ENOW) Data."
[88] U.S. Census Bureau, "County Business Patterns: About this Program."
[89] NOAA Office for Coastal Management, "Crosswalk Table: Economics—National Ocean Watch (ENOW)."
[90] U.S. Census Bureau, "County Business Patterns: About this Program."

within the Electric Power Generation, Transmission, and Distribution sector (NAICS 2211). However, two fell within the Water and Sewer Line and Related Structures Construction sector (NAICS 237110), and one fell within Scenic and Sightseeing Transportation, Water (NAICS 487210). County-level data from CBP were used to align with ENOW data, which is also presented at the county level.

Two WDI uses did not align with any of the six ENOW sectors or with a NAICS code in CBP: "navigation aids, marine police and fire stations, and other facilities which promote public safety and law enforcement on the waterways" and "other industrial uses or infrastructure facilities which cannot reasonably be located at an inland site as determined in accordance with 310 CMR 9.12(2)(c) or (d)."

Table 6 on page 59 shows the estimated number of establishments, employment, and wages for WDI use by sector for 2020.

Limitations

The economic analysis presented above should be considered in the context of several limitations of the underlying data. Some inaccuracies are due to methods used to capture businesses within a specific geographic area. The boundary of a typical DPA cuts across many census tracts, and the level of interpolation done by Data Axle means it is possible that some jobs just outside the DPA are captured and some jobs just inside the DPA are not. Additionally, as businesses open and close, Data Axle does not always capture these changes instantaneously, so the data may not reflect recent closures and openings. This issue could even lead to some duplicates in cases where businesses have changed names. Finally, Data Axle bases the location of each business on the facility's mailing address, and this location could be different from the place of work, leading to the potential for errors when identifying businesses inside the DPA.

To minimize such errors, the project team confirmed the locations of buildings whenever possible using Google Maps aerial views and assessment records from each town. Despite the limitations, the approach used for the DPA analysis is a standard approach used by federal agencies such as NOAA's Office for Coastal Management, who often use private data sets when working with communities to understand the number of jobs that might be vulnerable to coastal hazards. Despite efforts to fill the gaps and correct errors in the business-level data, some businesses may be missing from the data, and some employment estimates may be inaccurate.

Another limitation includes the potential to miss employment from water-based businesses. The business data used in the analysis are generally limited to land- or water-based businesses with an address within the DPA. In particular, the data most likely understate water-based businesses such as commercial fishing and passenger cruises, as their land-based address may come from well outside the DPA.

An additional limitation results from the use of the IMPLAN model to determine the ripple effects on the economy using data on the economic activity generated by the WDI uses in each DPA. These economic impact estimates rely on a commonly used economic model of relationships between businesses, with pre-defined “multipliers” that represent the impacts different industries have on the overall economy at the county and state levels.[91] While this is a standard model for economic impact analysis, the true relationships between businesses in the DPAs and the overall economy could be somewhat different than the estimates suggest, given the unique nature of WDI use.

For the statewide analysis, there can be overestimates and underestimates in government data due to the methods used to aggregate the data and make them available to the public. Unlike the analysis at the DPA level where individual businesses were reviewed to determine that they were correctly classified as WDI, it was not possible to make these adjustments for the statewide analysis. Additionally, many industries may tend to have a much higher concentration of water-dependent businesses when the area of analysis is closer to the water; thus, the statewide analysis may have a geographic bias that overestimates the number of WDI-affiliated entities compared to what was done in the DPA-level analysis. As a result, the broader term "WDI-affiliated entities" was used to describe entities in the statewide analysis, whereas there was more certainty that the entities with WDI use within DPAs were actually WDI.

[91] The IMPLAN economic software package includes multipliers that describe how a particular industry generates impacts in the overall economy. For example, if an additional $0.25 of economic activity is generated locally for every dollar a business spends in a particular industry, a multiplier of 1.25 is implied.

Table 6. Massachusetts WDI Use Summary by Sector [a]

Sector	Establishments	Employment	Wages
Marine Construction	107	1,066	$112,008,000
Living Resources (e.g., commercial fishing, seafood processing)	653	7,204	$518,039,000
Offshore Mineral Extraction	45	24	$2,195,000
Ship and Boat Building	40	528	$32,064,000
Marine Transportation [b]	265	14,176	$1,337,891,000
Electric Power Generation, Transmission and Distribution (including offshore wind)	181	9,555	$1,355,355,000
Water and Sewer Line and Related Structures Construction [c]	223	2,596	$277,275,000
Scenic and Sightseeing Transportation, Water	62	255	$20,620,000
Total	1,576	35,404	$3,655,447,000

Note: Estimates for Marine Construction, Living Resources, Offshore Mineral Extraction, Ship and Boat Building, and Marine Transportation include only coastal counties. Estimates for other industries include all Massachusetts counties.

[a] Estimates include two industry groups that represent both WDI uses and non-WDI uses ("Electric Power Generation, Transmission and Distribution" and "Scenic and Sightseeing Transportation, Water") and do not include two WDI uses that did not align with industry categories in available data sources ("navigation aids, marine police and fire stations, and other facilities which promote public safety and law enforcement on the waterways" and "other industrial uses or infrastructure facilities which cannot reasonably be located at an inland site as determined in accordance with 310 CMR 9.12(2)(c) or (d)").

[b] Marine Transportation includes deep sea freight, marine passenger transportation, marine transportation services, search and navigation equipment, and warehousing.[92]

[c] This sector is most closely aligned with two WDI uses: "discharge pipes, outfalls, tunnels, and diffuser systems for conveyance of stormwater, wastewater, or other effluents to a receiving waterway" and "facilities and activities undertaken or required by a public agency for purposes of decontamination, capping, or disposal of polluted aquatic sediments."

[92] NOAA Office for Coastal Management, "Crosswalk Table: Economics—National Ocean Watch (ENOW)."

Photo by T.S. Custadio, Public domain, via Wikimedia Commons

Chapter 4 - Key Findings from Stakeholder Engagement

This chapter of the Designated Port Area (DPA) assessment analyzes the 10 Massachusetts DPAs across the five focal areas—infrastructure and land use, regulatory framework, funding and financing, community impacts, and coastal resilience—to understand the DPA program's strengths, challenges, and opportunities for enhancement.

These strengths, challenges, and opportunities were identified through stakeholder meetings, a survey, interviews, and focus groups. The following findings are based on quantitative and qualitative analysis of reported stakeholder perceptions of the DPA program. For more details on the engagement process that informed these findings, refer to Appendix B. Some of the topics that emerged during the engagement process are relevant to various focal areas. Table 7 summarizes the key findings, which are described in detail in the following focal area sections.

Table 7. Summary of Key Findings from Stakeholder Engagement, Organized by Assessment Category

Infrastructure and Land Use

IL1.	Lack of maintenance and investment in aging infrastructure limits the functionality of DPAs for water-dependent industrial (WDI) use.
IL2.	Vacancy and underutilization of parcels exists to varying degrees within DPAs, while small parcel sizes may limit growth.
IL3.	Demand for port landside transportation infrastructure and residential traffic concerns create conflict.
IL4.	Conflicts exist between industrial uses and public waterfront access.

Regulatory Framework

R1.	Regulatory framework generally protects waterfront space for WDI uses and supporting uses.
R2.	A perceived lack of consistent compliance with current regulatory requirements exists.
R3.	The regulatory structure and the review and permitting processes can be difficult to navigate.
R4.	Uncertainty over uses that qualify as WDI leads to a perception that the regulatory framework limits innovative growth.

Funding and Financing

F1.	Financial strain within DPAs is compounded by many factors, including high costs of infrastructure and maintenance and approaches to land valuation.
F2.	Lack of access to funding and financing opportunities, especially for private entities, is a major barrier to fully utilizing DPAs for WDI use.

Community Impacts

C1. DPAs provide local benefits, including jobs, goods, and services.

C2. While multiple workforce training programs exist, there are opportunities to increase access to and improve WDI workforce development.

C3. The growing offshore wind industry and other emerging and innovative industrial uses offer potential opportunities for DPA development.

C4. Conflicts exist between industrial uses and surrounding residential neighborhoods, including traffic, pollution, and waterfront access.

C5. Legacy environmental contamination can increase the cost of redevelopment, which can contribute to the issues of vacancy, underutilization, and concerns of the surrounding community.

Coastal Resilience

CR1. Concerns exist about how coastal flooding and sea level rise will impact DPA operations, deteriorating infrastructure, hazardous materials, and adjacent communities.

CR2. Perceived barriers to implementing coastal adaptation interventions include lack of comprehensive planning to address parceled land ownership, lack of financial and technical resources, and regulatory constraints.

Infrastructure and Land Use

Infrastructure and Land Use 1. Lack of maintenance and investment in aging infrastructure limits the functionality of DPAs for water-dependent industrial (WDI) use.

Challenges related to infrastructure and infrastructure maintenance emerged consistently as a perceived critical barrier to operation of WDI uses within DPAs. Over half of survey respondents listed “infrastructure” as a challenge that has limited efforts to start or grow a business or organization within the DPA (see Figure 12).

The infrastructure that WDI users most commonly reported depending on was waterfront infrastructure (e.g., docks, piers, wharves, bulkheads, etc.), followed by transportation infrastructure (roads, rails, and other transportation) and deepwater infrastructure

(e.g., dredged channel, deep water berthing). “Other” critical infrastructure listed by users mainly involved harbor marine support (tugs, firefighting, emergency response).

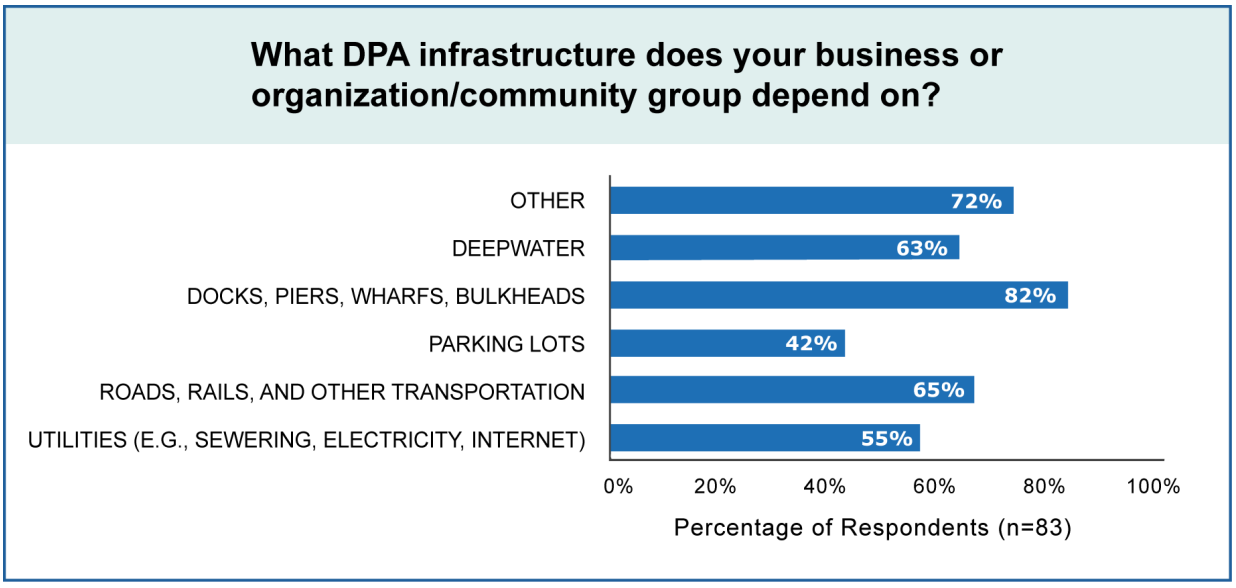

Figure 12. Survey responses showing the infrastructure that DPA users most commonly rely on.

Despite the challenges, 61 percent of stakeholders reported that the DPA infrastructure functions at least adequately for the needs of their businesses or organizations. However, over a third of stakeholders reported that the current DPA infrastructure functions poorly or very poorly. (See Figure 13.)

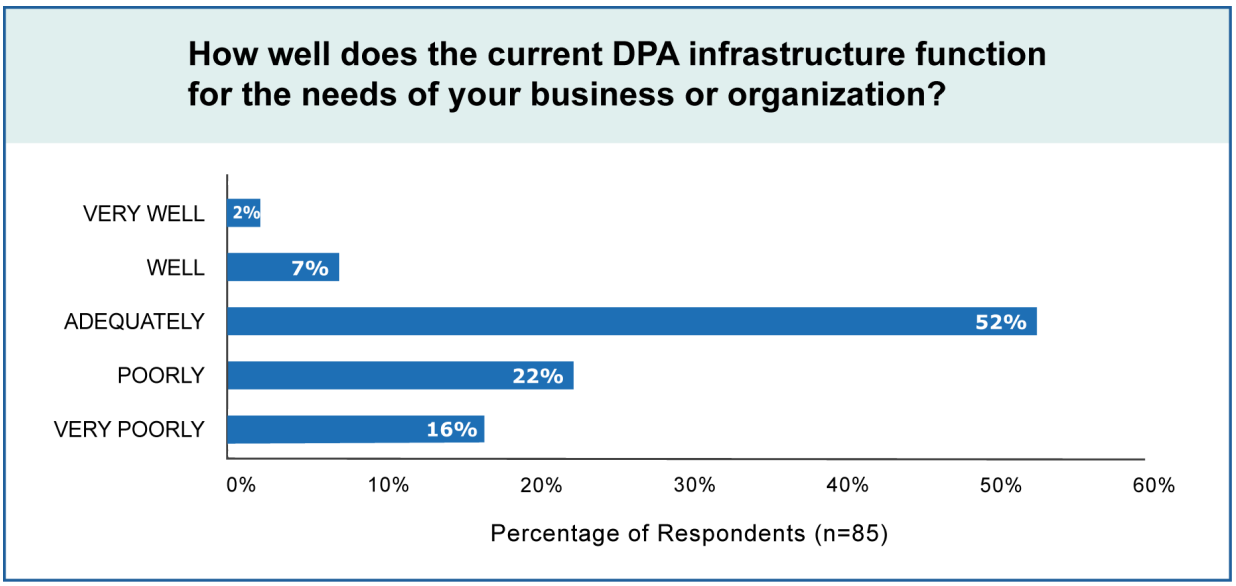

Figure 13. Survey responses across all 10 DPAs indicating perceptions of how well the current DPA infrastructure functions for industrial and organizational needs.

Stakeholders further elaborated in surveys, interviews, and focus groups on the challenges posed by the current condition of infrastructure. The most common concern was lack of maintenance and investment in aging critical infrastructure, leading to issues related to:

- **Workplace safety:** The lack of maintenance and general state of disrepair was reported to lead to concerns about worker safety and an inability to use the area as intended. The safety concerns make DPAs less desirable as worksites.
- **Vacancy and utilization:** Unmaintained or insufficient infrastructure also makes the land less appealing for leasing for new WDI uses or operators. Either the property owner or potential WDI use tenants would need to make significant investments to make the space functional for WDI use needs.
- **Community relationships:** Disrepair also contributes to the perception held by some neighboring communities that DPAs increase the presence of blighted areas.

Some reported infrastructure needs for water-dependent industrial uses included:

- Maintenance or dredging of deeper, wider channels
- Berthing and staging areas for large vessels
- Commercial dock space
- Deep water dock space
- Heavy lift capacity and other pier improvements and repairs
- Electrical infrastructure
- Truck access improvements
- Upgrades to bulkheads, headwalls, and seawalls
- Other coastal protection and climate resilience measures

Concern was communicated that the existing infrastructure, even if maintained, is not adequate to meet demand. Stakeholders suggested that global economic and shipping trends have changed the demands and infrastructure needs for maritime industry since DPAs were established, but DPAs have not kept pace with those changes. In focus groups, stakeholders shared that Massachusetts ports do not have the infrastructure needed to meet the demand to land cargo from large ships, so this business goes to other East Coast ports instead.

Suggestions for infrastructure improvements that would directly benefit WDI use operations varied across sites and DPAs. The box above lists infrastructure needs that were mentioned during the stakeholder engagement process.

The most frequently discussed challenges to addressing infrastructure improvement needs were financial constraints and fragmented private ownership. These issues are further detailed in the findings below.

Infrastructure and Land Use 2. Vacancy and underutilization of parcels exists to varying degrees within DPAs, while small parcel sizes may limit growth.

Concerns about the apparent vacancy throughout DPAs were a common theme in interviews and focus groups. Of survey respondents, 70 percent agree or strongly agree that DPAs are currently underutilized, but parcel utilization varies greatly between the 10 DPAs. It was noted that a few DPAs do not have much vacant or underused land (see Appendix C, Figure C-6). In those DPAs, stakeholders shared that current operations are running efficiently, these DPAs are fully utilized and generally at capacity, and the lack of space to accommodate more industry is actually of greater concern.

Based on interviews with municipal representatives, most vacant land in the DPAs was held under private ownership but not being actively used for WDI uses. In some cases, property owners reportedly restricted access to unused waterfront space for WDI uses. In DPAs with a larger percentage of parcels that are vacant and/or in disrepair, stakeholders reported that the DPA contributes to a sense of neighborhood blight, as well as lower property values, and has a negative visual impact.

Reported reasons for vacancy and underutilization include:

- Financial barriers and lack of incentive for infrastructure maintenance and investment, leading to site deterioration and increased vacancy rates.
- Lack of information on current and projected demand for WDI uses, resulting in landowners not knowing how to price and market leases for their properties.
- Lack of critical infrastructure, making land less appealing to lease for WDI uses.
- Expense and lack of clear responsibility for remediation of legacy contamination.
- A perception that the current regulatory framework disincentivizes WDI utilization or infrastructure maintenance by private owners who could profit from de-designation.
- Fragmentation of available space, making it unsuitable for large-scale WDI use development.

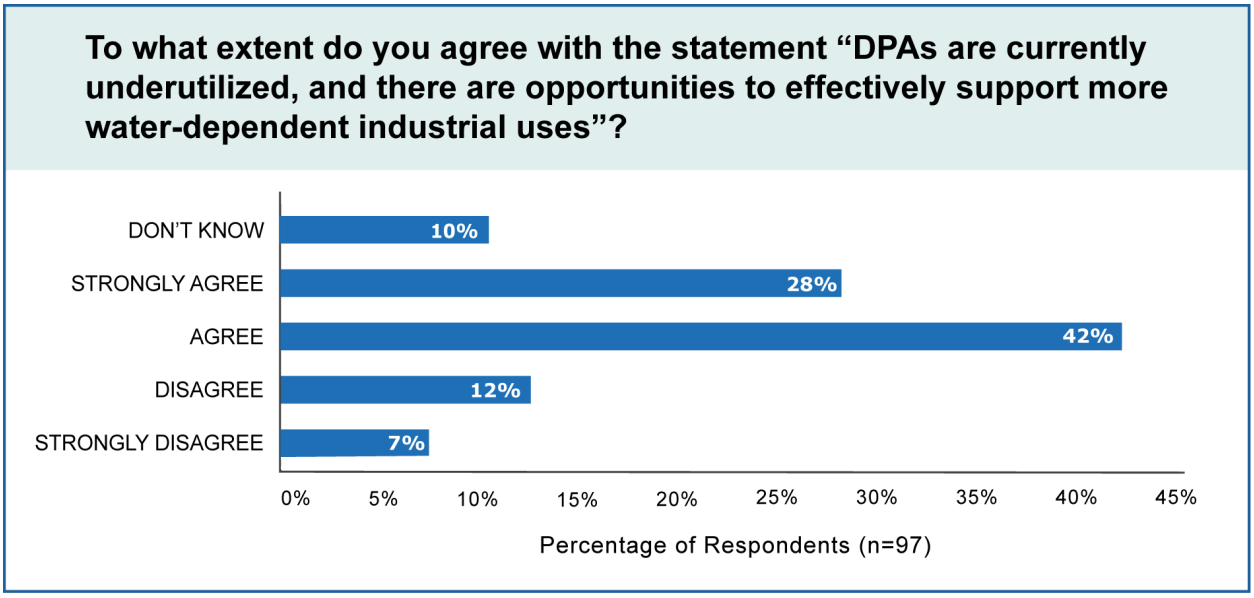

Figure 14. Survey responses indicating level of agreement that DPAs are currently underutilized across all 10 DPAs.

Stakeholders shared that lack of landside space limits the success of larger-scale WDI uses. This is due in part because vacant or non-WDI use parcels sometimes prevent critical waterfront access, there is a mosaic of private ownership, and the relatively small size of individual parcels within DPAs limits the opportunity for larger-scale WDI uses. The opportunity for growth of WDI uses within DPAs was reported to be limited because of the size and fragmentation of individual parcels, as small parcels likely cannot support large-scale industrial uses without consolidation. Relative to large maritime facilities on the East Coast (e.g., the ports of New York/New Jersey and Baltimore), Boston-area DPAs do not have comparable space reserved or developed for larger ships. While operators have managed to use the allowable space, larger cargo shipments with a need for physical laydown space can be difficult to accommodate. Limited laydown space also came up as a potential challenge for other uses such as offshore wind development and water transportation, as well as contiguous space for washing, storing, repairing, and maintaining commercial boats.

Respondents indicated that there would be greater development potential if opportunities existed to consolidate parcels or plan comprehensively across a DPA. However, because private entities own and operate the parcels, coordination and agreement among multiple parties would be required for comprehensive planning. Some stakeholders observed that the lack of zoning and parcel requirements (such as size or typology) leads to inefficient use of space for WDI uses and supporting uses within the DPAs. Stakeholders also discussed options such as the Commonwealth purchasing property to accommodate for larger WDI operations.

On the waterside, competition for berthing and docking was reported as a challenge by 40 percent of survey respondents across all 10 DPAs. However, there was variation among DPAs, and lack of available industrial docking space was reported as a significant concern in Boston, Gloucester, and New Bedford-Fairhaven DPAs. Navigational conflicts exist within the DPA watersheets and was a reported concern for approximately 20 percent of survey respondents across all 10 DPAs (see Figure 15). Multiple WDI users suggested that navigation could be improved by additional dredging to allow larger vessels to navigate the waterways, which would also reduce the overall number of ships required to transport a certain volume of goods.

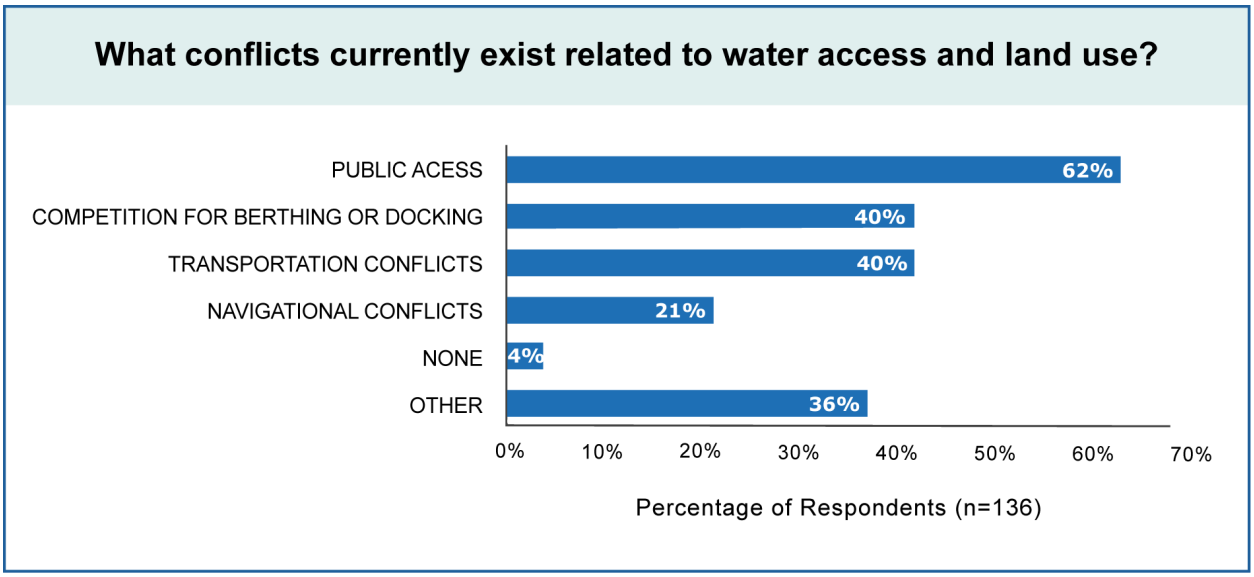

Figure 15. The most commonly cited conflicts related to water access and land use, according to survey responses across all 10 DPAs, where each respondent could answer for one or more DPAs.

Infrastructure and Land Use 3. Demand for port landside transportation infrastructure and residential traffic concerns create conflict.

Access to landside transportation infrastructure (trucking routes and railways) to transport goods to and from ports is vital for many WDI uses. Roads that support trucking must meet certain requirements (width and ability to bear heavy loads). However, across all stakeholder engagement phases, conflicts emerged between the need for adequate landside transportation routes for port uses and community concerns about traffic safety and congestion. In the survey, 40 percent of respondents across all DPAs reported transportation conflicts as a concern (see Figure 15), but that concern varied among DPAs. While rail could be an alternative to trucking for transporting bulk cargo/containers, railways were reported to be nonoperational at some DPA sites. Some industrial operators felt that trucking routes are becoming

restricted, and transportation concerns were reported to have grown alongside increased residential development of areas around DPAs.

In surveys, interviews, and focus groups, respondents shared several specific examples of conflict or challenges related to DPA operations, traffic management, and neighboring community impacts, including:

- Safety concerns, including reported fatalities, related to conflicts among multimodal traffic elements (walking, biking, trucks, cars) both within DPAs and in surrounding residential neighborhoods. These concerns are especially prominent given the emphasis on multimodal transportation by planning agencies.
- Heavy congestion on specific roadways and intersections due to the combination of commuter traffic, residential traffic, and trucking from DPAs.
- Truck accessibility and the narrowing of traffic lanes to accommodate increased multimodal traffic.
- Road flooding and drainage problems on low-lying roads exacerbating traffic conflicts during storm events.
- Conflict related to managing the timing of raising and lowering a vehicular bridge for vessel entry/egress and commuter traffic.
- Safety concerns related to conveyance of gas along heavily trafficked areas.
- Environmental and community impacts from truck emissions.
- Accommodation of increased trucking frequency and load weights based on growth of industrial operations within DPAs.

Across all phases of the engagement process, stakeholders indicated that transportation management would directly benefit operations within DPAs. Respondents observed that growth in some DPAs is limited by a lack of large-scale regional transportation planning, including plans for road construction, width, maintenance, truck traffic management, and residential transportation needs.

Infrastructure and Land Use 4. Conflicts exist between industrial uses and public waterfront access.

Community stakeholders reported a lack of public access to the harbor as an issue within DPAs. Balancing the operational efficiency and safety concerns of WDI users and the increased desire of the public for recreational access to the waterfront has created conflict within the DPAs. Increasing access and public spaces along the waterfront also comes with increased need for infrastructure accommodations, such as multimodal

roadways, sidewalks, and parking, which if not carefully planned can negatively impact the operating efficiency of the DPA for WDI use.

Regulatory Framework

Regulatory Framework 1. Regulatory framework generally protects waterfront space for WDI uses and DPA supporting uses.

According to feedback received during interviews and focus groups, the regulatory protections for WDI uses in DPAs are thought to be critical for preserving marine industrial uses in Massachusetts. Some stakeholders felt that water-dependent commerce and the working waterfront of the Commonwealth would be lost without this protection, especially considering growing pressure for residential and commercial development. The stakeholders acknowledged that the regulations are effective at preserving DPAs and preventing development that is incompatible with WDI uses. Some stakeholders also expressed concern about pressures to introduce flexibility into allowable DPA uses, which could undermine the strength of the program. During the initial stakeholder kickoff meetings, participants shared appreciation for the existence of DPA regulations that protect culturally important waterfront industry like fishing and have allowed the Commonwealth space to site clean energy consistent to meet clean energy goals. Some stakeholders raised concerns around the potential for gentrification if areas were to be removed from DPA regulation. Others expressed concern that portions of DPAs that have been removed as a result of boundary reviews have lost their capacity to serve WDI uses.

Regulatory Framework 2. A perceived lack of consistent compliance with current regulatory requirements exists.

Throughout the outreach process, DPA stakeholders communicated a perceived lack of consistent compliance with existing Chapter 91 regulations, and as a result, non-WDI uses are thought to be taking spaces that should be reserved for WDI uses. Possible reasons suggested for the lack of current compliance include insufficient knowledge of allowable uses among owners and tenants and inconsistent application or interpretation of regulatory standards. While non-WDI uses that pre-date the regulations are legal and compliant with regulations, they have also contributed to a perception by stakeholders that DPAs include uses that are inconsistent with the purpose of the DPA designation. Some stakeholders expressed a desire for greater oversight of allowable uses in DPAs, including temporary and supporting uses.

The perceived lack of regulatory compliance builds on reports of the inadequate state of infrastructure for WDI uses. A perception exists that the regulations inadvertently incentivize property owners to defer WDI development, improvement, or maintenance of their land, so that the lack of suitable infrastructure for WDI uses may disqualify an area from inclusion during a DPA boundary review process. While investment in new infrastructure is not compulsory, maintenance of existing licensed structures is required.

Regulatory Framework 3. The regulatory structure and the review and permitting processes can be difficult to navigate.

Of the participants in the initial stakeholder kickoff meetings, 25 percent stated that they did not have a good understanding of the regulatory framework for DPAs (see Figure 16). In surveys, interviews, and focus groups, DPA landowners, business owners, and potential users described encountering a lack of clear guidelines about the layered regulatory structure that governs DPAs. Stakeholders shared confusion about local zoning laws that intersect with state regulations, particularly within the five DPAs that cross multiple municipalities, or where state and local regulatory requirements may differ.

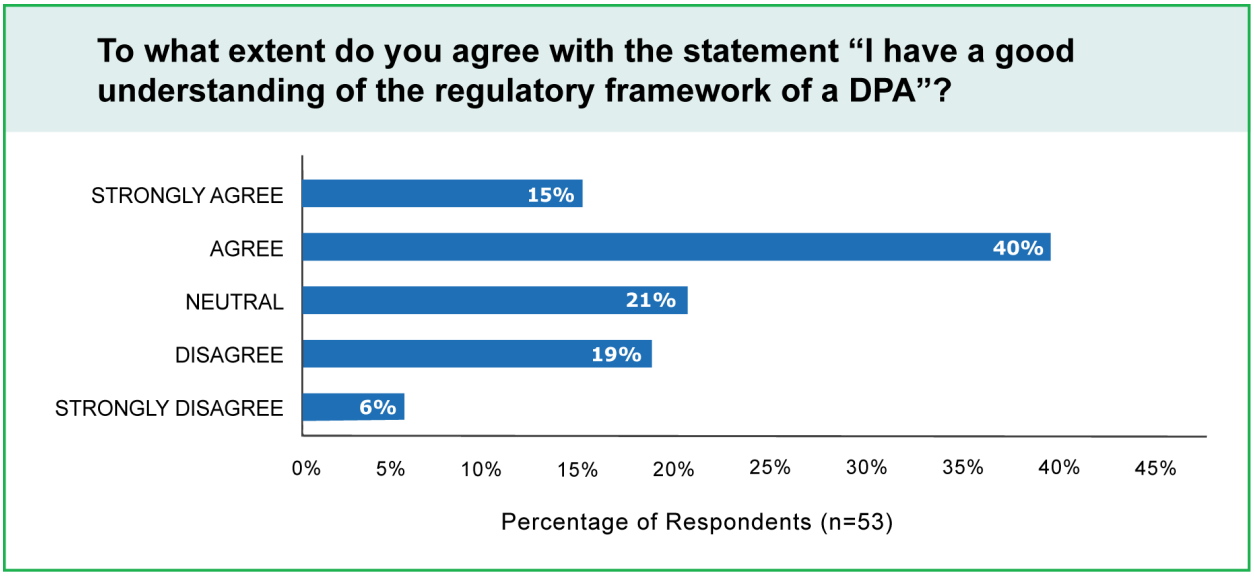

Figure 16. Results from initial stakeholder kickoff meetings, in which participants were asked to respond to questions in real-time virtual polling. This figure shows the responses aggregated across all three meetings.

Stakeholders noted that a lack of clear guidance on regulatory requirements has led to confusion and a sense of unpredictability. Potential WDI users reported not clearly knowing whether their uses would qualify as allowable WDI uses or supporting uses, or whether modern uses (uses that had not existed or been considered in the writing of the original regulations) would be allowable, which may dissuade them from seeking to

operate within the DPAs. Stakeholders reported that operators with temporary licenses are often unsure about whether those will be renewed, which affects holistic planning for a DPA.

Stakeholders also reported uncertainty specifically around the placement of public access within a DPA. It was reported that the uncertainty was compounded by a lack of local DPA regulatory expertise, perceived variations in regulatory interpretation, inability to access relevant resources within municipal agencies, and a lack of clarity from regulators within a timeframe necessary for their operation before going through the permitting process.

Those stakeholders who did proceed to the review and permitting process often found it challenging. Over half of survey respondents across all DPAs reported regulatory challenges as a barrier to starting or growing a business or organization within a DPA (see Figure 17). Notably, regulatory challenges were a greater perceived barrier within some DPAs, particularly Boston-area DPAs, than others. One key challenge identified was the length of the licensing and permitting process required to operate within a DPA, including the necessary phases of permitting on the local and state levels. The timeline may increase costs for a potential user and could affect the viability of a project that could otherwise operate within the DPA. The responsibility of permitting is often passed from the DPA landowner to a potential tenant, creating additional barriers for owners seeking tenants for available property.

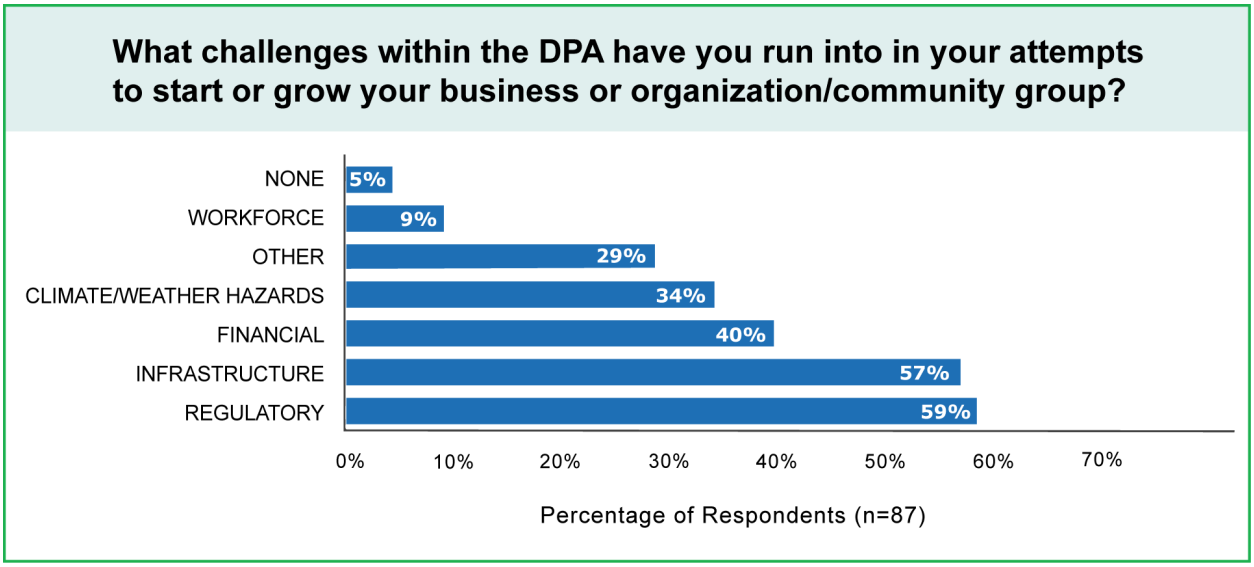

Figure 17. Survey responses across all 10 DPAs on challenges related to starting or growing business within a DPA.

DPA users and operators also discussed the challenges of considering sea level rise and coastal storms in permitting and regulatory requirements. It was noted that most DPA properties are within Federal Emergency Management Agency (FEMA) flood zones, which carry regulatory requirements for new construction or significant improvements, further increasing the complexity and cost of development. However, permitting that requires compliance with National Flood Insurance Program requirements was also seen by some stakeholders as an effective way to incentivize necessary adaptation and physical interventions.

The "**blue economy**" comprises the many sustainable economic activities, innovations, and emerging markets that depend on ocean ecosystems, the shoreline, and estuaries. It can include geographically linked activities (e.g., transport, small businesses) and interconnected riverine systems and ports. It also tends to emphasize ocean stewardship and diverse economic benefits.

Regulatory Framework 4. Uncertainty over uses that qualify as WDI leads to a perception that the regulatory framework limits innovative growth.

While stakeholders appreciated the protection that DPAs offer for traditional WDI uses, a theme emerged across interviews and focus groups that existing DPA regulations create barriers to economic diversification and potentially lead to missed opportunities for innovative use and economic growth. In focus groups and interviews, users discussed the changing nature and demand of maritime work. Stakeholders see the regulations as being tailored to traditional marine industrial use (e.g., shipping, fishing) but failing to adapt to new uses associated with the modern "blue economy," which they believe should include some uses that are not water dependent. Stakeholders referred to innovative maritime businesses that they considered potentially beneficial to the maritime economy, but that could not be licensed on an entire site because they would not be determined to be a WDI use under existing regulations if they do not require a direct access to the water.[1]

Stakeholder examples include:

- Marine research laboratories
- Marine robotics/autonomous underwater vehicles
- Offshore wind testing facilities

These stakeholders expressed a desire to allow uses that are not water dependent in DPAs as long as they are determined to be compatible economic uses within the DPA.

Funding and Financing

Funding and Financing 1. Financial strain within DPAs is compounded by many factors, including high costs of infrastructure and maintenance and approaches to land valuation.

Financial strain was cited across all phases of outreach as a significant barrier to full utilization of DPAs for WDI uses, and aging and deteriorating infrastructure is a major source of financial strain. Aging infrastructure continues to suffer wear and tear from weather and coastal impacts, placing financial demands on property owners. Shoreline maintenance, including seawall maintenance, poses a substantial financial burden for both private and public WDI use sites. Furthermore, any new or upgraded equipment or infrastructure built to support WDI uses, including port electrification, is extremely expensive, especially given the level of degradation that has occurred on some parcels.

Stakeholders expressed uncertainty about the current and future demand for WDI uses stemming from a lack of data on demand projections, limited physical space, and increasing competition with non-WDI businesses. This uncertainty makes it challenging for business owners and their funders to make informed decisions about investing in costly repairs, retrofits, and new infrastructure.

DPAs, along with other waterfront spaces, are at the forefront of coastal climate impacts. Adapting to climate change impacts, such as flooding and coastal storm damage, was reported to further increase costs of infrastructure and maintenance. Adaptation to sea level rise and storm surge necessitates the elevation of properties and shoreline structures or other management strategies, along with increased maintenance. In addition to the burden of protecting and maintaining their own assets, WDI users often also receive pressure from the surrounding communities to provide broader flood protection.

Development pressure and increased land valuation is another challenge identified by stakeholders for funding and financing WDI uses in DPAs. Stakeholders reported that parcels within DPAs may be valued as if they could be removed from the DPAs and transformed into expensive residential or commercial zones. Consequently, high property taxes may strain WDI uses operating in these areas. Stakeholders also reported pressure from competition with higher-margin non-WDI users to commercially develop the land within and immediately outside DPAs, as coastal properties are in limited supply and are increasingly valuable. While WDI uses are critical for the public good and the state and regional economy, commercial and residential development are often more profitable in

the short-term to coastal landowners. Even where DPAs are not converted directly, development pressure immediately outside the DPA affects landside logistics and relationships with growing residential communities.

Funding and Financing 2. Lack of access to funding and financing opportunities, especially for private entities, is a major barrier to fully utilizing DPAs for WDI use.

Stakeholders emphasized the need for public and private funding and financing options to overcome the high costs of WDI use upgrades, maintenance, and operations. Almost half of survey respondents chose "financial" as a challenge that they have run into in attempts to start or grow a business or organization within a DPA (see Figure 17). Existing public funding programs, including those from the U.S. Army Corps of Engineers, FEMA, U.S. Department of Transportation, and other federal and state agencies, offer potential avenues. However, stakeholders stated that eligibility criteria can shift with changing administrations, creating uncertainty. Stakeholders described how private landowners are typically ineligible for public funds as a persistent problem given the high rates of private ownership of DPA parcels. Stakeholders advocated for tailored grants and programs designed by the Commonwealth that would address the unique conditions of each DPA.

Stakeholders described further how private entities, including banks, are cautious about investing in WDI uses in DPAs. This reluctance could be partially due to a lack of clarity on the potential return-on-investment. Gaining that clarity would require a more detailed analysis on project demands for, and potential growth in, specific maritime industries, along with the ability of operations in Massachusetts DPAs to capitalize on growing demand. Furthermore, while port operations provide a public good and are critical for the state and national economy, they are not typically highly profitable in the short term and often require some amount of public investment to be economically viable. Stakeholders shared that potential investors would like to see more public financial support for general maintenance and repairs, which has been lacking since the DPA program began. This public investment would help alleviate some of the risk associated with privately funding WDI uses. Stakeholders reported that lack of public investment exacerbates the deferred maintenance, enhancing the perceived riskiness of investing in the future of DPAs and constraining economic growth within DPAs.

Community Impacts

Community Impacts 1. DPAs provide local benefits, including jobs, goods, and services.

More than half of stakeholders perceived that DPAs positively impact the surrounding community (see Figure 18), but perceptions varied by DPA.

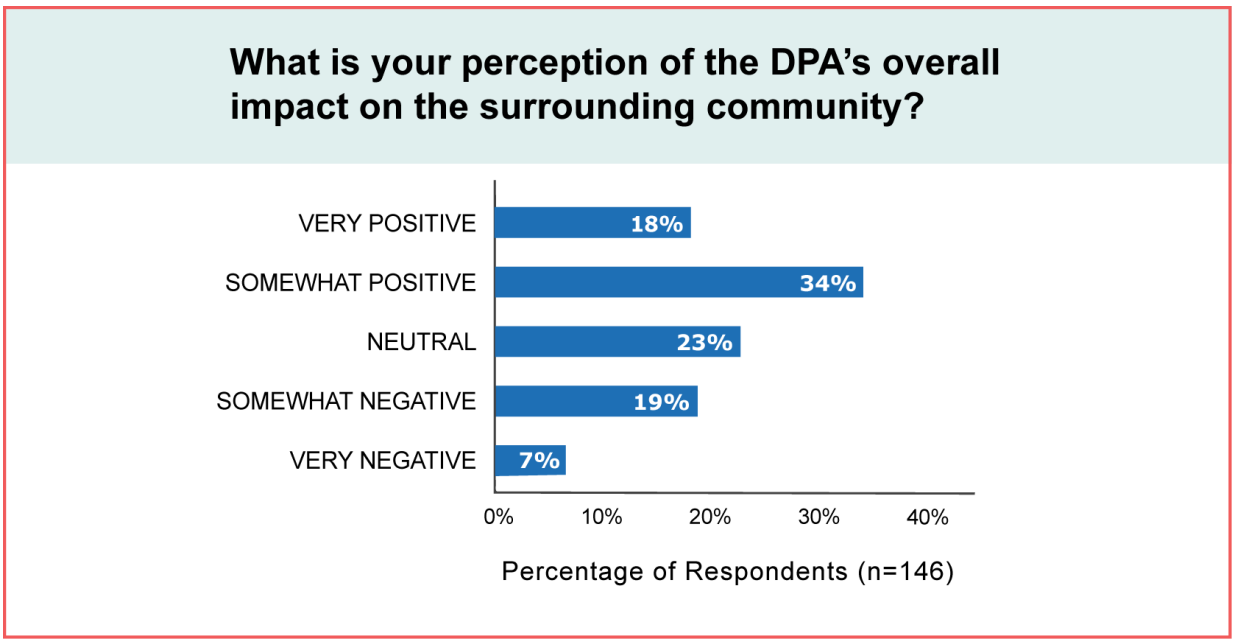

Figure 18. Survey responses across all 10 DPAs indicating perceptions of the DPA's overall impact on the surrounding community.

More than two-thirds of resident and non-resident respondents agreed that the DPAs provide a direct, sustained economic benefit to the nearby community (see Figure 19). Stakeholders further elaborated in survey responses, interviews, and focus groups on the variety of goods and services provided by DPAs. Examples include:

- Food security (e.g., commercial fishing and seafood processing)
- Vessel construction and maintenance
- Supply chain components
- Tourism and maritime heritage
- Fuel and energy, particularly clean energy that helps meet Commonwealth goals
- Recycling services
- Public safety/winter road maintenance (road salt)

- Care and custody of properties and infrastructure (e.g., marine structures and docks)
- Community investment

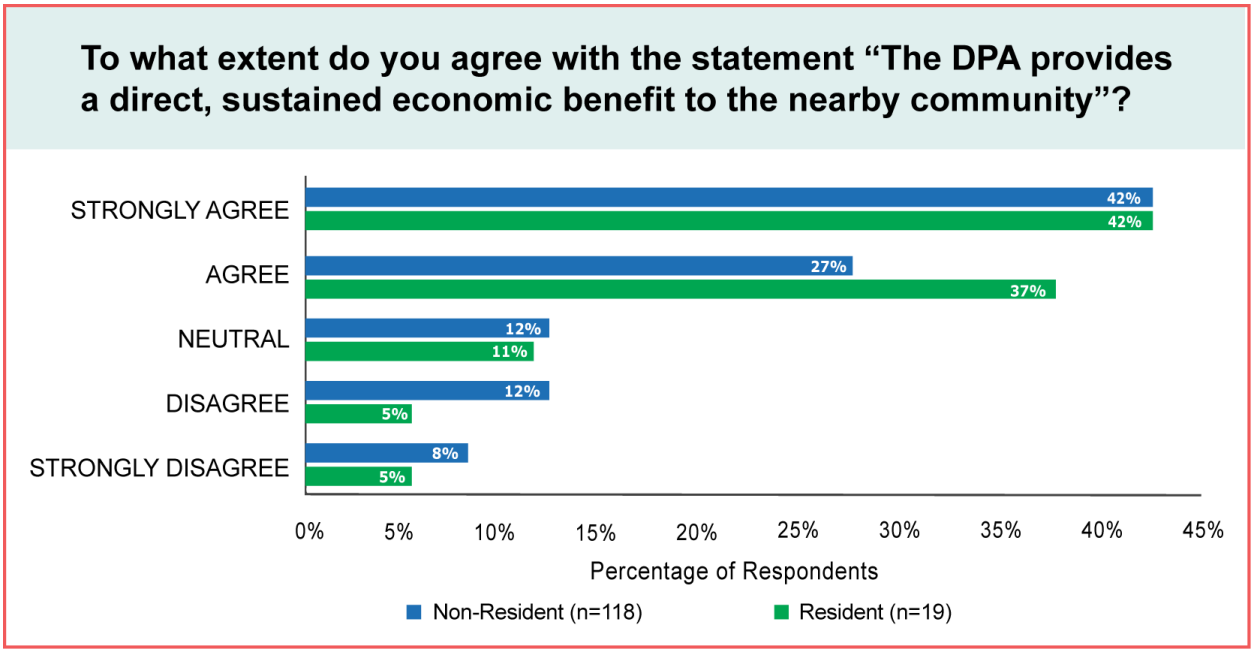

Figure 19. Survey responses across all 10 DPAs indicating perceptions of the DPA's direct, sustained economic benefit to the nearby community.

For further economic assessment based on jobs and estimated broad impacts, see Chapter 3 - Economic Analysis.

In survey results, most respondents agreed or strongly agreed with the statement, "The DPA provides local job opportunities" (see Figure 20). Respondents who lived in a neighborhood near a DPA ("residents") were more likely to indicate neutral or positive perceptions of the provision of local job opportunities compared to non-residents, but overall, there was agreement that the DPAs provide local jobs. The positive perception of local job opportunities was strongest for South Boston, New Bedford-Fairhaven, Weymouth Fore River, and Salem Harbor DPAs (see Appendix C, Figure C-29). For more details on the jobs supported by each DPA, please refer to Appendix A: Economic Impact by DPA.

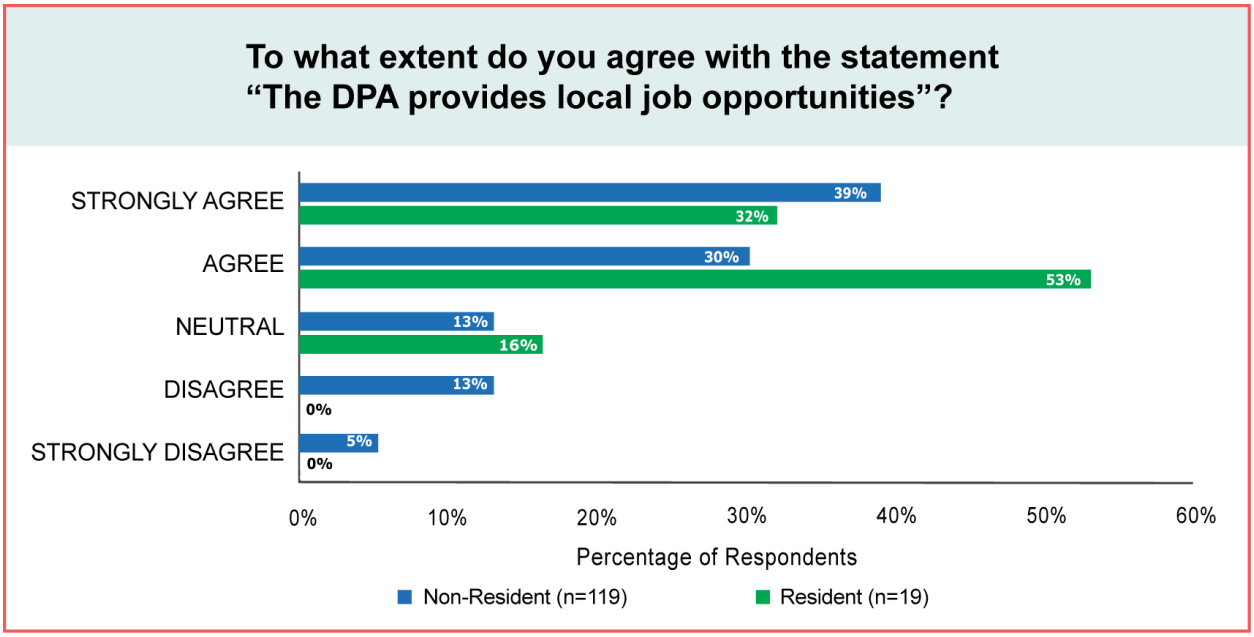

Figure 20. Survey responses across all 10 DPAs indicating level of agreement that the DPA provides local job opportunities, disaggregated by residents (people who live in neighborhoods near a DPA) and non-residents.

Stakeholders further described that WDI uses support creation of local jobs that do not require advanced degrees but are relatively high-paying, long-term employment opportunities with good benefits. DPA jobs were also thought to be accessible to workers with language barriers and other barriers to employment. The protection of traditional industries—such as fishing, seafood processing, shipbuilding, and vessel maintenance—contributes to the retention of local jobs, especially skilled positions that are specific to the maritime sector. One participant noted that without a well-maintained DPA, fishing vessels would not be able to remain in the state.

The level of diversity and inclusivity within the workforce appears to vary by DPA and industry. By some accounts, many businesses within the DPAs strive to work with surrounding communities, offering pathways to multi-lingual training and well-paying jobs for members of local communities. Some DPA workforces were reported to be representative of the diversity of the surrounding community. However, awareness of and accessibility to jobs and training varies, and barriers to employment still exist.

Lastly, some stakeholders suggested that DPAs help minimize regional pollution and traffic by supporting water transportation of goods and passengers. With port modernization and electrification, those benefits could be even more significant. Bringing goods into the Commonwealth by truck rather than ship would contribute to pressure on roadways, additional traffic, and emissions.

Community Impacts 2. While multiple workforce training programs exist, there are opportunities to increase access to and improve WDI workforce development.

Businesses and community groups described several successful workforce training programs and trade groups that already exist and could be built upon. Training opportunities include apprenticeships, student scholarships, and workforce training led by specific companies. Organizations involved in workforce development include trade associations, institutions of education, and community-based organizations.

Both business operators and community advocates discussed the importance of building up maritime workforce capacity in an equitable way that benefits local communities and historically disadvantaged populations. Some WDI stakeholders reported that the current workforce training and development resources are insufficient, and that the existing workforce capacity does not meet the demand for skilled and technical labor. To make training and development programs more accessible, stakeholders noted a need for an assessment of language training needs and other potential barriers.

Maritime education also emerged as a key step towards improving community perceptions about DPA activities. Respondents also felt that education and outreach, internships, scholarships, and other efforts to raise public awareness about and involvement in marine industrial activities would help to improve community perceptions about DPA activities, build public support, and enhance access to local job opportunities.

Community Impacts 3. The growing offshore wind industry and emerging and innovative industrial uses offer potential opportunities for DPA development.

When asked to identify emerging uses of DPAs, stakeholders most commonly cited offshore wind energy development. Offshore wind facilities were not a common use of DPAs until relatively recently. The fact that this emerging use was not projected illustrates the value of preserving working waterfront areas for future uses. Some DPAs have seen growth in offshore wind activities, and this growth is expected to continue, increasing the impacts of this use on DPAs and surrounding communities. Some DPAs offer, or could soon offer, unique space and infrastructure that is set up to connect offshore power to the electrical grid.

Stakeholder concerns about the rapid growth of the offshore wind industry include an increase in navigational traffic and competition with other vessels. Meanwhile, some stakeholders anticipated that these impacts may be offset if the demand for oil and gas coming through the DPAs shrinks as reliance on renewable energy grows.

Passenger water transportation (e.g., ferries and water taxis) was identified as another potential growth area. Stakeholders reported water transportation as a water-dependent use that generally results in fewer impacts than "heavier" industrial uses.

Research and development of "blue technology" was commonly reported as a sector with growing demand. Research and development related to marine robotics is already integrated within some DPAs. Overall, many stakeholders supported incubation of maritime research and development but were concerned that research and development operations do not necessarily depend on a functional connection to the water, so may not be able to be licensed as WDI uses.

Economic trends related to fisheries also emerged as an important consideration. Some DPAs are valued for their connection to historic fishing and fish processing and continue to supply large portions of the U.S. annual catch. However, according to stakeholders, fish landings have declined, and it is becoming more common for fish to be imported by plane and truck for processing within the DPA. Fishing industry stakeholders shared that fishing ports anticipate having to adapt as warming water associated with climate change affects the distribution of fish populations. Aquaculture was identified as a growing industry in the Northeast that could take advantage of the existing seafood processing job sector within DPAs and is already operating in at least one DPA.

Community Impacts 4. Conflicts exist between industrial uses and surrounding residential neighborhoods, including traffic, pollution, and waterfront access.

Increased residential development around DPAs can affect DPA operations and expose residents to the negative impacts of WDI use. Stakeholders shared concern about industrial uses in DPAs that expose surrounding communities to health and environmental hazards and impact their quality of life. Community stakeholders reported being negatively impacted by noise and light pollution, air and water pollution, congestion, and safety issues associated with traffic. These impacts, in turn, can lead to varying degrees of opposition to DPAs within local communities and, in some cases, within local municipal governments.

Communities near DPAs may face risks due to their proximity to industrial infrastructure and related contamination. Industrial sites may contain hazardous materials that can become concerns during storm surges. Overall discontent with the impacts of industry on quality of life is reflected in survey results showing that over half of stakeholders agreed or strongly agreed that DPA-related air pollution, noise pollution, and legacy industrial contamination negatively impact the surrounding communities. Additionally, residential growth near DPAs exacerbates transportation and navigation issues, which is reflected by the 63 percent of stakeholders who agreed or strongly agreed that DPA-related traffic negatively impacts the

community. As traditional trucking routes increasingly serve both industrial and residential purposes, and multi-model transportation expands, the increased traffic poses a public safety concern and may reduce the efficiency of the industrial operations.

Public access restrictions to the waterfront were reported as the most prevalent conflict by respondents across all 10 DPAs. Many stakeholders perceived that increased public access to the waterfront for cultural and recreational use would create opportunities for communities to connect with their surroundings, instill a sense of ownership and stewardship over their shared environment, and provide respite from urban heat. Respondents felt that waterfront access enhances quality of life for residents and fosters their sense of belonging. Most residents agreed that limitations on public access in a DPA negatively impact the community (see Figure 21). Stakeholders shared that the waterfront is one of the coolest areas during heat events and offers an opportunity for vital respite during increasingly hot summers. Limited DPA public access in communities without alternative access to the waterfront can reduce residents access to relief from heat. Safety concerns and the potential for interference with WDI activities are the main reasons that public access is limited in DPAs. Stakeholders suggested that there are opportunities for DPAs to be made more compatible with public access. Public waterfront access may also create educational opportunities for the public to learn about and gain appreciation for industrial operations.

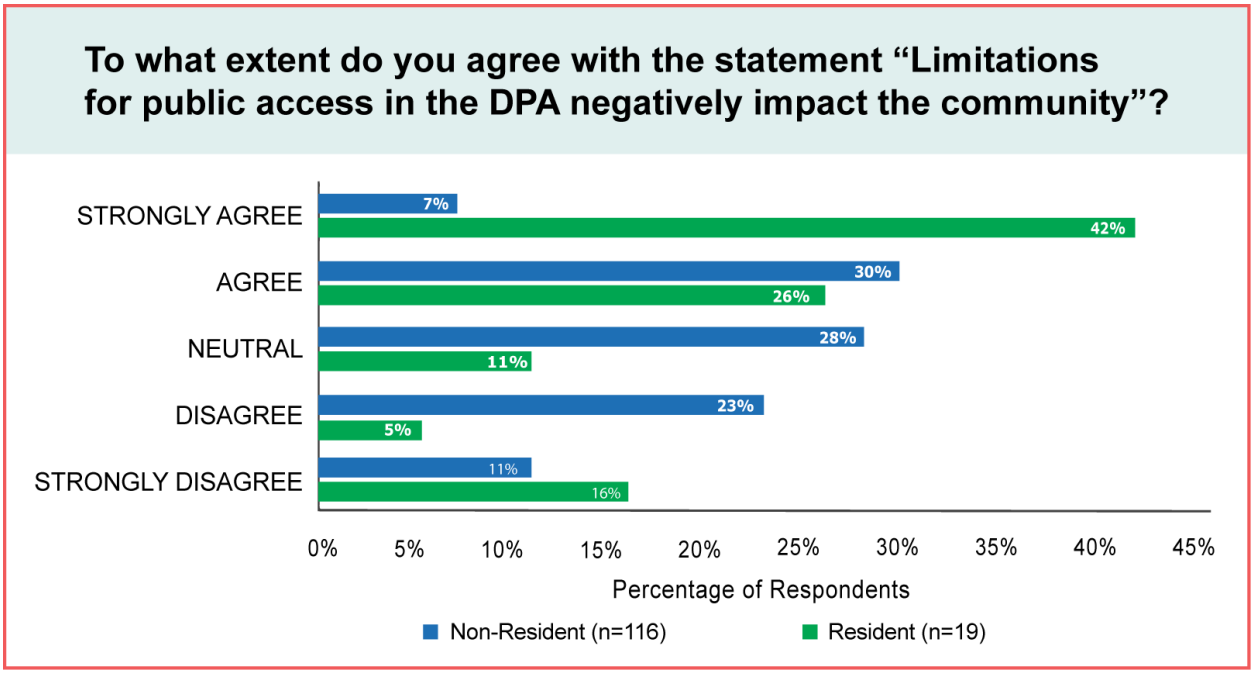

Figure 21. Survey responses across all 10 DPAs indicating level of agreement that limitations on public access in the DPA negatively impact the community. Results are disaggregated by residents (people who live in neighborhoods near a DPA) and non-residents.

The impacts of DPAs on surrounding communities include an important equity component. Table 8 presents demographic data on environmental justice (EJ) communities found within a 0.5-mile radius of each DPA. As shown by the data, many of the areas immediately surrounding DPAs are occupied by populations that qualify as EJ communities, including minority populations, English isolation populations, and low-income populations. For five of the DPAs—Mystic River, Chelsea Creek, East Boston, Weymouth Fore River, New Bedford-Fairhaven—EJ communities occupy over half of the surrounding area by census block within a 0.5-mile radius. A high proportion of EJ populations surrounding the DPAs can be indicative of disproportionate burdens on vulnerable populations.

Table 8. Percentage of Area within 0.5 miles of Each DPA that Meets the Criteria for EJ Communities [a]

DPA	English Isolation	Minority	Low Income	Total % Area
Gloucester Inner Harbor	0%	0%	23%	23%
Salem Harbor	16%	8%	14%	31%
Lynn	13%	25%	23%	25%
Mystic River	25%	76%	26%	76%
Chelsea Creek	27%	90%	36%	90%
East Boston	18%	65%	19%	65%
South Boston	6%	30%	2%	30%
Weymouth Fore River	16%	55%	20%	55%
New Bedford-Fairhaven	8%	59%	61%	64%
Mount Hope Bay/Fall River	4%	27%	30%	33%
Average	**13%**	**43%**	**25%**	**49%**

[a] *Data from the Massachusetts EJ Mapper were used to calculate the percentage of census block area within a 0.5-mile radius around each DPA that qualifies as environmental justice communities, based on one or more of the criteria used by the Commonwealth. "Total % area" refers to area that meets one or more of the three criteria.*

Perceptions of the overall impact of DPAs on the surrounding communities are generally positive (see Figure 18 above), and some stakeholders view investment in DPA development as a net positive for the surrounding community. Stakeholders suggested

several interventions to ease conflicts between industrial uses and surrounding residential neighborhoods, including enhancing environmental stewardship through renewable energy adoption, implementing pollution control measures (e.g., shoreside electrification, bilge water treatment), improving traffic layouts, and increasing buffers to reduce noise. As efforts to make ports more environmentally sustainable become more popular, there is growing interest in the electrification of port operations. The space used to accommodate electrification, including power infrastructure for vessels and trucks, should be a consideration in planning for sustainability efforts.

Community Impacts 5. Legacy environmental contamination can increase the cost of redevelopment, which may contribute to the issues of vacancy, underutilization, and concerns of the surrounding community.

Legacy contamination is common within DPAs due to their history of heavy industrial use. The term "legacy contamination" refers to water, soil, and air pollutants that persist in the environment long after their initial release, posing ongoing risks and requiring long-term remediation efforts. Legacy contamination has negative consequences on the health and well-being of local communities, and it affects the availability and marketability of land within the DPA.

Residents and non-residents expressed differing levels of concern regarding whether legacy industrial contamination related to DPAs negatively impacts surrounding communities (see Figure 22).

Contaminated land is expensive to remediate, contributing to vacancy and underutilization within DPAs. Yet, even as a property remains vacant or underutilized, current owners may have limited incentive to sell or make improvements to the land due to liability concerns associated with contamination. Stakeholders expressed similar concern over remediation expenses associated with land use change, especially when oil and gas processing phase out of use.

Stakeholders consistently suggested cleaning up and mitigating legacy pollution as a way to minimize negative impacts of DPAs on nearby communities. Proximity or adjacency to certain industrial uses can have adverse impacts when pollution is unmitigated. As DPA lands shift out of current uses, stakeholders are advocating that cleanups should be part of the transition process to a new use, that cleanup funds should be allocated in advance, and that the process should consider public value and benefits to local communities.

Stakeholders expressed a desire for clarity on what entities are responsible for leading and funding the cleanup of contaminated areas. Stakeholders suggested that certain programs, such as the U.S. Environmental Protection Agency's Brownfields Program or Superfund program, could provide funding and other critical support for cleanups. Some stakeholders also suggested start-up grants for new industrial users to address costs of remediation.

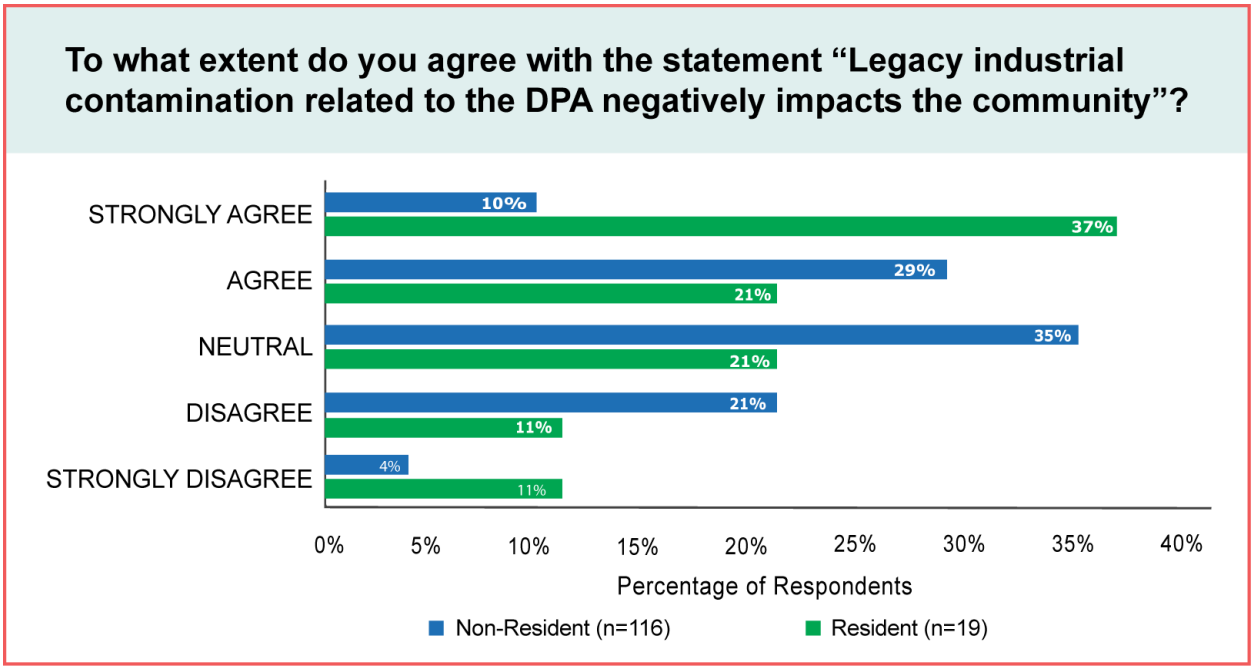

Figure 22. Survey responses across all 10 DPAs indicating level of agreement that legacy industrial contamination related to the DPA negatively impacts the community. Results are disaggregated by residents (people who live in neighborhoods near a DPA) and non-residents.

Coastal Resilience

Coastal Resilience 1. Concerns exist about how coastal flooding and sea level rise will impact DPA operations, deteriorating infrastructure, hazardous materials, and adjacent communities.

The majority of stakeholders who completed the survey reported being either somewhat concerned or very concerned about coastal flooding, storm surge, and sea level rise. Approximately three-quarters of all respondents were also concerned about additional climate hazards (see Figure 23). In survey, interview, and focus group responses, users within DPAs reported having higher tides, more frequent flooding, and new areas flooding that did not flood in the past. Coastal and inland flooding was reported to

impact critical transportation routes landside of DPAs. In interviews, water management and drainage also came up as a concern. Coastal resilience is a concern for DPA business owners and operators as well as for residents who live near a DPA, as their flood resilience may be impacted by the adaptation actions that are or are not implemented within the DPA.

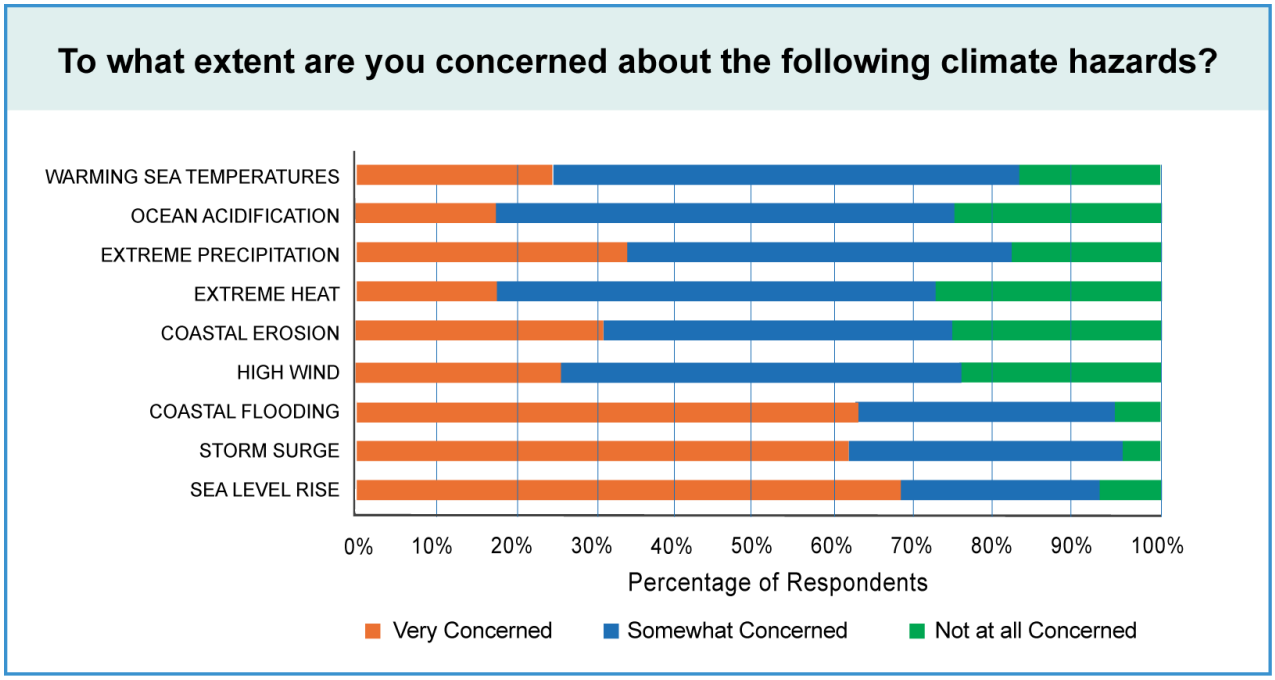

Figure 23. Reported concerns about climate hazards across all 10 DPAs.

Community concerns about storm surge are amplified by the presence of hazardous materials stored within DPAs. Road salt, oil tanks, and automobile storage were all mentioned as potential sources of contamination within DPAs that could impact ecological and public health during a storm event.

Seawalls, bulkheads, riprap, and other coastal engineering structures were reported to be deteriorating in some locations within DPAs where maintenance has been deferred. The degradation and aging of shoreline infrastructure is perceived as a particularly urgent problem in the context of sea level rise, as the infrastructure will have to withstand increased exposure over time. Owners and operators shared concern that the impacts of climate change will increase the costs of investing in infrastructure upgrades (including elevating) and maintenance.

Coastal Resilience 2. Perceived barriers to implementing coastal adaptation interventions include lack of comprehensive planning to address parceled land ownership, lack of financial and technical resources, and regulatory constraints.

While stakeholders expressed concern about sea level rise and coastal flooding, challenges that prevent effective action also emerged as a key theme of the assessment. Most commonly, respondents described how piecemeal ownership and shared jurisdictional responsibility along the coastline create barriers to effective and comprehensive coastal resilience. These barriers make continuous shoreline planning and management challenging, potentially creating points of vulnerability along the shore.

Industrial uses that require a connection to the water create particular challenges, in that any shoreline interventions must not restrict shoreline access. Many DPA operations are adapted to "get wet" during flood events, and can be evacuated before storms, but transportation routes can become impassible after a storm event and impact Industrial operations.

One key conflict that emerged is that some residents who live landward from DPAs believe that they must rely on waterfront properties within the DPA for flood protection, while waterfront landowners are burdened with the perceived responsibility for protecting the community as well as their own assets. Some respondents described certain DPA lands as flood pathways to inland parts of the community.

When individual property owners do want to invest in coastal protection, they often lack the technical and financial resources necessary to move forward. Stakeholders reported seeking information about engineering and legal support, financial resources, or best practices to address coastal flooding. As with infrastructure in general, the cost of investing in and maintaining coastal resilience infrastructure was reported as a significant barrier to action for private owners. Respondents said that the lack of funding for coastal protection adds even more pressure to develop DPAs with non-WDI uses, with the perception that these types of developments are more likely to include elevation of the shoreline. Stakeholders cautioned against this approach as the results may not reflect desired outcomes for the surrounding community.

WDI users also expressed concern about coastal resilience efforts that might impact the operation of their business, truck traffic routes, or maritime navigation. They stressed the need for having inclusive planning efforts so that resilience efforts do not compromise the operational efficiency of the DPAs.

Overall, the densely developed areas within and around DPAs create challenges and tradeoffs regarding how to best adapt limited space for coastal infrastructure. As a result of these many challenges, many respondents expressed a desire for comprehensive planning to address coastal resilience through partnerships between private landowners, public entities, and community groups. Despite the challenges associated with coastal protection, several stakeholders shared examples of ongoing coastal resilience projects and planning efforts within DPAs.

Chapter 5 - Relevant Practices from Other U.S. Ports

This chapter presents a selection of practices and approaches from other U.S. ports that address challenges identified by Massachusetts Designated Port Area (DPA) stakeholders. For each practice, a brief discussion of the applicability to the Massachusetts DPA program is provided. The Massachusetts DPA program is a unique approach to designating and preserving land for water-dependent industrial (WDI) uses. Unlike other publicly managed ports and WDI programs in the country, Massachusetts DPAs are made up of both publicly and privately owned parcels. All ports and water-related industrial sites are unique, and what works in one location will not necessarily be applicable to other locations.

Maintenance Standards

Through this assessment, lack of infrastructure maintenance emerged as a critical concern among DPA stakeholders. Infrastructure disrepair contributes to vacancy and underutilization, concerns about workforce safety, and negative local perceptions of DPAs. One potential form of incentive for infrastructure maintenance, suggested by stakeholders throughout the engagement process, is to establish minimum required maintenance standards.

The following are examples of other ports that utilize maintenance standards:

- **Port of Seattle, WA—Maritime Division Operation and Maintenance Manual:** This manual establishes maintenance requirements that enable the Port of Seattle to comply with both permit requirements and City of Seattle Code. It encompasses applicable best management practices that the Port must follow and outlines specific guidelines for the operation, maintenance, and upkeep of maritime facilities and infrastructure. By adhering to this manual, the Port ensures proper maintenance practices while meeting regulatory standards.[93]
- **Port of Newport, OR—Facilities Maintenance and Operations Plan (2016):** The Port of Newport currently operates four facilities providing services for the public, fishing industry, recreational tourism, government, and terminal shipping industry. Each department operates autonomously with its own office, crew, and budget to provide services, maintenance, and repairs to the facility. The Port Operations Department commits to achieving its standards through scheduled inspections, identification and prioritization of sub-standard conditions, and implementation of facility maintenance.[94]

Applicability to the Massachusetts DPA Program

Due to the high rates of private ownership of DPA parcels and operations and the observed lack of funding and financing mechanisms, establishing maintenance standards would be most effective if supported by dedicated funding or service mechanisms that private entities could use to achieve compliance. With that financial support established, maintenance standards could be integrated into the existing system of permitting and licensing new WDI uses, similar to the above example from the Port of Seattle. A periodic inventory of existing infrastructure, as described in the Port of Newport example, would provide the necessary information (e.g., year built, current condition, and estimated cost of repair or replacement) to prioritize and help fund critical improvements, however, this approach would be difficult on privately owned land. A system that supports critical improvements could help DPA owners maintain safe infrastructure to support current and future WDI uses.

[93] Port of Seattle Maritime Division, "Operation and Maintenance Guidance Manual."
[94] Port of Newport, "Facilities Maintenance & Operations Plan 2016."

Permitting Processes

Stakeholders perceived that permitting processes were a barrier to utilization of DPAs. Examples of streamlined permitting processes developed for ports and other water-dependent or related uses include:

- **Port of Los Angeles, CA—Online Application for Port Permit:** The Port of Los Angeles has simplified its permitting process through development of a single online Application for Port Permit. This initiative replaces the previous Application for Discretionary Projects, making it easier for applicants to apply for permits related to port activities. With the user-friendly online portal, applicants can submit requests, access information, and track permit status.[95]
- **New York City Economic Development Corporation—Waterfront Navigator:** The Waterfront Navigator is an official online permitting guide for developers and individuals seeking permits related to New York City's waterfront and wetlands. It centralizes information, helps users understand relevant agencies, and streamlines the process of obtaining state and federal permits.[96]

Applicability to the Massachusetts DPA Program

In Massachusetts, WDI users can use the EEA ePLACE Portal to apply for, renew, or amend a license or permit issued under the Massachusetts Waterfront Act (Chapter 91). This portal allows users to track the status of their application once it has been submitted. Through the portal, users may submit an application for a Request for Determination of Applicability, which initiates a process to determine whether a project site is located within Chapter 91 jurisdiction and whether a project or activity requires a license or other authorization. Applicants can also get advice about permit requirements and their potential eligibility for operation within a DPA through a pre-application consultation with MassDEP. Further evaluation of how the processes employed in other state systems could be applied to the EEA ePLACE Portal, in order to improve the process for WDI users.

Funding Mechanisms and Funding Consolidation

While ports across the country struggle with the difficulty of financing port infrastructure, the challenges for the Massachusetts DPA program are heightened by the high rates of

[95] The Port of Los Angeles, "Port of Los Angeles Streamlines Online Permit Process."
[96] New York Empire State Development et al., "Waterfront Navigator: NYC's One Stop Waterfront Permit Planner."

private ownership of DPA parcels. To address similar challenges, several organizations have developed initiatives to provide comprehensive guidance for port operators on innovative funding and financing. Examples include:

- **The National Governors Association State Resource Center:** This Center shares resources and approaches to help port operators take advantage of innovative infrastructure delivery and funding/financing models. These models and approaches can help port operators leverage public resources to accelerate projects, reduce costs, enhance delivery timeframes, and free public resources for other priorities and projects.
- **The American Association of Port Authorities:** The Association has developed a comprehensive resource called the Port Planning and Investment Toolkit, which provides analytical tools and guidance to assist ports in developing "investment-grade" project plans and securing capital for their infrastructure projects.

Some strategies explored in the above resources include use of taxes and fees (e.g., Harbor Maintenance Tax); different approaches and strategies for effective public-private partnerships; various debt structures (e.g., private activity bonds, bank loan financing); and tenant lease and use agreements.

Applicability to the Massachusetts DPA Program

Massachusetts has already designated a governance structure for the deployment of funds for DPA infrastructure through grants and loans that both private and public entities could be eligible for. Section 16G of chapter 6A of the Massachusetts General Laws calls for the creation of a Designated Port Area Fund.[97] Allowable uses for the funds include construction, repair, renovation, rehabilitation, and other capital improvements of marine industrial infrastructure and public maritime infrastructure in DPAs. By activating and funding this program, the Commonwealth could address some of the challenges associated with funding and financing DPAs.

[97] Massachusetts General Laws Section 16G: Executive Office of Housing and Economic Development.

Workforce Development

Workforce development is increasingly recognized as a critical component of achieving an equitable "blue economy." During the assessment process, stakeholders identified workforce development as a key strategy for improving the Massachusetts DPA program. The following are examples of workforce development programs in which ports or industries are seeking to partner with local communities to enhance access and opportunities:

- **Port of Seattle, WA—Workforce Development Strategic Plan for 2021-2023:** The Port of Seattle's Workforce Development Strategic Plan aims to support a skilled workforce in port-related industries while ensuring equitable access for all. The plan includes an analysis of the regional landscape and strategic investments. Specific strategies include continued investments, maritime youth career launch programs, and a jobs initiative focused on "green" employment opportunities.[98]
- **New York Offshore Wind—Jobs and Supply Chain Technical Working Group:** The New York State Energy Research & Development Authority is coordinating with industry experts, labor organizations, training programs, academic institutions, and other state agencies to prepare workers to participate in the offshore wind industry. The working group identifies job and industry needs, develops job training frameworks, and identifies programs and certifications to prepare residents, including low-income and priority populations, for high-paying jobs.

Applicability to the Massachusetts DPA Program

During the Massachusetts DPA assessment process, stakeholders shared a desire for accessible pipelines for technical/vocational maritime training, including scholarships, internships, and apprenticeships. Massachusetts has existing institutions that are primed to continue to support maritime workforce development pipelines. Some of those listed during stakeholder engagement include MassCEC Offshore Wind Works Program, Massachusetts Marine Trades Education Trust,[99] Extreme Gloucester Fishing (a commercial fishing training center),[100] Bunker Hill Community College's Marine

[98] Port of Seattle Office of Equity, Diversity, and Inclusion, "Workforce Development Strategic Plan 2021-2023."
[99] Massachusetts Marine Trades Educational Trust, "Schools & Training Programs."
[100] Extreme Gloucester Fishing, "Homepage." (https://www.extremegloucesterfishing.com)

Technician Program,[101] Massachusetts Maritime Academy,[102] and Massachusetts Marine Trades Association.[103] The Massachusetts Port Authority (Massport) also supports student internships and scholarships, including a Diversity STEM Scholarship.[104] Workforce training for offshore wind development is already being offered through the MassHire North Shore Workforce Board to help fill diversity gaps within the clean energy sector in collaboration with environmental justice communities around DPAs.[105] Collaborations that build off of existing programs, consolidate and share existing programs, and identify opportunities to integrate diversity, equity, and inclusion could be particularly effective.

Developing an effective dedicated program for WDI workforce development would require working with water-dependent industries and trade associations to strategically identify current and projected gaps in workforces that could be filled through training and placement programs. Furthermore, a strategic approach to enhancing maritime training could include identifying funding and determining which entity would be responsible for administering the program. Federal programs exist that support workforce development for ports and green energy, but connecting those programs to operations within DPAs would require additional coordination and planning.

Port Electrification

Port electrification measures minimize local air pollution and contribute to a cleaner, more efficient, and more sustainable maritime industry. Many stakeholders recommended port electrification as a way to modernize port infrastructure and minimize community impacts. Examples of ports that have implemented electrification measures to reduce environmental impacts include:

- **Port of Savannah, GA:** The Port of Savannah has piloted electric gantry cranes that use 95 percent less fuel than diesel-powered cranes. Additionally, electrified ship-to-shore cranes recharge themselves during container handling, resulting in cost savings for the port and reduced pollution for nearby communities.[106]

[101] Bunker Hill Community College, "Marine Technician Program: Introduction to Marine Engines and Systems."
[102] Massachusetts Maritime Academy, "Homepage." (https://www.maritime.edu)
[103] Massachusetts Marine Trades Educational Trust, "Schools & Training Programs."
[104] Massachusetts Port Authority, "Scholarships and Internships."
[105] MassHire North Shore Career Center, "Clean Energy and Offshore Wind Training Program."
[106] Environmental and Energy Study Institute, "Issue Brief: Climate Change Mitigation and Adaptation at U.S. Ports."

- **Port of Seattle, WA:** The Port of Seattle initiated the Seattle Waterfront Clean Energy Strategy to coordinate the infrastructure improvements, technologies, and implementation strategies needed to eliminate emissions from Seattle's working waterfront and transition the maritime industry away from fossil fuels. Partners in this effort include owners and operators, utilities, tenants, industry, and policy and economic leaders. Key components include: (1) a commitment to phase out maritime industry emissions by 2050; (2) installation of shore power connections at two cargo terminals and a cruise terminal, allowing vessels to turn off engines while at berth; and (3) a Clean Energy Partnering Agreement that establishes joint commitments and a long-term partnership for developing clean energy infrastructure across the Seattle harbor.

Applicability to the Massachusetts DPA Program

In Massachusetts, transportation is the single largest source of greenhouse gas emissions, with pollution primarily resulting from combustion of fuel in cars, buses, trucks, ships, and airplanes.[107] Pollution associated with DPA operations emerged as a consistent concern for communities living near DPAs. Efforts to minimize pollution could help to improve environmental quality, community relationships, and build local support for DPAs. These efforts would also help the Commonwealth achieve the goals of its Clean Energy and Climate Plan for 2050,[108] which aims to reduce emissions from transportation to at least 86 percent below 1990 levels by targeting all modes of transportation, including hard-to-electrify modes like shipping and long-haul trucking. The Commonwealth plans to reduce emissions from these areas through a combination of strategies, including deployment of clean fuels and electrifying non-travel-related equipment in the airline, cruise, and shipping industries. While funding opportunities for port electrification had been increasing in recent years, such as grants through EPA's Ports Initiative,[109] most public funding cannot be distributed to private operators, who own a large percentage of parcels within the DPAs. To qualify, private DPA operators would have to enter into a partnership with a public entity. Prerequisites for large-scale investment in port electrification likely include identification of specific barriers and opportunities for electrification within each DPA, along with coordination and strategic planning that brings together multiple partners. Massport has launched its own initiative to reduce emissions to "net zero" by 2031.[110]

[107] Executive Office of Energy and Environmental Affairs, "Massachusetts Clean Energy and Climate Metrics."
[108] Executive Office of Energy and Environmental Affairs, "Clean Energy and Climate Plan for 2050."
[109] U.S. Environmental Protection Agency, "Clean Ports Program."
[110] Massachusetts Port Authority, "Massport Announces Goal to Be Net Zero by 2031."

Public Access

Public access to industrial zones must prioritize safety and must not infringe on industrial operations. However, there are examples nationwide of industrial ports that have integrated public access, including:

- **Port of San Francisco, CA:** After the 1989 Loma Prieta earthquake in California, the Port of San Francisco engaged in planning processes with the San Francisco Bay Conservation and Development Commission, other city departments, and the public to balance the demands of the public and the needs for maritime uses and identify suitable and safe sites and approaches to increase public access to the bay while preserving maritime and industrial uses. Hours of operation, buffers, and vertical and horizontal separations were all used to allow for greater visual and physical access to the bay while protecting commercial fishing, maritime and cruise functions, industrial uses, and other critical port facilities.[111]
- **Port of Seattle, WA:** The Port of Seattle incorporates public access that is appropriate and consistent with its industrial and maritime uses, including visual access, boating and berthing access, parks and trails, and restored historic sites and interpretive centers. Always prioritizing the land and operational needs of the port's maritime and WDI sites, the Port of Seattle is often able to integrate access at a scale and of a type that fits the character and conditions of the site and limits or eliminates disruptions to the primary port uses. This approach might mean redesigning a proposed trail for out-and-back point access, limiting the hours of public access at a site, or siting the public access at the opposite side of consolidated industrial zones within the property.[112]

Applicability to Massachusetts DPA Program

For Massachusetts, public access has been safely incorporated into some DPA projects, and in other DPAs, temporary public access has been permitted as seasonal industrial use allows. Stakeholders suggested that public access could be an element of outreach and education that improves public awareness of the importance of DPA operations. In DPAs where high demand for public access exists, and particularly where no alternative waterfront access for residents is available, consideration of public access should be included. Stakeholders also suggested that more specificity in zoning within DPAs could help to differentiate "heavy" industrial zones, where public access would not be safe, from "light" industrial or buffer zones, where public access could be compatible with WDI uses or supporting uses.

[111] Port of San Francisco, "Port of San Francisco Waterfront Plan;" Beaupre, "Blue Greenway."
[112] Port of Seattle, "Public Access Sites."

Chapter 6 - Mass Leads Act Review

On November 20, 2024, the Mass Leads Act (Ch. 238 of the Acts of 2024) was signed into law by Governor Maura Healey. Section 295(c) of the law directs the Massachusetts Department of Environmental Protection (MassDEP), in consultation with the Massachusetts Office of Coastal Zone Management (CZM), to "complete a review of existing designated port area criteria and use restrictions." A four-week written comment period and two listening sessions were held in February 2025 to gather public input on the eight areas (subsections A through H) specified in the legislation.

Stakeholder feedback from the DPA assessment outreach, public input, and technical analysis process for each of the eight areas is provided below. Review of these criteria helped inform the Recommendations developed and presented in Chapter 7.

(A) The protection of traditional maritime industrial activities

The Chapter 91 Waterways regulations (310 CMR 9.00) include standards that are specific to projects within a DPA that are within Chapter 91 jurisdiction. The DPA program is designed to support water-dependent industry; therefore, the standards require a large

majority of DPA tidelands to be used or reserved primarily for water-dependent-industrial (WDI) uses. As a general rule, 75 percent of a project site within Chapter 91 jurisdiction is required to be developed or reserved for WDI uses. The Waterways regulations specifically identify 16 categories of uses that MassDEP shall find to be water-dependent industrial.

Stakeholders believe that the existing regulatory framework generally protects waterfront space for WDI uses and DPA supporting uses and that the DPA program has done an effective job of protecting traditional maritime industrial activities within the Commonwealth. Some stakeholders expressed that water-dependent commerce and the working waterfront of the Commonwealth would be lost without this protection, especially considering growing pressures for residential and commercial development.

It is important to promote WDI uses and to create a supportive environment for the coastal economy to grow and thrive. For more information, refer to "Regulatory Framework 1" in Chapter 4 - Key Findings from Stakeholder Engagement and see Chapter 7 – Recommendations and Conclusion.

(B) The addition of allowable uses consistent with future maritime industrial uses and clean energy activities

The existing Waterways regulations include broad categories of uses that MassDEP shall find to be water-dependent industrial at 310 CMR 9.12(2)(b). These include:

- hydroelectric power generating facilities;
- offshore renewable energy infrastructure facilities in the Commonwealth, including ocean wave energy facilities, ocean current energy facilities, tidal energy facilities, any ancillary facility thereto or any similar facility that obtains its energy from the ocean;
- infrastructure facilities used to deliver electricity, natural gas or telecommunications services to the public from an offshore facility located outside the Commonwealth;
- facilities for the manufacture, servicing, maintenance, data collection, and other functions related to coastal or offshore structures, buoys, autonomous underwater vehicles or vessels. The regulations also allow for the development of new technologies and systems for these structures, buoys, vehicles or vessels;
- facilities for research and development or for the manufacture of technologies, e.g., robotics and acoustics, related to the marine environment;
- facilities for research on, and the treatment of, marine species;

- facilities for the development and testing of offshore renewable energy infrastructure or components; and
- commercial aquaculture facilities; as long as these require transfer between ship and shore or the withdrawal and/or discharge of large volumes of water.

The existing Waterways regulations allow for other industrial uses or infrastructure facilities that are not specified but which cannot reasonably be located at an inland site if they are dependent on marine transportation or require large volumes of water to be withdrawn from or discharged to a waterway for cooling, process, or treatment purposes. Infrastructure crossing facilities, or any ancillary facility thereto, may also be found to be water-dependent industrial.

Certain water-dependent uses may also be determined to be water-dependent industrial if they are associated with the operation of a DPA. These include:

- dredging for navigation channels, boat basins, and other water-dependent purposes, and subaqueous disposal of the dredged materials below the low water mark;
- navigation aids, marine police and fire stations, and other facilities which promote public safety and law enforcement on the waterways;
- shore protection structures, such as seawalls, bulkheads, revetments, dikes, breakwaters, and any associated fill which are necessary either to protect an existing structure from natural erosion or accretion, or to protect, construct, or expand a water-dependent use;
- flood, water level, or tidal control facilities;
- discharge pipes, outfalls, tunnels, and diffuser systems for conveyance of stormwater, wastewater, or other effluents to a receiving waterway; and
- facilities and activities undertaken or required by a public agency for purposes of decontamination, capping, or disposal of polluted aquatic sediments.

Stakeholders supported ensuring that the DPA program can accommodate current and future water-dependent industrial uses. MassDEP and CZM reviewed the allowable WDI uses included in section 310 CMR 9.12(2)(b) to determine whether the regulations would be consistent with future maritime industrial uses and clean energy activities.

The language in section 9.12(2)(b) could allow for future maritime industrial uses, and subsections 9.12(2)(b)9. through 16 contain important language to support clean energy activities. In particular, subsection 9.12(2)(b)16. allows “other industrial uses or infrastructure facilities which cannot reasonably be located at an inland site as

determined in accordance with 310 CMR 9.12(2)(c) or (d)," which provides MassDEP with the flexibility to license future unforeseen WDI uses within the DPAs. A key finding from the assessment was that there is often uncertainty among stakeholders about DPA regulations and uses. Several of the "Communication, Engagement, and Technical Support" and "Regulatory Framework" recommendations in Chapter 7 aim to reduce this uncertainty by providing resources, conducting outreach, and actively engaging with DPA stakeholders.

(C) The reevaluation of compatible uses within designated port areas

Section 9.02 of the Waterways regulations states that for a Supporting DPA Use the "type, location, scale, duration, operation, and other relevant aspects of the industrial or commercial use must be compatible with activities characteristic of a working waterfront and its backlands, in order to preserve in the long run the predominantly industrial character of the DPA and its viability for maritime development." Supporting DPA Uses are generally limited to 25 percent of filled tidelands at a project site and are required to provide WDI uses within the DPA with direct economic or operational support, to an extent that adequately compensates for the reduced amount of tidelands on the project site that will be available for water-dependent industrial use during the term of the license.

In the case of commercial uses, any use may be determined to be compatible with the DPA except where the inherent nature of the use gives rise to conflict with port operations or excessive consumption of port space, either directly or indirectly (e.g., as a result of collateral development activity). The Waterways regulations identify certain commercial uses as incompatible with DPAs, such as hotels/motels, nursing homes, and hospitals; recreational boating facilities; amusement parks and other major entertainment or sports complexes; and new buildings devoted predominantly to office use.

Stakeholders who participated in DPA assessment interviews, the survey, and public meetings confirmed conflicts between WDI users and the incompatible commercial uses mentioned above. Traffic congestion on roadways and within the watersheet; noise, light, and sound pollution; parking; and public safety concerns were all identified by stakeholders as creating conflict within the DPA. Additional allowances for these incompatible uses are likely to exacerbate the conflicts and reduce the efficiency of the DPA for WDI use.

Stakeholders presented additional ideas such as modifying the regulations to allow non-water-dependent industrial and commercial uses that are marine-related industries, but that do not require proximity or access to water, within jurisdictional areas away from the waterfront and cluster-zoning the DPAs to synergize different types of commercial and/or

industrial activities. Some of the marine-related industrial activities identified were marine research laboratories, offshore wind training and testing facilities, marine engineering, and other marine products and services that help enable WDI uses. For certain uses that may not require proximity or access to water, but are accessory to existing or proposed WDI uses, there may be existing regulatory pathways for authorization.

Stakeholder input on exploring new and compatible uses directly informed "Infrastructure and Land Use" and "Regulatory Framework" recommendations in Chapter 7.

(D) A requirement, to the extent feasible, that all traditional and new allowed uses be resilient to coastal flood damage

The study of long-term vulnerabilities to coastal flood damage is a major focus for CZM within the Commonwealth's resilience efforts. CZM continues to study coastal resilience within Designated Port Areas and funded two separate studies completed in 2021 addressing this issue:

- *Building Resilience in Massachusetts Designated Port Areas: Resilience for Water Dependent Industrial Users in the Chelsea Creek and Gloucester Inner Harbor Designated Port Areas*. Arcadis U.S. Inc., June 30, 2021.
- *New Bedford Harbor Port Assessment Summary*. New Bedford Port Authority and Town of Fairhaven.

In addition, several local municipalities have performed studies to evaluate climate change risk and plan for future operations within their port areas. Resilience within DPAs requires site-specific considerations due to several unique factors:

- WDI users need to maintain their ship-to-shore connection to efficiently offload goods from vessels, so many traditional techniques for resilience, such as elevating structures, can be challenging.
- Much of the Commonwealth's DPA lands are privately owned and parcel size and use vary greatly.
- Low-lying transportation routes and road flooding within and outside of the DPA have a major impact on the efficiency of operations.
- Pressure exists for property owners to not only protect their own property and investments but also provide protection for surrounding communities.
- Coastal resilience improvements can be very costly and may not be feasible for many private landowners within the DPA without financial assistance.

- Coastal resilience strategies for water-dependent industrial sites may differ from those needed for sites that support non-water-dependent uses.

Stakeholders expressed concern that placing additional requirements on DPA property owners beyond what is included in existing regulations creates an undue burden without additional public financial assistance. If public funds were available for DPA improvements, then coastal resilience requirements could be tied to those resources.

Coastal Resilience recommendations in this assessment in Chapter 7 include integrating DPAs into the Commonwealth's current ResilientCoasts Initiative, identifying funding opportunities for coastal resilience measures to improve WDI infrastructure (for example, bulkheads, seawalls, piers, and docks) for existing and future conditions and uses, and working with WDI users to develop operational response and recovery plans to minimize impacts from coastal flooding and severe storms.

(E) Examining the feasibility of creating working port easements to purchase development rights from landowners in designated port areas

The need for financial assistance to address broad DPA infrastructure maintenance and development needs was a key finding of the assessment. Stakeholders identified the challenges of obtaining financing for marine infrastructure improvements and the lack of available resources and funding. Working port easements were not identified by stakeholders as an approach to addressing this issue. During the February 2025 listening sessions some stakeholders were interested in learning more about this idea as a possible financial assistance approach and others expressing concern over the perception of it as an eminent domain taking approach.

Further discussion and investigation would help determine if this approach could be beneficial and legally feasible. Given the need for additional funding and financial support for DPAs, several recommendations in this assessment do seek to provide support and funding for WDI users, including private property owners in DPAs. This could be further developed via "Infrastructure and Land Use" Recommendation 5 in Chapter 7 – Recommendations and Conclusion.

(F) Opportunities to create grants and revolving loan funds to update port infrastructure, including conversion from 1 designated port area use to another designated port area use

Financial strain was cited across all phases of outreach as a significant barrier to full utilization of DPAs for WDI uses. Additional funding opportunities for DPAs were broadly supported by stakeholders who participated in this assessment. For more information on funding and financing issues within the DPAs, refer to the "Funding" sections in the following chapters of this report: Chapter 4 - Key Findings from Stakeholder Engagement and Chapter 7 - Recommendations and Conclusion.

Several recommendations from the DPA assessment address this need. These recommendations include assessing the funding mechanisms and incentives for infrastructure and facility development, improvements, and maintenance, especially for private property owners, who are typically excluded from federal grants and most other existing funding opportunities. The assessment also recommends examining the feasibility of consolidating and leveraging funding from a variety of sources (e.g., federal, state, private) to provide funding to projects intended to improve DPA infrastructure for the purposes of attracting and/or retaining WDI uses.

In addition, this assessment recommends development of a port infrastructure and facility improvement program that can fund or provide technical assistance to both public and private priority projects for WDI users. Further "Funding and Financing" recommendations include securing additional funding through mechanisms like the Coastal Facilities Improvement Program, Seaport Economic Council, and other existing funding opportunities.

(G) Consideration of coastal flood resilience for inland neighborhoods

Some stakeholders expressed interest in opportunities for regional resilience for adjacent neighborhoods through improved resilience of waterfront properties in the DPA. However, many DPA users expressed concern that waterfront property owners and WDI users would become financially responsible for providing benefits beyond protection of their own properties, and that the neighborhood benefits would be prioritized over the needs of the WDI use. Some expressed concern that requirements would not apply equally to properties outside of a DPA.

In identifying effective and compatible resilience approaches within a DPA, it is important to consider whether the approach will preserve the functionality of the site to support WDI use today and into the future, while also looking for opportunities to expand the benefits to

the surrounding neighborhood wherever possible. Providing financial assistance opportunities that support these dual goals for both public and private properties may help this approach. The ability to provide public financing to private property owners with direct public benefits, including resilience, can be explored further by Recommendation 3 in the "Funding and Financing" section in Chapter 7 – Recommendations and Conclusion.

(H) An assessment of new and adjacent areas that could be added to designated port areas to reduce net loss of acreage

CZM and MassDEP performed a preliminary review of new and adjacent areas that might be appropriate to add to DPAs to reduce net loss of acreage. The potential for expanding DPAs into other areas is very limited in the Commonwealth due to the unique requirements of DPAs. These essential components include: (1) a waterway and associated waterfront that has been developed for some form of commercial navigation or other direct water use; (2) backland space that is conducive in both physical configuration and use character to the siting of industrial facilities and operations; and (3) land-based transportation and public utility services appropriate for general industrial purposes. Very few waterfront areas sufficiently meet these criteria. Economic, environmental, and social factors pose prohibitive challenges to intensive port development elsewhere along the coast, effectively making existing DPAs a non-renewable resource.

If an area were identified, the first step would be for CZM to conduct a review of any area proposed for inclusion to ensure that it meets DPA criteria and conduct extensive outreach with host communities and property owners to ensure support for any proposed change. Based on feedback during the February 2025 listening sessions, there may be some support for expanding DPAs to include other water-dependent use areas under a classification approach. This approach would require additional outreach to affected communities, and further discussion and analysis would be needed to determine if it could be beneficial. In addition, some of the current DPAs have never had a formal boundary review since their creation, and conducting such a review would help evaluate whether opportunities exist to expand the DPA area. This issue is addressed in the recommendation to conduct periodic DPA boundary reviews, starting with those DPAs that have not previously been reviewed. For more information, refer to Chapter 7 - Recommendations and Conclusion.

Chapter 7 - Recommendations and Conclusion

The following recommendations aim to build on the strengths of the DPA program, identify strategies to address ongoing and emerging issues, and provide the Commonwealth with specific steps to improve efficiency and reduce conflicts within the DPAs. The recommendations are based on analysis of existing data and information on the overall program as well as individual DPA sites, engagement and interviews with stakeholders, and a review of similar issues being confronted by ports and water-dependent uses around the country. Where applicable, recommendations integrate best practices and lessons learned from other U.S. port areas, as well as suggestions and solutions gathered from key participants.

The recommendations are organized by the Assessment's primary focus areas: Infrastructure and Land Use, Regulatory Framework, Funding and Financing, Community Impacts, and Coastal Resilience. Based upon stakeholder feedback, a sixth category of recommendations was created: Communication, Engagement, and Technical Support.

These recommendations are intended to identify strategic actions that may be taken to enhance the DPA program. Some actions fall within the purview of the Massachusetts

Department of Environmental Protection (MassDEP) or the Massachusetts Office of Coastal Zone Management (CZM), while others would require coordination across state agencies, local municipalities, WDI users and other DPA stakeholders.

Infrastructure and Land Use

Recommendation 1: Establish a commission on port development to recommend an integrated statewide strategic vision for Massachusetts ports; advise on opportunities for improvement and growth.

Recommendation 2: Develop a series of industry-based needs assessments including i) commercial and recreational fishing, ii) energy, iii) shipping, bulk cargo and goods, iv) transportation and tourism, and v) ocean technology and emerging markets.

Recommendation 3: Integrate DPA considerations into other ongoing initiatives and plans, including the ResilientCoasts Initiative, the Massachusetts Integrated Land Use Strategy (MILUS), the Massachusetts Ocean Plan update, and others.

Recommendation 4: Create an online marketplace that can track DPA vacancies, advertise for water-dependent industrial (WDI) use properties, and allow potential WDI users to identify vacant properties for utilization. Provide technical assistance to property owners.

Recommendation 5: Explore the development of a program to pilot and evaluate new, innovative, or coexisting uses.

Regulatory Framework

Recommendation 1: Develop guidance to clarify existing regulatory flexibility and highlight best practices in key areas to support understanding, consistency and transparency in the review process. Topics include i) flexibility in allowable uses in DPAs (WDI, supporting, accessory, and temporary), ii) public access, which is allowable and encouraged in DPAs when designed safely, and iii) the construction of coastal resilience solutions in DPAs, which are also allowable and encouraged.

Recommendation 2: Proactively conduct DPA boundary reviews and periodic DPA assessments.

Recommendation 3: Engage in ongoing permit streamlining initiatives and implement recommendations relevant to permitting in DPAs where identified.

Recommendation 4: Within each DPA, assess compliance with regulatory requirements of the DPA program.

Recommendation 5: Develop best practices for the design of projects adjacent to DPAs.

Funding and Financing

Recommendation 1: Leverage existing funding mechanisms to actively support DPAs, including increasing awareness of eligibility for existing grant programs such as the CZM Coastal Resilience grants, Seaport Economic Council grants, and Dam and Seawall Repair or Removal Program grants.

Recommendation 2: Support WDI users and host municipalities in accessing federal resources such as the Port Infrastructure Development Program.

Recommendation 3: Explore mechanisms to allow private WDI users to be considered eligible for funding for projects or activities that provide a direct public benefit.

Recommendation 4: Develop a port infrastructure and facility improvement program that can fund infrastructure improvements and provide technical assistance to both public and private projects for WDI uses in DPAs. Seek new dedicated funding sources or fund existing authorizations to support the program.

Community Impacts

Recommendation 1: Promote opportunities and programs for outreach supporting water-dependent industrial workforce training and fund additional workforce training opportunities. Partner with the Massachusetts Clean Energy Center (MassCEC) and others to achieve these outcomes.

Recommendation 2: Develop incentives to incorporate community buffers and public access into projects within the DPA without jeopardizing public safety or causing operational interference.

Recommendation 3: Support efforts to minimize the local impacts of DPA port operations on environmental justice communities and surrounding neighborhoods.

Recommendation 4: Work with partner agencies to develop programs and incentives to decarbonize and electrify port infrastructure (including land-side transportation) to reduce air and noise pollution impacts on port workers and neighboring communities.

Coastal Resilience

Recommendation 1: Integrate consideration of the unique needs of DPAs into the Commonwealth's ResilientCoasts Initiative to ensure that DPA-specific uses are evaluated.

Recommendation 2: Identify funding opportunities for coastal resilience measures to improve WDI infrastructure (for example, bulkheads, seawalls, piers, and docks) for existing and future climate conditions and uses and support municipalities and WDI users in applying for those funds.

Recommendation 3: Support WDI users in the development of operational response and recovery plans to preserve access to the water and minimize disruptions to operations in the face of increasingly severe coastal storms.

Communication, Engagement, and Technical Support

Recommendation 1: Create communication and outreach materials to improve awareness and understanding of the DPA regulatory processes for stakeholder groups.

Recommendation 2: Conduct outreach and engagement with stakeholders (business owners, WDI representatives, environmental justice community members, local residents, municipal and state agency staff, and others) to help build awareness of the role of DPAs. Identify opportunities to increase connections with the community and improve support within the community for DPAs and WDI use.

Recommendation 3: Develop webinars and provide office hours and other forms of technical assistance to support WDI users and community members in navigating the DPA program.

Recommendation 4: Feature information on DPA uses and activities online and highlight the role of DPAs in driving the blue economy.

Conclusion

The DPA program plays a crucial role in preserving suitable lands and waters for water-dependent industries in the Commonwealth of Massachusetts. By protecting lands and waterways that are suitable for these uses within designated areas, the program ensures that space is available on the waterfront to support industries of national, regional, and statewide importance, such as commercial fishing, offshore wind, marine repair, transportation, shipping, and manufacturing. Direct economic benefits of the DPA program include job creation and economic growth, while secondary benefits extend to related businesses and services. To fully realize the potential of the DPA program, investments must be made to facilitate financial, regulatory, resilience, community engagement, and other support. Balancing industrial use with community concerns and transparent processes is essential for building sustainable relationships between water-dependent industries, ports, and adjacent communities.

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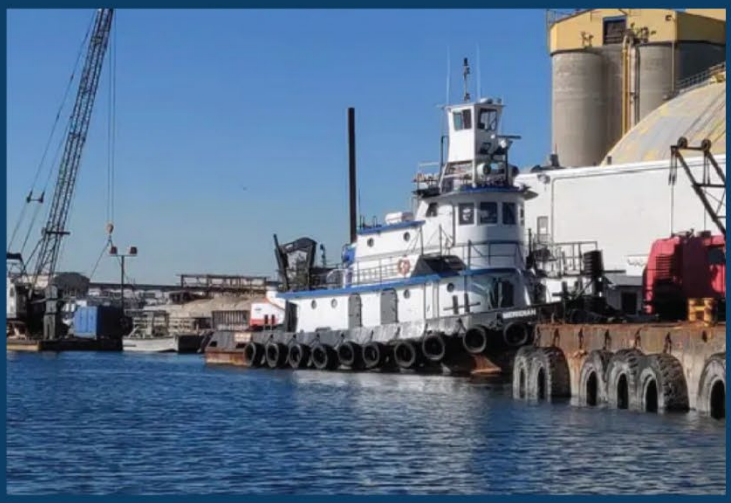
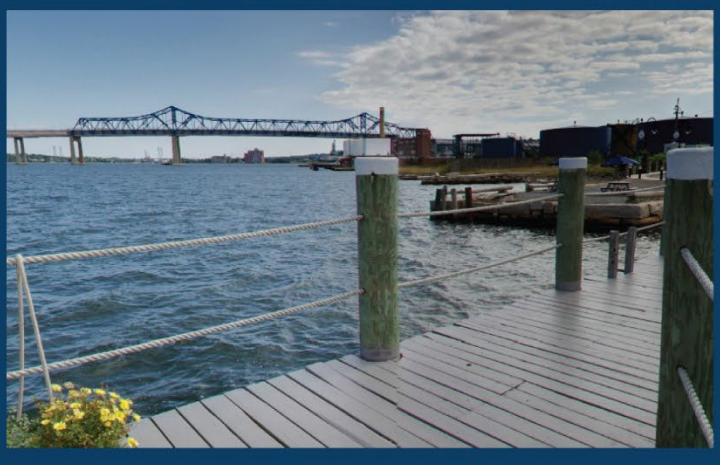
Appendices (Separate Volume)

The following appendices of the Assessment of Massachusetts Designated Port Areas are presented in a separate volume:

- Appendix A: Economic Impact by DPA
- Appendix B: Stakeholder Engagement Summary
- Appendix C: Summary of Survey Results
- Appendix D: Table Crosswalk of WDI Use with Corresponding NOAA ENOW Sector and/or NAICS Code

Back cover photos: ***top left*** *- fishing boats in New Bedford from Massachusetts Office of Travel & Tourism, Flickr;* ***top right*** *- Island End River, Chelsea from the Island End River Flood Resilience Project website;* ***middle*** *- Mass.gov Images/Shutterstock;* ***bottom left*** *- view along Mt. Hope Bay, Fall River, captured from Google Street View;* ***bottom right*** *- Coast Guard ship in New Bedford from Massachusetts Office of Travel & Tourism, Flickr.*



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