



BOSTON  
WATERFRONT  
PARTNERS

# **Strengthening The Urban Harbor:** Policy & Investment Recommendations for Boston's Working Ports

## **Boston Waterfront Partners**

**January 2025**



HR&A

INTERBORO

# Table of Contents

<b>EXECUTIVE SUMMARY</b> .....	<b>4</b>
OVERVIEW OF THE STUDY .....	4
KEY FINDINGS .....	4
STRATEGIES .....	5
ACKNOWLEDGMENTS .....	7
<b>INTRODUCTION</b> .....	<b>9</b>
STUDY OBJECTIVES AND METHODOLOGY .....	10
CHALLENGES AND OPPORTUNITIES FOR WORKING WATERFRONTS .....	10
VISION STATEMENT .....	12
<b>EXISTING CONDITIONS</b> .....	<b>13</b>
REGULATORY FRAMEWORK AND GOVERNANCE .....	16
OVERVIEW OF BOSTON'S INNER HARBOR DPAS .....	17
CHALLENGES AND OPPORTUNITIES .....	29
<b>STRATEGIES</b> .....	<b>34</b>
PLANNING & GOVERNANCE .....	34
LAND USE AND REGULATORY PLANNING .....	41
CLIMATE ADAPTATION AND SUSTAINABILITY .....	47
<b>IMPLEMENTATION ROADMAP</b> .....	<b>51</b>
<b>CONCLUSION</b> .....	<b>53</b>
<b>APPENDIX A. RESIDENT ENGAGEMENT</b> .....	<b>55</b>
RESIDENT ENGAGEMENT OVERVIEW .....	55
<b>APPENDIX B. CASE STUDIES</b> .....	<b>63</b>
KEY TAKEAWAYS AND LESSONS LEARNED .....	63
SUNSET PARK INDUSTRIAL BUSINESS ZONE, NEW YORK, NY .....	66
PORT OF SEATTLE AND SEATTLE INDUSTRIAL WATERFRONTS .....	71
PORT OF TACOMA AND TACOMA INDUSTRIAL WATERFRONTS .....	75
PORT OF SAN FRANCISCO .....	79
EDUCATIONAL PARTNERSHIPS .....	84
<b>APPENDIX C. METHODOLOGY AND SOURCES</b> .....	<b>89</b>
WATER-DEPENDENT INDUSTRIAL USES .....	89

## List of Figures

Figure 1: Map of Boston’s Inner Harbor DPAs .....	14
Figure 2: Map of Boston’s Inner Harbor DPAs and Catchment Areas .....	15
Figure 3: The Mystic Generating Station in Massachusetts .....	17
Figure 4: Map of Mystic River DPA Land Uses .....	18
Figure 5: Map of Mystic River DPA Flood Risk, 2070 Projections .....	19
Figure 6: MBTA / MassDOT-owned Railway Site Along Industrial Shoreline of Lower Chelsea Creek .....	20
Figure 7: Map of Chelsea Creek DPA Flood Risk, 2070 Projections.....	21
Figure 8: Map of Chelsea Creek DPA Land Uses .....	22
Figure 9: Boston Harbor Shipyard & Marina .....	23
Figure 10: Map of East Boston DPA Flood Risk, 2070 Projections.....	24
Figure 11: Map of East Boston DPA Land Uses .....	25
Figure 12: Conley Container Terminal.....	26
Figure 13: Map of South Boston DPA Flood Risk, 2070 Projections .....	27
Figure 14: Map of South Boston DPA Land Uses .....	28
Figure 15: Resident Engagement Focus Group Activity Setup .....	56
Figure 16: Mystic River DPA Focus Group .....	57
Figure 17: Chelsea Creek DPA Focus Group.....	59
Figure 18: East Boston DPA Focus Group .....	60
Figure 19: South Boston DPA Focus Group.....	62
Figure 20: Industrial Business Zones in New York City .....	66
Figure 21: Land Use Map for Sunset Park West of I-278.....	68
Figure 22: Graphical Breakdown of Land Uses by Acreage in Sunset Park West of I-278.....	68
Figure 23: Commercial Use Concentration.....	68
Figure 24: Residential Use Concentration.....	68
Figure 25: Industrial Use Concentration.....	68
Figure 26: City of Seattle Industrial Rezoning Oct 2023.....	72
Figure 27: Rendering of the Maritime Innovation Center.....	74
Figure 28: City of Tacoma Tideflats Subarea Plan .....	76
Figure 29: EarthCorps members Cleaning up Commencement Bay.....	77
Figure 30: Land Use in the Port of San Francisco.....	80
Figure 31: Maritime Eco-Industrial Center at Piers 80-96 .....	82
Figure 32: Maine Maritime Academy Students on Training Cruise .....	84
Figure 33: Students at Harbor High.....	85
Figure 34: Sound School Fish Lab .....	86
Figure 35: Discovery Pier on West Grand Traverse Bay.....	87
Figure 36: Sketch of the Freshwater Research & Innovation Center .....	88

# Executive Summary

## Overview of the Study

Boston's working ports, much of which lie in Designated Port Areas (DPAs), face unprecedented challenges. Competing regulatory, economic, and real estate priorities in Greater Boston have subjected these vital maritime industrial zones to enhanced political scrutiny and significant market pressure. These challenges are not all unique to Boston; working waterfronts across the country and the world are grappling with similar pressures as cities seek to balance maritime industrial uses, which can have regional economic importance, with valuable waterfront urban development and public access to the water, which create more local value. In Boston, this pressure has led to legislative attempts to circumvent established State industrial land use policy by removing areas from a DPA to realize other local economic and community development priorities. Unfortunately, once waterfront industrial land is converted to other uses, it is effectively impossible to restore its maritime industrial capacity.

The Boston Waterfront Partners (BWP) is a coalition of non-profit organizations and non-profit community-based organizations dedicated to the sustainable development and equitable use of Boston's waterfront areas. Recognizing the importance of the region's maritime industrial economy and the needs of waterfront communities, BWP has taken a proactive approach to addressing the complex challenges facing DPAs.

The Massachusetts Office of Coastal Zone Management (CZM) conducted a comprehensive statewide analysis of DPAs. To complement and inform this broader effort, BWP initiated a focused study of Boston's four Inner Harbor DPAs: South Boston, East Boston, Mystic River, and Chelsea Creek—all part of the Mystic River Watershed. This targeted approach allows for a deeper examination of the unique conditions and challenges facing these specific areas in Boston's evolving urban landscape.

The study provides an initial roadmap for the stewardship of Boston's working waterfront, ensuring that these vital economic assets continue to thrive while meeting adjacent communities' needs for open space and adapting to 21st-century environmental and economic needs. The study team employed a mixed-methods approach combining quantitative data analysis, qualitative stakeholder engagement, and case study research.

## Key Findings

### Problem Statements

Boston's Inner Harbor DPAs were created to protect regional shipping and maritime industrial activities on the waterfront. However, they now face several challenges:

- 1. DPAs and the land surrounding them are subject to intense real estate market pressure** from housing and other land uses. This pressure has fueled advocacy to reduce the geographic scope of DPAs and the enforcement of land use regulations in DPAs to meet competing local interests—potentially at the cost of local, State, and regional economic priorities.
- 2. The removal of water-dependent industrial land from DPAs threatens their integrity.** Land uses that are not related to water-dependent maritime industrial activity are common in DPAs, due to temporary use permits. In addition, legislative attempts to remove land from the DPA further threaten the legal idea that DPAs can durably protect urban working ports.
- 3. Persistent and unmitigated climate risks require urgent action and significant levels of public investment.** Predominantly located on filled coastal marshes, Boston Harbor's DPAs are highly flood-prone. Addressing these challenges requires substantial public investment to manage coastal flooding in

and inland of DPAs, and to ensure that extreme coastal storms do not lead to toxic spills, as has happened elsewhere, such as in New York City, New Orleans, and Houston.

- 4. Legacy environmental justice issues surrounding DPAs remain largely unaddressed.** Three Inner Harbor DPAs abut environmental justice neighborhoods whose populations are either low-income, more likely to be racial minorities, or less likely to speak English very well.<sup>1</sup> Some of these neighborhoods also experience disproportionate exposure to air pollution and extreme heat, and they also lack direct waterfront access.<sup>2</sup> These challenges are not the responsibility of individual businesses to solve; instead, this chronic exposure to contaminants, vehicle emissions, and lack of water access for inland communities require coordinated action from public and private stakeholders to mitigate. Addressing these long-standing challenges will require targeted investments and policy interventions to improve environmental quality and increase equitable access to waterfront resources.
- 5. There is no forward-looking business strategy and investment plan for Inner Harbor DPAs.** Although the publicly owned South Boston DPA has benefited from substantial planning and public investment, the privately-owned DPAs lack comparable levels of planning and investment. This has limited their ability to meet demand from core water-dependent industrial uses and leverage opportunities in emerging marine technology sectors.
- 6. There is a lack of consensus between the government and the private sector about what to do in DPAs,** and no forum exists to have these conversations across public and private sectors, hindering collaborative problem-solving and long-term strategic planning.

## Strategies

The following strategies chart a course toward addressing the problems explored above, offering steps to streamline and focus planning and governance, organize stakeholder engagement processes to inform decisions made in DPAs, and lay the groundwork for crucial investments in economic development and resilience. These strategies are organized into three categories: Planning & Governance, Land Use and Regulatory Planning, and Climate Adaptation and Sustainability. They aim to create a framework for transparent, collaborative, and effective governance of these critical waterfront areas. While some strategies can be implemented independently, many are interconnected and will be most effective as part of a comprehensive approach to DPA revitalization and management.

### Planning & Governance

1. Direct economic development planning and investment in DPAs by expanding and empowering the Seaport Economic Council to steward better-resourced, climate-resilient seaport development.
2. Invest in the first maritime economic development plan for the harbor in nearly three decades and maintain shared, detailed data on DPA economic and land use conditions thereafter.
3. Build workforce development pipelines that connect local talent, including talent in economically vulnerable communities, to high-road jobs in growing maritime industries.

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<sup>1</sup> The State of Massachusetts Executive Office of Energy and Environmental Affairs (EEA) defines “environmental justice populations” on its website—<https://www.mass.gov/info-details/environmental-justice-populations-in-massachusetts>—and maps them using 2020 census data: <https://www.mass.gov/info-details/massgis-data-2020-environmental-justice-populations>.

<sup>2</sup> The U.S. Environmental Protection Agency (EPA) EJScreen tool maps concentrations of environmental burden, socioeconomic vulnerability, and environmental justice indices (which integrate environmental burden and socioeconomic vulnerability). <https://ejscreen.epa.gov/mapper/>.

### **Land Use & Regulatory Planning**

1. Encourage clean fuel and electrification infrastructure in DPAs to help maritime industrial businesses and their supply chains transition to clean and renewable power sources.
2. Define and restrain temporary uses in DPAs while preserving accessory and supporting uses.
3. Create transitional zones to give business owners more flexibility on their properties and more effectively blend water-dependent industrial uses with other uses on the margins of DPAs.
4. Establish clear, fair, and enforceable standards for property maintenance in DPAs and facilitate collective responsibility for DPA property maintenance among property owners.

### **Climate Adaptation & Sustainability**

1. Establish a DPA decarbonization finance assistance program to help maritime industrial businesses navigate existing financing opportunities to transition to cleaner fuels and decarbonize their operations.
2. Establish a DPA resiliency grant program to help maritime industrial businesses assess their vulnerability to climate hazards and begin to fortify their assets.
3. Channel reauthorized MassWorks program funds, supplemented with federal money, to advance large-scale environmental remediation and long-needed climate adaptation investment in working ports.

## Acknowledgments

This study benefited from the insights and expertise of many stakeholders across the maritime-industrial, government, advocacy, and community sectors. We are particularly grateful to the following individuals who contributed their time and knowledge through interviews, focus groups, and review of draft materials:

Association for Neighborhood & Housing Development (New York)	Massachusetts Clean Energy Center
Boston Harbor Pilots	Massachusetts Office of Coastal Zone Management
Boston Harbor Shipyard and Marina	Massport
Boston Line and Service	Mediterranean Shipping Company; Peabody & Lane
Boston Planning and Development Agency	Moran Shipping
Boston Shipping Association	NOAH
Boston Waterfront Partners	Oceanvest
BTT Marine Construction Company	Ports America
Buchanan & Associates	Radius Recycling
Cargo Ventures	ReVision Energy
City of Boston	San Francisco Bay Conservation and Development Commission
Columbia Container Services/Columbia Group	Sea Ahead
The Davis Companies	Southwest Brooklyn Industrial Development Corporation
Durand and Anastas	UPROSE (New York)
Eastern Salt	VHB
Everett Community Growers	Washington State Department of Commerce
Fort Point Associates	The Waterfront Alliance
Greenroots Chelsea	Woods Hole Group
LendLease	WS Development
Maritime Alliance in Defense of Designated Port Areas	Wynn Development
Maritime Blue	

# INTRODUCTION



## Introduction

**Boston's Inner Harbor contains valuable but increasingly constrained working port areas, which drive maritime economic opportunity for the city, region, and country. These working port areas are not only worth protecting but also worth even greater levels of investment in order to unlock equitable and productive industrial growth while also protecting inland communities.**

DPAs, established by the CZM in the 1970s, aim to protect and promote maritime industrial activities in coastal areas with specific geographic and economic characteristics. These include deep navigable channels, developed shorelines, efficient land-to-water connections, access to transportation infrastructure and utilities, suitable topography, and an existing or potential industrial character. Boston's Inner Harbor—part of the Mystic River Watershed—hosts four DPAs: South Boston, East Boston, Mystic River, and Chelsea Creek. These areas have been historically crucial to the region's maritime economy, supporting industries like marine construction, fish food processing, and commercial trade. However, size constraints make it difficult to compete with other ports. The Port of Boston now ranks 76<sup>th</sup> in the country for total waterborne tonnage, 46<sup>th</sup> for total imports, and 54<sup>th</sup> for total exports.<sup>3</sup> Massachusetts currently ranks 30<sup>th</sup> in total tonnage.<sup>4</sup>

Recent legislative attempts to remove land from the Mystic River DPA for a soccer stadium and waterfront public park in Everett highlight the growing real estate pressures facing Boston's working waterfront.<sup>5</sup> This pattern of seeking site-specific exemptions from DPA regulations through legislative action rather than working through established planning processes undermines the entire DPA framework that preserves these crucial economic assets. Such legislative attempts to circumvent established State DPA boundary review processes are particularly concerning because once waterfront industrial land is converted to other uses, it is effectively impossible to restore its maritime industrial capacity. A more proactive approach to planning and investing in DPAs could help prevent future attempts to remove land from DPA protection while better balancing maritime industrial needs with other waterfront priorities.

This study builds upon and complements several recent planning efforts and studies focused on Boston's waterfront and DPAs. Notably, CZM is conducting a comprehensive statewide analysis of DPAs, which will provide valuable context for this report, which is focused only on Boston's Inner Harbor. Our work also considers insights from the 2018 Boston Harbor Now study, which offered a broad vision for innovation in the Harbor's future.<sup>6</sup>

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<sup>3</sup> Waterborne Commerce Statistics Center. "Waterborne tonnage for principal U.S. ports and all 50 states and U.S. territories" US Army Corps of Engineers. 2022. <https://usace.contentdm.oclc.org/digital/collection/p16021coll2/id/7447/>

<sup>4</sup> Waterborne Commerce Statistics Center. 2022.

<sup>5</sup> Vennoch, Joan. "Revs soccer stadium is a classic Boston insider story." (Nov 2024) Boston Globe. <https://www.bostonglobe.com/2024/11/13/opinion/everett-soccer-stadium-deal-menino-kraft/?event=event12>.

<sup>6</sup> Boston Harbor Now. "Boston's Working Port: A Foundation for Innovation." Boston Harbor Now, January 2018. <https://www.bostonharbornow.org/wp-content/uploads/2017/12/FOR-RELEASE-Bostons-Working-Port-A-Foundation-for-Innovation-v1-24.pdf>.

## Study Objectives and Methodology

BWP is a coalition of non-profit organizations and non-profit community-based organizations dedicated to the sustainable development and equitable use of Boston's waterfront areas. BWP commissioned this study to evaluate the current state of DPAs and develop forward-looking policy and investment strategies to update and protect them, strengthening maritime industrial activity while also effectively balancing other waterfront planning priorities, including resilience, environmental justice, and public access. The coalition's mission is to ensure these vital economic assets continue to thrive while meeting adjacent communities' needs and adapting to 21st-century environmental and economic realities.

The study included an updated baseline assessment of existing conditions, engagement with wide-ranging stakeholders, the development of policy recommendations and strategies, and an implementation roadmap. To achieve these objectives, the study team employed a mixed-methods approach that combined quantitative data analysis, qualitative stakeholder engagement, and case study research.

The unique regulatory definition of water-dependent industrial uses (WDIUs) in Massachusetts and the specific geographies of DPAs in Boston's Inner Harbor presented certain methodological challenges. Boston Inner Harbor DPAs may take up a large proportion of the waterfront but are relatively small, which limits the availability and accuracy of data—including business and job data—offered by data sources such as the U.S. Census Bureau American Community Survey (ACS) and Lightcast. Furthermore, the WDIU definition found in the State regulations does not neatly match the North American Industry Classification System (NAICS), further complicating the team's ability to utilize traditional data sources. To address this, the project team completed a detailed crosswalk of the WDIU regulations to NAICS codes (See *Appendix C. Methodology and Sources*) and relied on stakeholder engagement to fill in gaps caused by data limitations.

## Challenges and Opportunities for Working Waterfronts

Working waterfronts and maritime industrial areas worldwide face a complex array of challenges and opportunities in the 21st century. Global economic shifts, climate change, and evolving urban priorities are reshaping the landscape for ports and industrial waterfront zones. These global trends provide crucial context for understanding the specific issues confronting Boston's Inner DPAs.

**Ports and maritime industrial areas around the United States and worldwide face intense economic and political pressure to serve other needs, such as commercial office space, housing, hotels, and public waterfront access.** Stakeholders interviewed in New York City; Seattle and Tacoma, WA; and the San Francisco Bay Area shared that demand for other uses—which either command higher financial returns, such as commercial office and housing, or have more political support, including housing and open space—has led to regulatory land use changes or as-of-right non-industrial redevelopment that encroaches on limited water-dependent industrial areas. Stakeholders consistently shared that once industrial land is lost, it is all but impossible to reestablish due to the lower financial returns associated with most industrial uses. Stakeholders observed that the loss of industrial land reflects a focus on local economic priorities, such as housing. However, these can come at the expense of regional and national economic needs, such as importing heating oil for regionally critical power plants, participating in international commerce, and preserving relatively high-quality, accessible, working-class jobs associated with maritime industrial uses.

**Increasing demand for maritime freight has increased the urgency of port modernization nationwide.**

During the global COVID-19 pandemic, maritime shipping lines and freight services suffered disruption, leading to the closure of container distribution lines, delays in imported products, and unusually high shipping costs. Post-pandemic, consumer demand for online goods increased as economic activity bounced back beyond pre-COVID levels. At the same time, global trade lines reestablished themselves, and acute customer demand for imported goods outpaced the capacity of shipping containers (still limited due to pandemic-era closures). As a result, maritime freight transportation has since operated at maximum capacity, leading to occasional ship bottlenecks and backlogs at ports. In 2022, U.S. ports saw an unforeseen volume in cargo exchanged, with a high level of congestion as ports struggled to meet present and future demands in the face of container crunches.

**Waterfront port areas are increasingly vulnerable to the impacts of climate change, which pose significant risks to their infrastructure and operations.** Rising sea levels threaten to inundate docks and facilities, while more frequent and severe storms have caused extensive damage and disruption to maritime activities. Additionally, increased coastal erosion and higher storm surges compromise the structural integrity of port installations and necessitate costly repairs and adaptations. These climate-related challenges jeopardize the economic stability of port regions and hinder global supply chains, affecting trade and commerce on a broader scale. Effective adaptation and mitigation strategies are crucial to safeguarding these critical hubs against the escalating threats of climate change.

**A green economic transition presents significant opportunities for investment in the next generation of maritime industrial infrastructure.** The urgency of decarbonizing economic activity, paralleled with unprecedented federal investment in decarbonization and the economic boon promised by offshore wind investment, means ports can compete for dollars to update aging infrastructure. Although the rollout of offshore wind (OSW) in the United States has come in fits and starts, successful investments have catalyzed significant business development and hiring in ports (e.g., Salem Offshore Wind Port, MA; South Brooklyn Marine Terminal, NY) and rationalized spending to upgrade and maintain maritime infrastructure. Large ports have begun making other decarbonization investments, including electrifying operations such as container terminals.

**Urban working waterfronts face a complex tension between preserving vital industrial uses and addressing community concerns related to gentrification and environmental justice.** As surrounding neighborhoods experience increasing development pressure and rising property values, there's a growing push for waterfront access, housing, and mixed-use development. This creates a challenging dynamic where preserving industrial land—crucial for maintaining blue-collar jobs and supporting regional economic needs—can conflict with efforts to create more inclusive, accessible waterfronts and address housing affordability issues. Successful waterfront planning must navigate this tension, finding ways to maintain essential industrial functions while responding to community needs and concerns about displacement and environmental impacts. This balancing act requires nuanced policy approaches that can protect industrial uses without exacerbating gentrification or neglecting the interests of adjacent communities.

**Balancing Public Access and Industrial Operations Creates Operational Challenges.** Working ports worldwide face growing pressure to provide public waterfront access while maintaining secure and efficient industrial operations. Communities increasingly view waterfronts as public assets that should offer recreational opportunities, cultural amenities, and connections to the water. However, accommodating public access in industrial port areas presents significant operational and safety challenges. Heavy equipment operation, hazardous materials handling, homeland security requirements, and the need for flexible ship-to-shore

operations can make it difficult or dangerous to allow unrestricted public access. In Massachusetts, this tension is heightened by Chapter 91 regulations, which mandate that developments in tidelands provide meaningful public benefits including waterfront access. While some ports have successfully integrated limited public access through designated viewing areas or educational facilities, others struggle to balance these requirements with their core industrial functions. The challenge extends beyond just physical access - it raises fundamental questions about how to preserve working waterfronts as vital economic engines while meeting growing community expectations for waterfront accessibility and amenities.

## Vision Statement

Boston's Inner Harbor DPAs will be vibrant, sustainable hubs of maritime innovation and economic opportunity. These modernized climate-resilient waterfront zones will seamlessly blend cutting-edge blue economy industries with traditional water-dependent industrial uses, creating a dynamic business ecosystem while addressing legacy environmental justice issues. The revitalized DPAs will create high-road jobs and rewarding career opportunities for all residents, including historically disadvantaged residents and residents from environmental justice communities, supporting a skilled workforce in both established and emerging maritime sectors.

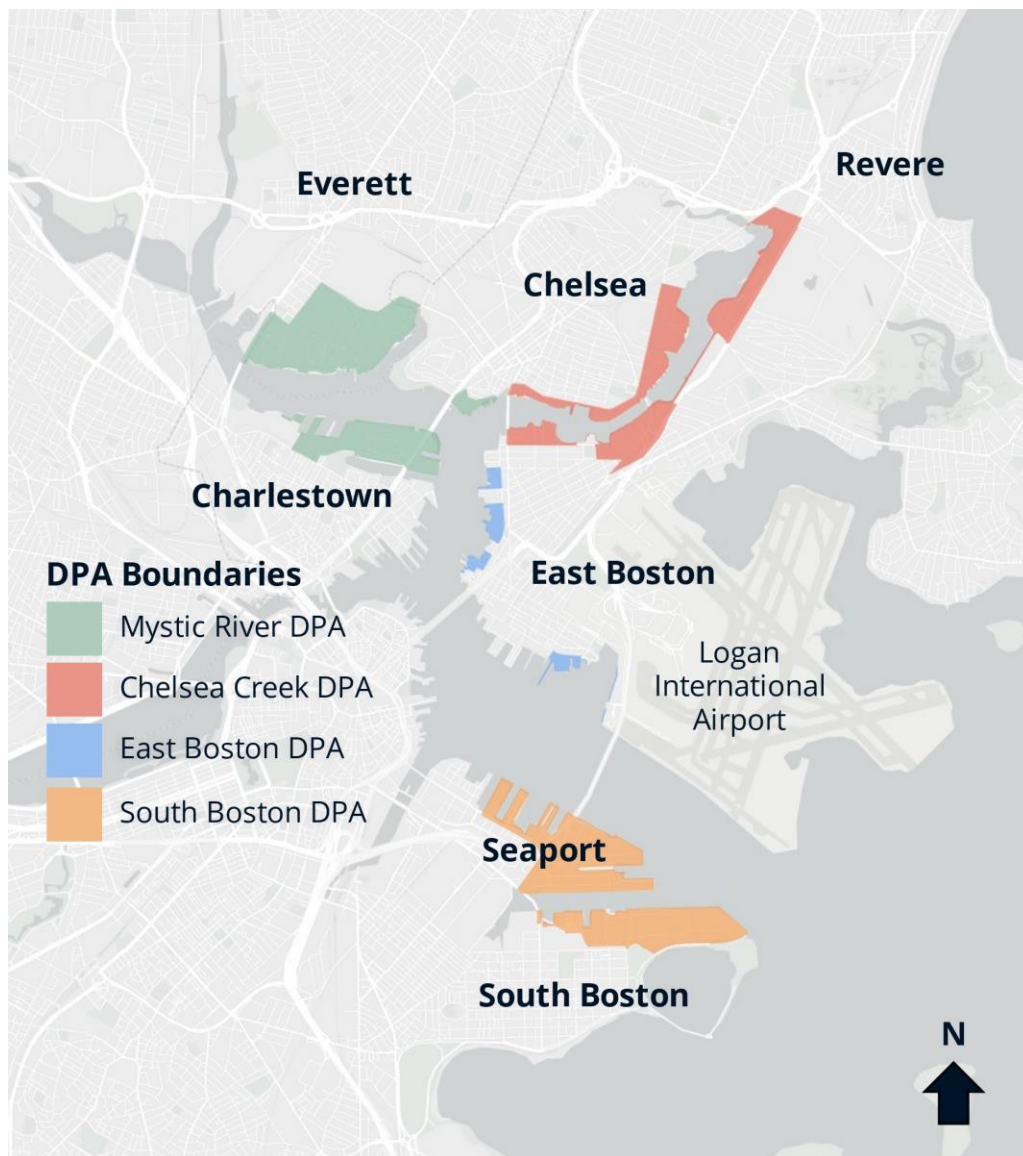
- Boston's Inner Harbor DPAs will be **vibrant, sustainable hubs of maritime innovation and inclusive economic opportunity**.
- These modernized waterfront zones will seamlessly blend **cutting-edge blue economy industries with traditional water-dependent industrial uses**.
- **DPAs will feature climate-adaptive infrastructure** to ensure long-term viability and protect surrounding communities.
- The revitalized DPAs will create rewarding **career opportunities for Massachusetts residents**, cultivating a skilled workforce in both established and emerging sectors.
- **Inclusive economic growth** will create opportunities for all residents, including people who live in environmental justice communities.
- Thoughtful land use planning will safely **bring the public closer to the water** and working port operations when possible.

# **EXISTING CONDITIONS**

**Boston's Inner Harbor DPAs are complex ecosystems shaped by intricate regulatory frameworks, diverse geographic characteristics, varied economic profiles, and pressing environmental and climate challenges.**

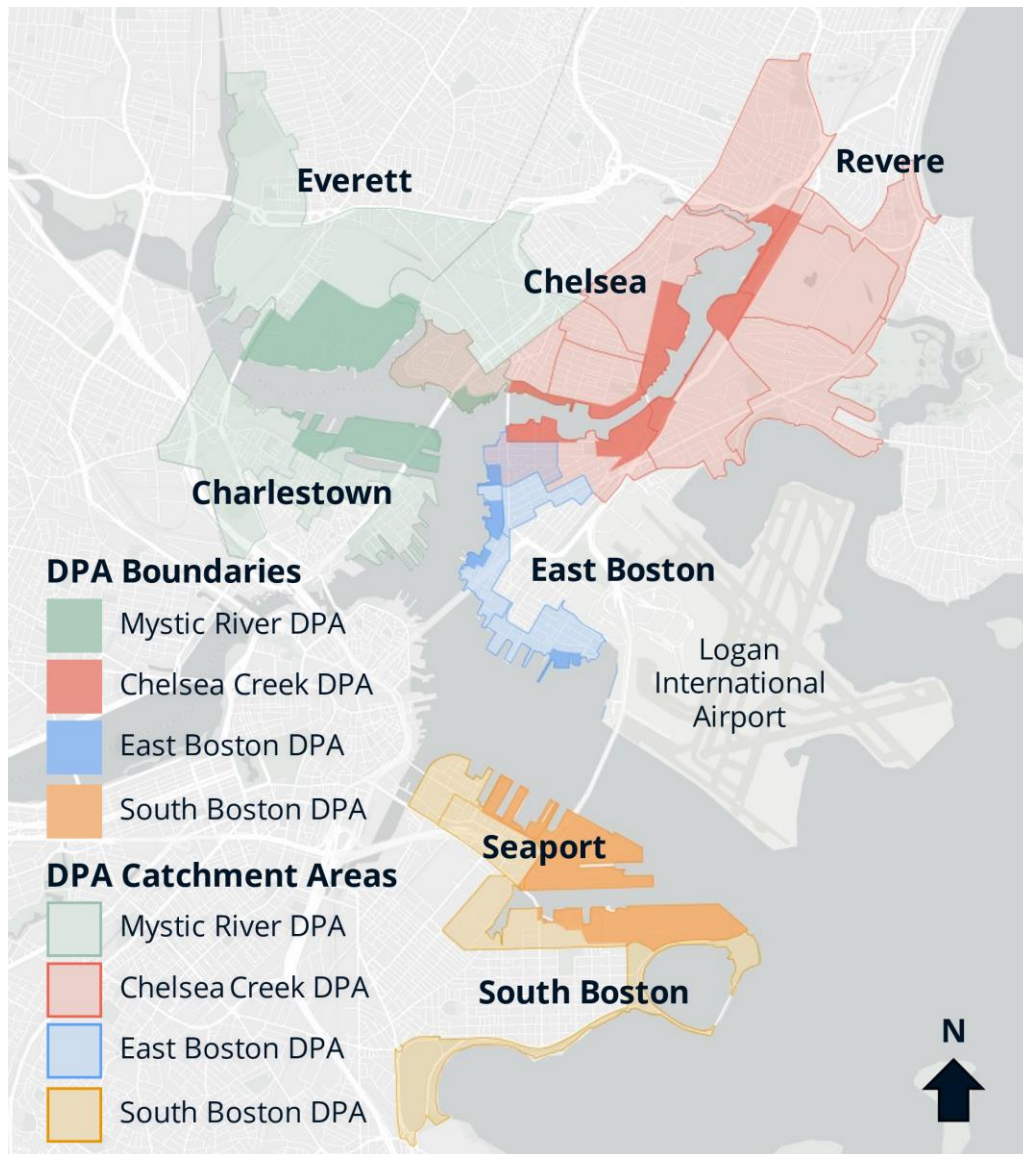
The South Boston DPA, at 444 acres, is the largest continuous industrial area in Boston, housing the Port of Boston. Most of the land is publicly owned, with key facilities driving regional employment. The East Boston DPA, though only 82 acres and scattered across disjointed waterfront blocks, features more publicly accessible uses than other Inner Harbor DPAs. The Chelsea Creek DPA, spanning 297 acres across Chelsea, Revere, and East Boston, is a hub for freight transportation, airport support services, and imported oil storage. The Mystic River DPA, covering 481 acres across Everett, Chelsea, and Charlestown, has strong transportation connections and has experienced a shift from manufacturing to warehousing, reflecting broader economic trends.

Figure 1: Map of Boston's Inner Harbor DPAs



We examined the regulatory framework as well as each DPA's geographic characteristics, economic profiles, and environmental challenges. To better understand these areas' economic impact and demographic context, we have defined catchment areas that extend beyond the strict boundaries of the DPAs. These catchment areas, illustrated in the Figure below, encompass the DPAs and adjacent census tracts, providing a more holistic view of each area's economic and community dynamics. The following analysis draws data from these expanded catchment areas to offer insights into employment trends, industry composition, and the broader socio-economic context of the DPAs and their surrounding neighborhoods.

Figure 2: Map of Boston's Inner Harbor DPAs and Catchment Areas



## Regulatory Framework and Governance

The management and development of Boston's Inner Harbor DPAs are governed by a complex set of State and local policies and regulations that seek to balance preserving maritime industrial activities with other public goals and interests.

At the State level, the Massachusetts Office of Coastal Zone Management (CZM) oversees the DPA program and establishes the regulatory framework for these areas. The critical State regulations and policies that apply to DPAs include:

- **Chapter 91 of the Massachusetts General Laws** governs the use of tidelands and waterways and requires licenses for any structures or activities in these areas. Chapter 91 regulations establish specific requirements for DPAs, including the prioritization of water-dependent industrial uses and limits to non-industrial uses that may conflict with maritime operations. For a complete list of WDIUs, see Appendix C. Methodology and Sources.
- **The Massachusetts Waterways Regulations (310 CMR 9.00)** implement Chapter 91 and provide more detailed guidance on the licensing and permitting process for activities in DPAs. These regulations also establish standards for DPAs, such as the requirement that at least 25 percent of the DPA land area be reserved for water-dependent industrial uses.
- **The Massachusetts Port Authority (Massport) Enabling Act** establishes Massport as a quasi-public agency responsible for managing the Port of Boston and other transportation facilities in the State. Massport plays a key role in developing and operating certain State-owned maritime industrial facilities within the DPAs, particularly in the South Boston DPA.

At the local level, municipalities such as Boston, Chelsea, Everett, and Revere have limited ability to influence the use of land in DPAs. DPA designations supersede local zoning. In the past, "Municipal harbor plans" have allowed municipalities to adjust Chapter 91 regulations to meet local urban design and development requirements. Additionally, "DPA Master Plans" have allowed communities to bring local zoning and DPA uses into greater harmony and adjust the maximum amount of non-WDIU uses allowed in DPAs (above 25 percent of the DPA land area).

In addition to these State and local policies and regulations, the development and use of DPA lands are also subject to various federal and State environmental quality requirements; these include permits and approvals related to water quality, air quality, wetlands protection, dredging, and other issues. The complex and sometimes overlapping nature of these policies and regulations can impede the management and economic development of DPAs because stakeholders must navigate multiple, time-consuming processes of government review and approval.



## Overview of Boston's Inner Harbor DPAs

Boston's Inner Harbor is home to four DPAs—South Boston, East Boston, Mystic River, and Chelsea Creek—each with unique characteristics and challenges.

Across all DPAs, maritime industrial businesses play a significant role, particularly in maritime transportation and logistics. However, there has been a noticeable shift from traditional manufacturing towards warehousing, distribution, and high-tech industries. The increasing importance of professional and technical services reflects broader economic trends, presenting both opportunities and challenges for these historically industrial areas. The DPAs face growing pressure from non-industrial uses, especially in areas adjacent to residential neighborhoods.

Boston's Inner Harbor DPAs face significant environmental and climate-related challenges that threaten their long-term viability and impact surrounding communities. While each DPA faces unique risks, they all share common vulnerabilities to flooding, sea level rise, and storm surge. These environmental concerns are further complicated by environmental justice issues for commercial workers, businesses, and adjacent residential neighborhoods.

### The Mystic River DPA

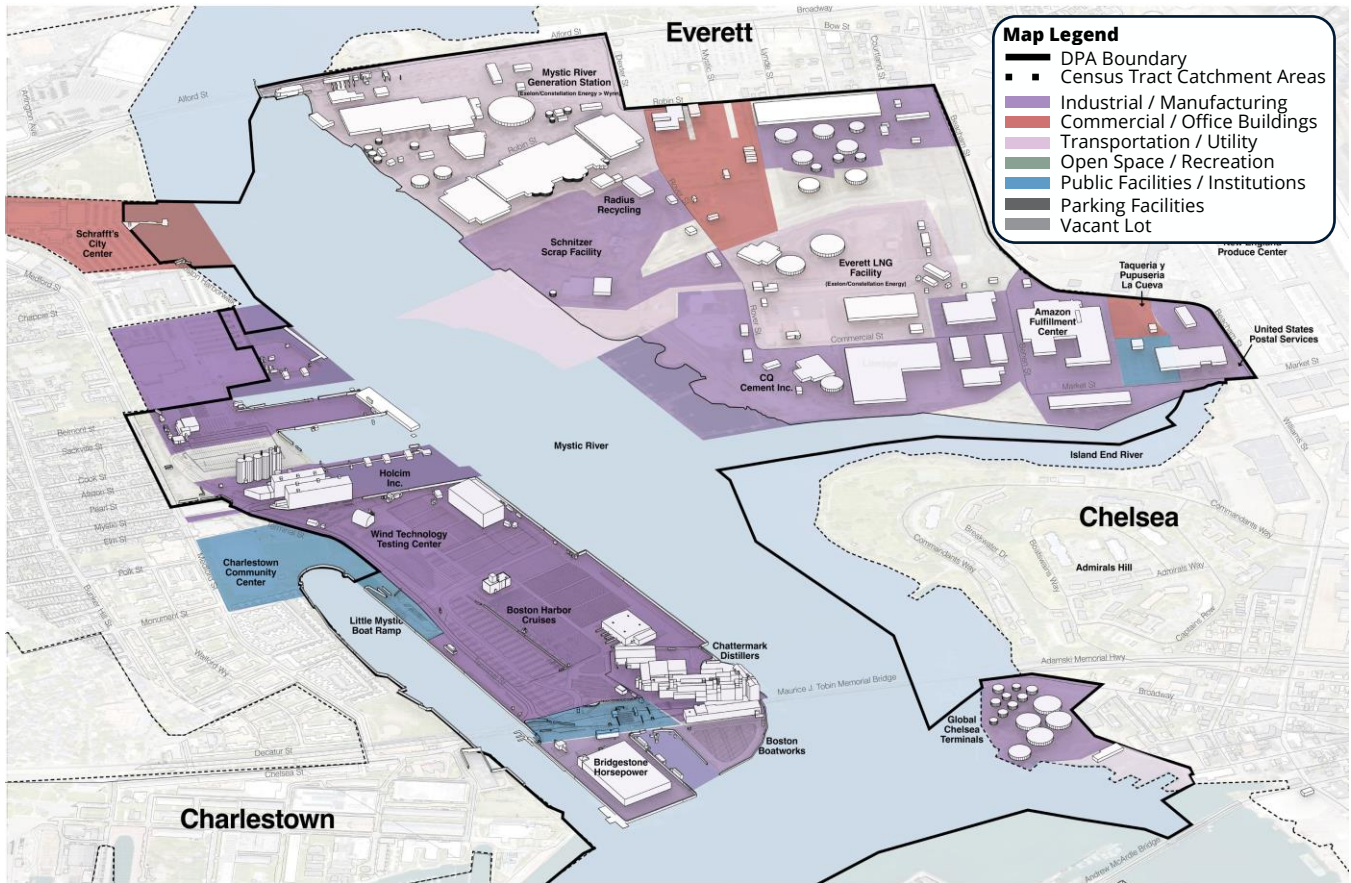
Figure 3: The Mystic Generating Station in Massachusetts<sup>7</sup>



The Mystic River DPA spans 481 acres across Everett, Chelsea, and Charlestown, with strong transportation connections via I-93, Route 16, and the Mystic River. In recent years, there has been a shift from manufacturing to warehousing. The northern portions of the DPA, particularly in Everett, face potential transformation from an energy distribution and storage center to a mixed-use area with entertainment, open space, and non-maritime uses. The Everett portion of the DPA contains the Mystic Generating Station, once one of the largest power stations in Massachusetts. The Station will retire at the end of May 2024 due to declining demand in the wholesale energy market.

<sup>7</sup> Photo: Brian Snyder/Reuters

Figure 4: Map of Mystic River DPA Land Uses



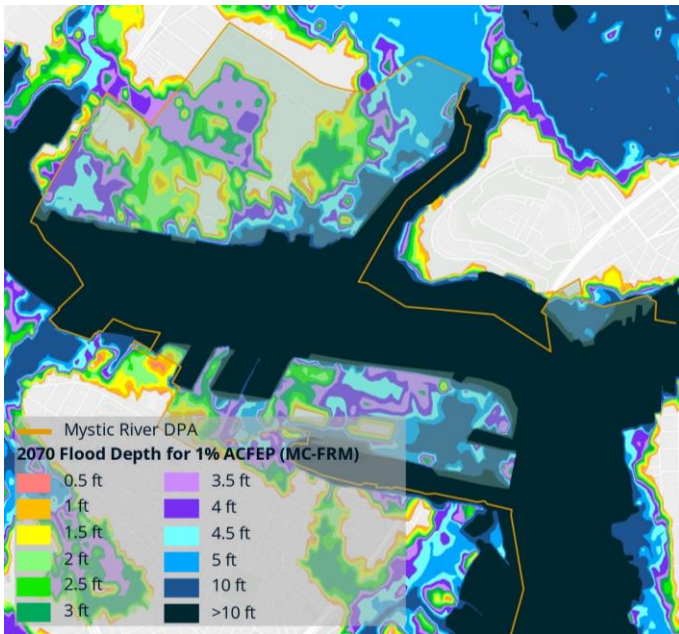
### Economic and Employment Profile

The Mystic River DPA catchment area encompasses about 23,000 jobs, with significant employment in accommodation and food services (22%) and retail trade (14%). Since 2017, there has been considerable growth in accommodation and food services jobs due to the development of the Encore Boston Harbor Hotel and Casino.

### Environmental and Climate Risks

While the Mystic River DPA faces somewhat lower immediate flood risks than the other DPAs, it still encompasses five FEMA flood zones. Current projections indicate a 26 percent chance of flooding in certain areas over the next 30 years, a risk likely to increase as climate change progresses.

Figure 5: Map of Mystic River DPA Flood Risk, 2070 Projections



## Land Use and Real Estate Trends

The industrial rental market within the DPA has remained relatively desirable, as indicated by generally low vacancy rates (4%). This is in part due to ready access to major transportation infrastructure. Industrial development has been limited over the past decade, with only a one (1) percent increase in total inventory. Despite low growth, the area commands high rents, likely due to synergies with existing industrial activities and strategic access to major transportation infrastructure.

Major land transactions in the last two years could significantly transform the northern portions of the DPA:

- Wynn Resorts, whose Encore Boston Harbor Hotel and Casino is located across the street outside the DPA, purchased a 45-acre portion of the Mystic Generating Station site from Constellation Energy for \$25 million in 2023. The Kraft Group (dba New England Revolution Stadium, or NRS, LLC) has confirmed a memorandum of agreement with the City of Everett to develop the stadium and park on the parcel, which would require legislative approval to remove the parcel from the DPA. The \$4 billion economic development bill signed in November 2024 would remove this area's DPA designation to enable the development of a soccer stadium and waterfront park on a timeline. The legislation allows developers access to environmental cleanup and infrastructure public funding.<sup>8</sup> Under the agreement, the Kraft Group must reach community agreements with Boston and Everett.
- Developer Davis Companies purchased nearly 100 acres of land for \$72.5M, spanning multiple parcels from Exxon in 2023, including land within the DPA. The purchase paves the way for a multimillion-dollar mixed-use development project. (An out-of-court settlement between Exxon and the Conservation Law Foundation in 2023 will prohibit the land from being used for fossil fuel storage in the future).<sup>9</sup>
- A Liquefied Natural Gas (LNG) facility owned by Constellation Energy occupies a large parcel east of the Generating Station. Initially expected to be decommissioned upon the Generating Station's 2024 retirement, a February 2024 deal with Britain's National Grid will keep the facility open for six years.<sup>10</sup>

<sup>8</sup> Vennochi, Joan. [The Boston Globe](#). Nov 13, 2024

<sup>9</sup> Chesto, Jon. "Davis Cos. Completes \$72.5 Million Acquisition of Nearly 100-Acre Exxon Tank Farm in Everett - The Boston Globe." [BostonGlobe.com](#), December 5, 2023. <https://www.bostonglobe.com/2023/12/05/business/exxon-tank-farm-everett-davis-companies/>.

<sup>10</sup> Reuters. "National Grid, Constellation Energy agree on LNG supply deal for Massachusetts facility." [Reuters.com](#), February 9, 2023. <https://www.reuters.com/business/energy/national-grid-constellation-energy-agree-lng-supply-deal-mass-facility-2024-02-10/>

## The Chelsea Creek DPA

Figure 6: MBTA / MassDOT-owned Railway Site Along Industrial Shoreline of Lower Chelsea Creek<sup>11</sup>



The Chelsea Creek DPA comprises 297 acres in Chelsea, Revere, and East Boston, serving as a hub for freight transportation and airport support services due to its proximity to Logan Airport. This area serves as Massachusetts's primary hub for imported oil storage. Warehouses and distribution centers occupy one-third of the land. While the area has experienced rent increases, they have been less severe compared to other nearby catchment areas. For instance, residential rents in Chelsea Creek DPA increased by approximately 35 percent, notably lower than the 67-70 percent increases seen in other locations. This relative affordability may be partly attributed to the chronic environmental hazards borne by residents who live associated with the area.

### **Economic and Employment Profile**

The Chelsea Creek DPA catchment area includes approximately 17,000 jobs, with key industries being healthcare and social assistance (17%) and transportation and warehousing (14%). Since 2017, the overall job market has contracted by about 470 jobs. This DPA is the only DPA within Boston's Inner Harbor that experienced net job losses during this period. Job opportunities in the construction, manufacturing, retail, wholesale trade, and transportation and warehousing—all industries intended to thrive in DPAs—have declined so much that growth in the care economy and administration jobs have failed to offset this loss fully.

### **Environmental and Climate Risks**

The Chelsea Creek DPA presents a unique set of environmental concerns. The risk is particularly acute around Eastern Avenue and Mill Creek, where flooding could spread hazardous materials into communities.

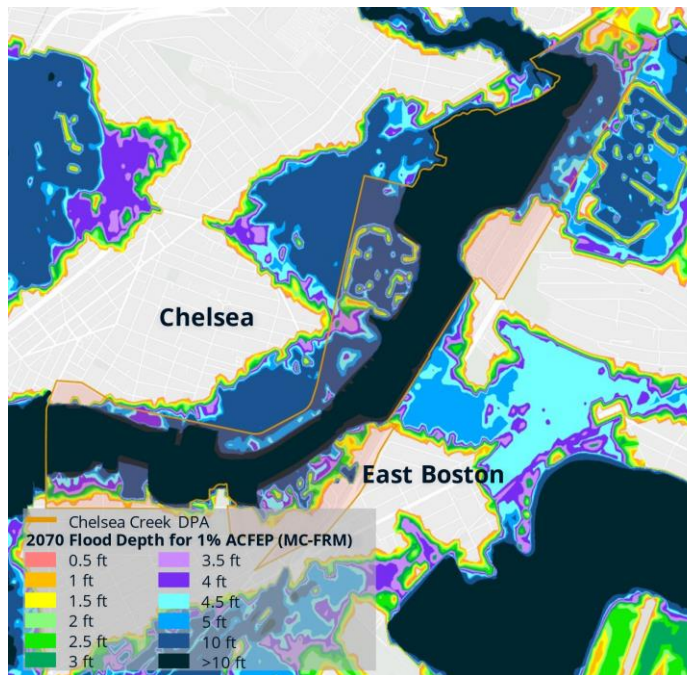
<sup>11</sup> Photo Credit: SCAPE Landscape Architecture

Beyond the immediate flood risks, these DPAs and their surrounding communities grapple with significant environmental justice issues. The city of Chelsea ranks in the 90th percentile statewide for exposure to respiratory hazards, traffic proximity, and hazardous waste proximity. Residents in these areas contend with intense truck traffic, poor air quality, exposure to unhealthy wastewater, and a lack of open space in part due to the presence of chemical storage facilities and the Critical Urban Freight Corridor along Eastern Avenue, which amplifies the potential for cascading environmental damage in the event of a flood.<sup>12</sup>

Coastal Resilience projects are underway to mitigate some impacts of climate change, including:

- The 2023 Eastern Avenue Climate Resilience Vision
- Mill Creek Flood Mitigation and Restoration
- Urban Heat Island Mitigation Projects

Figure 7: Map of Chelsea Creek DPA Flood Risk, 2070 Projections

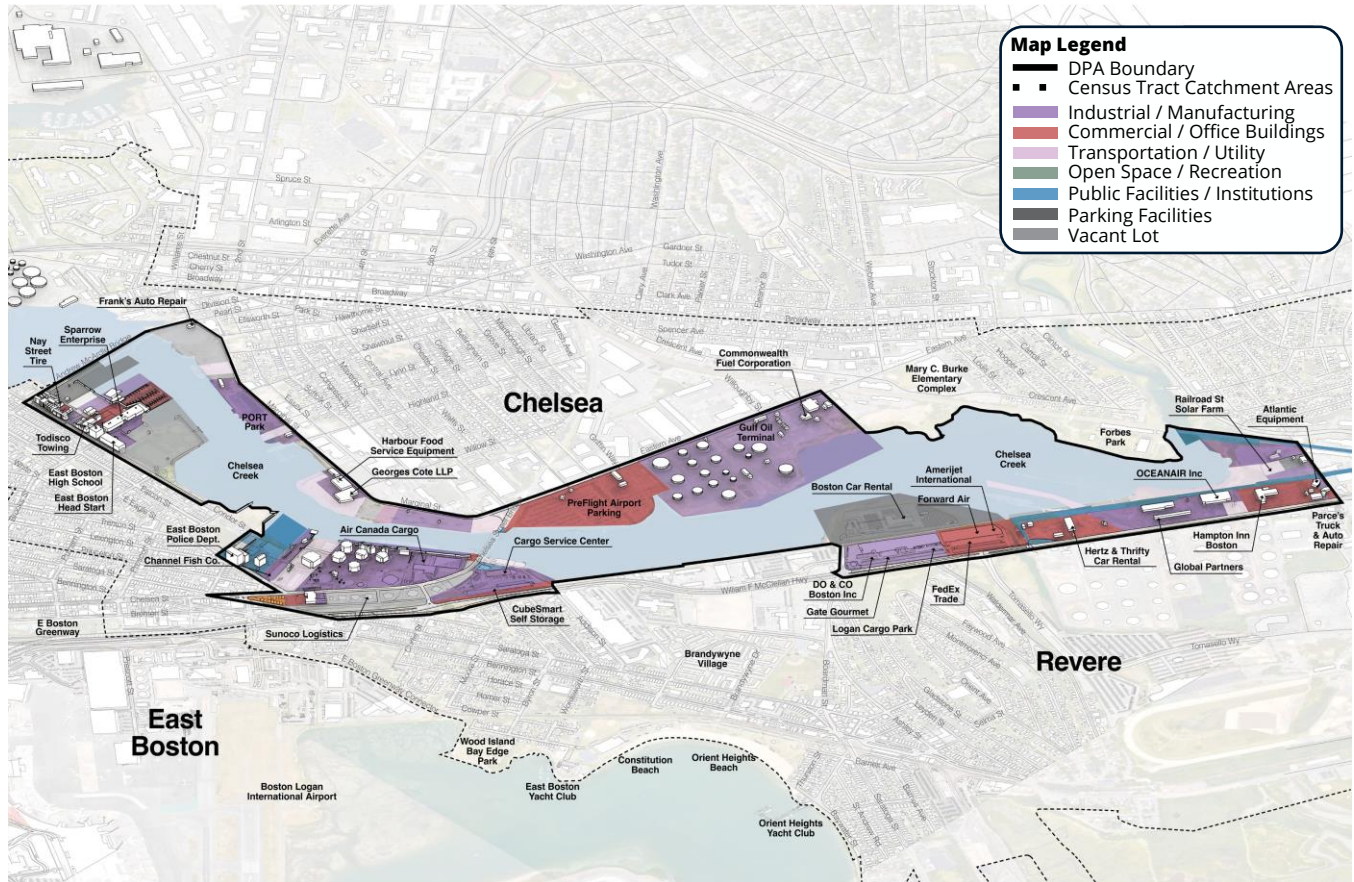


<sup>12</sup> A Critical Urban Freight Corridor (CUFC), as defined by the Federal Highway Administration, is a public road in an urbanized area that provides critical freight connectivity to the National Highway Freight Network. To qualify as a CUFC, a road must meet at least one of these criteria: (1) connect an intermodal facility to the Primary Highway Freight System, Interstate System, or another intermodal facility; (2) provide an alternative highway route within a corridor of the Primary Highway Freight System; (3) serve a major freight generator, logistics center, or manufacturing/warehouse industrial land; or (4) be important to freight movement within the region as determined by the Metropolitan Planning Organization or State. In urbanized areas with populations over 500,000, CUFCs are designated by the Metropolitan Planning Organization in consultation with the State. In smaller urbanized areas, they are designated by the State in consultation with the Metropolitan Planning Organization.

## Land Use and Real Estate Trends

The Chelsea Creek DPA catchment area is characterized by low industrial vacancy rates (4%) and significant interest in new warehouse and light manufacturing development. Despite a 3 percent loss in total inventory since 2019, the area shows signs of development interest. Several major developments are underway or proposed, including The Chelsea Point (146,000+ SF), 295 Eastern Ave (114,000 SF), and the Cargo Ventures East Boston Industrial Project (632,284 SF), which could substantially increase warehousing capacity and introduce public waterfront access. These uses represent a shift further toward warehouse and distribution logistics uses throughout this DPA.

Figure 8: Map of Chelsea Creek DPA Land Uses



## The East Boston DPA

Figure 9: Boston Harbor Shipyard & Marina<sup>13</sup>



The East Boston DPA, only 82 acres in size, is uniquely porous, with small plots scattered across disjointed waterfront blocks. Unlike other Inner Harbor DPAs, it features more publicly accessible uses, including the Liberty Plaza shopping center and the Boston Harbor Shipyard's recreational marina. The surrounding neighborhood of East Boston has experienced significant increases in median household income and rent prices over the past five years.

### **Economic and Employment Profile**

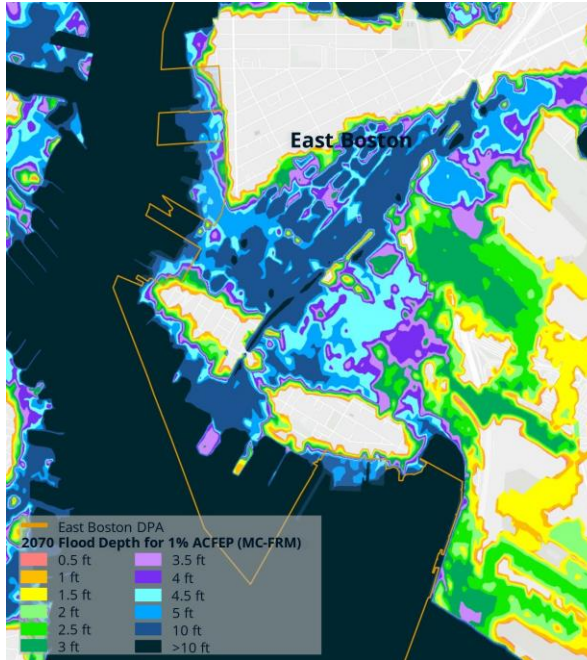
The East Boston DPA catchment area comprises about 15,000 jobs, with transportation and warehousing dominating the employment landscape (63 percent of jobs). Since 2017, the area has experienced a significant decline in retail trade jobs, and the job share has shifted towards transportation and warehousing. The immediate surrounding area has seen a notable rise in median household income and rent prices, doubling both metrics over the past five years.

<sup>13</sup> Photo Credit: Ocean Havens Properties

## Environmental and Climate Risks

The East Boston DPA is situated in what is considered the most flood-prone neighborhood in Boston. The southern parcels of this DPA, particularly along Marginal Street, face the highest risk of flooding. Multiple coastal resilience projects are in various stages of planning and development to address these challenges.<sup>14</sup>

Figure 10: Map of East Boston DPA Flood Risk, 2070 Projections



## Land Use and Real Estate Trends

The East Boston DPA catchment area presents unique challenges, with higher vacancy rates (8%) and limited interest in industrial development. It has the smallest industrial inventory of all DPAs (under 500,000 SF) and has experienced a 3 percent contraction since 2019. However, significant redevelopment is planned at the Boston Harbor Shipyard & Marina. The facility is planning a \$12 million investment to modernize aging infrastructure and expand ship hauling capacity for maintenance, storage, and repair, including<sup>15</sup>:

- Major infrastructure upgrades, including new boat lift and hauling piers, seawall improvements, and enhanced climate resilience measures.
- New 75-ton and 300-ton travel lifts to service larger vessels, particularly supporting expanded ferry and water transportation services.
- Four new buildings for vessel maintenance, repair shops, and maritime industrial tenant spaces.
- New marina with 150 additional boat slips, wave attenuation system, and dedicated water transportation dock.
- Improved public access through dedicated pedestrian and bike lanes, a new 650-foot Harborwalk connecting to Piers Park, and enhanced waterfront access.

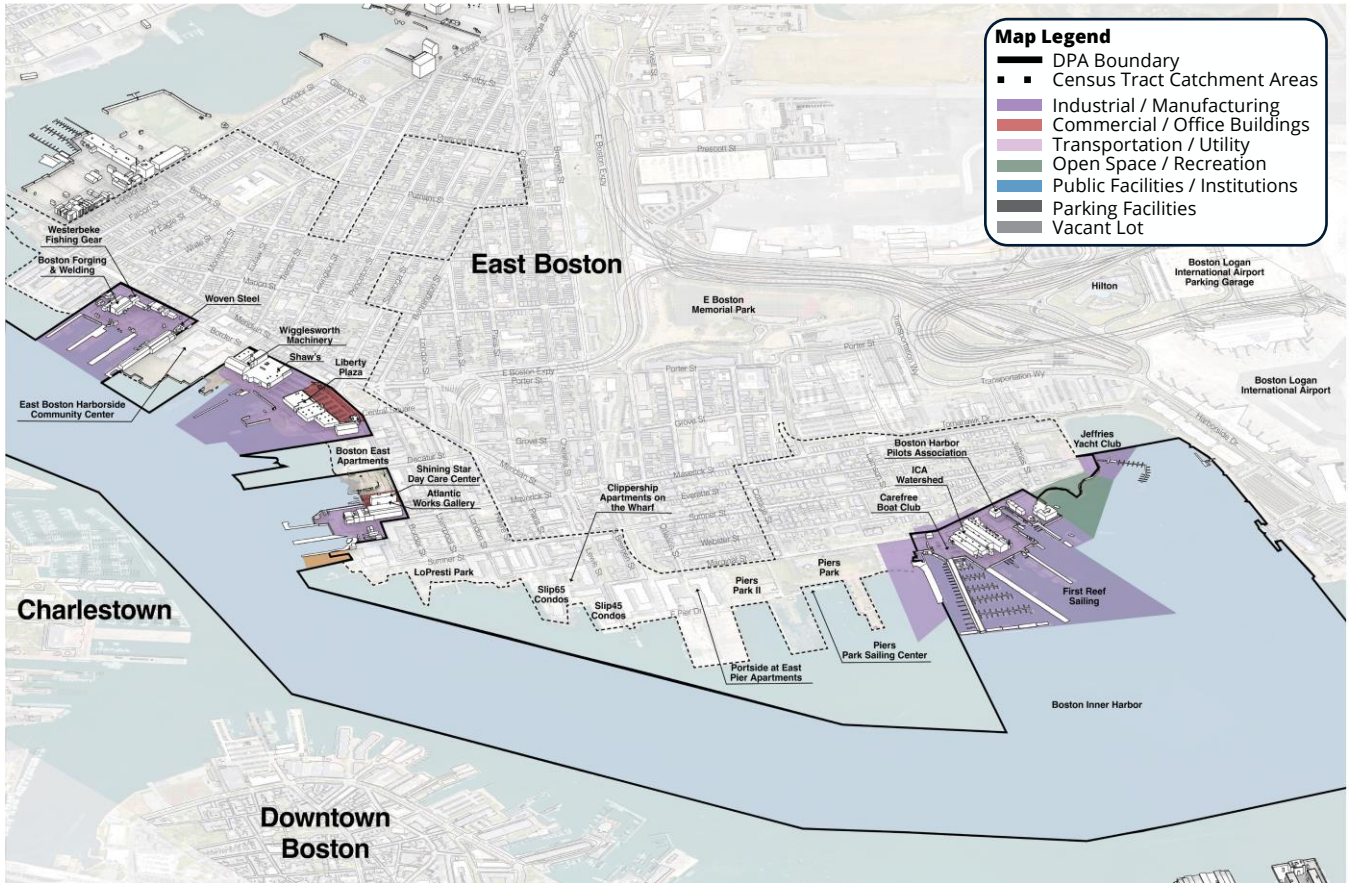
The project maintains water-dependent industrial uses as its primary function while enabling public realm transitions to adjacent community spaces.

<sup>14</sup> City of Boston, "Coastal Resilience Solutions for East Boston and Charlestown (Phase I)," Oct. 2017, <https://drive.google.com/file/d/1YfS1UwjghCLficfUOZcxhEnekmslijQ5/view>

<sup>15</sup> Boston Harbor Shipyard & Marina, "Investment Plan," Nov. 2024, <https://www.bhsmarina.com/investment-plan>



Figure 11: Map of East Boston DPA Land Uses



## The South Boston DPA

Figure 12: Conley Container Terminal



The South Boston DPA spans 444 acres and is Boston's largest continuous industrial area, containing the Port of Boston. The majority (63%) of the land is publicly owned. Key facilities like the Conley Container Terminal and the Boston Fish Pier drive employment in the DPA. The DPA has benefited from considerable investment in harbor dredging and port infrastructure modernization, signaling its vital economic importance regionally and internationally. Since 2020, the Conley terminal has seen significant trade volume growth through the terminal and an increase in Asian Pacific trade. Planned investment and upgrades to Conley Terminal demonstrate its importance to the continuity of the Port of Boston as an international port.<sup>16</sup> Residents of the adjacent neighborhoods are predominantly white and affluent; the surrounding area has a median income more than double that of other areas around DPAs.

### Economic and Employment Profile

The South Boston DPA catchment area encompasses approximately 42,000 jobs, primarily in professional, scientific, and technical services (40% of workers). In recent years, these sectors have seen significant job growth and a decline in government jobs. The industrial real estate market remains strong, with low vacancy rates (3%) and rising rents. Currently, there is 400,000 SF of industrial space under construction, including R&D facilities, indicating ongoing investment and development in the area. The area experiences high foot traffic, with almost 40,000 workers commuting into the area for employment.

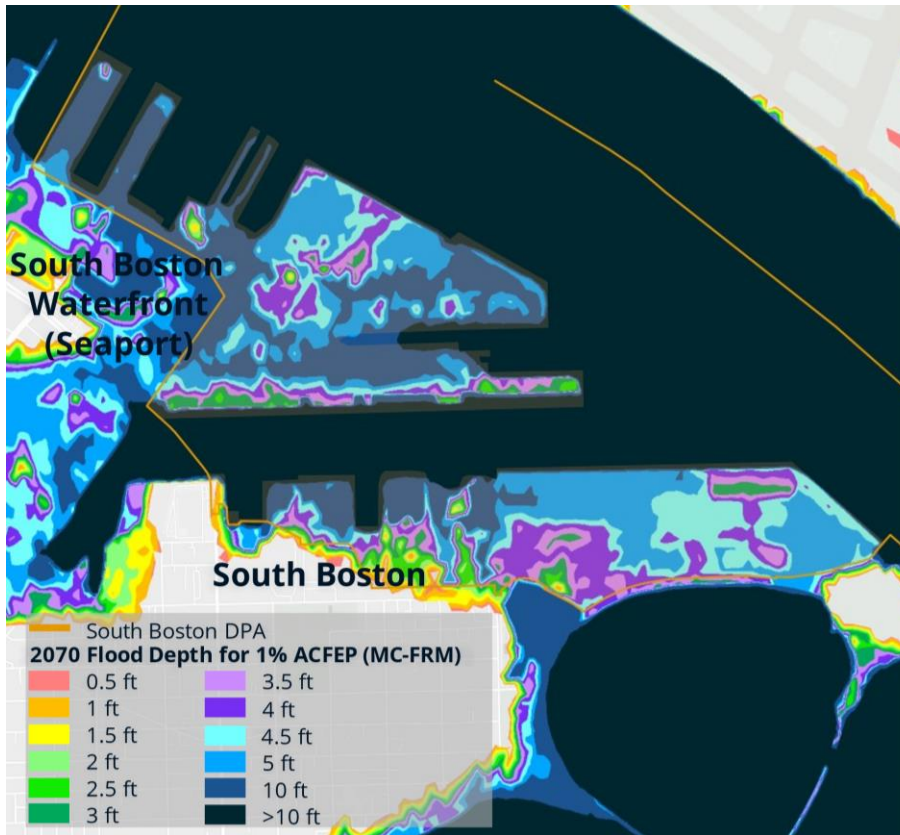
### Environmental and Climate Risks

The South Boston DPA is particularly vulnerable to climate change impacts. According to the 2016 Climate Ready Boston Report, this area, along with Downtown Boston, could account for up to 70 percent of the potential economic losses from flooding in the city.<sup>17</sup> Given its outsized economic importance, significant investments in flood protection infrastructure will be necessary to safeguard this critical economic asset.

<sup>16</sup> Boston Harbor Now, "Boston's Working Port: A Foundation for Innovation," January 2018, <https://www.bostonharbornow.org/wp-content/uploads/2017/12/FOR-RELEASE-Bostons-Working-Port-A-Foundation-for-Innovation-v1-24.pdf>

<sup>17</sup> City of Boston, "2016 Climate Ready Boston Report" December 2016, [https://www.boston.gov/sites/default/files/file/2023/03/2016\\_climate\\_ready\\_boston\\_report.pdf](https://www.boston.gov/sites/default/files/file/2023/03/2016_climate_ready_boston_report.pdf)

Figure 13: Map of South Boston DPA Flood Risk, 2070 Projections



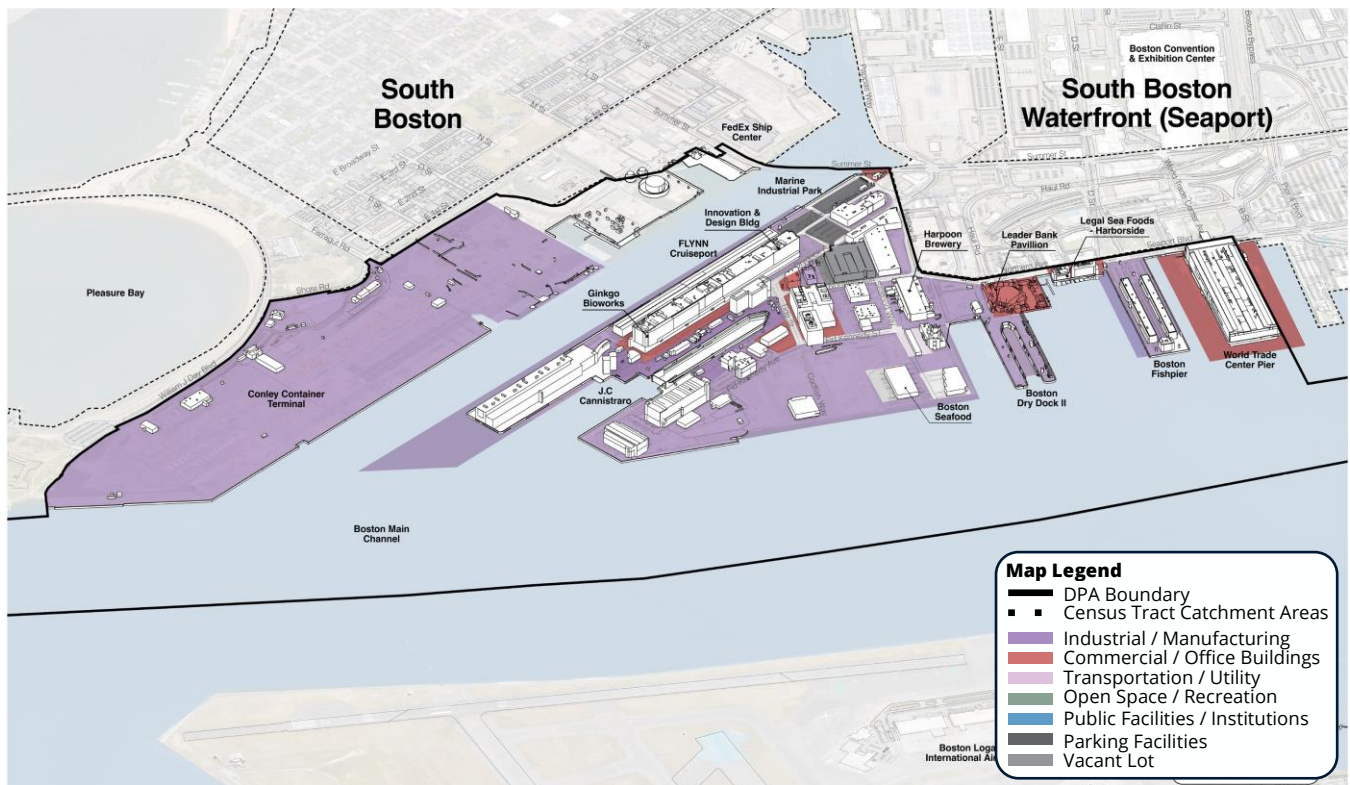
### Land Use and Real Estate Trends

The South Boston DPA catchment area outperforms the broader Greater Boston area in terms of rents and vacancy rates. The industrial landscape is diverse, dominated by logistics space (2.1 million SF), followed by specialized industrial space (1.4 million SF), and flex space (1.1 million SF). Industrial rents have increased by 34 percent since 2019.

Despite a slight contraction in total inventory, 600,000 SF of new industrial space is currently under construction, including high-tech and R&D facilities. Several development projects are underway within the DPA:

- Approximately 219,000 SF of life sciences/research and development building is under construction.
- Building 1 Construction is underway on a 400,000-square-foot innovation campus at 2 Harbor. This development includes green space along Haul Rd and a \$4.29/Building Area contribution toward the marine park mitigation fund.

Figure 14: Map of South Boston DPA Land Uses



## Conclusion

The increasing importance of warehousing and distribution uses, as well as professional and technical services businesses in and around DPAs, underscores the need for strategic planning and targeted interventions to ensure DPAs can not only adapt to support changing economic needs but also maintain their core function as vital and virtually irreplaceable maritime industrial areas.

Climate change poses significant challenges for DPAs and the rest of the Massachusetts coastline. Various initiatives are underway to improve resilience and address climate risks in and around Boston's Inner Harbor DPAs. These include the Moakley Park Vision Plan and the Raymond L. Flynn Marine Park Flood Resilience Mitigation Planning & Feasibility Study for the South Boston area, the Coastal Resilience Solutions project for East Boston and Charlestown, and the Eastern Avenue Climate Resilience Vision Plan in Chelsea. The Mystic River Watershed Association is also leading resilience efforts along the Mystic River. Vulnerability analysis and planning have revealed the sheer scale of investment required to adequately address these risks. Investment in physical resilience that does not compromise the water-dependency of maritime industrial uses in DPAs will require collaborative and innovative efforts involving multiple stakeholders, including businesses, government agencies, and community organizations, to ensure a resilient and equitable future for Boston's working waterfront.

## Challenges and Opportunities

This section contextualizes existing conditions analysis with takeaways from stakeholder engagement and case study analysis, forming the foundation for strategies to guide a resilient future for Boston's Inner Harbor DPAs.

We facilitated discussions with a broad spectrum of stakeholders, including maritime industry workers and business owners, port operators, private property owners and regional real estate developers, State and municipal government agencies, and residents living adjacent to DPAs. This process aimed to (i) validate or correct existing conditions data with local expertise and lived experiences, (ii) refine Boston Waterfront Partners' vision for supporting DPAs, and (iii) identify areas of consensus and disagreement among stakeholders.

### Stakeholder Engagement Takeaways

Key findings from our stakeholder engagement include:

- **Rising Demand for Maritime Industrial Uses:** Stakeholders across groups highlighted the increasing demand for berthing, maintenance, and fueling needs among commercial vessels of all sizes. Vessels in demand would include vessels supporting the maintenance and staffing of offshore wind infrastructure as well as freight vessels for bulk/aggregate goods.<sup>18</sup>
- **Potential for Other Economic Activities:** Other stakeholders highlighted the opportunity for economic growth in DPAs related to the generation, storage, and transmission of clean energy as well as blue economy technologies such as marine technology manufacturing and testing (e.g., marine robotics, autonomous underwater vehicles), and marine bioscience research and development facilities.
- **Infrastructure and Capacity Constraints:** Many stakeholders noted that Boston's Inner Harbor DPAs face significant physical limitations to accommodating greater maritime industrial activity, particularly for marine shipping-intensive activities like project cargo handling, ship berthing, and ship repair. These physical limitations include limited remaining usable land area and the fact that tunnels and bridges restrict deepwater shipping on larger vessels in the harbor.
- **Balancing Industrial and Community Needs:** Stakeholders recognized the conflicts between DPA operations and surrounding community needs, particularly regarding freight transportation infrastructure, environmental justice concerns, and limits to public waterfront access.
- **Regulatory Challenges and Permitting Difficulties:** Stakeholders, especially those associated with real estate development sectors, emphasized that complex and sometimes conflicting regulations stifle new development, even for uses that seem to align with DPA intentions.
- **Climate Adaptation and Resilience Needs:** All stakeholder groups acknowledged the urgent need for climate adaptation in DPAs but noted significant barriers, including high costs, lack of guidance, and limited funding options for private property owners.
- **Need for Coordinated Planning and Investment:** Across all groups, there was a call for better coordination between State and local agencies, comprehensive planning, and strategic public investments to unlock the full potential of DPAs while addressing community and environmental concerns.

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<sup>18</sup> It might be difficult for Boston to compete to host uses related to offshore wind (OSW) due to limitations on its economic competitiveness and physical barriers. Other maritime industrial areas in the state and region, including the Salem Offshore Wind Terminal and the Port of New Bedford, have already emerged as clear places for offshore wind-related investment. In addition, there is very limited remaining space in the South Boston DPA, and bridges and shallower depths further into Boston's Inner Harbor limit the feasibility of shipping very large wind turbine construction materials in and out of the Harbor. That said, Boston's Inner Harbor DPAs could still potentially host supportive activity, such as an increase in the capacity to service and repair a variety of different vessels that provide services for OSW turbines—e.g., such as small- to mid-sized crew transfer vessels. The Inner Harbor could also host sites that allow for the interconnection of offshore wind power into the State grid.

## Problem Statements

**Boston’s Inner Harbor DPAs were created to protect regional shipping and maritime industrial activities on the waterfront. However, they now face several challenges:**

- 1. DPAs and the land surrounding them are subject to intense real estate market pressure** from housing and other land uses. This pressure has fueled advocacy to reduce the geographic scope of DPAs and the enforcement of land use regulations in DPAs to meet competing local interests—at the cost of local, State, and regional economic priorities.
- 2. The removal of water-dependent industrial land from DPAs threatens their integrity.** Land uses that are not related to water-dependent maritime industrial activity are common in DPAs, due to temporary use permits. In addition, legislative attempts to remove land from the DPA further threaten the legal idea that DPAs can durably protect urban working ports.
- 3. Persistent and unmitigated climate risks require urgent action and significant levels of public investment.** Predominantly located on filled coastal marshes, Boston Harbor's DPAs are highly flood-prone. Addressing these challenges requires substantial public investment to manage coastal flooding in and inland of DPAs and to ensure that extreme coastal storms do not lead to toxic spills, as has happened elsewhere, such as in New York City, New Orleans, and Houston.
- 4. Legacy environmental justice issues surrounding DPAs remain largely unaddressed.** Three Inner Harbor DPAs abut environmental justice neighborhoods whose populations are either low-income, more likely to be racial minorities, or less likely to speak English very well.<sup>19</sup> Some of these neighborhoods also experience disproportionate exposure to air pollution and extreme heat and lack direct waterfront access.<sup>20</sup> These challenges are not the responsibility of individual businesses to solve; instead, chronic exposures to contaminants, vehicle emissions, and lack of water access for inland communities require coordinated action from public and private stakeholders to mitigate. Addressing these long-standing challenges will require targeted investments and policy interventions to improve environmental quality and increase equitable access to waterfront resources.
- 5. There is no forward-looking business strategy and investment plan for Inner Harbor DPAs.** Although the publicly owned South Boston DPA has benefited from substantial planning and public investment, the privately-owned DPAs lack comparable levels of planning and investment. This has limited their ability to meet demand from core water-dependent industrial uses and leverage opportunities in emerging marine technology sectors.
- 6. There is a lack of consensus between the government and the private sector about what to do in DPAs,** and no forum exists to have these conversations across public and private sectors, hindering collaborative problem-solving and long-term strategic planning.

**The optimal policy approach is to change how we plan for our working ports and make bold new investments to meet current and future maritime industrial needs while addressing critical environmental justice concerns in surrounding communities.**

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<sup>19</sup> The State of Massachusetts EEA defines “environmental justice populations” on its website—<https://www.mass.gov/info-details/environmental-justice-populations-in-massachusetts>—and maps them using 2020 census data: <https://www.mass.gov/info-details/massgis-data-2020-environmental-justice-populations>.

<sup>20</sup> The U.S. Environmental Protection Agency (EPA) EJScreen tool maps concentrations of environmental burden, socioeconomic vulnerability, and environmental justice indices (which integrate environmental burden and socioeconomic vulnerability). <https://ejscreen.epa.gov/mapper/>.

## Case Study Analysis

Although no community regulates its working ports using Massachusetts's unique, State-level regulatory system, peer urban ports could offer ideas and models to inform what is possible in Boston's Inner Harbor DPAs.

Therefore, we conducted in-depth case study analyses of innovative approaches in other port cities with either high-performing urban working ports or urban working ports facing challenges, including:

- Sunset Park Industrial Business Zone, Brooklyn, NY.
- Port of Seattle and Seattle industrial waterfronts, WA.
- Port of Tacoma and Tacoma industrial waterfronts, WA.
- Port of San Francisco, CA.

We also scanned operations and innovations in larger U.S. and international ports, including: Grand Traverse Bay; MI, Port of Barcelona; Port of Charleston (specifically Union Pier); Port of Lisbon, Portugal; Port of Long Beach, CA; Port of Oakland (including Oakland Seaport), CA; Port of Rotterdam, Netherlands; Port of San Diego, CA; Port of Toronto, Canada; Hampton Roads, VA; Quebec and the Blue Zone, Canada (including The Marine Innovation District and Port Quebec).

We also reviewed maritime industrial workforce development concepts across the Maine Maritime Academy, ME; the New York Harbor School, NY; the Sound School, CT; and Traverse City, MI.

New York City, Seattle, Tacoma, and San Francisco have implemented a range of strategies, from coalition-building and comprehensive land use planning to strategic public investments and workforce development initiatives. The key takeaways from these case studies have shaped our understanding of effective practices in urban port management and have influenced the strategies presented in this report.

- **Coalition Building for Preservation and Enhancement:** Successful preservation and enhancement of maritime industrial land requires broad coalitions spanning government, industry, and community sectors. These coalitions are essential in building a shared understanding of the working waterfront's economic value, even in the face of competing local urban needs. For instance, New York City's M-Zone coalition and environmental justice groups effectively advocated for preserving industrial uses, in part by emphasizing the importance of local high-quality jobs for surrounding urban residents. On the other hand, Seattle and Tacoma used a top-down approach to create working groups, which straddled public and private sectors, tasked with agreeing on sweeping changes to industrial land use policy.

In the context of Boston's Inner Harbor, there is significant disagreement about what is needed to protect and enhance Boston's working port, and there is no clear forum for having this conversation across different public and private sector groups. Even if consensus is not possible, the creation of a forum to facilitate discussion and agreement is a necessary first step in further planning.

- **Comprehensive Land Use Planning:** Other urbanized ports have effectively used comprehensive land use plans or amendments to update and protect industrial land use regulations citywide. Examples include New York City's "City of Yes" zoning text amendments, Tacoma's Tideflats Subarea Plan, and Seattle's Industrial and Maritime Strategy Council. These approaches have proven more effective than piecemeal adjustments.

Inner Harbor DPAs are regulated by the State and straddle four different municipalities—none of which have significant influence over DPA uses. Therefore, comprehensive municipal land use planning will not help Inner Harbor DPAs. That said, a collaboration between State agencies (e.g., MassCZM, MassDEP, Massport) and local municipal agencies with interests in the working ports could potentially respond to shared needs, complete updated economic planning, and lead major infrastructure investments.

- **Strategic Public Investments:** Bold investments in publicly owned land within industrial ports can catalyze significant turnarounds. New York City's "Harbor of the Future" includes investments in maritime industrial development, innovation centers focused on sciences and technology uses, and a green climate innovation hub.<sup>21</sup> The South Boston DPA also demonstrates the catalytic value of public investment in the Inner Harbor. Federal and State money for dredging and port modernization enabled a significant expansion of shipping activity in the DPA. A similar level of investment is needed to fortify the resilience of all four DPAs and unlock additional economic activity in the DPAs further into the Harbor.
- **Innovative Land Use Regulations:** Zoning and land use regulations that create transitional zones that allow gradual mixing of light industry with non-industrial uses or that create buffers between core industrial uses and residential uses, have been tried in peer contexts. Seattle and Tacoma's new industrial zoning categories create transitional space between heavy industrial uses and housing and limit the encroachment of housing development in certain industrial areas. New York City's "City of Yes for Economic Opportunity" citywide zoning text amendments created new tiers of graduating, higher-density industrial zoning areas in order to cultivate more job-dense centers of manufacturing activity in areas best-equipped for that activity.
- **Environmental Remediation and Climate Adaptation:** The scale of investment needed for environmental cleanup and climate resilience in urban ports often exceeds local capacity and requires bold levels of government investment, including federal investment. Projects planned or underway in New York City, Tacoma, and San Francisco emphasize the critical role of State and federal funding in addressing these challenges, which far exceed what the private sector can afford on its own.
- **Workforce Development Partnerships:** Collaboration between economic development institutions and educational entities is crucial for developing the next generation of maritime industrial workers. Programs in Seattle, Tacoma, and New York City showcase how targeted initiatives can create equitable pathways to blue and green jobs, particularly for local communities that face economic disadvantages and are more racially and ethnically diverse.

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<sup>21</sup> New York City Economic Development Corporation, "The Harbor Climate Collaborative Hosts NYC Climate Technology Showcase," Nov 2024, <https://edc.nyc/pres-release/harbor-climate-collaborative-hosts-nyc-climate-technology-showcase#:~:text=The%20Mayor%20Adams%20Administration's%20Harbor.North%20Shore%20of%20Staten%20Island>.



# **STRATEGIES & IMPLEMENTATION**

# Strategies

The following policy and investment strategies address the challenges facing Boston's Inner Harbor DPAs and aim to realize a vision of functional, sustainable, and secure DPAs for the future. The strategies are organized into three categories: Planning & Governance, Land Use and Regulatory Planning, and Climate Adaptation and Sustainability. Each strategy includes a problem statement or context, implementation details or alternatives, and relevant case study examples. While some strategies can be implemented independently, they are intended to be part of a multi-faceted, comprehensive approach to DPA revitalization and management.

## Planning & Governance

### #1. Direct economic development planning and investment in DPAs by expanding and empowering the Seaport Economic Council to steward better-resourced, climate-resilient seaport development.

#### ***Problem Statement/Context:***

In Boston's Inner Harbor, there is currently no shared forum for long-term, collaborative conversation and decision-making about the future of Inner Harbor DPAs. Despite mounting political pressure for some kind of action, these DPAs are not being invested in, in part, because there is persistent disagreement among public and private-sector stakeholders about what should be done in DPAs.

Economic development in DPAs needs a cohesive and well-resourced strategy that consults with different economic and political interests but is ultimately guided by centralized leadership. The success of the significant public investments made in the South Boston DPA shows what is possible given public-sector leadership that works with the private sector and catalyzes private investment.

The State's Executive Office of Economic Development can invest in the existing Seaport Economic Council in a way that brings to bear significantly greater financial resources and convenes broader stakeholders at the municipal and State levels to consult on the future of DPAs. The Seaport Economic Council was reauthorized in the 2024 Mass Leads Act in the amount of \$100 million over the next five years, which will serve as grant money to support climate-resilient fishing and maritime economic activity in coastal communities.<sup>22</sup>

#### ***Implementation Details or Alternatives:***

- Fund more permanent staff that support core Council responsibilities, such as economic monitoring and research, economic development strategy, engagement of maritime businesses, designation of capital funds, commentary on broader related State economic development programs and investments, and recommendation of particularly large projects to State financing. Permanent staff, with the guidance of appointed or elected Council leadership, can also engage in expanded Council responsibilities: namely ongoing, robust consultative engagement with fishing and maritime businesses, municipal government representatives, trade industry representatives, communities adjacent to DPAs, and other stakeholders across State DPAs and other seaports.
- Expand the stakeholders the Council routinely consults as it completes its economic research, planning, and project grant applicant review processes. By leveraging the structure of the "port professionals" body or creating other consultative groups, the Council should expand engagement to:

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<sup>22</sup> Governor Maura Healey and Lt. Governor Kim Driscoll, Executive Office of Economic Development. "Governor Healey Signs Economic Development Bill to Strengthen Massachusetts' Global Leadership in Climatetech, Life Sciences and AI." (Nov 2024). <https://www.mass.gov/news/governor-healey-signs-economic-development-bill-to-strengthen-massachusetts-global-leadership-in-climatetech-life-sciences-and-ai>.

- *Engage maritime industrial business owners.* The Maritime Alliance in Defense of Designated Port Areas (MADDPA) arose partly out of a sense that maritime business owners lacked a dedicated forum to advocate for their needs and interests. (MADDPA serves as a collective voice for maritime industrial business owners to advocate for their needs and interests, particularly business development, capital infrastructure planning, and climate change adaptation.)

The Council can recreate this forum by (i) expanding the role of the “port professionals” committee to serve as an advisory board over major planning and analysis projects (including those described below), (ii) increasing the number of appointed Council seats reserved for maritime trade association representatives or considering making the trade association seats elected rather than appointed—so that the seats are less likely to remain vacant, and so that industry is more directly engaged in leadership decisions every three years.<sup>23</sup>

- *Engage communities that live around DPAs.* Explore ways to engage communities that are adjacent to DPAs by consulting with community and economic development organizations and environmental justice organizations. The purpose of this engagement will be to inform DPA economic development and workforce development decisions so that they create opportunities for neighboring residents. Appointed Council representatives from coastal communities—which tend to be mayors or other planning officials—can help identify the relevant organizations and community representatives in their coastal communities.
- Define clear onetime and annual recurring goals for the Council, publish these online, and convene the Council more frequently—at least quarterly—to drive a robust push in seaport investment. Records of council meetings should be published online within a reasonable amount of time after each convening.
- Ask the Council to advise on and contribute to an updated maritime industrial development strategy for the Inner Harbor DPAs and a related, inclusive maritime workforce development strategy (see strategies #3 and #4 below). The strategies should build off an updated, shared understanding of conditions within and around DPAs. This understanding should draw from:
  - The Council’s own expertise;
  - MassCZM’s evaluation of DPAs, which considers DPAs statewide,<sup>24</sup> and this report, which is focused on Boston’s Inner Harbor;
  - Significant engagement with municipal leaders, maritime industrial businesses, non-profit industrial advocacy organizations, environmental advocacy organizations, and other workforce and economic development organizations led by Council permanent staff.

Based on the above resources, the Council should define a set of principles that inform the economic development and workforce development strategies for DPAs. The principles should differentiate the Inner Harbor DPAs from the other DPAs across the State, recognizing that each DPA has different comparative advantages and strengths, limitations, and risks.

- Recommend particularly ambitious or high-cost coastal infrastructure projects to MassWorks. MassWorks, which was reauthorized by the Mass Leads Act in the amount of \$400 million over the next five years,<sup>25</sup> has the ability to issue bonds for much larger infrastructure investments that exceed the level of grant investment that the Seaport Economic Council has been able to steer into seaports since the

<sup>23</sup> As of time of publication, only two of the three possible trade association seats on the Council are occupied.

<sup>24</sup> The MassCZM statewide evaluation of DPAs is ongoing, as of time of publication of this report.

<sup>25</sup> Governor Maura Healey and Lt. Governor Kim Driscoll, Executive Office of Economic Development. (Nov 2024.)

Council's reestablishment in 2015. Formalize a channel between the Council and MassWorks to elevate particularly large or ambitious projects that require State financing capacity.

For the largest investments that require federal funding, Council leaders and staff should advise MassCZM and other state agencies that are able to serve as conduits for federal investment related to port infrastructure and commercial development.

### **Case Study Examples or Influences:**

- **Seattle Industrial and Maritime Strategy Council:** In 2019, the City of Seattle convened a council to propose a new industrial and maritime zoning amendment to the City's comprehensive plan. The council—made up of maritime industrial business leaders, labor, residents, and City Council members— included a citywide committee and four regional committees representing Seattle's primary industrial maritime areas: Georgetown/South Park, SoDo, Interbay, and Ballard. After over a year of collaborative planning, the council developed 11 strategies that evolved into five new planning ordinances to insulate heavy industrial uses and create more effective transitions between industrial and commercial uses.
- **Tacoma Tidelands multi-agency planning process:** To complete the Tacoma Tidelands Subarea Plan, which covered the area home to the Port of Tacoma, the City undertook a multi-year planning process headed by leaders from Washington State, Pierce County, the City of Tacoma, the Port of Tacoma, and the Puyallup Tribe of Indians. The process resulted in a set of compromises aimed at protecting industrial uses while creating a buffer to mitigate interaction between industrial and residential uses.

## **#2. Invest in the first maritime economic development plan for the harbor in nearly three decades and maintain shared, detailed data on DPA economic and land use conditions thereafter.**

### **Problem Statement/Context:**

Although DPAs outside of the South Boston DPA are clearly in need of investment to strengthen their economic vitality, any investment needs to smartly target precise industry sectors that are expected to durably grow and produce jobs, expanded local purchasing, and tax revenue for local communities.

The small size of DPAs makes it difficult to use common public or proprietary data sources (e.g., ACS and Lightcast) to determine economic trends, strengths, and forecasts. This lack of refined data on the health, activity, and economic impact of the maritime industrial sector within DPAs has hindered the ability of policymakers, stakeholders, and the public to fully appreciate the economic significance of these areas and plan for their future. Stakeholders currently hold different views about which maritime industrial activities are poised for growth and how DPAs should be positioned to capitalize on these opportunities. A rigorous economic forecast and planning process would provide credible data to fill this vacuum, create shared understanding, and enable goal setting—for jobs, business development, and tax base expansion—based on market and economic realities.

In 1996, the Boston Planning & Development Agency worked alongside Massport to produce an economic development plan for the waterfront underpinned by a citywide industrial survey.<sup>26</sup> This study, an important example of municipal and State collaboration, laid the pathway for robust investments to support the seafood industry and expand port infrastructure in the South Boston DPA. It has nearly been three decades since the Boston Metro Area contemplated maritime industrial development needs comprehensively; such planning is needed to identify a new generation of economic and infrastructure investments in Boston's ports.

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<sup>26</sup> Boston Public Library, 1996-1997, [guides.bpl.org/maritimeindustry](https://guides.bpl.org/maritimeindustry)

### **Implementation Details or Alternatives:**

The new Harbor economic plan should focus on rigorous industrial growth projections—which consider local, regional, East Coast-wide, and international maritime industrial demand trends—to inform future investment decisions and policy priorities. Today, hypothetically, such a study might answer the following questions, among others, to develop a no-regrets investment plan for Inner Harbor DPAs:

- **Ship berthing, haul out, and repair capacity.** Demand for ship berthing, haul out, and repair capacity is expected to accelerate due to the indirect impacts of investment in offshore wind (e.g., small- to mid-sized crew transfer vessels). How much additional capacity will be needed for ship berthing and maintenance? How might growing capacity for vessel maintenance in other coastal regions compete with capacity in the Harbor, and how quickly should investments in the Harbor occur? Given bridges and geographic constraints further into the Harbor, how much of a role can Mystic River and Chelsea Creek DPAs play in accommodating this need? What is the financial and economic value of expanding this industry with respect to jobs and earnings, tax revenue, and other economic impacts?
- **Temporary storage and staging for project cargo.** What volume of short-term construction project materials and bulk aggregate for projects in the Boston Metro Area are delivered elsewhere (e.g., New York, Rhode Island) and trucked into the Metro Area over land? How much storage and staging capacity could the Harbor absorb, and at what cost (financial and opportunity costs)? What is the financial and economic value of expanding this industry with respect to jobs and earnings and tax revenue?
- **Marine technology and science.** Within DPAs, how much direct access to water (e.g., for testing) is required by growing marine technology manufacturing (e.g., marine robotics, autonomous underwater vehicles) and marine bioscience research and development?
- **Other industrial projections and benefit analysis.** What other State-defined WDIUs (e.g., clean energy generation and supportive activities, aquaculture, etc.) are expected to robustly expand in the future? Which of these activities would be supported by neighboring communities? What are the predevelopment and permitting requirements specifically entailed by major clean energy uses, and what is the business case for those investments today? What is the financial and economic value of expanding these industries with respect to jobs and earnings, tax revenue, and other economic impacts?

After creating a detailed investment plan based on economic projections, the region should commit to periodically updating (e.g., every 2-3 years) the public database of economic projections to fine-tune investments at the level of specific water-dependent industrial sectors.

### **Case Study Examples or Influences:**

- **NYC Citywide Industrial Plan, NYCDP (planned 2025):** In 2023, the New York City Council enacted a Local Law to require the Department of City Planning and Small Business Services, in partnership with the New York City Economic Development Corporation, to establish a comprehensive industrial development plan based on results of an analysis of economic trends in the industrial sector. The plan is required to identify the ways in which growth in the industrial sector can achieve important policy objectives—such as furthering transitions to green energy and broader workforce development goals. Under the current legislation, the plan is required to be updated every eight years, including the analysis of economic trends that inform the plan's recommendations.<sup>27</sup>

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<sup>27</sup> New York City Council, Industrial Development Strategic Plan, 2023, <https://legistar.council.nyc.gov/LegislationDetail.aspx?ID=6187616&GUID=ACE46C1E-6820-4935-976C-652F3534C483>

### #3. Build workforce development pipelines that connect local talent, including talent in economically vulnerable communities, to high-road jobs in growing maritime industries.

#### **Problem Statement/Context:**

Without a concerted effort to build a diverse and well-prepared pipeline of local talent for the maritime industrial sector, DPAs risk missing out on talent, and local communities—including those adjacent to DPAs—miss out on opportunities to develop valuable skills and increase their income.

Communities such as Chelsea, MA, have endured decades of disproportionate environmental burdens from industrial operations, including poor air quality from heavy truck traffic along major freight corridors and port activities, as well as proximity to hazardous materials. Although maritime and freight operations support valuable, high-road jobs for many Massachusetts residents, people living and working near the DPAs are dealing with these environmental costs without necessarily having direct access to the economic benefits of DPAs.

This disconnect between environmental costs and economic benefits is exacerbated by limited awareness of and access to maritime industry career opportunities. High-paying jobs with quality benefits exist within the maritime sector, yet residents of neighboring communities often lack pathways to these positions. In addition, maritime industrial jobs, and the schools that train maritime industrial workers, have historically lacked racial and gender diversity compared to those of other sectors.<sup>28,29</sup> This lack of representation can itself be a barrier to attracting a more diverse workforce and making communities feel economically connected to the DPAs they live adjacent to.

Residents who are currently opposed to or indifferent to DPAs that they live near might be more supportive of them if they had jobs or knew people who had jobs in DPAs. Building awareness about high-road jobs in maritime industries (that are projected to grow) and creating a pipeline that connects diverse residents to these jobs would not only generate qualified talent for regional working ports but also potentially create new political alignment in support of DPAs.

#### **Implementation Details or Alternatives:**

Economic development institutions and educational institutions can collaborate to advance workforce development in growing maritime industries. As an extension to the economic projections project (described above), a "DPA workforce needs assessment" would aim to:

- Identify current and future skills gaps, training needs, and equitable career pathways in maritime industrial sectors expected to grow.
- Acknowledge and understand the barriers keeping women and people of color from accessing and advancing in maritime industrial jobs.
- Engage local residents to understand their experience with and interest in maritime industrial careers.
- Document community perspectives on barriers to accessing maritime jobs, including transportation, training, and workplace culture.
- Strategize ways to overcome these barriers and promote diversity and inclusion in the sector.
- Inform workforce development investments and partnerships by local schools, non-profits, government institutions, and business actors.

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<sup>28</sup> Heseltine, Heidi. "Diversity, equity, and inclusion are gaining momentum in the maritime industry," Global Maritime Forum, 2022, <https://globalmaritimeforum.org/insight/diversity-equity-and-inclusion-are-gaining-momentum-in-the-maritime-industry/>.

<sup>29</sup> Ewing, Tom. "Maritime Academies Work Toward Inclusion," 2021, <https://www.marinelink.com/news/maritime-academies-work-toward-inclusion-491501>

The assessment should heed the similarities and differences between jobs in the following categories:

- Traditional water-dependent maritime jobs,
- Emerging marine technology manufacturing and marine bioscience research and development facilities,
- Professional and technical services,
- Resilience jobs (e.g., jobs related to constructing and maintaining hazard mitigation infrastructure).

The assessment would identify roles and investments needed among local educational institutions, labor organizations, and employers to enable collaborative training, certification, and job placement services for local residents. Implementation should consider:

- **Interventions for environmentally and economically vulnerable communities:** To ensure inclusive workforce development, education pathways, and job placement efforts at all levels should include a focus on recruitment in low-income communities that are adjacent to DPAs, such as neighborhoods in Chelsea and Everett (see case study below on the Maritime Blue Youth Maritime Collaborative in Washington).
- **High school-level interventions:** As exemplified by the Harbor School (NY) and The Sound School (CT) (see case studies below), high school-level initiatives can build early awareness about jobs and opportunities in maritime fields. As in New York and Connecticut, programs at this level should be free to students, ultimately funded by the State, and operate functionally as career technical education (CTE) schools teaching the State-mandated core academic curriculum alongside maritime programming.
- **College & workforce level interventions:** Similar to the efforts at the Northwestern Michigan College in Traverse City, Michigan (see case study below), connections with regional maritime academies such as Massachusetts Maritime Academy (MMA), and nationwide maritime employers should be leveraged to create pathways from higher education or training programs to job placement.
- **Partnerships with philanthropy:** While core academic curriculum should be publicly funded, funding for supplemental maritime training might need to rely—initially—on philanthropic and industry support to build out hands-on curricula that focus on the sectors of the blue economy expected to grow, such as offshore wind. Once it is proven, the State can step in to fund the programming permanently.
- **Improving Accessibility to Maritime Jobs:** Emphasize the need for improved public transit to address labor shortages in the maritime industry. This should include:
  - Assessing current public transportation routes and their accessibility to DPA locations
  - Collaborating with local transit authorities to enhance service to DPAs, potentially including new bus routes or increased frequency of existing services
  - Exploring innovative transportation solutions such as shuttles or ride-sharing programs specifically designed for maritime workers
  - Considering transit accessibility in future DPA planning and development decisions

#### ***Case Study Examples or Influences:***

- **Massachusetts Marine Trades Association (MMTA) Workforce Development Program:** The MMTA leads a comprehensive, State-funded workforce development initiative to address the recreational boating industry's labor shortages. To create maritime career pathways, the program partners with multiple educational institutions, including Salem High School, New Bedford Tech, Cape Cod Regional Tech, and Bunker Hill Community College. Through its "Tools of the Trade" program, MMTA provides \$300 Snap-On Tools gift cards to help workers build their toolboxes while also offering financial assistance for

employee training. These programs build a sustainable talent pipeline for an industry that generates approximately \$5 billion in economic impact and employs 20,000 workers in Massachusetts.

- **Maritime Blue, Youth Maritime Collaborative:** Once completed in Seattle, the Maritime Innovation Center (MIC) will become the home for Maritime Blue, a group representing representatives from across the maritime industrial sector, including major employers, potential workers, workforce development professionals, and policymakers. The Maritime Blue collective has developed a statewide strategy to help the State transition to a sustainable maritime economy by 2050, with an emphasis on creating workforce development pipelines through their Youth Maritime Collaborative, which will focus on supporting underrepresented communities through training opportunities and high school internships.
- **Port of Tacoma Port Maritime Center “Maritime 253” career and education program:** The Port of Tacoma will play an important role in training youth with its Port Maritime Center and a partnership with Tacoma Public Schools. The program, called “Maritime | 253,” will offer career and education focused on technical trades, transportation and logistics, and sustainability. Construction for the center, which is located on Port property, is set to begin in May 2025.
- **New York Harbor School, NY:** The Harbor School, a public high school on Governors Island, integrates standard Regents-based courses with maritime-related study and provides environmental restoration programs and partnerships with local organizations to prepare its diverse student body for college and careers in maritime fields. Over 70 percent of students identify as students of color, and over 60 percent come from economically disadvantaged backgrounds.
- **Sound School, CT:** The Sound School, a public high school in New Haven, Connecticut, combines State-mandated academics with specialized aquaculture programs, providing hands-on research opportunities and partnerships with industry leaders to prepare the student body for college and careers in the maritime industry. In addition to traditional academic skills, students develop job readiness skills and familiarity with the equipment of the maritime industry, as well as marine and terrestrial ecosystems. As a public school, tuition and transportation costs are covered through public resources, and 52 percent of the student body comes from an economically disadvantaged background.
- **Traverse City, MI:** Northwestern Michigan College (NMC), located on the shores of Lake Michigan in Traverse City, offers specialized programs through its Great Lakes Water Studies Institute and Great Lakes Maritime Academy, providing hands-on freshwater and marine research experience for its students. The college is working collaboratively with local partners to advance the region's status as a global leader in blue tech innovation through the creation of a new Freshwater Research & Innovation Center that will serve as an incubator and accelerator for freshwater and marine technologies. NMC has an open admission policy and offers financial aid, scholarships, loans, grants, and work-study programs to most students, making tuition comparatively affordable, especially for low-income students, who pay about \$4,000 annually to attend.



## Land Use and Regulatory Planning

### #1. Encourage clean fuel and electrification infrastructure in DPAs to help maritime industrial businesses and their supply chains transition to clean and renewable power sources.

#### ***Problem Statement/Context:***

Maritime industrial businesses are seeking to reduce their environmental impact and meet climate goals through electrification and clean fuel adoption. Current DPA regulations explicitly support certain clean energy infrastructure—including hydroelectric power generation, offshore renewable energy facilities, and transmission infrastructure from offshore facilities. Building on this foundation, DPAs are ideally positioned to host an expanded array of clean energy infrastructure that could accelerate maritime industrial energy efficiency, clean energy, and decarbonization—including vessels and inland freight.

While industrial business owners can currently implement small-scale clean energy solutions on their properties, achieving meaningful decarbonization will require larger shared infrastructure investments. Dedicated parcels for clean fuel storage, electrification systems, and charging networks could transform DPAs into hubs of maritime clean energy innovation. However, stakeholders reported that uncertainty around permitting these broader clean energy uses, combined with complex Chapter 91 requirements, has discouraged investment in critical infrastructure that could advance both maritime industrial operations and climate goals. The State has an opportunity to catalyze clean energy deployment in DPAs by clarifying the allowability of and actively encouraging the development of these vital facilities, particularly in areas that are well-suited for energy infrastructure but less essential for direct maritime industrial operations.

#### ***Implementation Details or Alternatives:***

The State should take proactive steps to encourage the following clean energy infrastructure investments in DPAs:

- Clean fuel storage for vessels that have transitioned to clean fuel alternatives.
- Vessel electrification infrastructure—including distribution, energy storage, and transmission infrastructure—needed to meet electricity demand from partially electrified vessels. (This appears to be outside of allowances for “hydroelectric power generating facilities,” “offshore renewable energy infrastructure facilities,” and “infrastructure facilities used to deliver electricity, natural gas or telecommunications services to the public from an offshore facility located outside the Commonwealth”).
- Land freight vehicle electrification infrastructure to enable electrified medium-to-heavy-duty vehicles to charge while parked, loading, or unloading in inland areas of DPAs.

If the Laws do not enable these uses, it is the State’s prerogative to consider whether those uses have a place in DPAs. Limitations or conditions on allowing such uses in DPAs might include:

- Limiting such infrastructure to areas of DPAs that have formerly stored fossil fuels.
- Limiting such infrastructure to further inland areas of DPAs.
- Limiting such infrastructure to particular DPAs. The Mystic River DPA is an example: it currently contains vacant or underutilized parcels that are not directly touching the water and could play a role in clean energy transition for maritime industrial uses and the broader region.

#### ***Case Study Examples or Influences:***

- **NYC City of Yes for Carbon Neutrality zoning text amendments (2023):** The City of Yes for Carbon Neutrality is set to modernize New York City’s zoning regulations to support its climate goals. The proposal will update zoning rules to make it easier for buildings to install green energy technology and decarbonize the power grid.

## #2. Define and restrain temporary uses in DPAs while preserving accessory and supporting uses.

### **Problem Statement/Context:**

Temporary uses have proliferated in DPAs over time, conflicting with the core mission of DPAs to preserve space for water-dependent industrial uses.

Current DPA regulations distinguish between (i) accessory and supporting uses and (ii) temporary uses.

- “Accessory and supporting uses,” which are industrial or commercial activities that directly support water-dependent operations, play a vital role in maintaining the functionality of DPAs.
- “Temporary uses” can be permitted for up to 10 years when no water-dependent industrial tenant can be found. Temporary uses have proliferated and persisted in DPAs, often through continuous renewal of permits that effectively make them permanent fixtures in DPAs. These temporary uses include a variety of activities, such as automobile maintenance, repair, and storage services, excluding automobile shipping; non-maritime storage and warehousing; and parking.

Temporary uses can provide nuanced value. Some temporary uses, though not water-dependent, have generated positive community outcomes, such as the PORT park that provides valued public space in the Chelsea Creek DPA. Other temporary uses provide important local employment opportunities; for instance, rental car storage facilities in the Chelsea Creek DPA employ residents from adjacent communities. However, the sheer prevalence of these uses indicates conflict with the core mission of DPAs.

### **Implementation Details or Alternatives:**

1. Catalog and evaluate the value of temporary uses. The Seaport Economic Council, MassCZM, or another organization can acknowledge the fact that temporary uses have proliferated in DPAs and comprehensively identify the variety, locations of, and rationale for temporary uses observed in DPAs today. In doing so, the organization should engage communities within and around DPAs—business owners, workers, and residents—to understand and document the value of certain temporary uses to a variety of residents, workers, and business owners. (As one stakeholder observed, the temporary rental car storage uses in the Chelsea Creek DPA do not appear to fulfill the original purpose of the DPA; however, these uses offer jobs to local community members in Chelsea, and so the inland community might be supportive of them despite their non-water-dependent nature.)
2. Restrain temporary uses moving forward. CZM can, if desired after the engagement process above, clarify and restrain allowable temporary uses in DPAs based on its findings. This process should involve:
  - a. Assessing the compatibility of different temporary uses with the core mission of DPAs;
  - b. Establishing clearer, ideally more restrictive criteria and rationale for allowing temporary uses moving forward;
  - c. Exploring whether certain DPAs should have more lax or more restrictive definitions of “temporary uses” than other DPAs. This could be determined on a case-by-case basis via a DPA master plan or within the bounds of a “Transitional Zone,” a concept explored further below.

### #3. Create transitional zones to give business owners more flexibility on their properties and more effectively blend water-dependent industrial uses with other uses on the margins of DPAs.

#### **Problem Statement/Context:**

Some property owners within DPAs reported they do not have the flexibility to supplement compliant water-dependent uses with other, non-water-dependent uses on their properties, which could help them unlock more revenue on their parcels. While heavy industrial uses in DPAs might not be able to easily mix industry with other uses, water-dependent uses that are lighter in nature and located on the margins of DPAs could benefit from more flexible regulatory conditions. This flexibility could also help create a more dynamic buffer zone between DPAs and neighboring commercial or residential areas while accounting for the inland freight needs of core water-dependent industries.

#### **Implementation Details or Alternatives:**

Revise land use regulations on the margins of Mystic River and South Boston DPAs—or on non-DPA land surrounding these DPAs—that introduce “transitional zones” that enable the gradual mixing of light maritime industry with compatible non-industrial uses.

In transitional zones, the State and municipalities could incentivize property owners and developers to fill the majority of ground-floor spaces with water-dependent industrial tenants. If properties satisfy this condition, owners would be allowed to build higher density in the form of flexible commercial space on upper floors or flexible commercial space in a separate structure on the same parcel. Flexible commercial space could host not only accessory and supportive uses but also broader uses such as low-impact clean manufacturing, office space, and retail.<sup>30</sup>

The implementation of a transitional zone is likely only feasible where a DPA, or an area inland of a DPA, is large enough to accommodate a mix of maritime and non-maritime uses. For the Mystic River DPA, certain parcels of the inland, underdeveloped industrial areas north of the DPA could be considered a transitional zone. In the South Boston DPA, transitional zones would serve to rationalize existing development patterns, as with the Raymond L. Flynn Marine Park; The Park, which is located within the DPA, prioritizes water-dependent uses but also hosts other commercial uses on upper floors.

Implementing transitional zones will require careful attention to planning transportation infrastructure and incentivizing the right combination of maritime industrial and other uses.

- **Transportation infrastructure planning.** Industrial property owners and tenants that operate in DPAs note that the existing road transportation networks inland of DPAs—especially around East Boston and South Boston DPAs—make it challenging for land freight to safely and efficiently navigate in and out of DPAs. Challenges include streets that are difficult for trucks to navigate and pedestrian and cycling infrastructure that puts pedestrian and cyclist traffic into conflict with freight.

The design of transitional zones, which would include greater diversity and density of uses, should avoid doubling down on this trend. Street planning should rely on stakeholder engagement of both maritime industrial businesses and inland road users to understand how each group relies on the roads. Planning and investment in these zones should incorporate road improvements; infrastructure that safely and efficiently separates freight from pedestrians and cyclists when feasible; and time-dependent

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<sup>30</sup> Examples of this type of mixed-use industrial and non-industrial development exist in the Raymond L. Flynn Marine Park in the South Boston DPA; Indigo Block in Dorchester, MA; and in Industrial Business Incentive Area (IBIA) developments in New York, NY, including 25 Kent Avenue; 12 Franklin St; and 103 North 13th St.

interventions like traffic guards and signage that balances industrial traffic with other vehicular and pedestrian traffic in a safe, efficient way (see case study below for an approach used in Seattle.)

- **Incentive design and assessment fees.** Developers or building owners in transitional areas would benefit from the opportunity to generate additional revenue on their parcel by prioritizing ground-floor water-dependent or supportive/accessory uses while also operating other uses on upper floors or elsewhere on the parcel (see case study below for an approach used in New York City).

The State, in consultation with a local municipality, could explore using this “density bonus” tool to generate revenue for minor maintenance and improvements within the core of the DPA. Owners that benefit from increased, flexible development rights could be required to pay a one-time development fee or recurring assessment fee. An alternative revenue-generation strategy could involve the use of transfer of development rights (TDR). In this scenario, owners of industrial parcels in DPAs could sell their unused development rights to other landowners in transitional zones that seek to build to greater density, and owners selling their development rights would be required to use at least a portion of the proceeds for site improvements.

- **Limited public access.** Unlike other waterfront areas in tidelands that are subject to Chapter 91, DPA regulations do not allow public access along the waterfront. However, transitional areas could potentially create room for limited public space with waterfront access or views, provided the use does not conflict with industrial development needs. PORT Park, in the Chelsea Creek DPA, is an example.

#### Example Core Water-Dependent Industrial Uses

Existing DPA lands would focus on “core” WDIU with a limit of supportive/accessory uses and a restriction on temporary uses. WDIUs could include:

- Allowed clean energy uses requiring proximity to water or waterborne transportation,
- Aquaculture,
- Boatyards,
- Commercial fishing,
- Manufacturing or storage facilities relying on waterborne transportation,
- Marine research facilities,
- Marine terminals and related facilities,

And other WDIUs defined by Massachusetts General Laws.

#### Example Transitional Industrial Uses

Transitional land could allow development of ground-floor water-dependent industrial uses that are less intensive in nature, such as:

- Marine research facilities,
- Storage facilities or light manufacturing relying on waterborne transportation, and

Uses that share the parcel, including uses on upper floors, could be more flexible:

- Accessory and supportive uses,
- Commercial office space, including office space for other non-WDIU tenants.
- Low-impact manufacturing
- Retail
- Storage and warehousing

#### Case Study Examples or Influences:

- **NYC City of Yes zoning text amendment new M-Zone regulations:** In New York City, the “City of Yes” zoning text amendment process introduced new industrial and manufacturing protections in New York City’s industrial business zones and other areas. City of Yes text amendments have created three new higher-density “M” zoning districts, M1A, M2A, and M3A:
  - “Core” M3A districts protect and allow denser development of heavy industry while limiting the ability of uses such as entertainment, office, and retail to compete with heavy industrial.
  - “Transitional” M2A districts dynamically mix industrial space with other commercial space while still providing an industrial density bonus to buildings with a minimum level of ground-floor

industrial development in the form of a higher floor-area-ratio (FAR) allowance. M2A districts are primarily mapped around historical industrial waterfront areas in the city.

- “Growth” M1A districts encourage mixed-use loft-style buildings that enable the growth of industrial, flex, office, and retail space near public transit offerings.<sup>31</sup>

These new, higher-density districts showcase one way to mix industrial uses with other commercial uses in a transitional district. The use of density bonuses can incentivize ground-floor industrial development while allowing more flexible uses on upper floors that increase overall parcel value.

- **City of Seattle: Maritime, Manufacturing, and Logistics (MML); Industry & Innovation; Urban Industrial zones:** In Seattle, 2024 legislation updated the City’s industrial lands policy and created three new industrial zones: (1) Maritime, Manufacturing, and Logistics (MML), which restricts non-industrial development in existing industrial areas that host intensive uses, (2) Industry & Innovation, which is a zone meant to encourage dense industrial development mixed with office and research and development clustered around existing and future light-rail stations, and (3) Urban Industrial, which serves as a transitional zone between industrial uses and residential or commercial districts.

Transitions between industrial and non-industrial zones in Seattle were previously managed using an industrial buffer zone.<sup>32</sup> The City’s working group identified that these buffers faced challenges: a lack of affordable space for small-scale industry; conflict between freight and pedestrian needs; a lack of affordable housing for industrial workers near their places of work; and unhealthy impacts on certain adjacent residential communities.

The Urban Industrial zone addressed these challenges by requiring street improvements in transitional areas that balanced freight transportation needs with pedestrian safety improvements; encouraging affordable, small-scale places for light industry, makers, and creative arts, industry-supporting ancillary retail; and allowing small amounts of “workforce housing” permitted as a conditional use.<sup>33</sup>

- **Tacoma Tideflats Subarea Plan transitional zones:** To complete the Tacoma Tideflats Subarea Plan, which covered the area home to the Port of Tacoma, the City undertook a multi-year planning process headed by leaders from Washington State, Pierce County, the City of Tacoma, the Port of Tacoma, and the Puyallup Tribe of Indians. The process resulted in a set of compromises aimed at protecting industrial uses while creating a buffer to mitigate interaction between industrial and residential uses.

The Plan establishes the majority of the Port as “core” districts that prioritize port and port-related cargo and industrial land needs and protect them from encroachment by other uses. A small section of peripheral land is designated as transitional zones—Seaport Core Conservancy (SC) and Seaport Transition (ST) zones—that buffer port activities from immediately adjacent residential areas. In these transitional areas, activities can include non-water related industries that are less intensive than, compatible with, and supportive of core maritime industrial uses.<sup>34</sup>

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<sup>31</sup> New York City Council. “City Of Yes: Zoning For Economic Opportunity: Summary of Proposal 18 – New “M” Districts -- and City Council Modifications.” (June 2024.) <https://council.nyc.gov/land-use/wp-content/uploads/sites/53/2024/06/ZEO-Proposal-18-One-Page-1.pdf>.

<sup>32</sup> City of Seattle. “23.34.094 - Industrial Buffer (IB) zone, function and locational criteria.” Title 23 – Land Use Code. [https://library.municode.com/wa/seattle/codes/municipal\\_code/281112?nodeId=TIT23LAUSCO\\_SUBTITLE\\_IIILAUSRE\\_CH23.34AMOFLAUSMARE\\_SUBCHAPTER\\_IIR\\_ECR\\_23.34.094INBUJIBZOFULOCR](https://library.municode.com/wa/seattle/codes/municipal_code/281112?nodeId=TIT23LAUSCO_SUBTITLE_IIILAUSRE_CH23.34AMOFLAUSMARE_SUBCHAPTER_IIR_ECR_23.34.094INBUJIBZOFULOCR).

<sup>33</sup> City of Seattle. “Seattle Industrial & Maritime Strategy: Director’s Report and Recommendation.” (March 2023). <https://www.seattle.gov/documents/Departments/OPCD/OngoingInitiatives/IndustrialMaritimeStrategy/IndustrialMaritimeFinalDirectorsReport2023.pdf>.

<sup>34</sup> City of Tacoma. “Tacoma Tideflats Subarea Plan.” (2024) [https://www.cityoftacoma.org/UserFiles/Servers/Server\\_6/File/cms/Planning/Tideflats/Subarea%20Plan/Steering%20Committee/2024/TSC\\_20241205\\_Tideflats%20Plan\\_Draft.pdf](https://www.cityoftacoma.org/UserFiles/Servers/Server_6/File/cms/Planning/Tideflats/Subarea%20Plan/Steering%20Committee/2024/TSC_20241205_Tideflats%20Plan_Draft.pdf). Pg. 139-140.

#### #4. Establish clear, fair, and enforceable standards for property maintenance in DPAs, and facilitate collective responsibility for DPA property maintenance among property owners.

##### **Problem Statement/Context:**

DPAs in Boston's Inner Harbor contain a significant number of underutilized or vacant parcels. Some stakeholders claim this pattern occurs because owners hold onto unproductive land for years only to attempt to justify a temporary non-water-dependent use on parcels in DPAs.

##### **Implementation Details or Alternatives:**

After considering the regulatory questions above (see above Strategies #1-#3: the redefinition of temporary uses, encouragement of clean or renewable energy infrastructure uses, and consideration of transitional zones), the State could enhance enforcement of DPA land use policies to hold property owners accountable for stewarding water-dependent industrial development.

##### Strengthen enforcement of existing or updated regulations:

- Increase Massachusetts Department of Environmental Protection (DEP) resources to monitor and enforce conditions stipulated in DEP licenses for DPA properties.
- Reduce opportunities for property owners to delay compliance with license conditions.
- Only once the regulations have been updated—if necessary—will financial penalties for non-compliance be considered. Financial penalties would only be reasonable if DPA properties had sufficient access to funding for basic maintenance through a business improvement district (see below). Financial penalties would be only meant to deter owners from holding their land vacant in an attempt to remove the parcel from the DPA.
- Develop a comprehensive set of minimum property management standards for vacant DPA parcels. Ensure these standards require landowners to maintain clean, ready-to-function parcels for new WDIUs.<sup>35</sup>

##### Facilitate collective maintenance of DPA properties and shared infrastructure by businesses, for businesses:

Explore ways to engage maritime industrial business owners and interests to:

- Support the provision of helpful economic development services and shared maintenance services *by* maritime industrial businesses *for* maritime industrial businesses,
- Acknowledge and value the planning efforts and investments already undertaken by private property owners and maritime industrial businesses within DPAs.

One vehicle for facilitating collective maintenance of DPAs by operating businesses is a Business Improvement District (BID). BIDs are allowable in contiguous geographic areas in which 75% of the land is zoned for commercial, retail, industrial, or mixed uses. BIDs, which must be formed voluntarily, require a signed petition among at least 60% of real property owners and comprise at least 51% of assessed valuation within the BID. The BID would allow participants to pay an assessment fee to fund district management, maintenance, promotion and marketing, industrial business support services, and limited capital improvements.

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<sup>35</sup> The encouragement of local joint property and infrastructure maintenance in a DPA via a Business Improvement District (BID) might be preferable to top-down property management requirements. The usefulness of BIDs is explored under "planning and governance recommendations."

## Climate Adaptation and Sustainability

### #1. Establish a DPA decarbonization finance assistance program to help maritime industrial businesses navigate existing financing opportunities to transition to cleaner fuels and decarbonize their operations.

#### **Problem Statement/Context:**

There has been a significant expansion of tax incentives and affordable capital for energy efficiency and decarbonization investments due to the Inflation Reduction Act (IRA). Small maritime industrial businesses operating in DPAs would benefit from financial and technical assistance to effectively navigate these financial opportunities. Catalytic assistance would help them affordably increase their energy efficiency, switch to cleaner fuels, and decarbonize their operations during a unique policy window created by the IRA.

#### **Implementation Details:**

The IRA significantly expanded Investment Tax Credits (ITC), Production Tax Credits (PTC), and other tax credits that small business owners and industrial property owners can use to offset the cost of investments in assets like clean and alternative-fuel vehicles, energy-efficient equipment in commercial buildings, distributed energy resources for commercial buildings, clean hydrogen production, and other investments.<sup>36</sup> In addition, under the IRA, the Greenhouse Gas Reduction Fund (GGRF) is expected to deploy affordable capital starting in 2025 nationwide, with a focus on distributed energy generation and storage, net-zero emissions buildings, and zero-emissions transportation investments. These funds will leverage Community Development Financial Institutions (CDFIs) to deploy financing in low-income and disadvantaged communities—including certain census tracts in Charlestown, Chelsea, East Boston, Everett, and Revere that encompass DPAs within Boston’s Inner Harbor.<sup>37</sup>

To prepare small maritime business owners to make the most of these tax credits and new financing opportunities, business owners need access to free or subsidized assessments and consultations to guide them on what asset decarbonization or clean energy investments they can make for their commercial property, and what investments are cost-effective over what timeframe. Business owners also need assistance with how to access and correctly combine multiple financial offerings—e.g., GGRF or Massachusetts State Small Business Credit Initiative (SSBCI) financing, federal tax credits, other government resources, and other private financial products—to cost-effectively decarbonize their operations and achieve long-term cost-savings.

Technical assistance to small maritime business owners must come from experts with experience in both small business green capital deployment and the very specific energy and resiliency needs and limitations of maritime industrial firms. Technical assistance could be built by collaboration between maritime industry organizations—e.g., the Seaport Economic Council, MADDPA—and one or more State and local government economic development organizations and institutions such as the Massachusetts Small Business Development Center (MSBDC) or CDFIs that lend out GGRF capital.

#### **Case Study Examples or Influences:**

- **Department of Energy Onsite Energy Program:** The DOE Onsite Energy Program provides technical assistance to industrial facilities and other large energy users to help them adopt onsite energy generation technologies to realize cost savings and manage uncertainty in fuel prices. DOE’s New England Regional Technical Assistance Partnership (TAP) serves industrial users in Massachusetts. The TAP

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<sup>36</sup> IRS. “Credits and Deductions under the Inflation Reduction Act of 2022 | Internal Revenue Service,” 2022. <https://www.irs.gov/credits-and-deductions-under-the-inflation-reduction-act-of-2022>.

<sup>37</sup> The Biden-Harris Administration defined “low-income and disadvantaged communities” (LIDAC) using criteria defined by the EPA: <https://www.epa.gov/environmentaljustice/inflation-reduction-act-disadvantaged-communities-map>, including communities located in census tracts mapped by the Climate and Environmental Justice Screening Tool (CEJST): <https://screeningtool.geoplatform.gov/en/>.

provides free assessments that help users identify the opportunity and value of adopting battery storage, combined heat and power, district energy, fuel cells, industrial heat pumps, renewable fuels, solar photovoltaic panels, waste heat to power, and other technologies. The TAP can also connect industrial users to third-party, private-sector engineering experts who can provide an assessment, potentially at a cost. Qualifying small-to-medium-sized industrial manufacturing users can also apply for grants of up to \$300,000 to offset 50% of the cost of implementing onsite energy generation investments recommended by the TAP.<sup>38</sup>

## #2. Establish a DPA resiliency grant program to help maritime industrial businesses assess their vulnerability to climate hazards and begin to fortify their assets.

### ***Problem Statement/Context:***

Small maritime industrial businesses operating in DPAs need financial and technical assistance to prepare for emergencies, fortify their assets against climate change impacts, and minimize environmental risks to themselves and inland communities. Unlike energy efficiency and decarbonization investments—which typically produce clear cost-savings for businesses over time and thus are suitable for loan financing—adaptation investments are necessary to reduce costs associated with climate hazards, but they have a less clear financial return or payback period due to uncertainty in climate change trends and the unpredictability of disasters. For this reason, small-scale grants to help businesses identify their flood hazard vulnerabilities and take initial steps to guard against them would help businesses get started. While the Seaport Economic Council's maritime infrastructure grant program serves municipal and non-profit grantees, there is no source of equivalent capital to help business owners directly fortify their assets and operations.

### ***Implementation Details:***

The Seaport Economic Council, MassCZM, or another organization could establish a grant program to support small maritime industrial businesses in fortifying their assets against the effects of climate change. The program should provide funding and technical assistance that does not need to be large in scale, but it should be sufficient to help businesses accomplish an initial resiliency plan and make starter investments.

- 1. Emergency preparedness and resiliency planning:** Develop emergency plans to manage accidental chemical releases and minimize the use of hazardous chemicals in industrial operations and utilities.
- 2. Asset-level hazard mitigation:** Introduce applicable adaptation measures to safeguard industrial structures while still allowing ship-to-shore movement, such as elevating equipment and inventory and floodproofing buildings.

Businesses that accomplish plans and initial hazard mitigation investments could complete additional investments using their own capital or by supplementing the grant resources with loans.

The business grant program should be designed to complement larger-scale investments funded through the Seaport Economic Council, MassWorks, and federal programs, which are more appropriate for major infrastructure projects that benefit multiple businesses or entire DPAs (see Strategy #3 below). Grant funding will likely require legislative action.

One vehicle to build the business grant program is to use the existing “maritime piers repair and rehabilitation program” (MA General Laws, Chapter 23G, Section 47) to pay for climate adaptation for WDIUs, which would

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<sup>38</sup> DOE. “Onsite Energy Program.” <https://www.energy.gov/eere/iedo/onsite-energy-program>.



enable a "DPA Infrastructure Improvement and Resilience Fund" that provides grants and low-cost loans to private landowners in DPAs to support the modernization, upgrade, and retrofit of critical maritime industrial infrastructure and facilities within DPAs to fortify them against climate risks.<sup>39</sup>

#### **Case Study Examples or Influences: Grant Programs:**

- **NYC Business Preparedness and Resiliency Program (BPREP) grant, announced April 2024:** The NYC Department of Small Business Services launched a new grant program to support small businesses in New York City to become more climate resilient in the face of climate emergencies. The grant will offer a free risk assessment to identify vulnerabilities within businesses and offer up to \$5,000 to eligible at-risk businesses to improve and fortify their infrastructure.
- **Environmental Protection Agency Diesel Emissions Reduction Act (DERA) National Grants Program:** In 2020, the EPA awarded over \$4.8 million in grants to help businesses, including maritime industrial businesses, shift to cleaner fuels. In addition to the Connecticut Maritime Foundation, the American Lung Association, and the Rhode Island Department of Environmental Management, Massport received \$387,266 to replace propulsion engines in boats owned and operated by the Boston Harbor Pilots Association.<sup>40</sup> The Boston Harbor Pilots Association also shared the investment costs.

#### **Case Study Examples or Influences: Guidance for the Private Sector**

- **ResilientMass Action Team Climate Resilience Design Standards and Guidance:** The Climate Resilience Design Standards Tool, developed by the Massachusetts climate adaptation working group ResilientMass, is a design tool that provides projects in Massachusetts with a climate change exposure risk rating, as well as recommendations to improve the resiliency of the project.<sup>41</sup>
- **WEDG guidelines by the Waterfront Alliance:** Developed by the Waterfront Alliance, WEDG is a comprehensive set of best practices for waterfront design, aiming to create resilient and accessible waterfronts. WEDG offers guidelines for industrial design, primarily focusing on integrating sustainable and resilient practices into industrial waterfront operations. Case studies for WEDG being applied to an industrial context include the redevelopment of the Brooklyn Navy Yard in New York City, which resulted in a more sustainable industrial hub that balances the needs of industrial activities with principles of environmental stewardship and sustainability.<sup>42</sup>

### **#3. Channel reauthorized MassWorks program funds, supplemented with federal money, to advance large-scale environmental remediation and long-needed climate adaptation investment in working ports.**

#### **Problem Statement/Context:**

Although intervention at the scale of individual businesses is helpful (see Strategy #2), the scale of climate hazard vulnerability in DPAs also requires funding and financing at the scale that only the State of Massachusetts and the

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<sup>39</sup> The Seaport Economic Council, discussed above, already offers a valuable grant program to stimulate maritime economic development and job creation; it favors capital investment projects led by municipal grantees or in partnership with municipal entities, and grants require matching funds equal to 20% of the overall project. Although awards are capped at \$1 million, most awards are significantly smaller in scale. Funding is available for (i) innovation grants to incubate innovative ideas and job-creating projects, (ii) local maritime economic development planning, (iii) public education related to coastal and maritime industrial development, (iv) supportive infrastructure investment to unlock job creation or economic growth, (v) dredging pre-construction design and permitting grants. Although the Council's program provides a valuable catalytic function for economic development, its funding not available for private businesses.

<sup>40</sup> EPA. "EPA Awards More than \$4.8 million for Clean Diesel Projects in New England." Oct 19 2020. <https://www.epa.gov/newsreleases/epa-awards-more-48-million-clean-diesel-projects-new-england>

<sup>41</sup> ResilientMass. "Climate Resilience Design Standards Tool." [https://resilient.mass.gov/rmat\\_home/designstandards/](https://resilient.mass.gov/rmat_home/designstandards/).

<sup>42</sup> Waterfront Alliance. "Waterfront Edge Design Guidelines." <https://wedg.waterfrontalliance.org/>.

federal government can support. Without significant investments in the resilience and adaptability of maritime industrial infrastructure and facilities within DPAs, these areas will become increasingly vulnerable to the impacts of climate change, such as sea-level rise, storm surges, and extreme weather events, potentially leading to costly disruptions, damage, and loss of critical economic functions. In addition, flood hazards have the potential to dislodge and spread potentially harmful contaminants on certain sites, such as underutilized sites in the Mystic River and Chelsea Creek DPAs, where fossil fuels have been stored in the past.

Maritime resilience infrastructure funded by the public-sector should be context-dependent, rely on observations and data on natural hazard impacts from the local community, and examine flood pathways closely to best mitigate negative impacts to both the community and DPA. It is possible that investments may entail flood protection infrastructure placed between the DPA and the community; while many WDIU businesses are well-suited to manage water on their properties and might be able to withstand some level of flooding, inland uses might not have that advantage.

### ***Implementation Details or Alternatives:***

**Leverage Massworks:** DPAs should be prioritized for investment by MassWorks. MassWorks is the State's bond program for infrastructure that stimulates economic development, and it was reauthorized by the 2024 Mass Leads Act in the amount of \$400 million over the next five years.<sup>43</sup> With guidance from the Seaport Economic Council, reauthorized MassWorks funding could speed up DPA infrastructure improvement, environmental remediation, and resilience projects. This approach would leverage existing administrative structures and funding sources, potentially providing access to larger funding pools than a separate DPA-specific fund (see mention of the "DPA Fund" in Strategy #2). However, care must be taken to ensure that DPA projects do not get overlooked in competition with other development projects and that the unique needs of maritime industrial uses are adequately addressed in project evaluation criteria.

**Leverage Federal Funding:** DPAs, by their very nature of being water-dependent, are at risk from climate change and persistent flooding. Acknowledging that thriving port areas serve regional and national economic goals, and due to the sheer scale of investment required to strengthen and protect these areas, investment in DPAs must also come from the federal level. EPA Brownfields dollars can initiate expensive environmental remediation in DPAs to support industrial reuse within DPAs. Planning and infrastructure deployment funding from FEMA, the U.S. Army Corps of Engineers, HUD, DOT, and other sources can support infrastructure upgrades and flood protection.

### ***Case Study Examples or Influences:***

- **Port of San Francisco Waterfront Resilience Program and USACE project:** This comprehensive \$13 billion plan, developed in collaboration with the U.S. Army Corps of Engineers, showcases the scale of investment needed for large-scale port resilience, including strategies like raising shorelines, fortifying properties, and implementing nature-based solutions, with potential for significant federal funding.

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<sup>43</sup> Governor Maura Healey and Lt. Governor Kim Driscoll, Executive Office of Economic Development. (Nov 2024.)

## Implementation Roadmap

The strategies outlined in this report represent a comprehensive approach to revitalizing and securing the future of Boston's Inner Harbor DPAs. This implementation roadmap provides a framework for prioritizing and executing these strategies over short-, medium-, and long-term horizons. It is important to note that while each strategy has been assigned a primary timeframe, many are designed to build upon one another.

Short-term strategies are often foundational steps that can feed into and support the success of medium-term and long-term initiatives. For example, expanding the resources and consultative responsibilities of the Seaport Economic Council (a short-term strategy) will lay the groundwork for more complex, longer-term efforts such as channeling State and federal funding toward comprehensive climate change adaptation in seaports.

The roadmap identifies key implementation parties for each strategy, categorized broadly to reflect the diverse stakeholders essential to the success of these initiatives. These include State and local government agencies, maritime industry associations, environmental organizations, educational institutions, and community groups, among others.

Strategy	Short-Term	Mid-Term	Long Term	Implementation Parties
<b>Planning &amp; Governance</b>				
#1. Direct economic development planning and investment in DPAs by expanding and empowering the Seaport Economic Council to steward better-resourced, climate-resilient seaport development.	X			Seaport Economic Council
#2. Invest in the first maritime economic development plan for the harbor in nearly three decades and maintain shared, detailed data on DPA economic and land use conditions thereafter.		X		Seaport Economic Council, port authorities, municipal planning departments
#3. Build workforce development pipelines that connect local talent, including talent in economically vulnerable communities, to high-road jobs in growing maritime industries.		X		Seaport Economic Council, educational and workforce development organizations

Strategy	Short-Term	Mid-Term	Long Term	Implementation Parties
<b>Land Use and Regulatory Planning</b>				
#1. Encourage clean fuel and electrification infrastructure in DPAs to help maritime industrial businesses and their supply chains transition to clean and renewable power.	X			Executive Office of Energy and Environmental Affairs, MassCZM, MassDEP
#2. Define and restrain temporary uses in DPAs while preserving accessory and supporting uses.		X		MassCZM, MassDEP
#3. Create transitional zones to give business owners more flexibility on their properties and more effectively blend water-dependent industrial uses with other uses on the margins of DPAs.			X	MassCZM, MassDEP, MassDOT, municipal planning departments, property owners and developers
#4. Establish clear, fair, and enforceable standards for property maintenance in DPAs, and facilitate collective responsibility for DPA property maintenance among property owners.			X	MassCZM, MassDEP, property owners and developers
<b>Climate Adaptation and Sustainability</b>				
#1. Establish a DPA decarbonization finance assistance program to help maritime industrial businesses navigate existing financing opportunities to transition to cleaner fuels and decarbonize their operations.	X			Seaport Economic Council, Massachusetts Small Business Development Center (MSBDC), business improvement districts, CDFIs and other lenders
#2. Establish a DPA resiliency grant program to help maritime industrial businesses assess their vulnerability to climate hazards and begin to fortify their assets.		X		Executive Office of Energy and Environmental Affairs, interagency ResilientMass Action Team, MassCZM, Seaport Economic Council
#3. Channel reauthorized MassWorks program funds, supplemented with federal money, to advance large-scale environmental remediation and long-needed climate adaptation investment in working ports.		X		MassWorks, Seaport Economic Council

## Conclusion

Boston's Inner Harbor DPAs stand at a critical juncture, facing unprecedented challenges from climate change, economic shifts, and development pressures. This study has illuminated the complex interplay of stakeholder interests and the urgent need for adaptive, forward-thinking policies to preserve and enhance these vital economic assets. Our key findings underscore the importance of balancing traditional maritime uses with emerging industries, addressing environmental justice concerns, and improving climate resilience—all while maintaining the economic viability that makes DPAs crucial to the region's prosperity.

We call upon the proposed DPA Task Force to act swiftly and decisively on the recommendations outlined in this report. Immediate priorities should include:

- Strengthening regulatory frameworks to protect core maritime industrial uses while allowing for strategic adaptation
- Investing in climate-resilient infrastructure and green technologies
- Fostering partnerships between industry, government, and communities to create inclusive economic opportunities
- Developing comprehensive workforce programs to build a skilled, diverse labor pool for the maritime economy of the future

The path forward demands collaboration, innovation, and a shared commitment to the long-term vitality of Boston's working waterfront. By acting now, we can ensure that DPAs continue serving as engines of economic growth, bastions of environmental stewardship, and gateways to opportunity for future generations. The future of Boston's maritime heritage and its position as a leader in the blue economy depends on our collective action today.

# APPENDICES

## Appendix A. Resident Engagement

Resident engagement—involving individuals living near or within Boston's Working Waterfront Areas—provided valuable perspectives on the challenges and opportunities facing Boston's Inner Harbor DPAs. Participants shared a diverse range of experiences, concerns, and ideas spanning community needs, economic opportunities, environmental issues, and waterfront access.

Residents generally expressed support for maintaining DPAs but emphasized the need for significant improvements. However, participants had varying priorities across different DPAs, with some focusing on affordability and displacement issues, others on environmental concerns and public infrastructure improvements, and still others on job creation and economic opportunities. While there was broad agreement on the importance of preserving maritime industrial uses, residents also stressed the need for better community integration, increased waterfront access, and more local economic benefits from these areas.

### Resident Engagement Overview

HR&A and Interboro Partners convened a working group of 23 residents who live close to or in Boston's Working Waterfront Areas. The focus group residents met once in person at GreenRoots' Teaching Kitchen on August 15, 2024, 6:00pm-8:00pm at 63 Pearl Street, Chelsea. During this focus group session, participants learned about DPA policy and existing conditions in DPAs and brainstormed about DPA challenges and potential solutions.

This meeting was held in person. HR&A and Interboro Partners catered a meal from a local restaurant, and residents were compensated for their time with \$100 each. Facilitators received \$150 gift cards for their help and support. Live translators were offered by HR&A and Interboro, but no focus group participants requested them.

### Organizational Outreach

The consultant team worked with three local community-based organizations—Everett Community Growers, GreenRoots, and NOAH (Neighborhood of Affordable Housing)—to help spread the word about the resident focus group session, nominate participants from their networks, and attend the meeting if available on August 15. NOAH, Everett Community Growers, and GreenRoots were all paid for their support.

- **Everett Community Growers (ECG)** works to build a more just and equitable environment in Boston through urban agriculture, youth development, policy advocacy, and community engagement. ECG operates two community gardens, two community farms, and a farm stand in Boston.
- **GreenRoots** is a resident-led organization dedicated to improving and enhancing the urban environment and public health in Chelsea, East Boston, and surrounding communities through deep community engagement and empowerment, youth leadership, and the implementation of innovative projects and campaigns. GreenRoots works to achieve environmental justice and greater quality of life through collective action, unity, education, and youth leadership across neighborhoods and communities in Boston.
- **NOAH (Neighborhood of Affordable Housing)** is a community development corporation in Boston that promotes equity, community cohesion, environmental justice, and economic resiliency. NOAH increases access to affordable housing, creates social and economic opportunities, and empowers residents of Boston to be leaders of change.

Four facilitators were appointed by the selected community-based organizations from among participants. Facilitators guided the discussion and prompted questions during the brainstorming activity. The Team decided to rely on facilitators from among the community, rather than consultants, to foster more candid and open discussion. Facilitators were provided detailed instructions, were briefed on their role before the session, and received additional compensation for their efforts.

### Summary: Resident Engagement Focus Group Session

Full run of show and agenda of the session can be found below.

The resident focus group session was held at GreenRoots' new Teaching Kitchen (63 Pearl Street, Chelsea).

HR&A kicked off the session with a high-level overview presentation about each DPA and related statistics relating to land use and ownership, businesses, jobs, and socioeconomic conditions in the DPA and surrounding catchment areas. After the overview, HR&A and Interboro held a quick Q&A session before the discussion.

The bulk of the focus group session was allocated to the 60-minute activity and discussion held at four different tables in the room, each dedicated to a different DPA in Boston's Inner Harbor. Participants could choose the table they wanted to sit at. Each table included a large, printed, axonometric map of the DPA coupled with statistical infographics, which represented data presented during the overview presentation and which were intended to inform discussion.

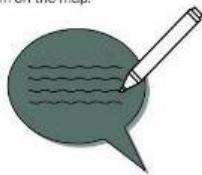
Each table accommodated approximately six residents, one facilitator, and one consultant team member who served as an observer and notetaker. Four community-based facilitators guided participants through a list of discussion questions about current community needs and desires, jobs and economic opportunities, concerns about displacement, areas of interest within and adjacent to DPAs, and hopes for new development. Participants were provided "thought bubbles" and "dream bubbles" to write on throughout the session; this interactive tool was used to help participants share ideas about their current experiences and future ideas for the DPA and surrounding areas. As participants wrote comments on the thought bubbles and dream bubbles, they placed them on the map at a relevant location in or around the DPA.

Figure 15: Resident Engagement Focus Group Activity Setup

#### Activity & Discussion: 60 mins

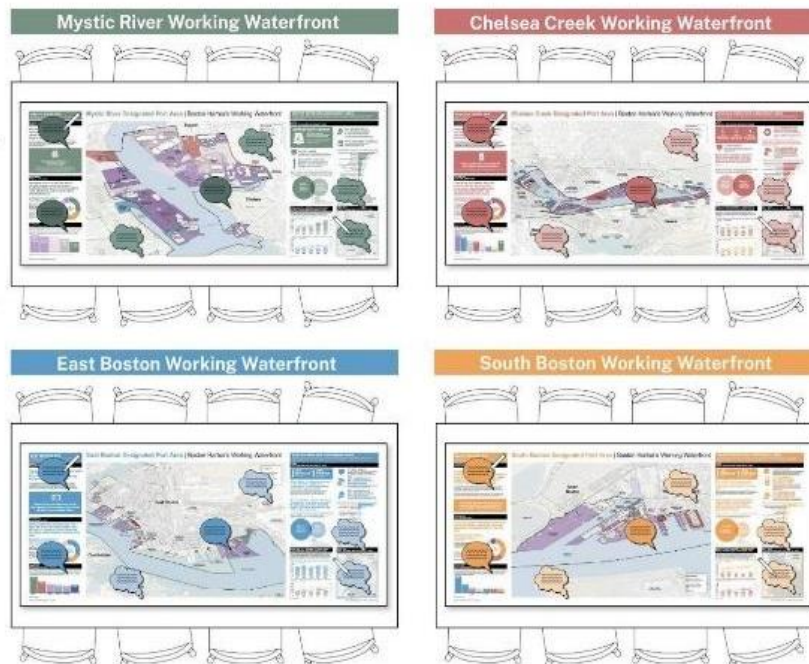
##### Thought Bubbles

Share your current thoughts and experiences on these cut-outs and place them on the map.



##### Dream Bubbles

Share your future ideas and dreams on these cut-outs and place them on the map where you would like to see these ideas come to life.





### Synthesis & Themes: Resident Engagement Focus Group Session

Participants were generally in favor of the continued existence of DPAs, but they suggested they need to be improved. Residents provided suggestions on areas of improvement for all four DPAs, and certain themes emerged from their thoughts and dreams regarding these areas.

#### Mystic River DPA:

Chief discussion topics at the Mystic River DPA table were affordability and displacement as well as the need for public infrastructure improvements.

- Concerns about affordability included discussion on increasing rent prices, housing discrimination, needing more affordable housing options, and not wanting any more luxury apartments in the environs of the DPA.
- Concerns relating to public infrastructure improvements included discussion about the difficulty of driving on roads due to poor maintenance, the fact that some residents found the DPA dirty and inaccessible, and excessive vehicle traffic.

Participants shared ideas and dreams for the Mystic River DPA and its surroundings, focused on jobs and economic opportunity.

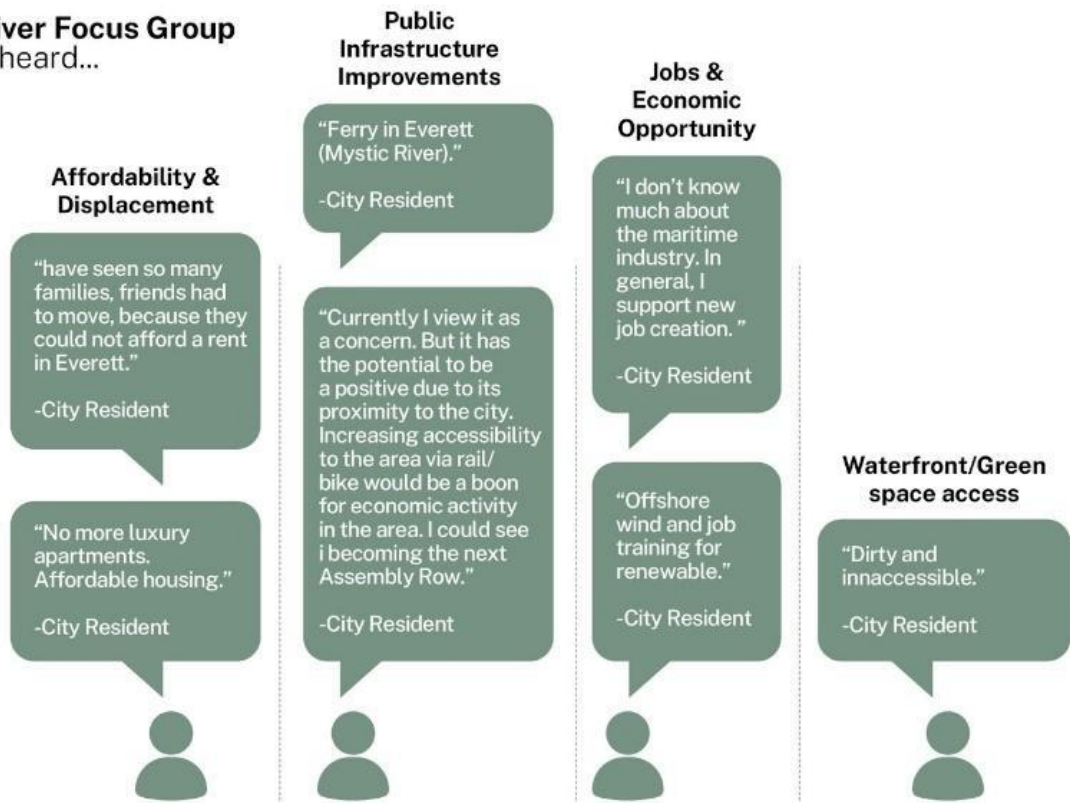
- Residents noted that the area median income needs to increase to keep pace with rising rents, specifically in Everett, MA. Residents cited interest in offshore wind jobs and job training for renewable energy investments.
- Some residents supported investment in a commuter ferry service that would connect Everett and Chelsea to waterfront Boston.

Figure 16: Mystic River DPA Focus Group

#### Mystic River Focus Group Photos



**Mystic River Focus Group**  
What we heard...



**Chelsea Creek DPA**

Participants at the Chelsea Creek DPA table focused on the need for public infrastructure improvements, waterfront and green space access, and concerns about environmental hazards.

- Residents cited tripping hazards and an overall poor pedestrian experience due to poor sidewalk maintenance in the areas inland of the DPAs.
- Residents observed the waterfront has not been historically accessible to residents.
- Environmental concerns centered on poor air quality, which affects residents as well as people who visit, work in or walk through the area.






Primary ideas and dreams for the Chelsea Creek DPA and surrounding areas focused on public infrastructure improvements and environmental cleanup and remediation. Dreams for public infrastructure included a beach at Mary O'Malley Park, bringing back the "River Revel", and providing a kayak launch. Environmental cleanup dreams included having clean water and a waterfront with less polluting uses. Residents also commented on the need for additional affordable housing inland of the Chelsea Creek DPA.

Figure 17: Chelsea Creek DPA Focus Group

**Chelsea Creek Focus Group**  
Photos



**Chelsea Creek Focus Group**  
What we heard...

<p><b>Environmental concerns</b></p> <p>"Bad traffic pollution danger for walkers." -City Resident</p> <p>"Waterfront industries that DON'T pollute." -City Resident</p> 	<p><b>Public Infrastructure Improvements</b></p> <p>"Beach at Mary O'Malley park." -City Resident</p> <p>"Dangerous sidewalks not maintained, unpleasant to walk on" -City Resident</p> 	<p><b>Affordability and Displacement</b></p> <p>"We need affordable housing." -City Resident</p> 	<p><b>Jobs and economic opportunity</b></p> <p>"Small business incubation for water dependent ocean/aqua farming. Kelp &amp; oysters." -City Resident</p> 	<p><b>Waterfront/Green space access</b></p> <p>"access to the waterfront!!!!!" -City Resident</p> <p>"Why can't we walk here? (waterfront in front of PreFlight airport parking)" -City Resident</p> 
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## East Boston DPA:

The East Boston DPA table's main discussion topics were waterfront / green space access, affordability and displacement, and jobs and economic opportunity.

- Residents expressed concerns that they have very little access to the working waterfront.
- Residents don't believe the working waterfront areas in East Boston are for the community because they're covered in security cameras, patrolled, and don't seem like a safe space for everyone.
- The topic of affordability suggested that affordable housing in East Boston DPA has been neglected.

Several main ideas and dreams for East Boston DPA emerged throughout the discussion on jobs and economic opportunity, waterfront access and green space, and public infrastructure improvements. Residents commented on wanting more hands-on water learning experiences for children and families in East Boston DPA when discussing waterfront access. The theme of jobs and economic opportunity came up several times with the dream of having more local businesses like fish markets similar to Seattle and Venice, and more affordable seafood industries. The idea of having a local water ferry in East Boston came up when discussing public infrastructure improvements, and mentioned how well-utilized the ferries were during the previous tunnel shutdown.

Figure 18: East Boston DPA Focus Group

### East Boston Focus Group Photos



**East Boston Focus Group**  
What we heard...

**Environmental concerns**

"Massport should be forced to pay for hundreds of more trees and to at least double the amount of real public greenspace we have in EB."  
-City Resident

"The tree coverage needs to be exponentially increased to counteract all the pollution."  
-City Resident



**Public Infrastructure Improvements**

"Living on the waterfront community we should promote and implement ferry services. During tunnel shutdown the ferries were so well utilized."  
-City Resident



**Affordability and Displacement**

"Who lives on this street? The 'affordable' housing is neglected."  
-City Resident



**Jobs and economic opportunity**

"Where are the relevant and modern climate-resilient industries?"  
-City Resident

"More local businesses at fish markets. Affordable seafoods."  
-City Resident



**Waterfront/Green space access**

"With 15 miles of waterfront the residents have access to so little of it."  
-City Resident

"Open a Marine Science Center for students at Mario Umana (East Boston Harborwide Community Center)"  
-City Resident



**Community involvement in decision-making**

"Transparency from Massport and developers about building size usage and impact."  
-City Resident



**South Boston DPA**

Primary discussion topics at the South Boston DPA table were affordability and displacement, jobs and economic opportunity, environmental concerns, and waterfront and green space access.

- Discussion on affordability in South Boston DPA included suggestions that new housing close to the South Boston DPA, as well as in East Boston and Everett, is typically luxury housing. Some residents shared that the sense of community surrounding the South Boston DPA had been lost due to residential displacement, that people who work here cannot afford to live nearby, and that parking is not affordable anywhere around the DPA.
- Some residents suggested that the workers in the DPA could be better incorporated into these surrounding communities and live there, if housing were more affordable. Someone said, "the DPA is important because we want to keep these industries and workers, but they need to be in the community more."
- Several main ideas and dreams for South Boston DPA emerged throughout the discussion on Environmental Concerns and Waterfront Education.

Residents shared dreams for the South Boston DPA centered on climate change adaptation, integrating educational activities along the waterfront where possible, and investment in decarbonization. Regarding waterfront education, residents wanted education and activities involving sea kelp, boating, and marine life education. This group also highlighted that they would, in general, like to be more involved in conversations about DPAs and more educated about DPA areas and what is currently happening with them.

Figure 19: South Boston DPA Focus Group

**South Boston Focus Group**  
Photos



**South Boston Focus Group**  
What we heard...

South Boston Focus Group		Waterfront/Green space access	
<p><b>Environmental concerns</b></p> <p>"There are still flood pathways that will get through if you put a wall up." -City Resident</p> <p>"There are communities around Boston Harbor that flood." -City Resident</p>	<p><b>Public Infrastructure Improvements</b></p> <p>"Water transportation!" -City Resident</p> <p>"There are no municipal parking lots at the seaport. It is like \$40 for 5 mins. Unaffordable!" -City Resident</p>	<p><b>Affordability and Displacement</b></p> <p>"Building new development and removing DPAs is detrimental." -City Resident</p> <p>"Sense of community harmed by displacement." -City Resident</p>	<p><b>Jobs and economic opportunity</b></p> <p>"At least 40 boats, workers live elsewhere - far away, Westport, MA." -City Resident</p> <p>"Investors need to invest in the community. Not get their 15 years in and leave." -City Resident</p>
			<p><b>Community involvement in decision-making</b></p> <p>"I tried to do an activity w/sea kelp and couldn't do it for educational purposes. Mass fisheries said no." -City Resident</p> <p>"Using sea for education." -City Resident</p> <p>"More events like this w/ compensation." -City Resident</p> <p>"Community needs to be more informed - no access." -City Resident</p>

## Appendix B. Case Studies

The case studies that follow are designed to inform what is possible to support Boston's Inner Harbor DPAs. These case studies provide insight into innovative planning efforts, land use policies, bold climate adaptation strategies, or additional interventions designed to support evolving maritime industrial areas while also balancing other needs along limited waterfront space.

HR&A surveyed a variety of waterfront industrial contexts in the United States and internationally. HR&A prioritized and selected four (4) precedents for further research, following a methodology described in the *appendix* to this document:

1. Sunset Park Industrial Business Zone, Brooklyn, NY
2. Port of Seattle and Seattle industrial waterfronts, Seattle, WA
3. Port of Tacoma and Tacoma industrial waterfronts, Tacoma, WA
4. Port of San Francisco, San Francisco, CA

HR&A also reviewed examples of educational programs that build a pipeline of talent for the maritime industry:

1. Maine Maritime Academy, ME
2. New York Harbor School, NY
3. Sound School, CT
4. Traverse City, MI

### Key Takeaways and Lessons Learned

**Building a mandate to preserve and enhance maritime industrial land requires coalitions that span sectors—government, industry, and community—and build a shared understanding of the economic value of the working waterfront despite competing urban needs.**

- In New York City, the M-Zone coalition has served as a strong political opponent to interests seeking to rezone industrial areas in waterfront industrial business zones throughout the city. In addition, a set of advocacy and environmental justice organizations like the Industrial Jobs Coalition, the Association for Neighborhood and Housing Development, UPROSE, and others have aligned with the importance of preserving industrial uses. This advocacy is based on an understanding of the importance of local high-quality jobs—even if those jobs entail a tradeoff between public waterfront access—and pressure to make those industrial uses cleaner and safer for workers and communities.
- In Seattle, WA, a lack of unified coalition-building behind preserving and enhancing waterfront industrial areas in part led the City of Seattle to create a taskforce in 2019 to approve a set of comprehensive plan amendments meant to preserve industrial uses while simultaneously creating “workforce housing.”

**Other urbanized ports have used comprehensive land use plans, or comprehensive land use plan amendments, as venues to update and protect industrial land use regulations citywide as opposed to making piecemeal adjustments.**

- In New York City, the “City of Yes” zoning text amendment process—in response to unified advocacy from a cluster of industrial advocacy and environmental justice groups—introduced new industrial and manufacturing protections in New York City’s industrial business zones and other areas.

- In Tacoma, WA, the 2022 Tacoma Tideflats Subarea Plan was a joint, multi-year planning process that culminated in changes to Tacoma's land use code in 2022 that, in part, preserved industrial uses yet limited the impacts industrial uses had on housing.
- The City of Seattle, in 2019, convened the Seattle Industrial and Maritime Strategy Council—made up of maritime industrial business leaders, labor, residents, and City Council members—to propose a new industrial and maritime zoning amendment to the City's comprehensive plan.

**Bold investments in publicly owned land in industrial ports can catalyze turnarounds for industrial areas.**

- **In New York City's Sunset Park Industrial Business Zone, significant investments led by the New York City Economic Development Corporation have positioned the zone as a testbed for green urban reindustrialization.** The NYCEDC has leveraged its ownership of IBZ assets to invest in transformative projects that enhance the climate resiliency of its properties. The City of New York has also allocated \$191 million to convert the South Brooklyn Marine Terminal shoreline into one of the nation's largest offshore wind port facilities,<sup>44</sup> with NYCEDC investing another \$115 million to rehabilitate and reactivate this terminal for marine transport. NYCEDC launched a \$100M Request for Proposal for the [Climate Innovation Hub](#) at Brooklyn Army Terminal to spur economic development at the historic site, boost NYC's climate tech ecosystem, and provide workforce development and green job training for the local community.
- **In San Francisco, the Port is working to preserve cargo shipping operations and maintain the integrity of the piers for future industrial activities.** The City has invested \$88 million in public and private funds to transform the industrial area into a 'Maritime Eco-Industrial Center,' incorporating green technologies and designs. This initiative includes identifying compatible open space uses and supporting green industries like recycling. Additionally, the Port is collaborating with the City and State Lands Commission to develop economic strategies for future development at these industrial sites.<sup>45</sup>

**Industrial land use regulations that introduce buffer zones or transitional zones—which enable the gradual mixing of light industry with non-industrial uses and even housing—have been welcomed in peer contexts.**

- **In Seattle, WA, the Seattle Industrial and Maritime Strategy Council proposed changes to comprehensive land use regulations and the creation of three distinct, new industrial zones:**
  - (1) Maritime, Manufacturing, and Logistics (MML), which restricts non-industrial development in existing industrial areas that host intensive uses,
  - (2) Industry & Innovation, which is a transitional zone meant to encourage dense industrial development around existing and future light-rail stations,
  - (3) Urban Industrial, which serves as a final transitional zone between industrial uses and residential or commercial districts. Uses within this zone focus on commercial industrial uses (e.g., art studios, breweries/taprooms, retail) but with restrictions around size. It also allows the construction of affordable housing units framed as workforce housing.<sup>46</sup>
- **In New York City, industry champions at SBIDC and IJC have successfully advocated for cementing industrial business zones within the city's zoning code and utilizing local zoning tools to foster industrial use on the margins of industrial business zones,** such as legislation to require ground floor industrial development in office spaces for light industrial activities, capping the size of commercial

<sup>44</sup> <https://waterfrontalliance.org/2022/06/02/south-brooklyn-marine-terminal-gets-ready-for-massive-new-offshore-wind-facility/>

<sup>45</sup> Port of San Francisco. "Waterfront Plan." 2023. [https://sfport.com/files/2024-01/waterfront\\_plan\\_jan2024\\_final\\_web\\_version.pdf](https://sfport.com/files/2024-01/waterfront_plan_jan2024_final_web_version.pdf)

<sup>46</sup> City of Seattle. Office of Planning and Community Development. "[Industrial and Maritime Strategy](#)."



buildings built in industrial zones, and the Self-Storage Text Amendment, which restricts special permits for large self-storage facilities in manufacturing districts that overlap with IBZs.<sup>47</sup>

**Economic development institutions and educational institutions are joining forces in working ports to invest in workforce development initiatives to fuel the next-generation maritime industrial economy—including blue and green jobs.**

- **Both Seattle and Tacoma, WA, are investing in the region’s maritime industrial workforce, including building business incubators and providing maritime industrial job training programs to high school students.** While there are plans to create a “living lab” on Boston’s Dry Dock, stakeholders in Washington State mentioned having an explicit focus on workforce training and not simply ecology or environmental stewardship, making the distinction as a result of increasing demand for jobs within the maritime industrial sector that do not require a traditional four-year degree, and a lack of current programming for this population.
- **In New York City, NYCEDC has set aside \$100 million to create a Climate Innovation Pilot Program at Brooklyn Army Terminal to foster the growth of innovative and sustainable “blue and green” economic development in the area.** As a result of EDC investments, the entire IBZ district is poised to be leveraged as a testbed for piloting climate technologies. The hub will accelerate commercialization pathways for climate tech startups and incumbent businesses, and offer space, facilities, and business growth programs to support these startups and businesses, serving 150 startups over 10 years and creating \$2.6 billion of economic impact and 600 jobs. The hub will also provide workforce development programming and training for the local Sunset Park community.

**The scale of environmental remediation and climate change adaptation investment needed in urban ports, which generally lack the ability to finance these investments through high-value real estate value, means environmental cleanup and resiliency depend on state and federal funding commitments.**

- New York City’s Sunset Park’s Industrial Business Zone, and areas inland, were significantly affected by Superstorm Sandy in 2012, and flooding caused secondary environmental hazards due to contaminated ground spreading from historically industrial land. In an adjacent IBZ, New York State is seeking to take advantage of federal funding set aside for brownfield cleanup and redevelopment, including New Market Tax Credits, New York State Brownfield Cleanup Program Tax Credits, and New York City Brownfield Incentive Grants.<sup>48</sup> Elsewhere along Brooklyn’s western waterfront, proposals for large-scale investments in climate adaptation have been made to the U.S. Army Corps of Engineers.
- In Tacoma, federal intervention through the EPA at Commencement Bay (an EPA Superfund Cleanup Site) has led to ongoing efforts to clean up landfills and encouraged remedial measures on private property through potentially responsible party (PRP) actions.

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<sup>47</sup> ANHD, “NYC Industrial Action Plan - 3 Years Later Progress Report”, October 31, 2018, <https://anhd.org/report/nyc-industrial-action-plan-3-years-later-progress-report>

<sup>48</sup> NYS Department of State, 2021, [Brownfield Opportunity Area Study](#)



## Sunset Park Industrial Business Zone, New York, NY

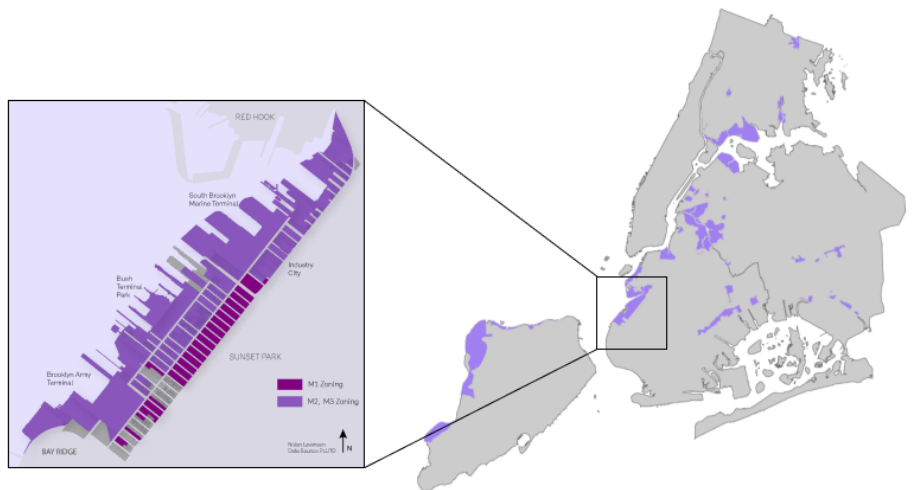
In the face of a dramatic decline in employment in industrial and manufacturing sectors, the New York City Bloomberg Administration created eight industrial business zones in New York City to preserve industrial land use. Industrial Business Zones (IBZs) are zoned by the NYC Department of Planning (DCP) to prioritize industrial uses, limit non-industrial office uses, and prohibit housing development. There are currently eight IBZs in New York City. Beyond DCP zoning, there is no dedicated body that regulates or oversees IBZs, and parcels within IBZs are generally privately owned (with the major exception of JFK Airport and marine terminals in Sunset Park, discussed below). The majority of IBZs, including the major IBZs - Southwest Brooklyn, Hunts Point, the JFK airport, Long Island City and Steinway—front major waterways. On the heels of advocacy in support of urban industrial manufacturing from a broad array of stakeholders, a 2023 City Council bill—the Industrial Development Strategic Action Planning bill—aims to revitalize IBZs with a focus on manufacturing, green industry, and inclusive business development and hiring.

The Sunset Park waterfront, part of the Southwest Brooklyn Industrial Business Zone, is the largest industrial waterfront within New York City,<sup>49</sup> representing about 500 acres of waterfront land. The Sunset Park industrial waterfront land used to serve as a major port for local maritime trade. Throughout the early half of the twentieth century, the area was dominated by heavy industry. Despite experiencing a major decline in the industrial sector, the area today remains primarily

industrial, and the waterfront is zoned mostly for heavy and light manufacturing uses, with pockets of isolated residential development.<sup>50</sup> The waterfront land now contains four dedicated maritime industrial complexes: (1) Brooklyn Army Terminal, (2) Bush Terminal, (3) South Brooklyn Marine Terminal, and (4) Industry City (see Figure 17 below).<sup>51</sup> Other industrial uses of the Sunset Park Industrial Business Zone include wholesale trade/manufacturing, warehousing, distribution, and small-scale precision manufacturers and specialty food product manufacturers.<sup>52</sup> However, retail and residential uses have increasingly encroached on the area.

Recent investments by the New York City Economic Development Corporation and other City agencies have reactivated maritime transportation uses of the port and unlocked new and innovative uses of the port, including

Figure 20: Industrial Business Zones in New York City



<sup>49</sup> City of New York, 2022, [Mayor Adams Announces Agreement to Transform South Brooklyn Marine Terminal](#)

<sup>50</sup> EDC, 2009, [Sunset Park Waterfront Vision Plan](#)

<sup>51</sup> SBIDC, 2024, [www.sbidc.org](#)

<sup>52</sup> EDC, 2009, [Sunset Park Waterfront Vision Plan](#)

infrastructure for one of the nation's largest planned offshore wind facilities. As a result, these City initiatives have begun to revitalize the waterfront into an active industrial area with a focus on cultivating green jobs:

- The South Brooklyn Marine Terminal served as a container terminal until the 1980s and then scaled down to serve as a storage and staging area for cargo. In 2011, NYCEDC invested \$115 million to rehabilitate and reactivate the South Brooklyn Marine Terminal for marine transport, creating 250 near-term jobs in the area and removing 11,000 truck trips from the city's roadways.<sup>53</sup> The terminal has a long-term lease through 2054 and will move 900,000 metric tons of material annually through the port.<sup>54</sup>
- The City of New York has also invested \$191 million in additional funding to transform the shoreline of South Brooklyn Marine Terminal, one of the country's largest offshore wind port facilities.<sup>55</sup> In order for the Sunset Park shoreline to meet the requirements of the offshore wind industry, additional investment is required to redevelop the traditional industrial maritime infrastructure. Wharves, piers, and roads will be rebuilt to handle heavy-lift equipment, and a substation will be built for connecting the transmission cables from the offshore wind farm to the local power grid. The new facility will differ from a traditional shipping port in that almost all of the traffic will be marine; there will not be a need for rails or large container cranes to carry or load and unload containers from ships.
- City agencies have invested in green jobs training and workforce development pipelines; NYCEDC and the City University of New York announced \$4 million in funding to create workforce development pipelines for students, to ensure that green jobs are made available to graduates of community colleges, creating certifications for jobs such as green sailing, and providing research opportunities in renewable energy and offshore wind industries.<sup>56</sup>
- From the bottom up, grassroots efforts—coordinated by organizations such as UPROSE, an environmental justice organization—have also led the charge to transform the IBZ and surrounding areas into a green jobs district.<sup>57</sup> Towards this end, UPROSE has released planning recommendations for a green industrial district through their GRID 2.0 plan, which outlines steps toward sustainable industrial development in Sunset Park.<sup>58</sup>

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<sup>53</sup> UPROSE, 2023, [Sunset Park GRID](#)

<sup>54</sup> Work Boat, 2018, "[New York City to Reactive South Brooklyn Marine Terminal](#)"

<sup>55</sup> Waterfront Alliance, 2022, "[South Brooklyn Marine Terminal gets ready for massive new offshore wind facility](#)"

<sup>56</sup> UPROSE, 2023, [Sunset Park GRID](#)

<sup>57</sup> Interview with SBIDC & UPROSE

<sup>58</sup> UPROSE, 2023, [Sunset Park GRID](#)

## Land Use Policy

Figure 21: Land Use Map for Sunset Park West of I-278

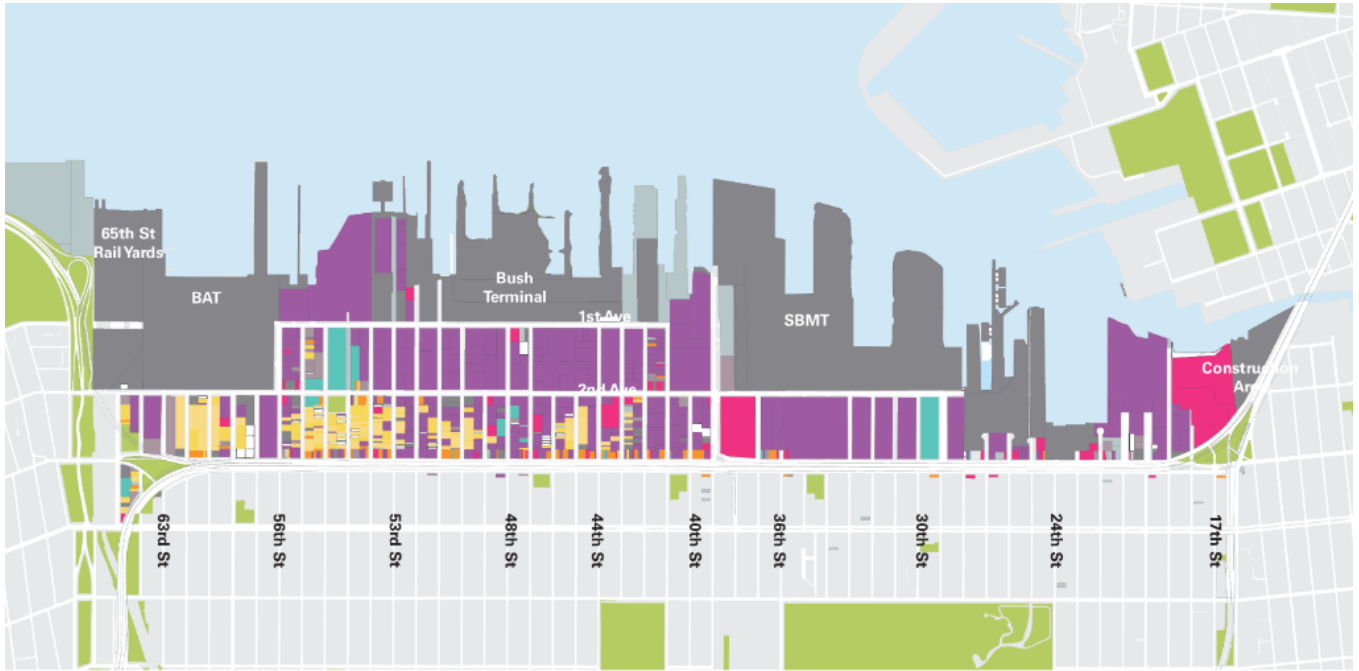


Figure 22: Graphical Breakdown of Land Uses by Acreage in Sunset Park West of I-278

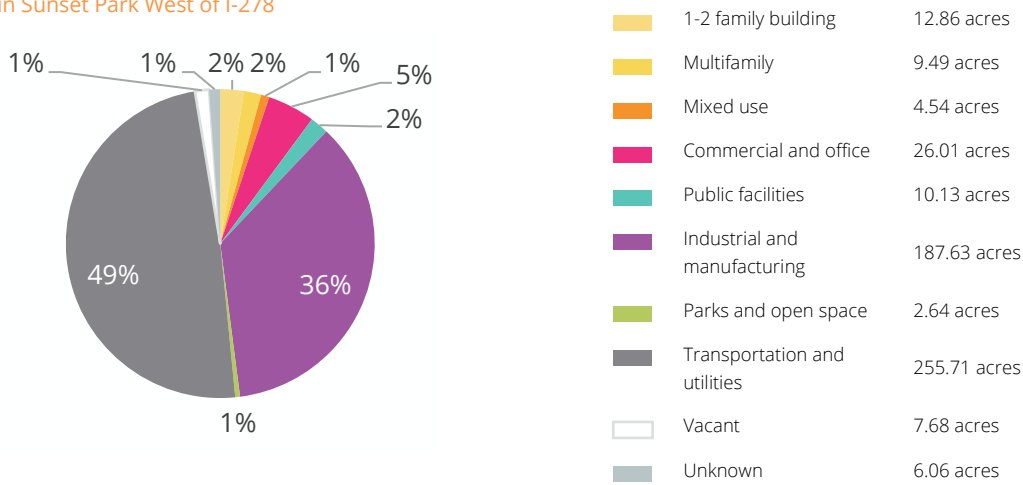


Figure 23: Commercial Use Concentration

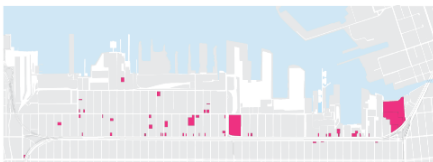


Figure 24: Residential Use Concentration



Figure 25: Industrial Use Concentration



(excluding marine terminals)

**Industrial Business Zone regulations have helped preserve industrial land uses along Sunset Park's waterfront since 2005.** IBZs generally restrict residential development within IBZ boundaries and require permits to construct commercial offices.<sup>59</sup> Strong political favor and coalition building among council members, constituents, economic development organizations, and environmental justice organizations have preserved zoning regulations and industrial use of the land. Currently, the Sunset Park IBZ waterfront area is zoned mostly for manufacturing. The waterfront lots are zoned for heavy and medium industrial uses.

**While there has been remarkable residential pressure and proposals to rezone the area to allow for more affordable housing, the area has not been rezoned due to strong public favor for preserving industrial uses.**<sup>60</sup> Rezoning proposals have faced immense pushback from the Sunset Park Taskforce, a local group bringing together community stakeholders, business owners, elected officials, and neighborhood residents. Protection from residential and commercial pressures has also come from the City Council, EDC, and the Sunset Park Taskforce. Sunset Park's 197a, which focuses on protecting the manufacturing and maritime waterfront, was adopted by the New York City Council in 2009, and in the same year, EDC designated Sunset Park a 'sustainable urban industrial district' in its Sunset Park Waterfront Vision Plan. While there is a "retail creep," as commercial use is not regulated in IBZs, developers who have sought to build parking spaces, hotels, and retail outlets have faced pushback from the local community boards, especially for hotel development.<sup>61</sup> Community worries include the idea that creating hotels will lead to the rezoning of areas for luxury housing and future residential real estate development.

## Climate Adaptation

**As New York City's largest industrial waterfront, the Sunset Park IBZ is extremely vulnerable to flooding from coastal storms and also poses environmental risks to local residents and workers.** The majority of the waterfront is located in a flood zone.<sup>62</sup> Due to a long history of industrial use, brownfield contamination, which could pose a threat to water quality during flooding, has become an environmental concern. Studies and ongoing research are being done both by the City and State to implement climate adaptations and interventions to address these critical challenges.

**The waterfront area was hit by Superstorm Sandy in 2012, which caused significant harm due to vulnerable infrastructure.** Because the waterfront no longer functions as a permeable floodplain marshland, Sandy caused significant damage to the area. A 14-foot storm surge devastated infrastructure and buildings, displacing residents and businesses. While large-scale investments in building flood walls have not yet been made in the area, the State is looking into interventions such as green or blue roofs, green walls, and planting to make smaller-scale infrastructure investments.<sup>63</sup> Proposals for large-scale investments in climate adaptation have been made in adjacent neighborhoods, including a \$52 billion project proposed by U.S. Army Corps of Engineers Citywide to include resiliency measures in northern Brooklyn and a \$177 million upgrade to Gowanus Tunnel.

To simultaneously remediate developable land and pave the way for additional industrial and commercial development, the State is looking to take advantage of federal funding options for brownfield cleanups, including

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<sup>59</sup> NYS DOS, 2021, [Brownfield Opportunity Study](#)

<sup>60</sup> Curbed, 2019, "[Long-stalled Sunset Park development back on the market](#)"

<sup>61</sup> Gotham Gazette, 2015, "[Sunset Park Redevelopment Proposal misses the mark](#)"

<sup>62</sup> New York City Department of City Planning, 2024, [Flood Hazard Map](#)

<sup>63</sup> NYS Department of State, 2021, [Brownfield Opportunity Area Study](#)

New Market Tax Credits, New York State Brownfield Cleanup Program Tax Credits, and New York City Brownfield Incentive Grants.<sup>64</sup>

Grassroots resiliency efforts include community-based interventions led by UPROSE, an environmental justice organization promoting on-the-ground efforts to address environmental health risks. UPROSE takes the lead in assisting business owners, including small auto shops, in identifying and adopting best practices to minimize the risk of releasing fugitive chemicals.<sup>65</sup>

## Economic Development

**Because NYCEDC is a major real estate owner in the area, owning more than 200 acres of real estate at the Brooklyn Army Terminal alone, the City has been able to make big investments to revitalize the terminals and reactivate their historical maritime capabilities.** In addition to terminal infrastructure investments noted above, NYCEDC has set aside \$100 million to create the [Climate Innovation Pilot Program](#) at Brooklyn Army Terminal, to foster the growth of innovative and sustainable “blue and green” economic development in the area. As a result of EDC investments, the entire IBZ district is poised to be leveraged as a testbed for piloting climate technologies. The hub will accelerate commercialization pathways for climate tech startups and incumbent businesses, and offer space, facilities, and business growth programs to support these startups and businesses, serving 150 startups over 10 years and creating \$2.6 billion of economic impact and 600 jobs. The hub will also provide workforce development programming and training for the local Sunset Park community, so residents can engage in green jobs training and opportunities.

**City, State, and federal agencies have also invested capital in upgrading marine and freight infrastructure for industry use. The government has used a multi-pronged approach to modernize industrial uses in the area, while also upgrading some spaces for other uses, such as for public and commercial use.** City, State, and Federal agencies have invested capital in upgrading marine and freight infrastructure for industry, including \$125 million in bulkhead repairs<sup>66</sup>, modernization of rail and terminal infrastructure, and dredging for South Brooklyn Marine Terminal. This investment has led to South Brooklyn Marine Terminal becoming the focal point for manufacturing and distribution industries. To address community needs, investment in Bush Terminal Piers and Park has also created a new public realm destination to re-establish public access to the waterfront. Furthermore, Federal Building 2 and Brooklyn Army Terminal (BAT)—which used to be historic warehouses—are now being repurposed to become modernized buildings, which will fulfill some real estate demands for small to medium-scale industries.

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<sup>64</sup> NYS Department of State, 2021, [Brownfield Opportunity Area Study](#)

<sup>65</sup> UPROSE, 2024, <https://www.uprose.org/>

<sup>66</sup> NYS Department of State, 2021, [Sunset Park BOA Study](#)



## Port of Seattle and Seattle Industrial Waterfronts

*The Greater Seattle-Tacoma Area includes two international commercial ports: the Port of Seattle and the Port of Tacoma. These two ports function independently but also collaborate through a joint development authority, the Northwest Seaport Alliance, which was created in 2015 under the Federal Maritime Commission. Each port is represented by five commissioners, who are elected at-large within their respective county (King County for Seattle; Pierce County for Tacoma) and serve four-year terms. Given the volume of cargo that enters the region, the Northwest Seaport Alliance manages the container, breakbulk, auto, and some bulk terminals for both ports.*

Maritime industrial uses within the City of Seattle are concentrated around two major Manufacturing Industrial Centers—Greater Duwamish and Ballard Interbay—which combined make up a little over 10 percent of Seattle's total land area. The **Port of Seattle**, which also includes the Seattle-Tacoma airport, directly supports over 100,000 jobs in the region. Seattle's historic connection to the water is a defining characteristic of the city's cultural identity. Iconic tourist destinations, like the Pike Place Market, originally developed because of their proximity to piers and wharves around Elliott Bay. However, as the city's economy has shifted to technology and professional services, coupled with rising housing costs, there are increasing calls from both community activists as well as the business community to transition some of Seattle's historic maritime industrial lands into residential or commercial uses.

*The Port of Tacoma and related industrial waterfronts are explored in a separate case study below.*

### Land Use Policy

Maritime industrial uses within the City of Seattle are concentrated around two major Manufacturing Industrial Centers—Greater Duwamish, which includes the Port of Seattle, and Ballard Interbay—which combined make up a little over 10 percent of Seattle's total land area (see Figure 21 below).

Despite Seattle's historic origins as a fishing and port city, the city has struggled to pass comprehensive industrial maritime protections over the last twenty years because it has not had consistent political leadership. The city has had four different mayors (not including two special appointments) in the last fifteen years. Each mayoral administration identifies protecting and preserving industrial maritime uses as an important component of the city's economy, but it is often deprioritized due to other politically sensitive issues, like Seattle's growing unhoused population and perceptions around street crime.

Stakeholders shared that developers and the business community eventually formed unprecedented partnerships in the mid-2010s with affordable housing advocates to put pressure on the city to redevelop land around Lumen Field in an area known as South of Downtown (SoDo). The land is directly adjacent to the Port of Seattle and has access to major freeways. While rezoning this land would help address some of the city's housing pressures, it would also reduce the scope of industrial uses.<sup>67</sup>

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<sup>67</sup> Cohen, Josh. "Seattle's decades-long rezoning fight." July 7, 2023. [Cascade PBS](#).

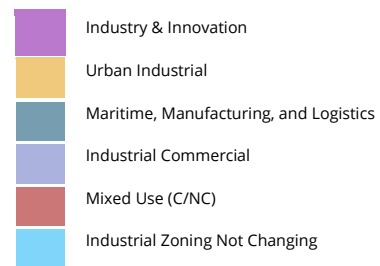
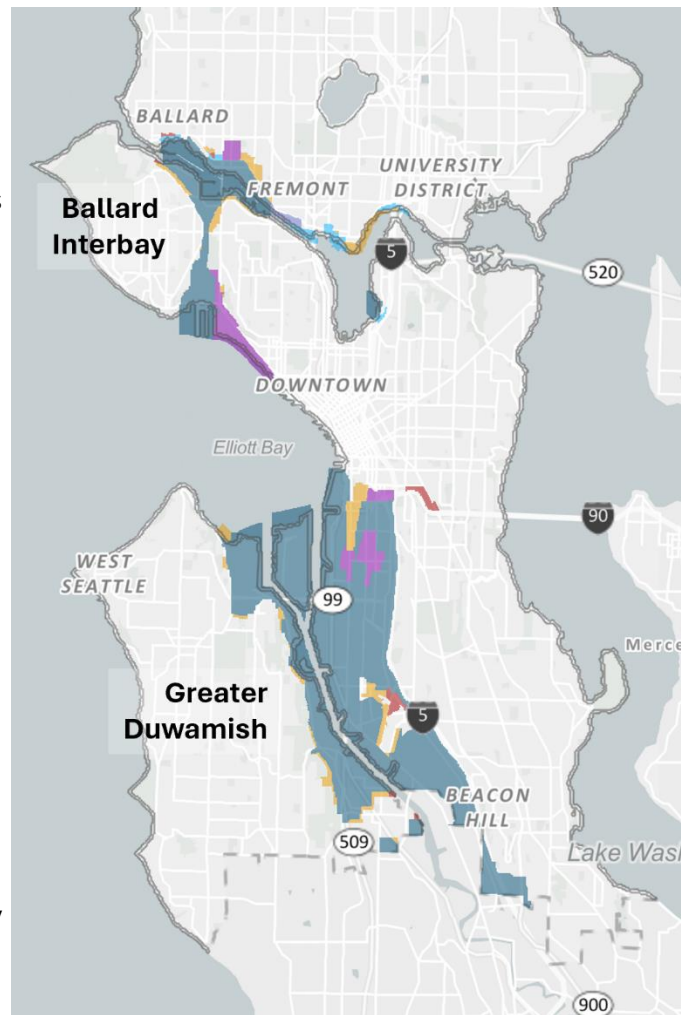
Conversations around what to do with SoDo finally reached a head during the Durken administration. In 2019, the City of Seattle convened an Industrial and Maritime Strategy Council to propose a new industrial and maritime zoning amendment to the City's comprehensive plan, which was last updated in 2007. The Council—made up of maritime industrial business leaders, labor, residents, and City Council members— included a citywide committee and four regional committees that represented Seattle's primary industrial maritime areas: Georgetown/South Park, SoDo, Interbay, and Ballard.

In addition to thinking through a proactive land use policy agenda, the council was tasked with:

- Implementing restorative economic principles to support the cultural, economic, and political power of communities most impacted by economic and racial inequities
- Strengthening Seattle's industrial and maritime sectors
- Promoting equitable access to high-quality, family-wage jobs for BIPOC communities
- Improving movement of people and goods within industrial zones
- Aligning Seattle's industrial and maritime strategy with climate and environmental protection goals

The Council eventually developed 11 strategies in 2021, which the Office of Planning and Community Development turned into five ordinances, with the goal to create options for new housing while still allowing for traditional maritime uses. The ordinances hope to accomplish this by creating three new types of industrial zones to create a transition from heavy industrial to more residential and commercial corridors. The proposed changes were finally approved in 2023 under the Harrell administration.<sup>68</sup>

Figure 26: City of Seattle Industrial Rezoning Oct 2023<sup>69</sup>



<sup>68</sup> City of Seattle. Office of Planning and Community Development. ["Industrial and Maritime Strategy."](#)

<sup>69</sup> City of Seattle, Office of Planning and Community Development. "Industrial and Maritime Strategy." Oct 23, 2023.



The three new zones that emerged for Seattle's maritime industrial areas included:

- **Maritime, Manufacturing, and Logistics (MML).** This includes existing industrial areas, with a focus on more traditional, intensive industrial uses, like manufacturing, warehousing, and shipping. Development in this zone also has stronger restrictions around non-industrial uses to prohibit their construction.
- **Industry & Innovation.** A transitional zone meant to encourage dense industrial development around existing and future light-rail stations. Uses for Industry and Innovation focuses on light-industrial, R&D, and industrial-adjacent businesses. It also includes non-industrial office space as a developer bonus, but only if the lower floors are dedicated to an approved industrial use.
- **Urban Industrial.** The final transitional zone between heavy or light industrial uses before reaching residential or commercial districts. Uses within this zone focus on commercial industrial uses (e.g., art studios, breweries/taprooms, retail) but with restrictions around size. It also allows the construction of affordable units (60-90% AMI), but it does not specify how it will ensure these homes are available to industrial maritime workers.

### Climate Adaptation

The Northwest Seaport Alliance, which is a venue for collaboration between the Ports of Seattle and Tacoma, has advanced a series of climate and environmental policies to ensure the region has clean air and water. The Alliance's **Air Quality and Sustainable Practices** team collaborates with both internal and external partners to implement strategies like the Clean Truck Program, which requires all trucks serving international terminals to have a model year on or after 2007. Both ports are also expanding their shore power program, which allows ships at berth to connect to the local power grid versus running their diesel engines. Shore power is currently available at the TOTE Terminal in Tacoma and Seattle's Terminal 5. The Alliance also has a **Water Quality** team, which oversees the port's treatment systems and provides technical assistance for companies navigating different permits required by both cities to protect watersheds and sources.<sup>70</sup>

The Port of Seattle manages its own **Climate and Air Action Plan**, which outlines a series of goals it hopes to achieve by 2030. Those goals include making sure all port-owned light duty vehicles are either electric or use renewable fuels and completing a "blue carbon" study at Smith Cove to support the restoration of the native habitat by planting oyster shells, kelp, and eelgrass.

### Economic Development

Interviewed stakeholders observed that the tension that played out over land use issues in the City of Seattle also manifests in economic development. While maritime uses are an important part of Seattle's historic identity, the region's economy is now increasingly defined by professional and technology services like Boeing, Amazon, Starbucks, and Microsoft. Maritime industrial employers are now either large, multinational corporations – who will just as easily leave for ports further south in California at either the Port of Oakland or Long Beach because they do not have a connection to the region – or are smaller, mom-and-pop operations who do not have the capacity to effectively organize. Economic development is currently organized around the Port of Seattle and its operations.

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<sup>70</sup> The Northwest Seaport Alliance. "[Environment](#)."

The Port of Seattle recently announced a \$100M investment to maintain docks for commercial fishers, enhance inland facilities, and incorporate an educational aspect of the terminal's history through wayfinding and signage. This investment includes an expansion of an existing conference center and the creation of the **Maritime Innovation Center (MIC)**, which will become the headquarters for an incubator and accelerator program. The building is currently under construction, with plans to open in late 2025.<sup>71</sup> Once completed, the MIC will become the home for **Maritime Blue**. Maritime Blue was created out of a stakeholder group convened by the Washington Department of Commerce during Governor Jay Inslee's second term in 2017. The group, made up of representatives from across the maritime industrial sector, including major employers as well as workers, workforce development professionals, and policymakers, developed a statewide strategy to help the State transition to a sustainable maritime economy by 2050. The recommendations from this initial report eventually led to the creation of Maritime Blue to support its implementation.<sup>72</sup>

Figure 27: Rendering of the Maritime Innovation Center



Maritime Blue focuses on five strategic goals, each with a supporting initiative or project. While it is a statewide organization, it primarily focuses on supporting the maritime industrial economy in and around Seattle-Tacoma. Specific strategies include supporting the acceleration of electrifying the ferry system, supporting the commercialization of emerging blue technologies through the MIC, and creating a formal cluster organization made up of businesses, public entities, and community organizations. Maritime Blue is also developing a Youth Maritime Collaborative, which will focus on supporting underrepresented communities through training and high school internships.

<sup>71</sup> Port of Seattle. "[Port to build landmark Maritime Innovation Center.](#)" August 8, 2023.

<sup>72</sup> Washington Maritime Blue. "[Washington State's Strategy for the Blue Economy.](#)" January 2019.



## Port of Tacoma and Tacoma Industrial waterfronts

*The Greater Seattle-Tacoma Area includes two international commercial ports: the Port of Seattle and the Port of Tacoma. These two ports function independently but also collaborate through a joint development authority, the Northwest Seaport Alliance, which was created in 2015 under the Federal Maritime Commission. Each port is represented by five commissioners, who are elected at-large within their respective county (King County for Seattle; Pierce County for Tacoma) and serve four-year terms. Given the volume of cargo that enters the region, the Northwest Seaport Alliance manages the container, breakbulk, auto, and some bulk terminals for both ports.*

Industrial maritime uses in Tacoma are concentrated around Commencement Bay, a natural deep-water harbor in the South Puget Sound, and is home to the **Port of Tacoma**, which supports over 42,000 jobs and generates roughly \$3 billion dollars in economic activity for Pierce County.<sup>73</sup> The Port occupies most of a 5,000-acre habitat known as the Tacoma Tideflats. Unlike Seattle, which has industrial maritime uses scattered throughout the city, the majority of Tacoma's industrial activity occurs in and around this area. This makes it easier for industrial maritime stakeholders, like the Port or the **South Sound Manufacturing Council**, a program of the **Tacoma-Pierce County Chamber**, to advocate for preserving industrial designated land use. However, some residents and community members would like to limit industrial uses along the waterfront because of the negative health and environmental impacts this type of work causes.

*The Port of Seattle and Seattle industrial waterfronts are explored in a separate case study above.*

### Land Use Policy

Over the last eight years, pressure between the maritime industries and community groups has escalated, beginning with a City Council amendment in 2017 that severely limited land use in and around the Port. The initial regulations introduced a series of interventions, most notably pausing new non-industrial uses at the Port and limiting expansion of existing non-industrial uses. The regulations also banned new coal terminals and bulk storage facilities but allowed an exception for existing uses, though any proposed site expansions were capped at no more than 10 percent of their existing storage, production, or distribution capacity. The Council instituted this regulation as a temporary measure before it began a subarea planning process for the Tacoma Tideflats, but the regulations were extended multiple times over the next five years due to delays in the process and the pandemic.<sup>74</sup>

The **Tacoma Tideflats Subarea Plan** was a joint planning process intended to create a shared vision and coordinated approach around strategic capital investments, development, and environmental regulation. Given the threat of sea level rise – an anticipated 4' rise plus 1' storm surge – five different levels of government or entities were involved in the multi-year plan: Washington State, Pierce County, the City of Tacoma, the Port of Tacoma, and the Puyallup Tribe of Indians, who have a historic claim to the region. The final plan resulted in a series of changes to the City's land use code that were adopted by the City of Tacoma City Council in October 2022. Updates to existing land use policy were able to strengthen protections for most industrial uses against

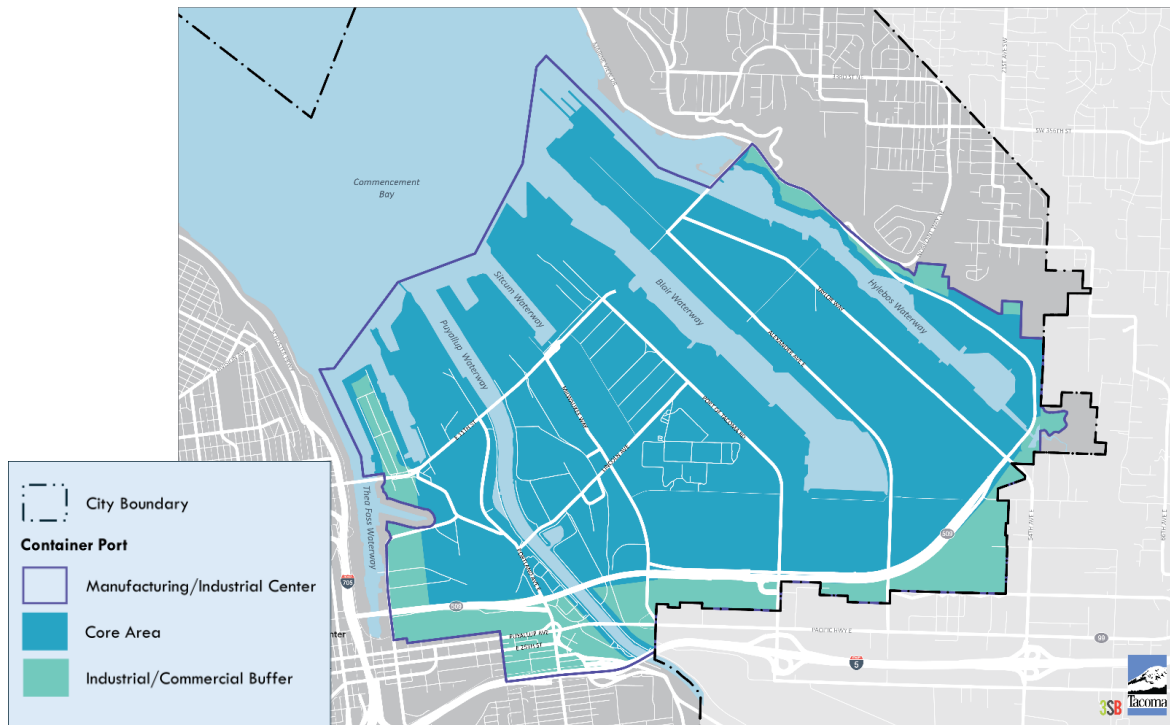
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<sup>73</sup> [Port of Tacoma](#).

<sup>74</sup> Ruud, Candice. "Environmentalists cheering change that would limit growth of current Tideflats businesses." November 17, 2017. [The News Tribune](#).

non-industrial uses while also addressing community concerns by restricting heavy industrial usage and making more of an effort to communicate any development changes to the public.<sup>75</sup>

Figure 28: City of Tacoma Tideflats Subarea Plan<sup>76</sup>



Key updates included:

- **Expanding notification for heavy industrial permits and land use amendments.** During the community engagement process, constituents revealed that the previous requirements did sufficiently notify potentially impacted communities. The public hearing notification expanded the radius to anyone living within 2,500 feet of a proposed site.
- **Retaining industrial land.** The previous code allowed for a variety of non-industrial uses. The final recommendations prohibit specific non-industrial uses, like K-12 facilities or retail.
- **Introducing a new overlay district to limit residential encroachment in industrial areas around the Port of Tacoma.** Given the challenges surrounding affordability in and around the Seattle-Tacoma region, developers began purchasing and constructing homes – typically single-family homes – on the outskirts of the Port. The final recommendations severely restrict residential development by establishing new maximum density for development at one unit per acre.
- **Prohibiting or severely limiting certain industrial uses.** The final recommendations prohibit mining and quarrying; smelters; coal; petrochemical, explosives, and fertilizer manufacturing. It also requires chemical manufacturing of hazardous materials to obtain a conditional use permit, restricts their use to specifically designated zones, and bans the construction of new fossil fuel facilities.

<sup>75</sup> City of Tacoma. Planning and Development Services. ["Tideflats Subarea Planning Project."](#)

<sup>76</sup> City of Tacoma. Planning and Development Services. ["Tideflats Subarea Planning Project."](#)

## Climate Adaptation

As discussed above (see “Port of Seattle”), the Northwest Seaport Alliance works on a series of climate and environmental policies focused on stewarding clean air and water for the region: a clean truck program, shore power program to connect berthed ships to the local power grid, and water quality treatment.<sup>77</sup> In Tacoma, the Port’s Strategic Plan outlines its environmental leadership strategy to protect and enhance the environment of Commencement Bay and Puyallup River by continuing to clean up contaminated land, improve habitat and water quality, and minimize air emissions from Port operations.<sup>78</sup>

Due to the concentration of heavy industrial uses at the Port of Tacoma, the watershed in and around Commencement Bay is heavily contaminated. Since the late 1990s, various coalitions have formed – ranging from representation from the two local tribes, the Puyallup and Muckleshoot, as well as federal and State agencies and community groups – to organize clean-up and remediation efforts. In 2015, the **EarthCorps**, a Seattle-based environmental nonprofit, developed a **Commencement Bay Stewardship Collaborative**, which was a framework and management plan that outlines the region’s restoration plans, site monitoring and management, and maintenance. Over the last ten years, EarthCorps has led efforts to promote wetland health and remove non-native invasive species in the Bay.<sup>79</sup>

Figure 29: EarthCorps members Cleaning up Commencement Bay.



The Tideflats includes an EPA Superfund cleanup, known as the Tar Pits, where the Puyallup River Delta meets the Thea Foss waterway. Residents in and around Commencement Bay are within the 80 to 90<sup>th</sup> percentile in the nation for rates of cancer due to exposure to air pollution from nearby industrial facilities, waste treatment storage and disposal, diesel emissions, and wastewater discharges. Over the last ten years, climate activists and local community groups have organized around stopping the construction of a 14-story tank on the Tideflats, which is owned by **Puget Sound Energy (PSE)** and holds 8 million gallons of liquefied natural gas. In 2012, the EPA gave TOTE Maritime, a domestic shipper, a waiver to switch their refueling station to natural gas. Two years later, PSE signed a contract with TOTE to supply their ships with natural gas. The **Puyallup Tribe** and a coalition of environmental groups represented by EarthJustice repeatedly appealed, but in 2021, the State Pollution Control Hearings Boards issued final permits for the tank, with the caveat that PSE monitors sulfur dioxide and volatile organic compound emissions. While City ordinances technically limit new petrol infrastructure, the tank was allowed given the perceived economic benefits.<sup>80</sup>

<sup>77</sup> The Northwest Seaport Alliance. “[Environment.](#)”

<sup>78</sup> Port of Seattle. “[Maritime Climate and Air Action Plan.](#)”

<sup>79</sup> Earth Corps. “[Commencement Bay.](#)”

<sup>80</sup> Moore, Rico. “Tacoma methane storage stirs conflict over climate, health, and tribal rights.” March 9, 2022. [Cascade PBS.](#)

## Economic Development

Maritime industrial jobs remain an important part of the local economies for the Seattle-Tacoma region. However, as with other parts of the country, employers are concerned about how to continue attracting and retaining talent as older employees begin to age out of the workforce.

The region is attempting to address this by not only enacting land use policies that protect current maritime industrial uses but also investing resources in growing the economy and training the next generation for jobs of the future. The Port of Tacoma is playing an important role in training youth with its **Port Maritime Center** and a partnership with Tacoma Public Schools.<sup>81</sup> The program, called “Maritime | 253,” will offer career and education focused on technical trades, transportation and logistics, and sustainability. Construction for the center, which is located on Port property, is set to begin in May 2025.

The Maritime Center is just one of several other economic and workforce development initiatives outlined in the Port of Tacoma’s strategic plan. Other priorities include strategically acquiring and developing real estate to support land use and infrastructure policies that will protect the cargo supply chain or improve transportation connectivity between the Port and major highways.<sup>82</sup>

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<sup>81</sup> Port of Tacoma. [“Port Maritime Center.”](#)

<sup>82</sup> Port of Tacoma. [“2021-2026 Strategic Plan.”](#)



## Port of San Francisco

The Port of San Francisco encompasses more than seven miles of the San Francisco Bay waterfront, stretching from the Hyde Street Pier to India Basin.<sup>83</sup> From 1863 to 1968, during the height of the maritime industrial economy, the State of California controlled the Port. During this time, several finger piers were constructed to facilitate the break-bulk shipping industry. The State of California filled the Bay to construct docks and wharves to facilitate industrial economies.<sup>84</sup>

In 1968, through the Burton Act, the waterfront land was transferred from the State of California to the City of San Francisco. The City created the Port Commission to regulate the Port of San Francisco. The waterfront land was designated in “public trust,” and the Port, as the trustee of these public lands, was required to continue to promote maritime uses of the waterfront land while also prioritizing public use.<sup>85</sup>

As a result of the Burton Act and the creation of the Port Commission, the Port has a unique financing and governance structure. Revenues generated by the Port can only be used for Port purposes. Furthermore, while the Port is technically a structured department within the City, the City does not have any financing instruments to utilize its funding to maintain Port facilities and relies solely on revenues from Port properties.<sup>86</sup> While the Port is expected to fulfill its ‘public trust’ obligations to both City and State residents, the Port Commission has struggled to unlock public capital for Port upkeep.

The decline of the Port’s industrial character can also be attributed to its inability to keep up with the competition: the Port of Oakland, which historically has had better inland connection to major industrial zones in Oakland, and which was faster to modernize its cargo and container terminals, outpaced the Port of San Francisco in terms of volume of cargo handled. As a result of this failure to compete domestically with the Port of Oakland, as well as with foreign competition in shipbuilding and ship repair, the Port of San Francisco experienced a drastic reduction in the size of its industrial workforce.<sup>87</sup>

As a result of industrial decline and lack of City financing, between 1997 and 2014, the Port of San Francisco turned to public-private partnerships to revitalize the Port.<sup>88</sup> The decline of the maritime industrial economy in San Francisco and struggles to upkeep the industrial Port have led to the proliferation of non-industrial use in the waterfront area, driven by citywide demand for commercial, residential, and open space uses. Non-industrial maritime recreational uses, which are very popular with both residents and visitors, have also proliferated at the waterfront.

During this time, many of the piers were transformed into commercial office and retail spaces or opened up for public use, and the Port Commission consolidated industrial operations to certain piers, as only a handful of shipping lines still existed from the Port. Remaining finger piers became underutilized, as they were not large

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<sup>83</sup> Port of San Francisco, 2024, [‘About the Port’](#)

<sup>84</sup> Port of San Francisco, 2009, [Land Use Plan](#)

<sup>85</sup> Port of San Francisco, 2009, [Land Use Plan](#)

<sup>86</sup> SPUR, 1999, [The Decline of the Port](#)

<sup>87</sup> Port of San Francisco, 2009, [Land Use Plan](#)

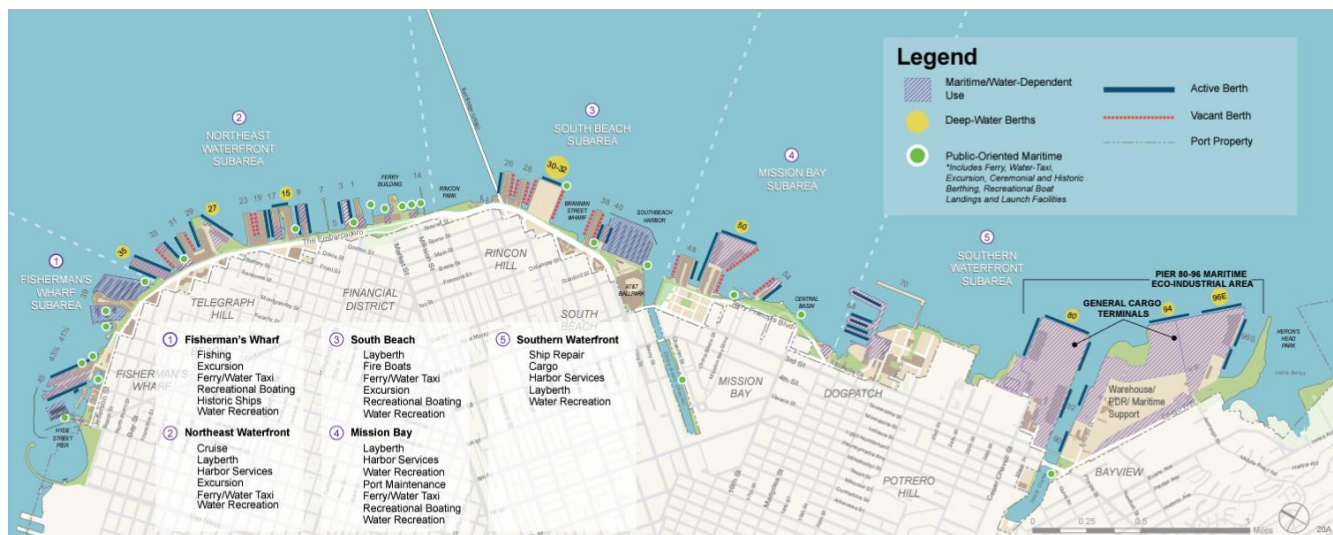
<sup>88</sup> Port of San Francisco, 2015, [Waterfront Land Use Plan 1997 – 2014 Review](#)

enough to support largescale industrial or shipping operations.<sup>89</sup> Today, true industrial uses of the waterfront are rare.<sup>90</sup> Industrial uses are concentrated at the southern edge of the waterfront, at Piers 80, 92, and 94-96.

The Port of San Francisco is currently trying to preserve the remaining cargo shipping and support operations to ensure the integrity of the piers to support future industrial activities.<sup>91</sup> To this end, the Port has attempted to protect the truck routes and transportation access to these piers and advocated for increased freight rail access to the Southern Waterfront in order to support continued industrial operations. At the Southern Waterfront, Piers 90-94, about 51 acres, can still support industrial warehousing.<sup>92</sup> However, the financing necessary to improve these Piers and support industrial activities once again currently exceeds Port resources. The Port is working with State actors, such as the California State Lands Commission, to determine if a public trust strategy can be implemented to improve the site and reactivate industrial uses once again at these Piers.<sup>93</sup>

## Land Use Policy

Figure 30: Land Use in the Port of San Francisco



Land uses of the Port waterfront are determined by Proposition H regulations, a City legislative instrument put into place to ensure land use remains consistently in line with public trust obligations and maritime uses.<sup>94</sup> Proposition H was implemented in 1990 by the City's voters, requiring the Port Commission of San Francisco to prepare a waterfront land use plan informed by public input to detail acceptable waterfront uses.<sup>95</sup> While Port lands are zoned for commercial uses (community businesses), light industry, and heavy industry, Proposition H requires the Port Commission's waterfront planning efforts to identify acceptable and unacceptable non-maritime uses of the waterfront land, which includes the piers and land within 100 feet of the shoreline.<sup>96</sup> The Planning Commission of San Francisco then amends the Zoning Map and Planning Code to reflect the latest policies.<sup>97</sup> Proposition H requirements have limited certain commercial properties from establishing footholds in the

<sup>89</sup> HR&A observations

<sup>90</sup> Port of San Francisco, 2024, [Waterfront Plan](#)

<sup>91</sup> Port of San Francisco, 2024, [Waterfront Plan](#)

<sup>92</sup> Port of San Francisco, 2016, [Maritime Eco-Industrial Center](#)

<sup>93</sup> California State Lands Commission, 2023, [Port Readiness Plan](#)

<sup>94</sup> Port of San Francisco, 2015, [Waterfront Land Use Plan 1997 - 2014 Review](#)

<sup>95</sup> City of San Francisco, 2014, [Voter Approval for Waterfront Development Height](#)

<sup>96</sup> Port of San Francisco, 2024, [Waterfront Plan](#)

<sup>97</sup> Port of San Francisco, 2007, [Waterfront Plan](#)



waterfront (deliberations by the Port Commission have determined, in the past, that hotels are unacceptable non-maritime uses).<sup>98</sup> Proposition H also restricts the development of non-accessory parking and residential uses (within 100 feet of the shoreline).<sup>99</sup>

In addition, the San Francisco Bay Conservation and Development Commission, a planning and regulatory body with jurisdiction over the entirety of the Bay, including land within 100 feet of the shoreline of the Bay, has also played a role in adjudicating uses in the Port of San Francisco. SFBCDC has limited non-water-dependent commercial uses of the waterfront, including office uses.<sup>100</sup>

Within the context and requirements of Proposition H and SFBCDC's influence, maritime industrial uses have been replaced by recreational uses and other maritime resident and tourist amenities. Recreational activities and tourism remain one of San Francisco's largest industries today, and waterfront planning led by the Port demonstrated strong public demand for cultural, educational, recreational, entertainment, and accessory food and beverage uses along the waterfront.<sup>101</sup>

The Port has begun to leverage demand for recreational, and accessory uses to fund port infrastructure improvements. The Port Commission has sought out partnership opportunities with developers and property owners to secure private funding through leases of accessory commercial uses; as a result, most of the Port waterfront has become a mixed-use area.<sup>102</sup> The latest waterfront plan prioritizes non-industrial maritime and water-dependent uses of the land, including water transportation lines (cruise ships, ferries, and water taxis) for a growing maritime transportation industry. Public access and open space along the waterfront are also high priorities for waterfront land use, fulfilling the port's obligations of the 'public trust' designation.<sup>103</sup> Many former industrial areas have been converted into open spaces for parks and public access.<sup>104</sup>

## Climate Adaptation

The environmental consequences of filling the bay to expand maritime industrial operations included the destruction of tidal wetlands and contamination of the water. To rehabilitate some of these environmental issues, the Port is working to restore some of the remaining wetlands along Pier 94 and protect them from future damage, as these wetlands also mitigate water quality issues and offer buffer areas in flood zones.<sup>105</sup>

Furthermore, to address future flood risk to the waterfront, the Port of San Francisco is implementing strategies to promote the environmental resiliency of the port, detailed in its [Waterfront Resilience Program](#). The Port Commission anticipates sea level to rise seven feet over the next century and has published a draft plan to strengthen flood protections along the 7.5-mile stretch of the Port. The plan includes strategies to raise shorelines, fortify and adapt waterfront properties and floodproof infrastructure, utilize the natural landscape of the piers to eco-engineer nature-based seawalls, and build stormwater management systems. The plan, which incorporated years of technical analysis from the U.S. Army Corp of Engineers, will cost over \$13 billion dollars to realize, the majority of which may be financed by the federal government if approved by Congress.<sup>106</sup>

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<sup>98</sup> Port of San Francisco, 2009, [Land Use Plan](#)

<sup>99</sup> Port of San Francisco, 2024, [Waterfront Plan](#)

<sup>100</sup> Port of San Francisco, 2009, [Land Use Plan](#)

<sup>101</sup> Port of San Francisco, 2024, [Waterfront Plan](#)

<sup>102</sup> Port of San Francisco, 2015, [Waterfront Land Use Plan 1997 – 2014 Review](#)

<sup>103</sup> Port of San Francisco, 2024, [Waterfront Plan](#)

<sup>104</sup> Port of San Francisco, 2016, [Maritime Eco-Industrial Center](#)

<sup>105</sup> Port of San Francisco, 2024, [Wetland Restoration](#)

<sup>106</sup> Port of San Francisco, 2024, [Waterfront Resilience Program](#)

## Economic Development

Figure 31: Maritime Eco-Industrial Center at Piers 80-96



In efforts to both preserve the maritime industrial uses of the Southern Waterfront and also promote environmental resiliency efforts, the Port of San Francisco is seeking to transform Piers 80-96 into a “Maritime Eco-Industrial Center.” This Center is an industrial area that incubates green technology and design to minimize environmental impacts of industrial uses. It also prioritizes the workforce development programming for local residents and the provision of open space for public use. To this end, the Port Commission realized a two-and-a-half-year planning process to identify open spaces and park locations within the industrial area that can coexist with remaining industrial businesses.

Planning efforts to promote existing and future industrial uses within the Eco-Industrial Center include identifying where industry use can be preserved on the land, leasing land to recycling operators and other green industries that promote environmental resiliency efforts, and pursuing additional leasing and cargo operations. While industrial uses throughout the Port have diminished overall, the new Eco-Industrial Center offers a microcosm for an area in which industry, open space, and green technology can exist synergistically and create workforce development pipelines for the local community. To develop the Maritime Eco-Industrial Center, the City of San Francisco allocated about \$88 million in public and private investment.<sup>107</sup>

As another tool for economic development, the Port of San Francisco is considering offshore wind to revitalize industry on Port lands and refurbish and update old maritime assets.<sup>108</sup> The California Energy Commission has identified offshore wind as a high-priority initiative to switch to clean energy and help the State achieve 100 percent clean electricity and carbon neutrality goals. By 2045, California is attempting to generate 25 gigawatts of energy from offshore wind turbines through the development of 1,600 wind turbines, including turbines floating near the Port of San Francisco.<sup>109</sup> Strategic plans for offshore wind encompass measures to bolster workforce development and training initiatives, aiming to equip and mobilize local workers to fulfill the labor demands of construction.<sup>110</sup>

To revitalize the Port’s industrial uses and bring manufacturing and maritime industrial jobs back to San Francisco, the City must repair its port infrastructure, which offshore wind investment could support. Certain port lands are ideal spaces for supporting offshore wind given that there are multiple maritime terminals with deepwater berths and available industrial workspace. The Port Commission currently envisions Piers 95 and 96 as primary sites for foundations for floating wind turbines, as these Piers have available open acreage for industrial development, deep water berths, and railroad and highway access, all of which is conducive to the development

<sup>107</sup> Port of San Francisco, 2016, [Maritime Eco-Industrial Center](#)

<sup>108</sup> Port of San Francisco, 2024, [Offshore Wind](#)

<sup>109</sup> California Energy Commission, 2021, ‘[California Releases Report Charting Path to 100 Percent Clean Electricity](#)’

<sup>110</sup> California Legislation, [Assembly Bill No. 525](#)

of a strong base for offshore wind development. Piers 68-70 are being envisioned as manufacturing sites, operations and maintenance facilities, and administrative offices for the development of offshore wind equipment, as these Piers once used to be an industry shipyard with structures designed to handle heavy equipment.<sup>111</sup>

Port officials are currently working with the State to develop a strategic plan to unlock funding for development, as the upfront capital costs needed for the revitalization of the industrial areas will require State investment.<sup>112</sup> In February 2024, State Assemblymembers proposed a \$1 billion bond act to help pay for ports to build offshore wind hubs.<sup>113</sup> If approved, the Port of San Francisco will be in competition with other ports in California to utilize federal funding (other ports are also in the process of developing strategic plans to become offshore wind hubs).

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<sup>111</sup> Port of San Francisco, 2024, [Offshore Wind](#)

<sup>112</sup> Port of San Francisco, 2024, [Offshore Wind](#)

<sup>113</sup> CalMatters, 2024, ['Legislators unveil measure to ask voters for \\$1 billion offshore wind bond'](#)

## Educational Partnerships

### Maine Maritime Academy, ME

Figure 32: Maine Maritime Academy Students on Training Cruise



Maine Maritime Academy (MMA) is a public college focused on maritime training located in Castine, Maine. The Academy was first proposed in the 1930s and established by the 90th Maine Legislature in 1941. MMA is one of six non-federal maritime training colleges in the United States.<sup>114</sup> The institution offers two undergraduate degrees across four fields: engineering, marine sciences, marine transportation, and international business and logistics. Additionally, the graduate program provides master's degrees—in international logistics management and maritime management—and associate degrees. The Academy also prepares students for careers as officers in the Marines and the U.S. armed forces.

MMA operated with a \$51 million budget in FY 2023-2024<sup>115</sup>, with \$12 million provided by the State. In 2024, the Academy advocated increasing its base funding from the State from 24% to 49% of its operational budget, given that other State maritime colleges generally receive about 50% of their operating funding from the State.<sup>116</sup> MMA receives some, although limited, funding from federal sources, mainly to cover costs associated with federal programs and federally operated vessels.<sup>117</sup> Federal funding does not cover the operating costs of the college. Additional sources, including tuition, cover the remaining operating budget.

MMA programs integrate hands-on skill-building practice, curricula tied to industry or military-recognized certifications, and educational partnerships with major employers to ensure high rates of employment after graduation. Students who graduate from MMA, and other maritime academies, tend to outearn graduates from other public schools by age 34.<sup>118</sup>

- The Academy's adjacent waterfront campus allows students to build practical skills in maritime trade while interacting with a variety of vessels. Students are able to gain experience as utility workers, launch drivers, powerboat operators, radio operators, and other roles.
- Degree pathways at MMA lead to professional licensing, such as U.S. Coast Guard licenses and certifications from the Center for Professional Mariner Development. With the support of career services, 90% of graduates secure employment within 90 days and earn the highest median earnings among graduates of all public colleges in Maine.
- Joint associate degree programs and other paid apprenticeships provide onramps to direct employment. MMA offers two joint Associate of Science degree programs with Bath Iron Works—a subsidiary of General Dynamics that specializes in the design, construction, and maintenance of combat ships for the

<sup>114</sup> Other non-federal maritime colleges include the California Maritime Academy, the Great Lakes Maritime Academy, the Massachusetts Maritime Academy, the State University of New York Maritime College, and the Texas Maritime Academy.

<sup>115</sup> Johnson, Craig, Maine Maritime Academy. [Testimony in support of LD 21092](#), 2024

<sup>116</sup> Johnson, Craig, Maine Maritime Academy. [Testimony in support of LD 21092](#), 2024

<sup>117</sup> U.S. Department of Transportation, 2024, [The State Maritime Academies](#).

<sup>118</sup> The Upshot. NYTimes. "[Mobility Report Cards: The Role of Colleges in Intergenerational Mobility](#)", by Raj Chetty, John Friedman, Emmanuel Saez, Nicholas Turner and Danny Yagan, The Equality of Opportunity Project.

U.S. Navy. A partnership with Portsmouth Naval Shipyard offers a paid apprentice program that also contributes to Maine's defense industry workforce development.

- The Career Center at MMA connects students with employers through on-campus recruitment and field experience opportunities. Students go on to work with companies such as Shell, Pepsi Co., Kiewit Corporation, General Dynamics, and the Jackson Laboratory.

State maritime academies tend to be less gender and racially diverse than other public colleges, including MMA, but the matriculation of non-white students has trended upward.<sup>119</sup> MMA seeks to cultivate a diverse class with respect to gender and race by focusing on outreach to women, Native American tribes in Maine, and Black students across the United States. Despite outreach efforts, in 2022, only 11% of the student body identified as students of color, similar to the demographics of other maritime academies.<sup>120</sup>

To reduce barriers to admission, test scores are not required. The Academy has one of the highest percentages of women students among State maritime academies, and 70% of students receive need-based financial aid. Despite efforts to provide need-based financial aid to its student body, the average student debt upon graduation is about \$50,000; the institution is currently advocating for increased State funding to provide more financial aid to students, as tuition currently represents a significant portion of the operational budget.<sup>121</sup>

### New York Harbor School, NY

Figure 33: Students at Harbor High<sup>122</sup>



The Harbor School, a public high school founded in Bushwick in 2003, relocated to the waterfront in Governors Island in 2010. The school served 480 students in 2023,<sup>123</sup> offering a curriculum that integrates standard New York State Education Department Regents-based courses with maritime-related study.<sup>124</sup> The Harbor School was established by the Urban Assembly, a nonprofit organization dedicated to improving public education in New York City, in collaboration with the New York City Department of Education (DOE). Founding partners included the Waterkeeper Alliance and the South Street Seaport Museum; the New York Harbor Foundation was incorporated into the school's governance in 2010.<sup>125</sup>

The school's programs in Aquaculture, Marine Biology Research, Marine Affairs, Marine Systems Technology, Ocean Engineering, Vessel Operations, Welding & Fabrication, and other marine-based learning opportunities are designed to prepare students for college and careers in maritime fields. The curriculum emphasizes environmental stewardship, providing students with hands-on experience in environmental restoration and the preservation of the marine environment. One such program at the school is the Billion Oyster Project<sup>126</sup>, an initiative aimed at restoring one billion live oysters to New York Harbor over the next twenty years. This project

<sup>119</sup> Ewing, Tom, 2021, "Maritime Academies Work Toward Inclusion" [MarineLink](#)

<sup>120</sup> U.S. News & World Report, 2022, [Maine Maritime Academy](#)

<sup>121</sup> Johnson, Craig, 2024, Maine Maritime Academy [Testimony in support of LD 21092](#)

<sup>122</sup> National Geographic

<sup>123</sup> Napolitano, Jo, 2023, "[With 1,000 Applicants for 140 Seats, NYC's Harbor School Set for Major Expansion](#)"

<sup>124</sup> New York Harbor School, 2024, <https://www.newyorkharborschool.org/>

<sup>125</sup> New York Harbor Foundation, 2012, [Annual Report](#).

<sup>126</sup> New York Harbor School, 2024, [Billion Oyster Project](#)

engages thousands of young people in marine ecology and economic principles, making it a significant maritime restoration program and a model for urban marine ecosystem restoration globally.

NYCDOE has historically provided approximately \$9,500 per student for traditional classroom programming, with an additional \$2,500 per student secured through donations to the Harbor Foundation to support maritime training and other preparation related to marine careers<sup>127</sup>. The school is currently expanding to accommodate 1,000 students by 2030, with expansions costing \$80 million. This growth plan is a partnership effort among the Trust for Governors Island, the DOE, and the New York City School Construction Authority.<sup>128,129</sup>

The Harbor School partners with the maritime community in New York City, utilizing local marine resources to support student learning and career preparation. The school's college and career office focuses on college readiness, with the goal of having graduates accepted at four-year colleges and earning technical credentials in marine fields.<sup>130</sup> As a tuition-free public high school, the Harbor School prioritizes a diverse student base, reserving the majority of seats for students qualifying for free or reduced-price lunch. As a result, over 70% of students identify as students of color, and over 60% come from economically disadvantaged backgrounds.<sup>131</sup>

### Sound School, CT

In Connecticut, high schools are turning to aquaculture to support a sustainable future by reducing the need to import seafood, increasing protein production, and improving water quality. The State is investing funds to support students at aquaculture-focused high schools.

Figure 34: Sound School Fish Lab<sup>132</sup>



One such institution is the Sound School, which serves as a Regional Vocational Agriculture Center and prepares students for college and careers in the maritime industry with a focus on aquaculture. The Sound School was established in 1981 by George Foote, who was passionate about maritime education. During its inception and early years, the school relied on partnerships with organizations such as Southern Connecticut State University and the Connecticut Marine Naval Reserve Center for locations to host its classes until the establishment of its permanent campus on South Water Street, near the waterfront of New Haven.

Today, the Sound School operates as a public school funded by the Connecticut State Department of Education, with additional donations supporting maritime programming. As a public school, the Sound School teaches the State-mandated core academic curriculum alongside aquaculture science and technology programming. In addition to traditional academic skills, students develop job readiness skills and familiarity with the equipment of

<sup>127</sup> New York Harbor Foundation, 2012, [Annual Report](#).

<sup>128</sup> Office of the Mayor, 2022, "[Mayor Adams Announces new Expansion Plans for Urban Assembly New York Harbor School on Governors Island](#)"

<sup>129</sup> Napolitano, Jo, 2023, "[With 1,000 Applicants for 140 Seats, NYC's Harbor School Set for Major Expansion](#)"

<sup>130</sup> New York Harbor Foundation, 2012, [Annual Report](#).

<sup>131</sup> New York State Education Department, 2023, [Urban Assembly NY Harbor School](#)

<sup>132</sup> New Haven Register

the maritime industry, and marine and terrestrial ecosystems. The curriculum engages high school students in college-level research in aquaculture.<sup>133,134</sup>

While the public school focuses its efforts on college readiness, educators at the Sound School also collaborate with industry leaders to develop pathways into training programs for students in the maritime field, such as through the Oyster Reef Restoration project. The Oyster Reef Restoration project is a collaborative effort funded by the New Haven Harbor Foundation and executed with the help of Yale research scientists and university resources. Through this “living laboratory” program, Sound School students are equipped with the research training and equipment necessary to lead the effort to successfully redevelop and restore an oyster reef in New Haven Harbor and enhance the coastal resiliency of the waterfront.<sup>135</sup>

The Sound School actively recruits middle school students from 27 eligible school districts across Connecticut. Tuition and transportation costs are covered through public resources, making it a free public school where 52% of the student body comes from economically disadvantaged backgrounds. In the 2022-2023 school year, out of 343 students, 164 (48%) were women and 179 (52%) were male. 56% of students identified as non-white, and 52% of students were eligible for reduced-price or free lunch.<sup>136</sup> The relative racial diversity of the high school is a result of intentional State planning, whereby the “legislature broadened the concept of agriculture to include aquaculture” to increase “racial balance [in] the State’s urban school districts, including vocational schools.”<sup>137</sup>

## Traverse City, MI

Figure 35: Discovery Pier on West Grand Traverse Bay



In Michigan, local partners are joining forces to establish Traverse City as a global leader in freshwater research and innovation. Positioned at the heart of the Great Lakes, Traverse City is ideally situated to become an epicenter for freshwater and marine research and innovation in the blue tech industry.<sup>138</sup> Northwestern Michigan College (NMC), located on the shores of Lake Michigan, plays a pivotal role in this vision through its Great Lakes Water Studies Institute (GLWSI) programs. The GLWSI program offers one of the only bachelor’s degrees in marine technology in the United States, providing students with hands-on experience on

research vessels and access to maritime facilities, and boasts a 100% employment rate for graduates.<sup>139</sup> In addition to GLWSI programs, the Great Lakes Maritime Academy at NMC—the smallest and newest of the six state-operated maritime academies in the United States—is also integral to the effort of NMC to become a leader in freshwater research. Industry partners frequently visit Traverse City to recruit talent from the Academy, offering networking opportunities, interviews, and pipelines to industry jobs.<sup>140</sup>

<sup>133</sup> New Haven Register, 2023, [Connecticut Schools collaborating to expand aquaculture workforce](#)

<sup>134</sup> Sound School, 2024, [About Sound](#)

<sup>135</sup> New Haven Harbor Foundation, 2019, “[Programs](#).”

<sup>136</sup> [National Center for Education Statistics](#), 2022-2023.

<sup>137</sup> New Haven Harbor Foundation, 2019, “[About](#).”

<sup>138</sup> Traverse Ticker, 2022, [Gold in the Water: Local Partners Band Together to Make Traverse City a Global Freshwater Leader](#)

<sup>139</sup> Northwestern Michigan College, 2024, [Marine Technology Degrees](#)

<sup>140</sup> Northwestern Michigan College, 2024, [Industry Visits](#)

NMC is also involved in the planning of the Freshwater Research & Innovation Center, an ambitious project in Michigan currently under development. This project aims to transform Discovery Pier on West Grand Traverse Bay into an 85,000-square-foot, \$60 million facility, \$15 million of which has been already secured through State funding. NMC views the Freshwater Research & Innovation Center as an accelerator for the goals related to the Great Lakes Water Studies Institute and its Maritime Academy.<sup>141</sup> As industry partners engage with the talent emerging from NMC's programs, the Center is set to bolster the region's status as a hub for applied freshwater innovation, offering research, education, commercialization, incubation, and acceleration programs. In addition to NMC, this collaborative effort involves four other education and nonprofit partners: Discovery Center & Pier, Traverse Connect, 20Fathoms, and Michigan Technological University. The envisioned facility will include public access to the pier, research labs, classroom and seminar spaces, startup incubators, and more. The Center will serve as a hub for education, research, development, and commercialization of freshwater and marine technologies and will also include public-facing programs to highlight ongoing research, new technologies, and academic programs in marine technology and freshwater sciences available at NMC and Michigan Technological University

Figure 36: Sketch of the Freshwater Research & Innovation Center<sup>142</sup>



NMC has an open admission policy and offers financial aid, scholarships, loans, grants, and work-study programs to most students, making tuition comparatively affordable, especially for low-income students, who pay about \$4,000 annually to attend.<sup>143</sup> Despite lower cost barriers compared to other higher education institutions and an open admission policy, in 2022, only 13% of the student body identified as non-White. In terms of gender diversity, NMC follows national trends, with females comprising 55% of the student body, based on 2022 data.<sup>144</sup>

<sup>141</sup> Northwestern Michigan College, 2023, "[NMC joins coalition in applauding \\$15M in State funding for Freshwater Research & Innovation Center](#)"

<sup>142</sup> Northwestern Michigan College

<sup>143</sup> U.S. Department of Education, 2024, [Northwestern Michigan College](#)

<sup>144</sup> U.S. News & World Report, 2022, [Northwestern Michigan College](#)



## Appendix C. Methodology and Sources

### Water-Dependent Industrial Uses

This appendix provides a comprehensive overview of industries considered Water-Dependent Industrial Uses (WDIUs) within the context of Boston's Inner Harbor DPAs. Determining which industries qualify as WDIUs is crucial for effective DPA management and policymaking.

	Water-Dependent Industrial Use	NAICS Code (6 Digit)	NAICS Description (6 Digit)
1	marine terminals and related facilities for the transfer between ship and shore, and the storage of, bulk materials or other goods transported in waterborne commerce	488310	Port and Harbor Operations
		488320	Marine Cargo Handling
		488330	Navigational Services to Shipping
		488390	Other Support Activities for Water Transportation
		493110	General Warehousing and Storage
		493120	Refrigerated Warehousing and Storage
		493130	Farm Product Warehousing and Storage
		493190	Other Warehousing and Storage
2	facilities associated with commercial passenger vessel operations	483112	Deep Sea Passenger Transportation
		483114	Coastal and Great Lakes Passenger Transportation
		487110	Scenic and Sightseeing Transportation, Water
		488310	Port and Harbor Operations
		488330	Navigational Services to Shipping
		488390	Other Support Activities for Water Transportation
		561599	All Other Travel Arrangement and Reservation Services
3	manufacturing facilities relying primarily on the bulk receipt or shipment of goods by waterborne transportation	311211	Flour Milling
		311224	Soybean and Other Oilseed Processing
		324110	Petroleum Refineries
		325110	Petrochemical Manufacturing
		325120	Industrial Gas Manufacturing
		325180	Other Basic Inorganic Chemical Manufacturing
		325193	Ethyl Alcohol Manufacturing
		325199	All Other Basic Organic Chemical Manufacturing
		325311	Nitrogenous Fertilizer Manufacturing
		327310	Cement Manufacturing
		331110	Iron and Steel Mills and Ferroalloy Manufacturing
331313	Alumina Refining and Primary Aluminum Production		
4	commercial fishing, shellfishing, and other seafood and fish processing facilities for fish, shellfish, and other seafood	114111	Finfish Fishing
		114112	Shellfish Fishing
		114119	Other Marine Fishing
		311710	Seafood Product Preparation and Packaging
		311711	Seafood Canning
		311712	Fresh and Frozen Seafood Processing
5	boatyards, dry docks, and other facilities related to the construction, serving, maintenance, repair, or storage of vessels or other marine structures	336611	Ship Building and Repairing
		336612	Boat Building
		488390	Other Support Activities for Water Transportation
		713930	Marinas
		811490	Other Personal and Household Goods Repair and Maintenance
6	facilities for tug boats, barges, dredges, or other vessels engaged in port operations or marine construction	488310	Port and Harbor Operations
		488330	Navigational Services to Shipping
		488390	Other Support Activities for Water Transportation
		213111	Drilling Oil and Gas Wells
		237990	Other Heavy and Civil Engineering Construction

	Water-Dependent Industrial Use	NAICS Code (6 Digit)	NAICS Description (6 Digit)
7	any water-dependent use listed in 310 CMR 9.12(2)(a)9. through 14., provided the Department determines such use to be associated with the operation of a Designated Port Area		
8	hydroelectric power generating facilities	221111	Hydroelectric Power Generation
9	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	221118 237130 237990	Other Electric Power Generation Power and Communication Line and Related Structures Construction Other Heavy and Civil Engineering Construction
10	infrastructure facilities used to deliver electricity, natural gas or telecommunications services to the public from an offshore facility located outside the Commonwealth	221121 221210 221122 237120 237130 517911	Electric Bulk Power Transmission and Control Natural Gas Distribution Electric Power Distribution Oil and Gas Pipeline and Related Structures Construction Power and Communication Line and Related Structures Construction Telecommunications Resellers
11	facilities for the manufacture, servicing, maintenance, data collection, and other functions related to coastal or offshore structures, buoys, autonomous underwater vehicles or vessels, and for the development of new technologies and systems for these structures, buoys, vehicles or vessels, provided that the facility requires transfer between ship and shore or the withdrawal and/or discharge of large volumes of water	334511 336611 541715 488390	Search, Detection, Navigation, Guidance, Aeronautical, and Nautical System and Instrument Manufacturing Ship Building and Repairing Research and Development in the Physical, Engineering, and Life Sciences (except Nanotechnology and Biotechnology) Other Support Activities for Water Transportation
12	facilities for research and development or for the manufacture of technologies, e.g., robotics and acoustics, related to the marine environment, provided that the facility requires transfer between ship and shore or the withdrawal and/or discharge of large volumes of water	541715 334511 333999	Research and Development in the Physical, Engineering, and Life Sciences (except Nanotechnology and Biotechnology) Search, Detection, Navigation, Guidance, Aeronautical, and Nautical System and Instrument Manufacturing All Other Miscellaneous General Purpose Machinery Manufacturing
13	facilities for research on, and the treatment of, marine species which require transfer between ship and shore or the withdrawal and/or discharge of large volumes of water	541715 712190 712130	Research and Development in the Physical, Engineering, and Life Sciences (except Nanotechnology and Biotechnology) Nature Parks and Other Similar Institutions Zoos and Botanical Gardens
14	facilities for the development and testing of offshore renewable energy infrastructure or components, provided that the facility requires transfer between ship and shore or the withdrawal and/or discharge of large volumes of water	541715 221118 333611	Research and Development in the Physical, Engineering, and Life Sciences (except Nanotechnology and Biotechnology) Other Electric Power Generation Turbine and Turbine Generator Set Units Manufacturing
15	commercial aquaculture facilities that require transfer between ship and shore or the withdrawal and/or discharge of large volumes of water	112511 112512 112519	Finfish Farming and Fish Hatcheries Shellfish Farming Other Aquaculture
16	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).		