NEW BEDFORD WATERFRONT DISTRICT

DRAFT Technical Appendix

2015
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REGULATORY & LEGISLATIVE MEMORANDA
MEMORANDUM

Date: May 15, 2015
To: Brie Hensold, Sasaki Associates
    Katie Flynn, Sasaki Associates
From: Emily Keys Innes LEED AP ND
RE: Regulations Affecting the New Bedford Waterfront Redevelopment Plan
Copies: Steven G. Cecil AIA ASLA, The Cecil Group

Development in the Study Area for the New Bedford Waterfront Plan is regulated not just by the zoning regulations of the City of New Bedford, but by a number of state and federal regulations that govern development in or near the harbor. In addition, the City’s comprehensive plan and other local plans have relevance for the preparation of a redevelopment plan under Massachusetts General Laws (M.G.L.) Chapter 121B.

The majority of the parcels within the Study Area are within the boundaries regulated by The Massachusetts Public Waterfront Act, or M.G.L. Chapter 91. A smaller subset of these parcels is within a Designated Port Area, which has a more restrictive set of requirements.

Findings

Regulatory Implications for Development or Redevelopment

As a Municipal Harbor Plan (MHP), the New Bedford/Fairhaven Harbor Plan (which incorporates the Designated Port Area Plan) is the primary document governing development or redevelopment in the Study Area. Under Chapter 91, a harbor plan regulates projects within its boundaries. The Harbor Development Commission is responsible for this plan; it is approved by the Massachusetts Executive Office of Energy and Environmental Affairs (EOEEA).

The Massachusetts Department of Environmental Protection (MassDEP) will apply the guidance within an approved municipal harbor plan to the discretionary requirements in 310 CMR 9.00 and will allow the use limitations and numerical standards within the municipal harbor plan to supersede certain standards relative to the preservation of shorelands and tidelands for water-dependent uses and public access. Section III: Standards for Plan Approval of the New Bedford/Fairhaven Harbor Plan contains specific requirements for parcels subject to Chapter 91 and the DPA.
Chapter 91 differentiates between water-dependent uses and nonwater-dependent uses. The definition of water-dependent uses includes water-dependent industrial uses and requires direct access to or a location within tidal waters. The proposed project must be completely water-dependent to qualify – a nonwater-dependent use as part of the project will result in determination of the entire project as nonwater-dependent. Nonwater-dependent uses must have a proper public purpose, be consistent with the policies of the Massachusetts Office of Coastal Zone Management (CZM), and provide public benefits that outweigh the negative effect on the public of the nonwater-dependent use. A MassDEP Waterways License is required for activities subject to Chapter 91 jurisdiction.

The regulations for a Designated Port Area (DPA) prioritize water-dependent industrial uses. Under 310 CMR 9.36 and 9.51, a structure that is not for a water-dependent industrial use must not preempt a water-dependent industrial use, must not conflict with adjacent water-dependent industrial uses, and must be able to convert to allow future development of water-dependent industrial uses. In addition to water-dependent industrial uses, Temporary and Supporting Uses are allowed within a DPA, but are limited by percentage of land area. This limitation can be modified within a community’s MHP.

Public access and connection to the community is encouraged, as long as it does not interfere with the purposes of the DPA. Within the DPA boundary, certain uses are “presumptively compatible,” such as storefront retail, small-scale administrative offices, and eating and drinking establishments; while other uses are not allowed, including residential, new office buildings, and large-scale recreational boating facilities. New Bedford had a mechanism for transferring development rights – the Eligibility Credit Program – but it was eliminated in the New Bedford/Fairhaven Harbor Plan (2010). MassDEP licenses structures and uses in a DPA.

The City’s zoning regulations apply, although the requirements of some of the zoning districts may conflict with or be superseded by the requirements of Chapter 91 and the DPA. The primary zoning districts in the Study Area are Residential A, Mixed Use Business, Industrial A, Industrial B, and Waterfront Industrial. There are also three overlay districts within the Study Area: the Cove Street Mill Overlay District, the Flood Hazard Overlay District, and the Waterfront Economic Development & Revitalization Overlay District.

In addition to the above, there are a number of environmental regulations, including those related to flood zones, solid waste disposal, historic and archaeological resources, and environmental resources, at both the state and federal level that restrict methods of demolition, development, and redevelopment. The requirements of these regulations would be addressed as part of the Chapter 91 licensing process. Existing industrial sites
may also be regulated by requirements for addressing the presence of hazardous materials. Finally, as a working port, certain uses and procedures within the Study Area are subject to the Homeland Security Act of 2002 and are under the jurisdiction of the Department of Homeland Security.

The Appendix contains a list of applicable regulations, the authority with jurisdiction, and notes on the implications of the regulations for development applications.

**Regulatory Implications for the Redevelopment Plan**

Chapter 121B requires that a redevelopment plan be in conformance with the community’s comprehensive plan. Both the City’s comprehensive plan (A City Master Plan: New Bedford 2020) and the New Bedford/Fairhaven Harbor Plan recommend detailed goals, strategies, and implementation actions that are relevant to the Study Area. These recommendations should form the basis of the goals and strategies of any redevelopment plan for the area. In addition, the Office of the Mayor sponsored a report in September 2014: Uniting in Pursuit of Growth and Opportunity: Final Report of the New Bedford Regeneration Committee. The recommendations of this report relative to the Port of New Bedford are consistent with other goals and strategies developed by the City.

The overall vision supported by each of these plans is two-fold: to strengthen the capacity of the Port of New Bedford as a working port and to encourage public access to and interaction with the waterfront. The safety of the public is critical – a working waterfront is industrial in nature, and the equipment and processes can be dangerous. The New Bedford/Fairhaven Harbor Plan offers the most detailed strategies and action steps related to the study Area, but the City Master Plan: New Bedford 2020 also ties the Study area into the larger context of the entire city.

The main goals of each report are listed below. Each document also has detailed goals and strategies that support these higher-level goals. The redevelopment plan should recognize these goals, and use them as the basis for the specific recommendations and strategies relevant to its purpose and related activities.

**Harbor Plan Goals**

The following goals are quoted directly from the Overview to the New Bedford/Fairhaven Municipal Harbor Plan (2010).

- **Support Traditional Harbor Industries:** Preserve and enhance the Port’s traditional strengths in fishing, seafood processing, and their supporting industries.
- **Rebuild and Add to the Harbor Infrastructure:** Upgrade port infrastructure essential to the future economic vitality of both the working port and the region and to the public’s use and enjoyment of the Harbor.
• **Capture New Opportunities:** Take advantage of new opportunities for the expansion of marine industry in the Port and other supporting industries (such as tourism, short sea shipping, recreational boating, import/export, and alternative energy) while ensuring that new activities do not conflict with the traditional working port.

• **Enhance the Harbor Environment:** Demonstrate leadership in Harbor cleanup, recycling and energy conservation under a “Green Port” initiative, with the goal of creating an environmentally healthy Harbor that will encourage a large variety of compatible uses.

### Comprehensive Plan Goals

The following goals are quoted directly from the Executive Summary of the *City Master Plan: New Bedford 2020* (2010). These goals are relevant for, but not always specific to, the Study Area.

- Expand and secure recent success in developing emerging technology sectors, such as marine science and technology, alternative energy, medical devices, biotech manufacturing, and creative enterprises.
- Enact a comprehensive development strategy that links underperforming and potential development sites, such as brownfields, business park sites, and historic mills throughout the city with opportunities for emerging sector development to increase and stabilize the commercial tax base and create jobs.
- Continue to foster sustainable development projects that have the ability to catalyze economic growth within targeted neighborhood, commercial, and development districts through both jobs created during construction and the creation of permanent jobs for New Bedford citizens.
- Support traditional harbor industries, including fishing and seafood processing, while capturing new opportunities to diversify the Port’s economy in sectors, such as short sea shipping, alternative energy, tourism, and recreational boating.
- Develop the creative economy and cultural tourism as a leading edge growth sector.
- Improve, enhance, and integrate the city’s public transit services, including shuttles and inter-city buses as well as regional passenger rail.
- Protect natural resources and create new greenways throughout New Bedford.
- Promote and market the cultural and historical assets of New Bedford to transform the city’s image for both tourists and residents.

### Goals of the New Bedford Regeneration Committee

The following goals are quoted directly from the Summary of Strategies from *Uniting in Pursuit of Growth and Opportunity: Final Report of the New Bedford Regeneration Committee* (2014).
• Champion the EDA planning process as a strategy for building a dynamic working waterfront.
• Gain local operational management of State Pier, and in the long term, develop the pier for public and retail uses that are integrated with the downtown.
The following table contains a list of local, state, and federal regulations that apply to properties within the Study Area and the responsible committee, department, or agency.

**Primary Regulations or Regulatory Documents**

Development or Redevelopment within the Study Area must comply with these regulations and regulatory documents.

<table>
<thead>
<tr>
<th>Regulation</th>
<th>Authority</th>
<th>Implication</th>
<th>Source</th>
</tr>
</thead>
<tbody>
<tr>
<td>The New Bedford/Fairhaven Harbor Plan</td>
<td>Harbor Development Commission (Port of New Bedford); approved by the Massachusetts Executive Office of Energy and Environmental Affairs (EOEEA)</td>
<td>Standards that MassDEP uses as part of discretionary review</td>
<td>The New Bedford/Fairhaven Harbor Plan, Section 9.7.4; City of New Bedford Ordinance, 4753A 310 CMR 9.33</td>
</tr>
<tr>
<td>City of New Bedford Ordinance</td>
<td>City Council/Planning Board</td>
<td>Special Permit and/or Site Plan Approval</td>
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</tr>
<tr>
<td>The Massachusetts Public Waterfront Act Waterways Regulations</td>
<td>Department of Environmental Protection</td>
<td>MassDEP Waterways License License of a structure in a DPA City of New Bedford Conservation Commission review and order of conditions Implications for uses, buffers, public access, setbacks</td>
<td>The New Bedford/Fairhaven Harbor Plan, Section 9.7.4; City of New Bedford Ordinance, 4753A 310 CMR 9.33</td>
</tr>
<tr>
<td>Wetlands Protection Act</td>
<td>City of New Bedford Conservation Commission</td>
<td>Review of activities within 100 foot buffer zone of land bordering waters</td>
<td>The New Bedford/Fairhaven Harbor Plan, Section 9.7.1</td>
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## APPENDIX

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<thead>
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<th>Regulation</th>
<th>Authority</th>
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<tbody>
<tr>
<td>Massachusetts Coastal Zone Management Program and Designated Port Area</td>
<td>M.G.L. c. 21A §§2 and 4A 301 CMR 25.00 (Federal Coastal Zone Management Act (16 U.S.C. 1451))</td>
<td>Review of activities that would remove, fill, dredge or alter the resources within six different types of resource areas Development in Flood Hazard Overlay District must be compliant</td>
<td>City of New Bedford Ordinance, 4460 310 CMR 9.33</td>
</tr>
<tr>
<td>Massachusetts State Building Code</td>
<td>780 CMR 9306</td>
<td>Building Permit Development in Flood Hazard Overlay District must be compliant</td>
<td>City of New Bedford Ordinance, 4460</td>
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<td>Inspectional Services, City of New Bedford</td>
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<tr>
<td></td>
<td>EOEEA</td>
<td>Establishment of Massachusetts Coastal Zone Management Office Regulations for establishing and reviewing the DPA boundary</td>
<td>310 CMR 9.00</td>
</tr>
</tbody>
</table>
Secondary Regulations or Regulatory Documents

These regulations either

- Require compliance with the provisions within as part of a permitting process by one or more authorities listed in the table above
- Require consistency with the provisions within as part of a permitting process by one or more authorities listed in the table above
- Affect the development of one or more regulatory documents listed above

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<thead>
<tr>
<th>Regulation</th>
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<tbody>
<tr>
<td>A City Master Plan: New Bedford 2020</td>
<td></td>
<td>Department of Planning, Housing &amp; Community Development</td>
<td>Consistency with goals and strategies</td>
<td>The New Bedford/Fairhaven Harbor Plan, Section 9.7.2</td>
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<td></td>
<td>33 CFR Section 320</td>
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<td></td>
<td>33 U.S.C. §1251 et seq. (1972), Section 404(b) (1)</td>
<td>US Army Corps of Engineers</td>
<td>Requires water quality certification from the state that discharge complies with state criteria</td>
<td>The New Bedford/Fairhaven Harbor Plan, Section 9.7.2</td>
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<td>40 CFR Section 230</td>
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<tr>
<td>Rivers and Harbors Act of 1899</td>
<td>Rivers and Harbors Act of 1899, Section 10</td>
<td>US Army Corps of Engineers</td>
<td>Regulates structures and work in navigable waters of US (to high water line)</td>
<td>The New Bedford/Fairhaven Harbor Plan, Section 9.7.3</td>
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<td></td>
<td>33 U.S.C. 403</td>
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<td>Section 10 refers to construction of bridges, causeways, dikes, or dams</td>
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<th>Regulation</th>
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</thead>
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<tr>
<td>Massachusetts Environmental Protection Act (MEPA)</td>
<td></td>
<td>Secretary of the Office of Energy and Environmental Affairs</td>
<td>Environmental Notification Form (ENF) for dredging projects over 10,000 cubic yards and certification from Secretary of the Office of Energy and Environmental Affairs Army Corps of Engineers review required – includes Environmental Protection Agency (EPA), National Marine Fisheries, U.S. Fish and Wildlife Service, State Historic Commission</td>
<td>The New Bedford/Fairhaven Harbor Plan, Section 9.7.4</td>
</tr>
<tr>
<td>Regulation</td>
<td>Reference</td>
<td>Authority</td>
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<tr>
<td>Massachusetts Office of Coastal Zone Management Policy Guide 2011</td>
<td></td>
<td>Massachusetts Office of Coastal Zone Management</td>
<td>Consistency with CZM policies required for Chapter 91 permit Consistency review by CZM for Army Corps of Engineer federal permit process</td>
<td>The New Bedford/Fairhaven Harbor Plan, Sections 3.0 and 9.7.4</td>
</tr>
<tr>
<td>Review and Approval of Municipal Harbor Plans</td>
<td>301 CMR 23.00</td>
<td>Executive Office of Energy and Environmental Affairs</td>
<td>Compliance with state tidelands policies</td>
<td>The New Bedford/Fairhaven Harbor Plan, Appendix C</td>
</tr>
<tr>
<td>Designation of Port Areas</td>
<td>301 CMR 25.00</td>
<td></td>
<td>Establishment and modification of DPA boundaries</td>
<td>The New Bedford/Fairhaven Harbor Plan, Section 7.2.6</td>
</tr>
<tr>
<td>Coastal Wetlands Restriction</td>
<td>M.G.L. c. 130, § 105 310 CMR 12.00</td>
<td>Department of Environmental Protection</td>
<td>Development in Flood Hazard Overlay</td>
<td>City of New Bedford Ordinance, 4460</td>
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<tr>
<td>Inland Wetlands Restriction</td>
<td>M.G.L. c. 131, § 40A 310 CMR 13.00</td>
<td></td>
<td>District must be compliant</td>
<td>City of New Bedford Ordinance, 4460</td>
</tr>
<tr>
<td>Navigation and Navigable Waters</td>
<td>U.S. Code Title 33 33 CFR 165.117</td>
<td>EPA</td>
<td>Navigation restrictions on deepwater ports in First Coast Guard District</td>
<td>State Enhanced Remedy for the South Terminal in New Bedford</td>
</tr>
<tr>
<td></td>
<td>33 CFR 165.125</td>
<td>EPA</td>
<td>Navigation restrictions on EPA Superfund site in New Bedford Harbor</td>
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</table>
**APPENDIX**

**Additional Regulations that Affect Chapter 91 Applications**

These regulations appear in 310 CMR 9.33 as relevant to a Chapter 91 application, and were not mentioned in either of the two tables above.

<table>
<thead>
<tr>
<th>Regulation</th>
<th>Reference</th>
<th>Authority</th>
<th>Notes in 310 CMR 9.33</th>
<th>Source</th>
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</thead>
<tbody>
<tr>
<td>Massachusetts Environmental Policy Act</td>
<td>M.G.L. c. 30, §§ 61 through 62H 301 CMR 11.00</td>
<td>Secretary of the Office of Energy and Environmental Affairs</td>
<td></td>
<td>310 CMR 9.33</td>
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<tr>
<td>Wetlands Restriction Acts</td>
<td>M.G.L. c. 130, § 105  M.G.L. c. 131, § 40A</td>
<td>MassDEP</td>
<td>All development projects must comply with these restrictions</td>
<td>310 CMR 9.33</td>
</tr>
<tr>
<td>Areas of Critical Environmental Concern</td>
<td>M.G.L. c. 21A, § 2(7) and St. 1974, c. 806, § 40(E) 301 CMR 12.00</td>
<td>Executive Office of Environmental Affairs</td>
<td></td>
<td>310 CMR 9.33</td>
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<tr>
<td>Massachusetts Clean Waters Act</td>
<td>M.G.L. c. 21, §§ 26 through 53: 314 CMR 3.00 314 CMR 5.00 314 CMR 7.00 310 CMR 9.00 310 CMR 15.00</td>
<td>Surface Water Discharge Permits - NPDES Ground Water Discharge Permits Sewer Extension/Connection Permits Water Quality Certification Subsurface Sewage Disposal Permits - Title 5</td>
<td></td>
<td>310 CMR 9.33</td>
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<tr>
<td>Ocean Sanctuaries Act</td>
<td>M.G.L. c. 132A, §§ 13 through 16 and 18 302 CMR 5.00</td>
<td>Department of Environmental Management</td>
<td>If structure or fill is prohibited by this regulation then no license or permit will be granted</td>
<td>310 CMR 9.33</td>
</tr>
<tr>
<td>Regulation</td>
<td>Reference</td>
<td>Authority</td>
<td>Notes in 310 CMR 9.33</td>
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<td>Marine Fisheries Laws</td>
<td>M.G.L. c. 130 322 CMR 1.00</td>
<td>Department of Fish and Game</td>
<td></td>
<td>310 CMR 9.33</td>
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<tr>
<td>Scenic Rivers Act</td>
<td>M.G.L. c. 21, § 17B 302 CMR 3.00</td>
<td>Department of Environmental Management</td>
<td></td>
<td>310 CMR 9.33</td>
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<tr>
<td>Massachusetts Historical Commission Act</td>
<td>M.G.L. c. 9, §§ 26 through 27C, as amended by St. 1982, c. 152 and St. 1988, c. 254 950 CMR 71.00</td>
<td>Massachusetts Historical Commission</td>
<td>If project is subject to 950 CMR 71.07 (which requires the filing of a Project Notification Form with the Massachusetts Historical Commission)</td>
<td>310 CMR 9.33</td>
</tr>
<tr>
<td>Mineral Resources Act</td>
<td>M.G.L. c. 21, §§ 54 through 58 310 CMR 29.00</td>
<td>Department of Environmental Management</td>
<td></td>
<td>310 CMR 9.33</td>
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<tr>
<td>Massachusetts Drinking Water Act</td>
<td>M.G.L. c. 111, §§ 159 through 174A 310 CMR 22.00</td>
<td>MassDEP</td>
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<td>310 CMR 9.33</td>
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<td>Underwater Archeological Resources Act</td>
<td>M.G.L. c. 91 and c. 6, §§ 179 and 180 312 CMR 2.00</td>
<td>Board of Underwater Archeological Resources</td>
<td></td>
<td>310 CMR 9.33</td>
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<tr>
<td>Hazardous Waste Management Act</td>
<td>M.G.L. c. 21C 310 CMR 30.00</td>
<td>MassDEP</td>
<td></td>
<td>310 CMR 9.33</td>
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<tr>
<td>Solid Waste Disposal Act</td>
<td>M.G.L. c. 16, §§ 18 through 24 310 CMR 16.00</td>
<td></td>
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<td>310 CMR 9.33</td>
</tr>
<tr>
<td>Air Pollution Act</td>
<td>M.G.L. c. 111, §§ 142A through 1 310 CMR 7.00</td>
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<td>310 CMR 9.33</td>
</tr>
<tr>
<td>State Highway Curb Cuts</td>
<td>M.G.L. c. 81, § 21</td>
<td>Division of Highways</td>
<td></td>
<td>310 CMR 9.33</td>
</tr>
<tr>
<td>Energy Restructuring Act</td>
<td>M.G.L. c. 164, §§ 69G through 5 980 CMR 1.00 through 12.00.</td>
<td>Energy Facilities Siting Board</td>
<td></td>
<td>310 CMR 9.33</td>
</tr>
</tbody>
</table>
The following notes are a summary of the legislative acts relating to either the New Bedford Harbor Development Commission (HDC) and/or the New Bedford Redevelopment Authority (NBRA).

I am providing these notes in advance of our July 15 phone call to discuss the relationship between the actions the HDC can take in the waterfront area and the actions the NBRA can take.

As a follow-up to these notes and our discussion on the 15th, I will be reviewing the documents related to the original urban renewal plans in the Study Area and the documents related to the establishment of the NBRA. I will then produce a memorandum that summarizes our discussion and the source information.

The summary will provide useful information as we discuss the strategies for the redevelopment of the area and identify which organizations in the City should have primary responsibility for each strategy.

NOTES

Chapter 762 of the Acts of 1957 (HDC)

Section 1 authorizes the City of New Bedford to establish a harbor development commission and establishes the terms.

Section 2 establishes the responsibilities.

- Administrative charge of the port of New Bedford
- Make all necessary plans for the development of the New Bedford Waterfront (defined in Section 3)
- Charge of lands, piers and other structures and facilities now or hereafter owned by the city or conveyed to the city by the commonwealth in said port
- Administer all land and water terminal facilities under its control
• Keep itself informed on present and probable future requirements of steamships and shipping and best means of providing for accommodations of steamships, railroads, warehouses, and commercial and industrial establishment

Section 3 defines the property the HDC can acquire. (AMENDED: Chapter 193, Acts 1960)

• All tidal or other waterfront properties now owned by the city of new Bedford
• May acquire by purchase approximately 75 acres of tidal and other waterfront lands lying north of the Fairhaven bridge on the west side of the New Bedford Harbor, including the tidal lands lying immediately east of the New Haven Railroad yards, terminating at the most northerly boundary of those yards

Section 4 defines the right to hold property.

• May hold real property as defined in Section 3.
• May hold such rights and easements necessary to construct or utilize public piers and related utilities
• Includes planning, design, and development of sites for warehouses and commercial and industrial establishments for such purposes

Section 5 defines the right to sell and lease property. (AMENDED: Chapter 247, Acts 1982)

• Sell and enter into a purchase and sale agreement for transfer of title
• Lease industrial and commercial locations, storage facilities, wharves, piers, foreshores, bulkheads, docks, sheds, grain elevators, and warehouses within its charge for a period not exceeding twenty years
• Lease sites for warehouses and industrial locations for longer than twenty years with a readjustment of rent at intervals not more than twenty years
• Mayor and city council must approve all sales and all leases for more than five years
• HDC may acquire, purchase, hold, sell, lease, sublease, and otherwise deal and dispose of any land or interest in land in connection with the leasing or operation of any pier, dock, wharf, maintenance of the foreshores, operation of warehouses and industrial locations

Section 6 defines the allowable operations and procedure for excess income.

• Operations are to promotes and encourage industrial and commercial development of the port of New Bedford by making available to persons engaged in commerce and industry the piers, wharves, and other facilities at the lowest cost consistent with sound economy and prudent management
• Excess of income over current expenses and liabilities determined annually and deposited in a special fund
• After reserve for loss and depreciation, the fund may be used as follows:
Payment of bonded indebtedness of loans the city made for the purposes above
Proper construction or reconstruction of the sites, buildings, plants and equipment under the jurisdiction of the HDC

Section 7 defines the initial allowable debt.

- $300,000 initial loan
- $5 million total debt limit

Section 8 establishes the HDC as a public agency; defines officers; establishes grounds for and methods of removal and surety bond requirement prior to issuance of debt, establishes the means of appointing and removing a director, and creates and advisory council. (AMENDED: Chapter 126, Acts 1991)

Section 9 allows the HDC to apply for grants and gifts. (AMENDED: Chapter 126, Acts 1991)

- Allows the HDC to petition city DPW to undertake work for the improvement, development, maintenance and protection of the port of New Bedford
- Allows HDC to pay the DPW from its own funds for such work

Section 10 states that act will take effect upon approval by the city council.

Chapter 193 of the Acts of 1960 (HDC)

Amends Chapter 762 Acts of 1957 by striking Section 3 and inserting new Section 3.

Section 3 allows the HDC to purchase additional lands.

- Tidal and waterfront lands lying south of the New Bedford Fairhaven Bridge as far south as Cove Street
- Exempts any land owned by New Bedford Gas and Edison Light Company
- Exempts any land owned by any company engaged in the fishing business

Chapter 626 of the Acts of 1965 (NBRA)

Directs DPW to grant an irrevocable licenses to maintain fill or structures in certain tidelands to the New Bedford Redevelopment Authority.

- License is to NBRA or successors in interest
- Whole or part of fee or any other interest of the NBRA
- Granted to fill or maintain fill or erect or maintain structures within area covered by an urban renewal plan and land assembly and redevelopment plan under MGL Chapter 121
- Land consists of the tidelands that lie within these areas
Beginning at a point, said point being at the intersection of the south side of Potomska Street and the east side of Prospect Street; thence northerly along the east side of Prospect Street to its intersection with the north side of Howland Street; thence westerly along the north side of Howland Street to its intersection with the east side of Cape Street; thence northerly along the east side of Cape Street to its intersection with the north property line of Lot two hundred and thirty-nine of Plat forty-two of the 1964 Assessor’s Map of the city of New Bedford; thence easterly along the north property line of Lot two hundred and thirty-nine of Plat forty-two of the 1964 Assessor’s Map of the city of New Bedford to a point, said point being the intersection of the north property line of said lot; thence easterly along the north property line of said lot; thence in range of this north property line of said lot produced through the tidelands of the Acushnet River to a point of intersection with the U. S. Bulkhead and Pierhead Line; thence, in a southerly direction along the said U. S. Bulkhead and Pierhead Line to a point, said point being at the intersection of the south side of Potomska Street and the east side of Prospect Street, said point being the point of beginning.

Supporting letters from John Volpe, Governor, certified by Kevin White, Secretary of the Commonwealth that this is an emergency law and the immediate granting is a necessary and vital part of a program directed at revitalization of the New Bedford Port, to improve the economy and general welfare of the city.

Chapter 375 of the Acts of 1966 (Affects NBRA)

Authorizes the City to sell park land to the NBRA for urban renewal purposes

City Council can sell park land described below to the NBRA

Requires approval from Mayor and Park Commissioners

Purpose is urban renewal

Beginning at the northeast corner of Second Street and Middle Street; thence northerly in the east line of Second Street, one hundred ninety-nine and seventy-five one-hundredths feet to the south line of High Street (formerly Ark Lane); thence easterly in the said south line of High Street, three hundred nineteen and three one-hundredths feet to the west line of Water Street; thence southerly in the west line of Water Street, two hundred five and twenty-one one-hundredths feet to the north line of Middle Street; thence westerly in the North line of Middle Street, three hundred twenty-three and forty-five one-hundredths feet, to the point of beginning.
Chapter 635 of the Acts of 1971 (NBRA)

Sets a borrowing limit for the City of New Bedford for the purpose of constructing and equipping public off-street parking facilities.

Section 1 sets the borrowing limit to $3 m.

- Purpose is to construct and equip public off-street parking facilities in the North Terminal Urban Renewal Area

Section 2 allows the mayor to delegate power to the NBRA to plan, construct, and equip the public odd-street parking facilities for the city.

Section 3 establishes the powers as additional.

Section 4 states that the act takes effect on passage.

Chapter 247 of the Acts of 1982 (HDC)

Section 1 amends Chapter 762 of the acts of 1957 by striking out Section 5.

Section 5 has the following changes:

- Adds “and locations for use as condominiums, luxury apartments, and commercial buildings related thereto” to list of purposes for which the HDC can sell or lease land
- Lease for longer than twenty years no longer limited to warehouses and industrial locations

Chapter 679 of the Acts of 1983

Section 1 relinquishes and extinguishes the rights of the public and of the Commonwealth in and to the flats and submerged land within the boundaries of the parcel of land described in Section 2.

Section 2 defines the parcel, which belongs to the city of New Bedford.

Being a certain parcel of land in New Bedford, Bristol County (S.D.), Massachusetts, and also being a portion of the parcel shown on a plan entitled "Corrective Plan, Steamship Wharf, Coal Pocket Pier, Belonging to the City of New Bedford, " Scale 1”=60’, dated June 1, 1979, Recorded in the Bristol County Registry of Deeds (S.D.), bounded and described as follows:

Beginning at a point in the Easterly line of MacArthur Drive. Thence running North 81°-39'-17" East in the line of land now or formerly of the Commonwealth of Massachusetts, 99.08 feet to a point on Steamship Wharf. Thence turning and running South 8°-15'-00" East across said Wharf about 39 feet to the high water line of the Acushnet River at said wharf as shown on the above mentioned plan. Thence turning and running Westerly by the high water line and said Wharf about 42 feet to a point; Thence turning and running Southerly, Easterly, and Southerly by the high water line about 205 feet to Coal Pocket Pier. Thence continuing Southerly across said Pier about 38 feet to a point in the line of land now or formerly of the
New Bedford Redevelopment Authority; Thence turning and running South 81°-28'-18" West in the line of last-named land about 5 feet to a point; Thence turning and running North 66°-38'-18" West in the line of land now or formerly of Aiello Bros., Inc., 30.29 feet to a point; Thence turning and running South 81°-28'-18" West in the line of last named land, 82.00 feet to a point; Thence turning and running North 87°-36'-52" West in the line of land now or formerly of Thomas Coucci and Sebastian T. Aiello, 63.42 feet to the Easterly line of MacArthur Drive; Thence turning and running North 8° - 3 T - 5 2 " West in the Easterly line of MacArthur Drive, 8.01 feet to a point; Thence turning and running by a curve to the right of radius, 4.00 feet in the Easterly line of MacArthur Drive an arc length of 7.36 feet to a point; Thence turning and running North 6°-50'-22" East in the Easterly line of MacArthur Drive, 164.41 feet to the point of beginning.

Section 3 describes the conditions under which the rights of the public and the Commonwealth have been extinguished.

- Land is to be used for construction of residential condominiums, apartments, and retail commerce
- Construct pedestrian walkway around the waterfront perimeter must be no less than 200 feet long and 8 feet wide; must be open to public
- Operation of condominium, apartment, and retail commercial space must not be detrimental to public navigation of the Acushnet River or the remaining waters of the Commonwealth
- Act does not authorize dredging or fill without approval under MGL requirements
- If conditions are not complied with then title reverts to status prior to effective date of passage. No rights of the public or the Commonwealth are extinguished for any other lands.

Section 4 states that damages for taking by the Commonwealth or its political subdivisions of land that is described in Section 2 and is in compliance with Section 3 shall be done under MGL Chapter 79.

Chapter 126 of the Acts of 1991 (HDC)

Section 1 amends Section 8 of Chapter 762 of the acts of 1957 by striking subsection f.

- Subsection f established an advisory council to the HDC.

Section 2 adds four sections after Section 9 of Chapter 762 of the acts of 1957.

- 9A established the ability to collect fees relative to piers and wharves and parking, dockage, landing, launching and mooring fees. Fees must be reasonable.
- 9B defines terms for these four new sections. Key terms include the following:
  - New Bedford Harbor is the entire harbor and tidal waters in the limits of New Bedford Harbor including the estuary and tidal waters of the Acushnet River and about the islands within the city of New Bedford and southerly and westerly of the lines of
the harbor including all channels and entrances into the harbor not under the exclusive control of the United States and all coves, inlets and other parts where the tide runs and flows within the limits of the city of New Bedford.
  o Piers and wharves are all piers, wharves, and bulkheads from Wamsutta Street to Hassey Street, exclusive of the New Bedford State Pier

• 9C allows the HDC to adopt rules to limit the speed of vessels within the harbor, permit moorings, and removed derelict and abandoned vehicles.
  o Can impose reasonable penalties for violations
  o Must hold public hearing on new rules
  o May institute new rule under emergency relative to public health, safety, or welfare; may not be effective for more than 14 days; can be extended after a public hearing, but nor for more than 60 days

• 9D requires the HDC to deliver an annual report to the mayor and addressed to the city council
  o Statement of activities
  o Recommendations for legislation by city, commonwealth, or federal government
  o Detailed budget for following year

Chapter 382 of the Acts of 1992 (HDC)

Section 1 allows commissioner of the division of capital planning and operations to lease to the HDC for the purpose of construction, development, operation, and maintenance of a marina and recreational area.

• Area being shown and details indicated on the department of environmental protection license Plan No. 1882 issued October twenty-sixth, nineteen hundred and eighty-nine and recorded in the Bristol registry of deeds, southern division Book 2431, page 330, Plan Book 124
  o page 100 Lease is for a term of five years; lessee may renew lease for an additional five years
  o Lessee will pay 15% of annual gross revenues from operation of marina
  o 2/3 of gross revenues to be deposited to the Harbors and Inland Water Maintenance Fund and 1/3 to the department of environmental management

Section 2 amends Section 21 of chapter 564 of the acts of 1987 by adding the following text:

• Commissioner of the department of environmental management to reimburse the HDC no more than $50,000 for the construction of a playground, landscaping, parking and other related upland access and recreational improvements.

Original text from Section 21 of chapter 564 of the acts of 1987:
Section 21. The commissioner of the department of environmental management is hereby authorized to expend three million dollars for the development, construction and associated cost for the Pope Island marina in the city of New Bedford. The amounts appropriated in this section shall be in addition to any funds previously appropriated for this purpose.

Chapter 17 of the Acts of 2007 (NBRA and HDC)

Section 1 allows the City of New Bedford and NBRA to undertake a project at the railroad depot site (the railroad depot project)

- Construct an engineered environmental barrier and railyard at the rail road depot site
- Reconstruct mainline tracks, turn-around track, lead tracks and industrial tracks
- Work with US EPA to construct a rail spur to transport dewatered sediments from New Bedford Harbor
- City and HDC may construct a ferry terminal in vicinity of site and parking lot at site
- City, NBRA and HDC may redevelop any portion of such site into 1 or more other transportation facilities, other necessary public facilities, or into commercial or industrial uses
- City, NBRA, and HDC have the following authorities for this project
  - Develop, construct, improve, enlarge, reconstruct, alter, demolish and remediate an portion of such project site and facilities
  - Sell, convey, acquire, mortgage, lease, transfer, exchange or otherwise dispose of any property, both real and person, or any interest therein necessary for the project
  - Operate and maintain any portion of the project
  - Enter into agreements necessary or desirable to carry out such project
  - Do all acts and things necessary to carry out purposes of act
- All agreement entered into by city, NBRA or HDC are authorized and costs are ratified, validated and confirmed
- All actions taken by NBRA and HDC for this project are subject to the approval of the mayor
- Mayor may require that NBRA or HDC transfer control of the project to the city, assign related agreements to the city, provide all records to the city and cooperate with the city in connection with transfers of control and responsibility

Section 2 authorizes the city to borrow not more than $12,470,000 to pay the costs of this project incurred by the city, the NBRA, or the HDC.

Section 3 ratifies orders of the New Bedford city council approved by the May on March 17, 2003, June 25, 2004, and June 22, 2006 authorizing city to issue bonds and notes for the cost of this project.
Section 4 requires HDC to reimburse the City for costs incurred by HDC and paid for by the city not to exceed $600,000 from any net commission and as provided for in section 6 of chapter 762 of the acts of 1957; costs shall not exceed $60,000 in any fiscal year of the commission.

Section 5 authorizes the city to recover costs from parties responsible for the contamination of the project and may act as an agent for other public or quasi-public entities. Act does not affect rights and powers of DEP under MGL 21E.

Section 6 states that the act shall take effect upon its passage.

Chapter 109 of the Acts of 2014 (HDC)

Section 1 allows the mayor to approve the harbormaster of the city, with the approval of the city council.

- Shall be a resident, unless waiver is granted
- Terms is no more than five years
- Hearing required for removal
- Mayor shall authorize the HDC to enter into an employment contract with the harbormaster

Section 2 allows mayor to reappoint an incumbent for a term of not more than 5 years. Reappointment requires the approval of the city council and is subject to Section 1.

Section 3 states that the act shall take effect upon its passage.
Appendix B

CURRENT USE & DIMENSIONAL TABLES
### 2230 Table of Use Regulations

<table>
<thead>
<tr>
<th>PRINCIPAL USE</th>
<th>RA</th>
<th>MUB</th>
<th>IA</th>
<th>IB</th>
<th>WI</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>A. RESIDENTIAL</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1. Single-family dwelling</td>
<td>Y</td>
<td>Y</td>
<td>N</td>
<td>N</td>
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</tr>
<tr>
<td>2. Two-family dwelling</td>
<td>N</td>
<td>Y</td>
<td>N</td>
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<td>N</td>
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<tr>
<td>3. Multifamily dwelling</td>
<td>N</td>
<td>Y</td>
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<tr>
<td>4. Boarding House</td>
<td>N</td>
<td>BA</td>
<td>N</td>
<td>N</td>
<td>N</td>
</tr>
<tr>
<td>5. Group residence</td>
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</tr>
<tr>
<td>6. Assisted or Independent Living Facility</td>
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<td>BA</td>
<td>BA</td>
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<tr>
<td>7. Nursing or convalescent home</td>
<td>BA</td>
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<td>BA</td>
<td>BA</td>
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<tr>
<td>8. Trailer camp or park</td>
<td>N</td>
<td>N</td>
<td>N</td>
<td>N</td>
<td>N</td>
</tr>
<tr>
<td>9. Hoofed animals</td>
<td>N</td>
<td>N</td>
<td>N</td>
<td>N</td>
<td>N</td>
</tr>
<tr>
<td>10. Animals or head of poultry, not exceed to exceed one animal or head of poultry per one thousand (1,000) square feet of the net area of the lot. Net area shall be determined by subtracting the gross ground floor area of all buildings and structures on the lots from the gross area of the lot plus any contiguous lots owned by the same party.</td>
<td>Y</td>
<td>Y</td>
<td>N</td>
<td>N</td>
<td>N</td>
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<tr>
<td><strong>B. EXEMPT AND INSTITUTIONAL USES</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1. Use of land or structures for religious purposes</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
</tr>
<tr>
<td>2. Use of land or structures for educational purposes on land owned or leased by the commonwealth or any of its agencies, subdivisions or bodies politic or by a religious sect or denomination, or by a nonprofit educational corporation</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
</tr>
<tr>
<td>3. Child care facility (in existing building)</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
</tr>
<tr>
<td>4. Child care facility (not in existing building)</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
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<tr>
<td>5. Use of land for the primary purpose of agriculture, horticulture, floriculture, or viticulture on a parcel of more than five acres in area</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
</tr>
<tr>
<td>6. Facilities for the sale of produce, and wine and dairy products, provided that during the months of June, July, August, and September of every year, or during the harvest season of the primary crop, the majority of such products for sale, based on either gross sales dollars or volume, have been produced by the owner of the land containing more than five acres in area on which the facility is located</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
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<tr>
<td>7. Municipal facilities</td>
<td>Y</td>
<td>Y</td>
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<td>Y</td>
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<td>8. Essential services</td>
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<tr>
<td>9. Cemeteries</td>
<td>Y</td>
<td>Y</td>
<td>N</td>
<td>N</td>
<td>N</td>
</tr>
<tr>
<td>10. Hospital</td>
<td>Y</td>
<td>Y</td>
<td>N</td>
<td>N</td>
<td>N</td>
</tr>
<tr>
<td><strong>C. COMMERCIAL</strong></td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1. Nonexempt agricultural use</td>
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<tr>
<td>2. Nonexempt educational use</td>
<td>N</td>
<td>Y</td>
<td>BA</td>
<td>BA</td>
<td>BA</td>
</tr>
<tr>
<td>3. Animal clinic or hospital; with ancillary animal boarding</td>
<td>N</td>
<td>SP</td>
<td>BA</td>
<td>BA</td>
<td>N</td>
</tr>
<tr>
<td>PRINCIPAL USE</td>
<td>RA</td>
<td>MUB</td>
<td>IA</td>
<td>IB</td>
<td>WI</td>
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<td>--------------------------------------------------</td>
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</tr>
<tr>
<td>4. Adult day care</td>
<td>BA</td>
<td>BA</td>
<td>N</td>
<td>N</td>
<td>N</td>
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<tr>
<td>5. Family day care</td>
<td>BA</td>
<td>BA</td>
<td>N</td>
<td>N</td>
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<tr>
<td>6. Large family day care</td>
<td>BA</td>
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<td>7. Club or lodge, nonprofit</td>
<td>CC</td>
<td>CC</td>
<td>N</td>
<td>N</td>
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<td>8. Funeral home</td>
<td>BA</td>
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<tr>
<td>9. Adult entertainment establishment</td>
<td>N</td>
<td>CC</td>
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<td>CC</td>
</tr>
<tr>
<td>10. Bed &amp; Breakfast</td>
<td>BA</td>
<td>BA</td>
<td>N</td>
<td>N</td>
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<tr>
<td>11. Motel, hotel or inn</td>
<td>N</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
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<td>12. Retail stores and services not elsewhere set forth</td>
<td>N</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
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<td>13. Motor vehicle sales and rental</td>
<td>N</td>
<td>CC</td>
<td>CC</td>
<td>CC</td>
<td>N</td>
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<td>14. Motor vehicle general repairs</td>
<td>N</td>
<td>CC</td>
<td>N</td>
<td>CC</td>
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<tr>
<td>15. Motor Vehicle body repairs</td>
<td>N</td>
<td>N</td>
<td>N</td>
<td>CC</td>
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<td>16. Motor vehicle light service</td>
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<td>17. Restaurant</td>
<td>N</td>
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<td>N</td>
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<tr>
<td>18. Restaurant, fast-food</td>
<td>N</td>
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<td>BA</td>
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<td>19. Business or professional office</td>
<td>N</td>
<td>Y</td>
<td>Y</td>
<td>N</td>
<td>Y</td>
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<tr>
<td>20. Medical offices, center, or clinic</td>
<td>N</td>
<td>BA</td>
<td>BA</td>
<td>N</td>
<td>BA</td>
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<tr>
<td>21. Bank, financial agency</td>
<td>N</td>
<td>Y</td>
<td>Y</td>
<td>N</td>
<td>Y</td>
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<tr>
<td>22. Indoor commercial recreation</td>
<td>N</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
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<tr>
<td>23. Outdoor commercial recreation</td>
<td>N</td>
<td>BA</td>
<td>BA</td>
<td>N</td>
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<tr>
<td>24. Wireless Communications Facilities</td>
<td>PB</td>
<td>PB</td>
<td>PB</td>
<td>PB</td>
<td>PB</td>
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<tr>
<td>25. Theatres and auditoriums</td>
<td>N</td>
<td>PB</td>
<td>N</td>
<td>N</td>
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<tr>
<td>26. Convention Centers</td>
<td>M</td>
<td>PB</td>
<td>PB</td>
<td>PB</td>
<td>N</td>
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<tr>
<td>D. INDUSTRIAL</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1. Earth removal</td>
<td>N</td>
<td>N</td>
<td>N</td>
<td>N</td>
<td>N</td>
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<tr>
<td>2. Manufacturing</td>
<td>N</td>
<td>N</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
</tr>
<tr>
<td>3. Light manufacturing</td>
<td>N</td>
<td>N</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
</tr>
<tr>
<td>4. Research, development or testing laboratories and facilities</td>
<td>N</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
</tr>
<tr>
<td>5. Fish processing</td>
<td>N</td>
<td>N</td>
<td>N</td>
<td>N</td>
<td>Y</td>
</tr>
<tr>
<td>6. Wholesale, warehouse, self-storage mini-warehouse, or distribution facility</td>
<td>N</td>
<td>N</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
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<tr>
<td>7. Transportation terminal</td>
<td>N</td>
<td>N</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
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<tr>
<td>8. Water freight terminal</td>
<td>N</td>
<td>N</td>
<td>N</td>
<td>N</td>
<td>Y</td>
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<tr>
<td>9. Businesses engaged in the sale, distribution or storage of grain, petroleum products, building materials and industrial machinery provided that such businesses shall be primarily reliant upon a waterfront location or shall be in direct support of an industrial use which requires a waterfront location</td>
<td>N</td>
<td>N</td>
<td>N</td>
<td>N</td>
<td>Y</td>
</tr>
</tbody>
</table>
### PRINCIPAL USE

<table>
<thead>
<tr>
<th>Use</th>
<th>RA</th>
<th>MUB</th>
<th>IA</th>
<th>IB</th>
<th>WI</th>
</tr>
</thead>
<tbody>
<tr>
<td>10. Businesses engaged in the sale, distribution or storage of grain, petroleum products, alternative motor vehicle fuels, building materials and industrial machinery.</td>
<td>N</td>
<td>N</td>
<td>N</td>
<td>CC</td>
<td>N</td>
</tr>
<tr>
<td>11. Businesses engaged in salvaging, dismantling and reprocessing of scrap and waste materials including building materials, motor vehicles, machinery and equipment, paper, rags or any other discarded material, provided that such business shall be primarily reliant upon a waterfront location</td>
<td>N</td>
<td>N</td>
<td>N</td>
<td>N</td>
<td>Y</td>
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<tr>
<td>12. Junkyard or automobile graveyard</td>
<td>N</td>
<td>N</td>
<td>N</td>
<td>N</td>
<td>N</td>
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<tr>
<td>13. Contractor's yard</td>
<td>N</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>N</td>
</tr>
<tr>
<td>14. Low-level radioactive or nuclear waste facility.</td>
<td>N</td>
<td>N</td>
<td>N</td>
<td>N</td>
<td>N</td>
</tr>
<tr>
<td>15. Tire recycling &amp; re-treading</td>
<td>N</td>
<td>N</td>
<td>N</td>
<td>N</td>
<td>N</td>
</tr>
<tr>
<td>16. Batch asphalt &amp; concrete plants</td>
<td>N</td>
<td>N</td>
<td>N</td>
<td>CC</td>
<td>N</td>
</tr>
</tbody>
</table>

### NOTES

- Missing items above are not allowed in any of the identified districts.
- Y: A permitted use
- N: An excluded or prohibited use
- BA: A use authorized under special permit from the Board of Appeals as provided under Section 5300
- CC: A use authorized under special permit from the City Council as provided under Section 5300
- PB: A use authorized under special permit from the Planning Board as provided under Section 5300

#### 2320. Accessory Uses.

<table>
<thead>
<tr>
<th>Use</th>
<th>Permitted By?</th>
<th>District</th>
</tr>
</thead>
<tbody>
<tr>
<td>Accessory Scientific Uses</td>
<td>BA</td>
<td>All</td>
</tr>
<tr>
<td>Boarders in Single-Family Dwelling</td>
<td>BA</td>
<td>RA, MUB</td>
</tr>
<tr>
<td>Family Day Care Homes</td>
<td>BA</td>
<td>All</td>
</tr>
<tr>
<td>Off-Street parking for more than 5 vehicles</td>
<td>BA</td>
<td>RA</td>
</tr>
<tr>
<td>Joint use of off-street parking by buildings on contiguous lots</td>
<td>BA</td>
<td>RA</td>
</tr>
</tbody>
</table>
## 2700 Dimensional Use Regulations

<table>
<thead>
<tr>
<th>REQUIREMENT</th>
<th>RA</th>
<th>MUB</th>
<th>IA</th>
<th>IB</th>
<th>WI</th>
</tr>
</thead>
<tbody>
<tr>
<td>Minimum Lot Size (sq. ft.)</td>
<td>8,000</td>
<td>8,000 for uses allowed in residence A; 10,000 for two family units; 15,000 for 3 or more family units</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Density of Dwell-</td>
<td>1 per 10,000 sq. ft.</td>
<td>1 per 10,000 sq. ft. for single family; 1 per 5,000 sq. feet for two family; 1 per 1,000 sq. feet for three or more family</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>ing Units per Lot</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lot Frontage (ft.)</td>
<td>75</td>
<td>75 for uses allowed in RA; 100 for two family; 150 for 3 or more family; 0 for other allowed uses</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Height of Buildings (ft.)</td>
<td>45; 60 for religious, educational, or institutional buildings</td>
<td>45 for single or two family; 60 for three family, 1001 for other allowed uses</td>
<td>1001</td>
<td>1001</td>
<td>1001</td>
</tr>
<tr>
<td>Height of Buildings (# stories)</td>
<td>2.5; 3 for religious, educational, or institutional buildings</td>
<td>2.5 for uses allowed in residence A or B; 4 for three or more family; 7 for other allowed uses</td>
<td>7</td>
<td>7</td>
<td>7</td>
</tr>
<tr>
<td>Front Yard (ft.)</td>
<td>202</td>
<td>20 for uses allowed in residential district; 0 for other allowed uses</td>
<td>25</td>
<td>25</td>
<td>10</td>
</tr>
<tr>
<td>Side Yard (ft.)</td>
<td>10 on one side; 12 on the other</td>
<td>10 on one side, 12 on the other for uses allowed in residential district; for other uses, 10 on any side where adjacent lot is in a residential district or used for residential purposes</td>
<td>25</td>
<td>25</td>
<td>10</td>
</tr>
<tr>
<td>Rear Yard (ft.)</td>
<td>30</td>
<td>30 for uses allowed in residential district; for other uses, 10 for 1-2 story buildings; 20 feet for 3 or more stories</td>
<td>25</td>
<td>25</td>
<td>10</td>
</tr>
<tr>
<td>Lot Coverage by Buildings (%)</td>
<td>30; 40 on corner lots</td>
<td>30; 40 on corner lots for uses allowed in residential district; 0 for other uses</td>
<td>50</td>
<td>50</td>
<td>50</td>
</tr>
<tr>
<td>Green Space</td>
<td>35%</td>
<td>35% for uses allowed in residential districts; 0 for other uses</td>
<td>20%</td>
<td>20%</td>
<td>20%</td>
</tr>
</tbody>
</table>

1Provided, however, that no part of any building shall be erected to a height in excess of 1¾ times the horizontal distance from its face to the opposite street line.
Appendix C

ECONOMIC SUMMARY
Executive Summary

FXM Associates reviewed relevant reports on conditions and trends in New Bedford’s waterfront economy, prepared previously by FXM and others, and analyzed the most recent data on population and businesses as well as historical data on employment and wages in key waterfront industries. FXM staff conducted interviews with seafood processors referred by the Harbor Development Commission, commercial bankers, shippers, realtors, and others knowledgeable about New Bedford market conditions and waterfront business activity. The following paragraphs summarize key findings from this research:

- The population within the waterfront study area is estimated at about 700 persons in 2014 and households at approximately 300. Both population and households have grown much more rapidly than city and regional averages since 2000, owing largely to conversion of former mills to apartments in the northern portion of the study area where the vast majority of all persons in the waterfront area live. Within the Hicks Logan Sawyer section, household incomes are well below city and region averages, and poverty rates are high.

- In 2014, business establishments in the waterfront study area numbered over 370, providing over 4,100 jobs and generating about $2.7 billion in sales. Wages totaled approximately $238 million with an average annual wage of $57,000. This average annual wage compares favorably to the $44,500 average annual wage for all industries in New Bedford, and is largely accounted for by wages in the fishing and seafood related businesses.
The fishing and seafood related industries accounted for about 54% of all jobs in the waterfront study area in 2014 and 78% of payrolls, despite the fact that jobs in both sectors have fallen from their historical highs in 2009 and 2011, respectively, in New Bedford. The seafood processing industry has lost both in absolute numbers of jobs and in the City’s relative share of all seafood processing jobs in Bristol County. Bristol County overall, where seafood processing employment is growing, had over 400 more seafood processing jobs in 2014 than in New Bedford alone – in 2004 the county-city difference was about 60 jobs.

Interviewees report that seafood processors have encountered difficulties gaining the permits necessary for them to expand in New Bedford and that this factor largely accounts for the job migrations outside the city limits, as both labor force in the city and infrastructure in the waterfront area remain positive assets. Policy and other economic development initiatives are needed to retain and help expand this industry in New Bedford. This would include supporting and strengthening steps that would enable seafood and related businesses to expand, whether on the waterfront or elsewhere in the city, such as the expedited permitting, zoning changes, bulkhead extensions and other specific initiatives noted in the interviews (see Interviews Summary section).

Today, State Pier remains the City’s core resource for handling ocean cargoes, and investments to enhance cargo potential at State Pier are ongoing. Additional investments at the newly developed Marine Commerce Terminal are needed for that facility to be able to handle non-wind energy related cargoes efficiently and to attract a private terminal operator and other shipments. Cargo operations at State Pier do not necessarily preclude other uses and activities but need accommodation to ensure the local jobs, household income, and business sales they now provide and are projected to provide in the foreseeable future.

The HDC is pursuing funding for dredging and this effort if successful will result in additional jobs and business activity according to potentially affected businesses.

The Eversource/Sprague site in the central waterfront area continues to represent a significant untapped potential for locating a variety of water-dependent and related uses. Remediation costs as currently estimated are a deterrent to development, but need to be revisited based on actual potential uses. The future development strategy may also offer opportunities to achieve major mixed use development. Towards this end it is recommended that the HDC reinstitute the “eligibility credit trading” initiative for the DPA established in the first Municipal Harbor Plan. If reinstated, that program could represent an opportunity to utilize more than 25% of the Eversource site for non-marine industrial uses.
Other potential economic development initiatives could include expansion of the Popes’ Island Marina, as detailed in prior feasibility studies; attraction of an excursion vessel for dinner, party, and business function cruises as recommended in the Massachusetts Strategic Ports Initiative, with dockage and parking close to downtown such as at Pier 3 (excursion vessels make significant contributions to visitation and spending at other ports); and a new initiative to use the ro-ro facilities already built at State Pier for freight ferry service to Nantucket and Martha’s Vineyard previously shown to be both feasible to the operator and to produce economic benefits to New Bedford and the Islands.

Introduction

This memorandum summarizes FXM Associates’ assessment of current social and economic conditions within the waterfront study area based on limited primary research and analysis of the most recent available secondary source data from public and proprietary subscription data services (page 3-11). Senior staff of FXM interviewed a sample of key waterfront businesses, and a summary of the findings of those interviews is included in this memorandum (pages 12-13). Finally, the memorandum lists economic issues and opportunities culled from the analysis of secondary source data, interviews conducted during the course of this study, as well as prior research and reports prepared by FXM Associates and others over the past 15-plus years (pages 14-17). An Appendix contains synopses and excerpts from selected prior reports (pages 18-32). Opportunities specifically related to offshore wind energy projects – such as staging and the potential for offshore wind related and supportive industry development in New Bedford -- are addressed separately in memoranda and presentations prepared by Dan Hodge and the UMass Donahue Institute.

Study Area Profile

The study area encompasses the area from I-195 to the north to Cove Street in the south, Route 18 to the west, and Popes Island to the east. FXM specified a polygon circumscribing this area to obtain demographic and economic data reported in this section from the subscription data service A.C. Nielsen Site Reports. The Site Reports data are 2014 estimates based, according to Nielsen, on the latest US population and economic censuses updated by sources and algorithms proprietary to Nielsen. Other sources are noted in the text and tables.

Population and Households

As shown in Table 1, the estimated population of the waterfront study area is 719 residents in 2014. This represents about 1% of the city as a whole. The study area has grown much faster than the city and county, however: 43% between 2000 and 2010, compared to 1.5% in the city and 2.5% in the county. Although this rate is not estimated to have continued in recent years, the study area is still projected to grow over five times as fast as the city and county over the next five years. This rapid change is largely due to mill conversions to residential apartments that have
been occurring in the northern part of the study area, known as the Hicks Logan Sawyer district. The households occupying the converted mill properties are likely to have higher incomes than those living elsewhere in the Hicks Logan Sawyer district, thereby raising the median and average incomes reported for the area as a whole\(^1\). The vast majority of the population, households, and housing within the overall waterfront study area and depicted in Tables 1 through 3 are in the Hicks Logan Sawyer district.

The households in the study area experienced comparable growth rates to population in the decade between 2000 and 2010 and are projected to grow at rates similar to population rates, also exceeding those of the city and county by wide margins. These households are, however, less affluent than those of the city and county: median household income in 2014 is estimated at $27,613 compared to $38,858 in the city and $57,890 in the county. Poverty rates among families in the study area are very high: 47%, with 42% of families with children living in poverty. In comparison, only 19% of families in the city are below poverty levels and 9% of county families.

**Workforce Characteristics**

The data in Table 2 show that education levels in the study area are very low: only 12% have a college degree, and 45% have no high school diploma. In the city as a whole, however, only 15% have a college degree and 32% have not completed high school. The county boasts somewhat better levels, with 26% of its residents having a college degree. Only 18% have not completed high school. The workforce in the study area reflects the low educational attainment. It is largely blue-collar: 47% compared to 28% in the city and 21% in the county. The great majority of workers in all three areas work in the private sector. Almost 40% of the households in the study area have no vehicle, a very high proportion. Only 19% of those in the city and 10% of those in the county have no vehicle. Travel times to work are similar, however, among those who do and do not own vehicles.

---

\(^1\) Further research, beyond that possible in this study, is necessary to determine incomes and other characteristics of households in sub-areas below that of the study area overall.
### FXM Associates

#### Table 1

Demographic Data: Population & Households

<table>
<thead>
<tr>
<th></th>
<th>Study Area</th>
<th>City of New Bedford</th>
<th>Bristol County</th>
<th>Study Area as % of City</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Population</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2019 Projection</td>
<td>768</td>
<td>97,254</td>
<td>561,800</td>
<td>1%</td>
</tr>
<tr>
<td>2014 Estimate</td>
<td>719</td>
<td>95,794</td>
<td>552,793</td>
<td>1%</td>
</tr>
<tr>
<td>2010 Census</td>
<td>680</td>
<td>95,072</td>
<td>548,285</td>
<td>1%</td>
</tr>
<tr>
<td>2000 Census</td>
<td>476</td>
<td>93,713</td>
<td>534,732</td>
<td>1%</td>
</tr>
<tr>
<td><strong>Projected Growth 2014 - 2019</strong></td>
<td>5.83%</td>
<td>1.52%</td>
<td>1.63%</td>
<td></td>
</tr>
<tr>
<td><strong>Estimated Growth 2010 - 2014</strong></td>
<td>5.78%</td>
<td>0.76%</td>
<td>0.82%</td>
<td></td>
</tr>
<tr>
<td>Growth 2000 - 2010</td>
<td>42.88%</td>
<td>1.45%</td>
<td>2.53%</td>
<td></td>
</tr>
<tr>
<td>2014 Estimated Median Age</td>
<td>31.8</td>
<td>37.6</td>
<td>40.50%</td>
<td>85%</td>
</tr>
</tbody>
</table>

| **Households**           |            |                     |                |                         |
| 2019 Projection          | 302        | 40,022              | 218,699        | 1%                      |
| 2014 Estimate            | 285        | 39,262              | 215,107        | 1%                      |
| 2010 Census              | 273        | 38,761              | 213,010        | 1%                      |
| 2000 Census              | 194        | 38,158              | 205,434        | 1%                      |
| **Projected Growth 2014 - 2019** | 5.83%    | 1.94%               | 1.67%          |                         |
| **Estimated Growth 2010 - 2014** | 4.66%    | 1.29%               | 0.98%          |                         |
| Growth 2000 - 2010       | 40.52%     | 1.58%               | 3.69%          |                         |
| Average Household Size   | 2.5        | 2.4                 | 2.6            | 103%                    |

#### 2014 Estimated Household Income

<table>
<thead>
<tr>
<th>Income Level</th>
<th>Study Area</th>
<th>City of New Bedford</th>
<th>Bristol County</th>
<th>Study Area as % of City</th>
</tr>
</thead>
<tbody>
<tr>
<td>Income Less than $15,000</td>
<td>97</td>
<td>34.0</td>
<td>20.3</td>
<td>27,099</td>
</tr>
<tr>
<td>Income $15,000 - $24,999</td>
<td>39</td>
<td>13.7</td>
<td>6,166</td>
<td>15.7</td>
</tr>
<tr>
<td>Income $25,000 - $34,999</td>
<td>26</td>
<td>9.1</td>
<td>4,127</td>
<td>10.5</td>
</tr>
<tr>
<td>Income $35,000 - $49,999</td>
<td>36</td>
<td>12.6</td>
<td>5,296</td>
<td>13.5</td>
</tr>
<tr>
<td>Income $50,000 - $74,999</td>
<td>47</td>
<td>16.5</td>
<td>6,658</td>
<td>17.0</td>
</tr>
<tr>
<td>Income $75,000 - $99,999</td>
<td>15</td>
<td>5.3</td>
<td>3,860</td>
<td>9.8</td>
</tr>
<tr>
<td>Income $100,000 - $124,999</td>
<td>11</td>
<td>3.9</td>
<td>2,315</td>
<td>5.9</td>
</tr>
<tr>
<td>Income $125,000 - $149,000</td>
<td>6</td>
<td>2.1</td>
<td>1,254</td>
<td>3.2</td>
</tr>
<tr>
<td>Income $150,000 - $199,999</td>
<td>5</td>
<td>1.8</td>
<td>979</td>
<td>2.5</td>
</tr>
<tr>
<td>Income $200,000 - $249,999</td>
<td>3</td>
<td>1.1</td>
<td>330</td>
<td>0.8</td>
</tr>
<tr>
<td>Income $250,000 - $499,999</td>
<td>0</td>
<td>0.0</td>
<td>221</td>
<td>0.6</td>
</tr>
<tr>
<td>Income $500,000 and over</td>
<td>0</td>
<td>0.0</td>
<td>80</td>
<td>0.2</td>
</tr>
<tr>
<td>Household Income Less than $25,000</td>
<td>136</td>
<td>47.7</td>
<td>14,142</td>
<td>36.0</td>
</tr>
<tr>
<td>Household income more than $150,000</td>
<td>8</td>
<td>22.8</td>
<td>1,610</td>
<td>26.2</td>
</tr>
</tbody>
</table>

#### 2014 Families by Poverty Status

| 2014 Families Below Poverty    | 66         | 47%                 | 4,447          | 18.8                    | 12,766 | 8.9%  | 1%        |
| 2014 Families Below Poverty with Children | 59      | 42%                 | 3,523          | 14.9                    | 9,637  | 6.7%  | 2%        |

#### 2014 Estimated Average Household Income

<table>
<thead>
<tr>
<th></th>
<th>Study Area</th>
<th>City of New Bedford</th>
<th>Bristol County</th>
</tr>
</thead>
<tbody>
<tr>
<td>$41,420</td>
<td>$52,959</td>
<td>$76,043</td>
<td>78%</td>
</tr>
<tr>
<td>$27,613</td>
<td>$38,858</td>
<td>$57,890</td>
<td>71%</td>
</tr>
<tr>
<td>$16,418</td>
<td>$21,706</td>
<td>$29,590</td>
<td>76%</td>
</tr>
</tbody>
</table>

Source: Nielson Clavitas SiteReports 2014 and FXM Associates

New Bedford Waterfront Plan: Economic Summary
Table 2

<table>
<thead>
<tr>
<th>Workforce Characteristics</th>
<th>Study Area</th>
<th>%</th>
<th>City of New Bedford</th>
<th>%</th>
<th>Bristol County</th>
<th>%</th>
<th>Study Area as % of City</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Education</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Less than 9th grade</td>
<td>124</td>
<td>25.5</td>
<td>11,820</td>
<td>18.1</td>
<td>35,554</td>
<td>9.3</td>
<td>1%</td>
</tr>
<tr>
<td>Some High School, no diploma</td>
<td>93</td>
<td>19.1</td>
<td>8,729</td>
<td>13.4</td>
<td>34,051</td>
<td>9.0</td>
<td>1%</td>
</tr>
<tr>
<td>High School Graduate (or GED)</td>
<td>145</td>
<td>29.8</td>
<td>21,076</td>
<td>32.3</td>
<td>114,614</td>
<td>30.1</td>
<td>1%</td>
</tr>
<tr>
<td>Some College, no degree</td>
<td>56</td>
<td>11.5</td>
<td>10,382</td>
<td>15.9</td>
<td>67,444</td>
<td>17.7</td>
<td>1%</td>
</tr>
<tr>
<td>Associate Degree</td>
<td>9</td>
<td>1.9</td>
<td>3,663</td>
<td>5.6</td>
<td>31,399</td>
<td>8.3</td>
<td>0.2%</td>
</tr>
<tr>
<td>Bachelor's Degree</td>
<td>48</td>
<td>9.9</td>
<td>6,433</td>
<td>9.9</td>
<td>63,579</td>
<td>16.7</td>
<td>1%</td>
</tr>
<tr>
<td>Master's Degree</td>
<td>3</td>
<td>0.6</td>
<td>2,415</td>
<td>3.7</td>
<td>25,381</td>
<td>6.7</td>
<td>0.1%</td>
</tr>
<tr>
<td>Professional School Degree</td>
<td>0</td>
<td>0.0</td>
<td>292</td>
<td>0.4</td>
<td>4,680</td>
<td>1.2</td>
<td>0.0%</td>
</tr>
<tr>
<td>Doctorate Degree</td>
<td>7</td>
<td>1.4</td>
<td>465</td>
<td>0.7</td>
<td>3,712</td>
<td>1.0</td>
<td>2%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Occupation Classification</strong></th>
<th>Study Area</th>
<th>%</th>
<th>City of New Bedford</th>
<th>%</th>
<th>Bristol County</th>
<th>%</th>
<th>Study Area as % of City</th>
</tr>
</thead>
<tbody>
<tr>
<td>Blue Collar</td>
<td>125</td>
<td>46.8</td>
<td>12,004</td>
<td>28.4</td>
<td>58,755</td>
<td>21.4</td>
<td>1%</td>
</tr>
<tr>
<td>White Collar</td>
<td>85</td>
<td>31.8</td>
<td>20,021</td>
<td>47.4</td>
<td>163,998</td>
<td>59.6</td>
<td>0%</td>
</tr>
<tr>
<td>Service and Farm</td>
<td>57</td>
<td>21.3</td>
<td>10,170</td>
<td>24.1</td>
<td>52,406</td>
<td>19.0</td>
<td>1%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Type of Worker</strong></th>
<th>Study Area</th>
<th>%</th>
<th>City of New Bedford</th>
<th>%</th>
<th>Bristol County</th>
<th>%</th>
<th>Study Area as % of City</th>
</tr>
</thead>
<tbody>
<tr>
<td>For-Profit Private Workers</td>
<td>231</td>
<td>86.5</td>
<td>30,939</td>
<td>73.3</td>
<td>193,485</td>
<td>70.3</td>
<td>1%</td>
</tr>
<tr>
<td>Non-Profit Private Workers</td>
<td>13</td>
<td>4.9</td>
<td>3,704</td>
<td>8.8</td>
<td>23,451</td>
<td>8.5</td>
<td>0.4%</td>
</tr>
<tr>
<td>Local Government Workers</td>
<td>5</td>
<td>1.9</td>
<td>2,722</td>
<td>6.5</td>
<td>20,691</td>
<td>7.5</td>
<td>0.2%</td>
</tr>
<tr>
<td>State Government Workers</td>
<td>5</td>
<td>1.9</td>
<td>1,758</td>
<td>4.2</td>
<td>11,081</td>
<td>4.0</td>
<td>0.3%</td>
</tr>
<tr>
<td>Federal Government Workers</td>
<td>2</td>
<td>0.7</td>
<td>656</td>
<td>1.6</td>
<td>4,681</td>
<td>1.7</td>
<td>0.3%</td>
</tr>
<tr>
<td>Self-Emp Workers</td>
<td>10</td>
<td>3.7</td>
<td>2,401</td>
<td>5.7</td>
<td>21,520</td>
<td>7.8</td>
<td>0.4%</td>
</tr>
<tr>
<td>Unpaid Family Workers</td>
<td>0</td>
<td>0.0</td>
<td>15</td>
<td>0.0</td>
<td>250</td>
<td>0.1</td>
<td>0.0%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>2014 Est. Households by Number of Vehicles</strong></th>
<th>Study Area</th>
<th>%</th>
<th>City of New Bedford</th>
<th>%</th>
<th>Bristol County</th>
<th>%</th>
<th>Study Area as % of City</th>
</tr>
</thead>
<tbody>
<tr>
<td>No Vehicles</td>
<td>111</td>
<td>38.9</td>
<td>7,306</td>
<td>18.6</td>
<td>20,761</td>
<td>9.7</td>
<td>2%</td>
</tr>
<tr>
<td>1 Vehicle</td>
<td>129</td>
<td>45.3</td>
<td>17,564</td>
<td>44.7</td>
<td>76,714</td>
<td>35.7</td>
<td>1%</td>
</tr>
<tr>
<td>2 Vehicles</td>
<td>27</td>
<td>9.5</td>
<td>10,776</td>
<td>27.4</td>
<td>79,935</td>
<td>37.2</td>
<td>0.3%</td>
</tr>
<tr>
<td>3 Vehicles</td>
<td>16</td>
<td>5.6</td>
<td>2,618</td>
<td>6.7</td>
<td>26,620</td>
<td>12.4</td>
<td>1%</td>
</tr>
<tr>
<td>4 Vehicles</td>
<td>2</td>
<td>0.7</td>
<td>722</td>
<td>1.8</td>
<td>8,163</td>
<td>3.8</td>
<td>0.3%</td>
</tr>
<tr>
<td>5 or more Vehicles</td>
<td>1</td>
<td>0.4</td>
<td>276</td>
<td>0.7</td>
<td>2,914</td>
<td>1.4</td>
<td>0.4%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Average Travel Time to Work (minutes)</strong></th>
<th>Study Area</th>
<th>%</th>
<th>City of New Bedford</th>
<th>%</th>
<th>Bristol County</th>
<th>%</th>
<th>Study Area as % of City</th>
</tr>
</thead>
<tbody>
<tr>
<td>Average Travel Time to Work (minutes)</td>
<td>26.5</td>
<td></td>
<td>26.3</td>
<td></td>
<td>29.3</td>
<td></td>
<td>101%</td>
</tr>
</tbody>
</table>

Source: Nielson Claritas Site Reports 2014 and FXM Associates

Housing

Table 3 summarizes the housing characteristics of the study area, the city, and the county. The great majority, over 90%, of study area residents are renters, higher even than the 60% of New Bedford residents who rent. In the county, the latter proportion is reversed: 60% of units are owner-occupied and 40% are rented. Average lengths of residence are comparable, but the few owners in the study area have the longest tenures: 28 years compared to 23 in the city and 22 in the county.
Conversely, renters in the study area have the shortest terms: 7 years compared to 9 in the city and county.

The median value of owner-occupied structures in the study area is just over $200,000, while the comparable figure for the city is a little over $230,000 and for the county $275,000.

Reflecting the large proportion of renters in the study area, 92% of the structures are multi-unit with only 7% being single unit structures. In the city, 35% are single unit structures, and in the county, 58%.

Table 3

<table>
<thead>
<tr>
<th>Housing Characteristics</th>
<th>Study Area</th>
<th>City of New Bedford</th>
<th>Bristol County</th>
<th>Study Area as % of City</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Tenure</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Owner Occupied</td>
<td>25</td>
<td>0.1</td>
<td>16,481</td>
<td>0.4</td>
</tr>
<tr>
<td>Renter Occupied</td>
<td>260</td>
<td>0.9</td>
<td>22,781</td>
<td>0.6</td>
</tr>
<tr>
<td><strong>Avg. Length of Residence (yrs)</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Owner Occupied</td>
<td>28.4</td>
<td>23.2</td>
<td>21.6</td>
<td>122.4%</td>
</tr>
<tr>
<td>Renter Occupied</td>
<td>7.0</td>
<td>9.2</td>
<td>9.3</td>
<td>76.1%</td>
</tr>
<tr>
<td><strong>Owner-Occupied Housing Values</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Value Less than $20,000</td>
<td>1</td>
<td>4.0</td>
<td>127</td>
<td>0.8</td>
</tr>
<tr>
<td>Value $20,000 - $39,999</td>
<td>1</td>
<td>4.0</td>
<td>242</td>
<td>1.5</td>
</tr>
<tr>
<td>Value $40,000 - $59,999</td>
<td>0</td>
<td>0.0</td>
<td>54</td>
<td>0.3</td>
</tr>
<tr>
<td>Value $60,000 - $79,999</td>
<td>2</td>
<td>8.0</td>
<td>230</td>
<td>1.4</td>
</tr>
<tr>
<td>Value $80,000 - $99,999</td>
<td>1</td>
<td>4.0</td>
<td>324</td>
<td>2.0</td>
</tr>
<tr>
<td>Value $100,000 - $149,999</td>
<td>3</td>
<td>12.0</td>
<td>1,137</td>
<td>6.9</td>
</tr>
<tr>
<td>Value $150,000 - $199,999</td>
<td>5</td>
<td>20.0</td>
<td>3,542</td>
<td>21.5</td>
</tr>
<tr>
<td>Value $200,000 - $299,999</td>
<td>11</td>
<td>44.0</td>
<td>8,004</td>
<td>48.6</td>
</tr>
<tr>
<td>Value $300,000 - $399,999</td>
<td>2</td>
<td>8.0</td>
<td>2,134</td>
<td>12.9</td>
</tr>
<tr>
<td>Value $400,000 - $499,999</td>
<td>0</td>
<td>0.0</td>
<td>444</td>
<td>2.7</td>
</tr>
<tr>
<td>Value $500,000 - $749,999</td>
<td>0</td>
<td>0.0</td>
<td>191</td>
<td>1.2</td>
</tr>
<tr>
<td>Value $750,000 - $999,999</td>
<td>0</td>
<td>0.0</td>
<td>33</td>
<td>0.2</td>
</tr>
<tr>
<td>Value $1,000,000 or more</td>
<td>0</td>
<td>0.0</td>
<td>19</td>
<td>0.1</td>
</tr>
</tbody>
</table>

Median Value

- $201,496
- $232,290
- $274,747
- 86.7%

Source: Nielson Claritas SiteReports 2014 and FXM Associates
Establishments, Employees, Business Sales, Payrolls and Wages

Data in Table 4 show estimates of the number of business establishments, employees, and business sales within the waterfront study area. The waterfront area accounts for about 7% of business establishments, 8% of employment, and 20% of business sales within the overall economy of New Bedford. Fishing and seafood and related industries are estimated to account for over half (54%) of the employment and over 90% of the business sales within the waterfront area2.

<p>| Table 4 |
| New Bedford Waterfront Study Area: Businesses, Employees, Sales |
| 2014 estimated |</p>
<table>
<thead>
<tr>
<th>Establishments</th>
<th>Employees</th>
<th>Sales ($ millions)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fishing and related</td>
<td>143</td>
<td>777</td>
</tr>
<tr>
<td>Oil and Gas</td>
<td>1</td>
<td>4</td>
</tr>
<tr>
<td>Utilities</td>
<td>1</td>
<td>5</td>
</tr>
<tr>
<td>Construction</td>
<td>11</td>
<td>51</td>
</tr>
<tr>
<td>Manufacturing (primarily seafood processing)</td>
<td>24</td>
<td>620</td>
</tr>
<tr>
<td>Wholesale Trade (primarily seafood)</td>
<td>52</td>
<td>839</td>
</tr>
<tr>
<td>Retail Trade</td>
<td>37</td>
<td>485</td>
</tr>
<tr>
<td>Transportation and Warehousing</td>
<td>11</td>
<td>148</td>
</tr>
<tr>
<td>Information</td>
<td>1</td>
<td>5</td>
</tr>
<tr>
<td>Real Estate and Rental and Leasing</td>
<td>10</td>
<td>35</td>
</tr>
<tr>
<td>Professional, Scientific, and Technical Services</td>
<td>19</td>
<td>66</td>
</tr>
<tr>
<td>Admin and Support and Waste Mgmt and Reme Servic</td>
<td>8</td>
<td>111</td>
</tr>
<tr>
<td>Healthcare and Social Assistance</td>
<td>16</td>
<td>61</td>
</tr>
<tr>
<td>Arts, Entertainment, and Recreation</td>
<td>9</td>
<td>71</td>
</tr>
<tr>
<td>Accommodation and Food Services</td>
<td>11</td>
<td>173</td>
</tr>
<tr>
<td>Other Services (except Public Administration)</td>
<td>16</td>
<td>404</td>
</tr>
<tr>
<td>Public Administration</td>
<td>3</td>
<td>304</td>
</tr>
<tr>
<td><strong>ALL INDUSTRIES</strong></td>
<td><strong>373</strong></td>
<td><strong>4,159</strong></td>
</tr>
</tbody>
</table>

Sources: A.C. Nielsen Site Reports; MassDept of Labor&Workforce Training, ES202 series; US Dept of Commerce, County Business Patterns; US Dept of Commerce, Regional Economic Information System; and FXM Associates

Payrolls for the estimated 4,159 employees in the waterfront area totaled about $238 million in 2014. Average annual wages are estimated at $57,000. This average annual wage for all employees within waterfront area industries compares favorably to the $44,500 average annual wage for all industries in New Bedford in 2014, with the higher average wage largely accounted for by wages in fishing and

2 The fishing and seafood and related industries are assumed to comprise the fishing, manufacturing, and wholesale trade sectors shown in Table 4.
FXM Associates

seafood and related businesses. The fishing, seafood and related industries accounted for 78% of all payrolls within the waterfront area in 2014, at an average annual wage of $82,500³.

Data in Table 5 show average annual wages and total payrolls within each of the industries shown in Table 4.

Table 5

<table>
<thead>
<tr>
<th>New Bedford Waterfront Study Area: Average Annual Wages and Payrolls by Industry 2014 estimated</th>
<th>Ave. Annual Wages $</th>
<th>Total Wages $</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fishing and related</td>
<td>111,304</td>
<td>86,482,950</td>
</tr>
<tr>
<td>Oil and Gas</td>
<td>79,375</td>
<td>317,501</td>
</tr>
<tr>
<td>Utilities</td>
<td>79,375</td>
<td>396,876</td>
</tr>
<tr>
<td>Construction</td>
<td>51,219</td>
<td>2,612,189</td>
</tr>
<tr>
<td>Manufacturing (primarily seafood processing)</td>
<td>63,162</td>
<td>39,160,149</td>
</tr>
<tr>
<td>Wholesale Trade (primarily seafood)</td>
<td>54,872</td>
<td>46,037,966</td>
</tr>
<tr>
<td>Retail Trade</td>
<td>26,527</td>
<td>12,865,726</td>
</tr>
<tr>
<td>Transportation and Warehousing</td>
<td>34,880</td>
<td>5,162,168</td>
</tr>
<tr>
<td>Information</td>
<td>51,559</td>
<td>257,795</td>
</tr>
<tr>
<td>Real Estate and Rental and Leasing</td>
<td>34,731</td>
<td>1,215,573</td>
</tr>
<tr>
<td>Professional, Scientific, and Technical Services</td>
<td>57,180</td>
<td>3,773,852</td>
</tr>
<tr>
<td>Admin and Support and Waste Mgmt and Reme Services</td>
<td>22,357</td>
<td>2,481,586</td>
</tr>
<tr>
<td>Healthcare and Social Assistance</td>
<td>39,547</td>
<td>2,412,378</td>
</tr>
<tr>
<td>Arts, Entertainment, and Recreation</td>
<td>22,528</td>
<td>1,599,497</td>
</tr>
<tr>
<td>Accommodation and Food Services</td>
<td>14,522</td>
<td>2,512,259</td>
</tr>
<tr>
<td>Other Services (except Public Administration)</td>
<td>28,687</td>
<td>11,589,631</td>
</tr>
<tr>
<td>Public Administration</td>
<td>61,883</td>
<td>18,812,460</td>
</tr>
</tbody>
</table>

**ALL INDUSTRIES**

| $ 57,151 | $ 237,690,556 |

Sources: A.C. Nielsen Site Reports; MassDept of Labor&Workforce Training, ES202 series; US Dept of Commerce, County Business Patterns; US Dept of Commerce, Regional Economic Information System; and FXM Associates

Given the importance of the fishing, seafood and related industries to the waterfront area and overall city economy it is important to note the decline in employment in both fishing and seafood processing in recent years. Figure A graphs historical employment in these two sectors between 2004 and 2014.

³ Massachusetts Department of Labor & Workforce Training, ES202 series data applied to the fishing, manufacturing and wholesale trade sectors shown in Table 4.
As shown by the data in Figure A, employment in seafood processing appears to be rebounding slightly since hitting a 10-year low in 2012, but still remains almost 40% below its peak in 2009. Employment in fishing continued to decline in 2014 from its peak in 2011, though the rate of decline between 2013 and 2014 was less than in the prior year.

As reported to FXM in interviews with seafood processors and others knowledgeable of conditions and trends in this industry in New Bedford (see subsequent interviews summary section), processors in New Bedford have encountered difficulties expanding their operations along the waterfront or elsewhere in the city. Data in Figure B appears to confirm these observations, showing that the decline in seafood processing jobs in New Bedford exceeds that in Bristol County overall; the city’s share of Bristol County seafood processing jobs is declining; and that the recent rebound is greater in the county overall than in the city. In 2004, New Bedford held 95% of all seafood processing jobs in Bristol County; at the 2009 peak employment the City held 85% of Bristol County jobs in seafood processing; by 2014 New Bedford’s share of county jobs in seafood processing had declined to 61%. As shown in the “Difference” line in Figure B, in 2004 the county total for jobs in seafood processing was 62 more than New Bedford’s total. By 2014 Bristol County overall held over 400 more jobs in seafood processing than the total in New Bedford.
Bedford. Countywide, seafood processing employment in 2014 was 17% below its peak in 2009, compared to 40% below peak in New Bedford.

Figure B

Average Monthly Employment in Seafood Processing
New Bedford & Bristol County Overall
2004-2014

Source: Massachusetts Department of Labor & Workforce Training, ES202 data series, and FXM Associates

State Pier

The data shown in Tables 4 and 5 do not fully reflect the current economic impact of cargo handling, especially at State Pier, nor the spending of visitors downtown and elsewhere in New Bedford associated with other water-dependent uses at State Pier. In addition to cargo handling, State Pier accommodates about 25 cruise ship callings annually, the Martha’s Vineyard passenger ferry service, the Schooner Ernestina (official vessel of the Commonwealth of Massachusetts), several charter and excursion operations, as well as occasional festivals and events such as the Working Waterfront Festival.

Based on prior work done by FXM, each vessel calling at State Pier is estimated to generate about $258,000 in expenditures within the local area economy, of which an estimated $116,000 is wages and salaries to local resident workers. For the most recent year (2014-2015) the 16 vessels that offloaded at State Pier generated about $4.1 million in local expenditures, of which an estimated $1.8 million was wages to local residents. According to Maritime International, which brokers and
manages the fruit cargoes associated with these local expenditures, at least this level of activity is expected to continue at State Pier for the near future. Further, Maritime expects this activity can be expanded when cold storage/refrigeration investments are completed as currently planned by the state DCR, owner and manager of State Pier.4

Interviews Summary

FXM conducted confidential telephone interviews with seafood processors referred by the Harbor Development Commission, commercial bankers, and realtors knowledgeable about New Bedford market conditions and waterfront business activity. The context for these FXM interviews exploring New Bedford Waterfront land uses, economic potential, and public policy is described in numerous reports, studies, and plans commissioned by state and local government over the past 15 years. A synopsis of report findings relevant to this study is attached as an appendix. Waterfront land use and development implementation focuses on retention, expansion and attraction of the seafood/fish processing sector in particular.

The main points emerging from the interviews are:

- Seafood processors comprise a significant sector of the City’s economy, representing 30% of GDP by some accounts if all indirect effects are considered. Critical factors influencing the continued growth of the seafood industry and competitive advantage for the Port of New Bedford are shore side support for processors (supplies, equipment, packaging materials, labor), and vessel repair, provisions, and marine equipment.

- Long established local processing companies have become “vertical operations” that include ownership or affiliation with nationwide harvesters calling at the Port of New Bedford and using the seafood display auction. While it is generally acknowledged that seafood processing is not a water dependent use, as “vertical operations” drive productivity, expanding or locating facilities in the waterfront area becomes more cost efficient and effective.

- Local infrastructure (water, wastewater capacity, power, transportation, network/roads) seems adequate to accommodate existing and near-term demand for expanded and new facilities.

- Three (3) key issues limit the city’s ability to maintain its competitiveness and retain/attract seafood processors.

4 This level of economic activity from cargo handling alone – not including other existing uses and activities at State Pier – is roughly the equivalent of the spending of 160,000 visitors (at $25 per cap), or 10 full service restaurants like those now in Downtown New Bedford (one quarter of all existing restaurant uses in Downtown).
1. The permitting process is not timely, well coordinated or predictable. Delays in permitting have led some processors seeking expansion space to locate elsewhere, outside the City of New Bedford. In the past, the City department heads met regularly to coordinate permitting and other initiatives necessary to secure local business expansion. That process should be re-established.

2. The waterfront area available for seafood processing excludes property available and suitable for planned or potential expansion. The majority of waterfront business within the current study boundaries is zoned water industrial (WI) which allows seafood (fish) processing. It extends roughly from Wamsutta Street south to Wright Street, including the Eversource/Sprague site. The remainder of the waterfront area is zoned Industrial A or Industrial B, neither allowing for seafood/fish processing. This includes the area north of Wamsutta to I-195, land west of South Terminal near North Front Street, and the area south of Wright Street to Cove Street.

Recommendations:

a) Extend the bulkhead south and north of the Revere Copper property to accommodate harvesters owned or affiliated with seafood processors.

b) Expand WI zoning south from Wright Street, including Berkshire Hathaway, to North Front Street west of South Terminal, and north of Wamsutta Street to I-195. This would increase the amount of land/property suitable and available for seafood processors’ expansion, retention and growth.

3. The value of New Bedford’s seafood processing sectors and its “brand” potential is not well understood or promoted.

Recommendations:

a) NBEDC, HDC, and UMass Dartmouth should undertake research to formulate a marketing strategy for the New Bedford seafood brand and identify successful examples, such as Maryland crabs, Maine lobster.

b) Explore the feasibility of a trade association to promote the value of the local seafood industry in terms of jobs and business output.

c) Institutionalize or formalize the services such a trade association would provide specific to the seafood processing industry, including technical assistance and financial incentives.
PORT of NEW BEDFORD

1. WATERBORNE PASSENGER TRANSPORT

Predominant commercial waterborne passenger transportation uses on the New Bedford-Fairhaven watershed and waterfront include water shuttles/taxis, excursion vessels, and a variety of recreational, educational and other public activities. The New Bedford Fairhaven Municipal Harbor Plan determined the Harbor lacked adequate berthing for water taxis and launch service, charter/excursion boats, Port security and operational vessels. The Plan cited data from Maritime Trades Association studies that every $1 spent by a boater generates an $8 economic return to the host community; and, the lack of adequate water/land interface to support water taxi, excursion, and recreational boating operations causes the Port to lose opportunities for this economic spin-off. The Plan included goals and specific locations for waterborne passenger transport in four of the six defined harbor planning sub-areas.

New Bedford Central Waterfront.

- **State Pier Cruise Ship Terminal (East Side and South Side)** - City and HDC ‘Cruise Ship Initiative’ actively marketing the Port of New Bedford as a full service port of call for cruise and other transient passenger vessels. In 2010, City and American Cruise Lines contract for up to 25 cruise vessels per year.

- **State Pier Floating Dock (Southwest Side)** - A substantial floating dock system is proposed to serve the Schooner Ernestina (the official vessel of the Commonwealth), and to establish an accessible central berthing area for charter fishing boats, excursion vessels, water taxi/shuttle, and other commercial boating services.

- **State Pier Water Taxi Dock (Northwest Corner)** – Improved docking facilities near Tonnesson Park and adjacent to Waterfront Visitor Center to adequately support charter/excursion boats and water shuttle/taxi services.

New Bedford South Terminal/Hurricane Barrier/Palmer’s Island.

- **Gifford Street Boat Ramp** - Public access to water, and City is exploring opportunities to expand the mooring fields off Gifford Street.

Fairhaven Central Waterfront

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5 New Bedford Fairhaven Municipal Harbor Plan, 2010

New Bedford Waterfront Plan: Economic Summary
Excursion/Charter Berthing Center - Development of a central berthing area for commercial charter and excursion vessels at one of several potential locations, all on private property. The best location for such a facility would be the northern face of the Linberg Marine property, facing the Pease Park boat ramp.

Pease Park Boat Ramp – The Plan recommends a floating dock to provide a central landing for across-harbor water taxi, Duck Tour use, in addition to transient berthing for recreational vessels.

1.1 Charter & Excursion Vessels

- Captain Leroy’s Deep Sea Fishing at 226 Pope’s Island, New Bedford offers daily ‘open boat’ (porgies, sea bass) fishing expeditions, special charters, and customized offshore fishing packages; free parking, slips and moorings available; complimentary bait (squid & clams); keep your catch! 2012 prices: $70 per person for regularly scheduled inshore trips; prices vary for offshore "no-man's land" trips (giant porgies), and custom charters on 36-foot Miss Elaine. Bait & Tackle Shop, fishing poles, tackle rental; ice, refreshments, gift certificates, sweatshirts, T-Shirts, and souvenirs also available.

- Whaling City Expeditions at 52 Fisherman’s Wharf (Visitors Center), New Bedford and Union Wharf, Fairhaven - services include 60-minute, narrated, daily scheduled Harbor Tours from mid-May through September ($15 Adults; $13 Seniors; $8 Children); Sunset Cruises to Palmers Island ($330 per boatload) Private Charters on the Acushnet for tour of New Bedford Harbor ($285 per boatload) 14 passenger capacity; free parking on the pier. The 2010 MHP reported harbor tour ridership from ‘walk-on’ patrons had increased 33% from 2006 to 2007, over the 18% increase from 2005 to 2006. Water-taxi customers of the water taxi/launch service are primarily from boat owners at moorings near Captain Leroy’s, the Fairhaven Shipyard, and Pope’s Island marinas.

- Cuttyhunk Ferry Company at 66B State Pier South Bulkhead, New Bedford offers Sunset, Dinner & Theater cruises, as well as charter packages on the MV CUTTYHUNK for corporate, fundraiser, weddings, and other events; full service bar and catering.

1.2 Water Taxis & Water Shuttles

- Whaling City Water Taxi and Launch Service – water taxi service from Pier 3 near Tonnesson Park, New Bedford and Union Wharf, Fairhaven; launch service available to/from Whaling City moorings, to/from harbor-side destinations while renting a Whaling City mooring, and by private arrangement; rates: $4.00/person. The 2010 MHP noted that a harbor-wide route with scheduled water taxi service envisioned in the 2002...
Harbor Plan had not materialized; water taxi operators indicated feasibility dependent upon increased patronage, dredging harbor sites (e.g. Palmer’s Island), and signage and possibly two-way communication at selected locations.

1.3 Cruise Ships

The 2010 MHP reported that since July 2002, cruise ships have been regularly making port calls to New Bedford during the summer and early fall months; in 2009, the City signed a contract with American Cruise Lines for up to 25 visits. This activity was expected to increase as cruise industry continues to grow and helped by a statewide initiative (Historic Ports of Massachusetts) to attract more cruise ships to Massachusetts ports. HDC has suggested making modifications to State Pier, possibly including a new terminal facility better suited to serve the needs of the ships and their passengers.


2. Recreational Boating

The City of New Bedford and Town of Fairhaven recognized potential economic benefits of recreational boating, and the 2010 Municipal Harbor Plan included expansion of recreational boating slips and moorings, as well as more boater services and amenities. Suggested additional facilities and services for transient recreational boats including, shuttle services, dinghy docks, improved access for physically disabled boaters, and shore-side support services such as boat repair, provisions, and visitor amenities. The Plan recommended designating some of the new slips and moorings for transient boaters to draw more tourists and visitors by sea. The Plan recognized the need to ensure that growth of recreational boating activity does not interfere with the traditional working port functions or limit opportunities to expand other marine industries in the Port. New or expanded recreational slips and moorings in both communities were located outside of the Designated Port Areas.

The HDC invested more than $275,000 to implement Harbor Plan recommendations for recreational boating improvements within the Inner Harbor including, transient moorings, boat launches, dinghy docks.

2.1 Marinas & Yacht Clubs

Predominant recreational uses of the New Bedford-Fairhaven watershed and waterfront are homeport for a growing number of recreational boats, port of call.

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6 New Bedford Fairhaven Municipal Harbor Plan, 2010
7 2011: A Year of Achievement, New Bedford Harbor Development Commission, December 12, 2011

New Bedford Waterfront Plan: Economic Summary
for cruise ships, mega yachts, historic vessels/tall ships, and transient recreational vessels. Recreational boats are a significant presence on the Harbor watersheet from Memorial Day through late September, and the MHP noted that more recreational boats, including transient boats, boaters making the Harbor their homeport, and potentially more sailboats, kayaks, rowing shells, and canoes in the future. Recreational marinas in the Inner Harbor are located primarily on the Fairhaven waterfront or on Pope’s Island in New Bedford. A few recreational boat marinas are located north of Route 6, and adjacent to the I-195 Bridge. Boat ramps used for both commercial and recreational boats are located off Gifford Street in the southwest corner of the inner harbor (New Bedford side), and at the end of Pease Street in the Fairhaven.

- Pope’s Island Marina – 198 slip public marina for seasonal and transient boaters; free parking, fresh, lowest-priced fuel; amenities include water & power (30/50/100 AMP); showers & restrooms; ice, laundry & free Wi-Fi; picnic area & gas grills; free pump-out Service; launch service to Historic Downtown available; 2013 rate: $90 a foot. The HDC operates the 198-slip public marina facility by contract with the Department of Environmental Management.

Six marinas in New Bedford Harbor are located in Fairhaven, and there are more than 580 boat slips for recreational vessels on the Fairhaven waterfront.; marinas accommodate various types of sail and power boats ranging from 23 to 120 feet; the Fairhaven Harbormaster and marina owners report increasing demand from larger boats (50+ feet) but access is restricted by limited water depths of less than six feet at low tide in some areas due to harbor silting. The majority of marina slips are rented on a seasonal basis with 5% to 6% of Fairhaven marina slips used by transient boaters. Most marinas are full-service, providing electricity, water, ice, shower, and laundry facilities; some have fuel docks but none have a shore-side pump-out facility. Marina slips average $70 to $80 per foot plus the cost of other available services. The Moby Dick Marina also offers indoor rack storage (summer and winter) for small boats (less than 33 feet) at the same price as slip rental ($80 LOA); Fairhaven Shipyard, Fairhaven Shipyard North, and Moby Dick Marina have winter storage both inside and outside. The majority of marina clientele are repeat customers, primarily from southeastern Massachusetts; there are waiting lists for slips at several of these marinas, particularly for larger vessels.

The number of super sized pleasure boats, mega yachts, had been growing rapidly over the past decade with more of them home-ported or visiting destinations in the northwest Atlantic. Over past few years, owners/operators of these vessels have been experiencing challenges finding ports with services required to maintain and provision the boats. Some mega yachts visit the Harbor attracted by the broad mix of quality marine services that both Fairhaven and New Bedford have to offer. Port is uniquely well positioned to take advantage of the opportunities that this developing market has to offer.

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Cozy Cove Marina (formerly Brightman’s) - 90 slips (no on-line information)

Seaport Inn Marina - 105 slips, deep water berthing; marina amenities: electricity hookup, water hookups, cable TV hookup, wireless Internet, fresh-water hose, wide berth docking, 24-hour fitness center, laundry, and shower; daily, weekly, monthly, and transient (overnight) rentals; fees range $85 to $105 per foot.

Moby Dick Marina - 54 slips at 2 River Avenue, Fairhaven services 50 in water slips, 80 indoor rack storage spaces, 5 moorings, and a 19,200 square foot steel building for storage during summer and winter seasons; newly renovated slips, valet summer rack storage; amenities: 24 hour security surveillance, WI-FI internet access, free water/electric, on site mechanic and sales office, remote access to gated yard.

Fairhaven Shipyard Companies, Inc. marina services at 50 Fort Street (South Yard) 170 slips and transient moorings, and at 32 Water Street (North Yard) - 12 slips. seasonal and transient concrete floating slips for boats up to 12- ft. in length and 18 ft. depth; fixed pier dockage to 200 ft.; 30 Amp, 50 Amp, 100 Amp single-phase, three-phase electric outlets and water at every slip; wireless high-speed Internet access available, washers, dryers, restrooms, showers and ice; ships store supplies and accessories.

Acushnet River Safe Boating Club - 80 Middle Street, Fairhaven is a 150-slip government marina 300 members of the U.S. Coast Guard Auxiliary Flotilla harbor patrols, safety and security functions, and events in Buzzards Bay.; facility offers safe haven to transient boaters; has one of three fuel docks in Harbor for members and recreational boaters.

2.2 Seasonal Moorings

In 2010, the New Bedford Harbor Recreational Boating Plan reported 495 moorings for recreational vessels, of which 373 are private moorings. The HDC administers public boat moorings at ten (10) locations north and south of the Hurricane Barrier, and maintained a waiting list for each mooring area.

Private moorings for recreational vessels are located at Cozy Cove (53), Pope’s Island South (48), Gifford Street (92), Frederick Street (24), Aquidneck Street (79), Butler Flats (17), West Rodney French Boulevard (15), and Clark’s Cove (45).

2.3 Transient Moorings

In 2010, privately operated transient moorings in the harbor, authorized as commercial moorings, at the Gifford Street mooring area, and Pope’s Island South mooring area; and the HDC planned to install 15 transient moorings in the Gifford
Street mooring area to the north and west of Palmer Island.\(^9\) Ten of these moorings will accommodate vessels less than 50 feet in length, and five moorings for boats 50-60 feet in length.

2.4 Boat Launches

In 2010, there were three (3) public boat launching ramps in New Bedford Harbor: the Gifford Street boat ramp is within the Inner Harbor, the East Rodney French Boulevard and West Rodney French Boulevard ramps are located south of the hurricane barrier. The HDC planned to reconstruct the three facilities, and reviewing plans for amenities (bathrooms, showers) at the Gifford Street ramp site.

- Gifford Street – public boat ramp for launching and hauling of both trailerable recreational and commercial boats; facility needs rehabilitation and dredging to allow full Harbor access (Summer 2009 – dredging underway).

- Pease Park Boat Ramp – public boat ramp in Fairhaven; suitable for trailer boats of less than 20 feet, and shallow water, short pier for dingy tie-up. Harbormaster reports boat ramp is heavily used during weekends, typically more than 100 vehicles in the parking lot and along side streets; recreational boating representatives interviewed stated need for another Fairhaven waterfront public dinghy dock with a rack, or another floating dock with dinghy tie-ups at Union Wharf.

2.5 Dinghy Docks & Storage Racks

In 2009, the HDC installed seasonal dinghy docks at the Gifford Street Boat Ramp, and Coast Guard Park; dinghy dock storage racks are available at the Gifford Street facility. The HDC planned to install seasonal and transient dinghy docks at Pope’s Island Marina.

\(^9\) New Bedford Harbor Recreational Boating Plan, May 2010
Executive Summary

FXM Associates reviewed relevant reports on conditions and trends in New Bedford’s waterfront economy, prepared previously by FXM and others, and analyzed the most recent data on population and businesses as well as historical data on employment and wages in key waterfront industries. FXM staff conducted interviews with seafood processors referred by the Harbor Development Commission, commercial bankers, shippers, realtors, and others knowledgeable about New Bedford market conditions and waterfront business activity. The following paragraphs summarize key findings from this research:

- The population within the waterfront study area is estimated at about 700 persons in 2014 and households at approximately 300. Both population and households have grown much more rapidly than city and regional averages since 2000, owing largely to conversion of former mills to apartments in the northern portion of the study area where the vast majority of all persons in the waterfront area live. Within the Hicks Logan Sawyer section, household incomes are well below city and region averages, and poverty rates are high.

- In 2014, business establishments in the waterfront study area numbered over 370, providing over 4,100 jobs and generating about $2.7 billion in sales. Wages totaled approximately $238 million with an average annual wage of $57,000. This average annual wage compares favorably to the $44,500 average annual wage for all industries in New Bedford, and is largely accounted for by wages in the fishing and seafood related businesses.
Economic Issues and Opportunities

The following bullet points summarize observations and findings based on the analysis of secondary source data, interviews, prior reports, working group and public meetings, and discussions with consultant and city team members:

- The fishing and seafood industries remain the dominant economic activity within the waterfront area of New Bedford. They represent a classic business “cluster” unrivaled by any other single related economic activity in New Bedford. They depend upon the availability, skills and expertise of facilitative functions – labor force, packaging companies, marine services/boat repair, legal, financial, and promotional, among others. Much of the labor force they utilize for direct operations is located within the City, and in some instances near the waterfront. They are also a significant symbol of the City and draw visitors to the waterfront and downtown as well as well customers for their direct sales.

While the processing, wholesale storage and distribution segments of the industry are not literally water-dependent, proximity to vessel off-loadings as well as proximity to other dealer processors is advantageous. These related businesses share product on a daily basis as needed to fill specific orders. The trend toward vertical integration – in which the processing, storage and distribution, and fishing activities share a common corporate identity - blurs the distinction between water-dependent and non-water dependent business identities in this industry.

For the foreseeable future, the seafood industry is predicted to continue to be the dominant waterfront area economic “cluster”, providing a majority of jobs, payrolls, and business expenditures within the waterfront area economy. Policy and other economic development initiatives are needed to retain and help expand this industry in New Bedford. Such initiatives would include supporting and strengthening steps that would enable seafood and related businesses to expand, whether on the waterfront or elsewhere in the city, such as the expedited permitting, zoning changes, bulkhead extensions and other specific initiatives noted in the interviews (see previous section). Additionally, policy incentives for expansion of other waterfront industries should consider the ongoing health of the seafood industry.

- While significant investments have been made at the Marine Commerce Terminal, non-offshore wind cargos and commodities operations will necessitate alterations to the apron area to enable fishing and cargo vessels to offload efficiently, according to local shippers and fishing vessel owners. Public construction of administrative, cold storage and other cargo transit sheds (as prescribed in the original business and development plan) is also warranted. Cargo handling potential with direct rail connections may be realized in the future in the North Terminal area as well.
Today, State Pier remains the City’s core resource for ocean cargoes and the expenditures, jobs, and income associated with cargo handling, storage and distribution. Recent City and state legislative efforts support ongoing use of State Pier for cargo, including the completion of DCR investments in cold storage/refrigeration capacity so that the fruit program can be expanded to include warm weather months and meet food-handling requirements. Cargo operations at State Pier do not necessarily preclude other uses and activities but need to be accommodated to ensure the economic benefit of existing and potential expanded cargo operations. State Pier also hosts passenger ferry service to Martha’s Vineyard and newly approved service to Nantucket (2016), about 25 cruise ship callings each year, the Schooner Ernestina (the official vessel of the Commonwealth of Massachusetts), water taxi, harbormaster, water shuttle, commercial charter and excursion vessels. Cargo and other vessel operations at State Pier do not necessarily preclude other uses and activities. But they need to be accommodated to ensure the economic benefit of existing and potential expanded cargo and other vessels operations.

The Eversource site continues to represent an untapped potential for locating a variety of water-dependent and related uses that could further expand the waterfront area economy. A principal issue to address is the cost of remediation for productive economic uses. The clean-up cost, estimated by some to be as much as $50 million, is a deterrent to incremental development. However, further study is needed to understand the true remediation cost in the context of yet-to-be-determined future uses. For example, a high clean-up cost applies to residential uses, and a less intensive requirement and cost may be needed for industrial uses. The future strategy may offer an opportunity to achieve major mixed-used development. Towards that end it is recommended that the HDC reinstitute the “eligibility credit trading” initiative for the DPA established in the first Municipal Harbor Plan but discontinued in the 2009 revision. If reinstated, that program could represent an opportunity to utilize more than 25% of the Eversource site for non-marine industrial uses.

The HDC is in the process of attempting to secure funding for dredging of the navigational channel as well as fairways and driveways serving particular locations. A number of affected businesses have already provided support for this initiative in letters to public officials, suggesting significant potential to add business activity and jobs. This is an important, immediate term initiative for the waterfront area’s continued economic viability and expansion.

A number of years ago the HDC funded a study of the potential to expand Pope’s Island Marina for the purpose of generating additional net operating income for the HDC. The findings of that study (noted in the Appendix section review of relevant reports) remain valid and the
investigation should be updated and acted upon. The expansion of capital facilities and the adoption of a mission to charge full market rates could realize significant new net revenue to the HDC for use in other projects and programs serving economic development objectives.

- Recreational boating and excursion vessels remain a potential growth area for the waterfront study area. The recent Massachusetts Strategic Ports Initiative Study (see Appendix synopsis and excerpt) proposed that New Bedford take advantage of untapped local demand for excursion and charter vessels serving the evening dinner cruise, party, sightseeing, business conference, weddings, and other markets. Other ports (ranging from Boston to Onset) have successfully captured these markets to local economic benefit. For example, the Viking, a 65-foot excursion vessel based at Onset pier in Wareham attracts over 40,000 visitors annually for its Cape Cod Canal cruises and charter parties. In a study done by FXM, the economic impact of these visitors locally exceeded that of a planned 100-room hotel. Such a vessel(s) could potentially berth at Pier 3, which would provide parking and easy access to Downtown to draw visitors there after an excursion trip. The previously noted Pope’s Island Marina expansion study also provided for excursion vessel berthing and water taxi or shuttle runs to the central waterfront (Pier 3 or State Pier) for connections to Downtown.

- The Martha’s Vineyard ferry dockage at State Pier was originally designed as a ro-ro facility to accommodate freight cargoes to Martha’s Vineyard and Nantucket. Several studies and a 2-year pilot program demonstrated that freight ferry services from New Bedford to the islands were not only financially feasible for the Steamship Authority or other operator but would provide jobs to New Bedford area shippers, lower costs of goods to the islands, and remove unwanted truck traffic from Hyannis and Woods Hole. The principal advantage of the New Bedford service, in addition to lowering the costs of overland transport to the islands, was the ability of a vessel to depart New Bedford early enough in the morning (without disturbance to surrounding uses) to enable truckers to return for a possible second run in the same day or to other productive routes. This two trip potential is a significant advantage now possible to only a limited number of movements from Hyannis and Woods Hole. These market opportunities should be further explored in today’s context for their opportunity to support local jobs.
APPENDIX- Review of Selected Reports

The following paragraphs summarize the relevant points contained in documents reviewed to inform the current plan.

The Ports of Massachusetts Strategic Plan, Technical Memorandum Number 3: Macro Maritime Transportation Trends That Impact the Compact Ports, AECOM et al., September 2013.

This study evaluates five Massachusetts ports and capabilities based on a previous analysis of existing conditions (Technical Memorandum #1) and macro trends. The analysis describes macro trends relevant to the state’s maritime outlook: cargo, passenger travel and commercial fishing activities, ship building, vessel repair, salvage, off-shore energy/exploration, and recreational boating. Emerging markets in Africa, Asia and India are expected to increase cargo flow to the Eastern United States, but uncertain timing and pace of growth trends will affect investment in port facilities.

Massachusetts is unlikely to be the first port of call for larger Pan X ships (49’ draft, 160’ beam, 1,200’ long, 20 containers across), although Boston container facilities could service shipping expected from the expanded Suez Canal. Short-sea shipping remains underutilized as a cost-effective alternative to goods movement using a ‘hub-spoke’ system of maritime transport between East Coast ports. National trends in waterborne cargo freight indicate a maritime trade imbalance with total tonnage value of imports exceeding that of exports, primarily due to the import of petroleum products and metals, while agricultural products are the chief U.S. export.

Projections for future maritime freight flows indicate that maritime systems will handle twice the amount of volume (2010), with import freight volume growing annually by 2.2% and export tonnage growing by 3.5%. As a result, by 2040, export volume will equal import volume.

In Massachusetts, trends in commercial fishing include catch limitations, changing environmental conditions, and decreasing stock in some species, which influence the need for waterfront dockage, supplies, and shore-side services. The value of the seafood industry to Massachusetts is significant: American lobster and sea scallops generated 70% of landing revenues for the state, but represented only 6% of total New England landings in 2011. New Bedford is forecast to sustain its fishing industry based on the strength of the scallop industry. Its processing sector and the condition of port infrastructure solidify its position as the top fishing port on the East Coast, with the highest value landings.

Massachusetts ranks 9th nationally in the cruise industry, with embarkments predominantly in Boston. Local waterborne passenger travel extends beyond cruises and includes whale watches, charters, water shuttles/taxi and ferries. Projected demand for water transportation services is expected to grow based on population and tourism in regional (County) markets.
The offshore energy industry is an emerging industry in Massachusetts, which ranks 36th nationwide in renewable energy installations. Offshore wind energy opportunities exist at Massachusetts ports for facility construction, supply, location and maintenance.

The technical memo also describes potential effects of climate change/disruption at Commonwealth ports. Massachusetts key maritime sectors are port infrastructure, cargo handling, commercial fishing and passenger waterborne travel.


This Technical Memorandum evaluates each of the five ports in the Massachusetts Port Compact in terms of market aspirations and capability and includes recommendations for the next phase of business development. The analysis of each port identifies gaps or deficiencies in port elements required to service a viable market, including waterside/landside physical infrastructure, marketing, business development, capital formation, and regional issues. Port opportunities examined include marine logistics (channel depth, dockage, terminal facilities), business sectors (cargo, passenger transportation, fishing/seafood process), and technology sectors.

The Port of New Bedford is described as regionally important for the import of food products/perishable items and the import/export of dry and liquid bulk cargos, with aspirations to support the regional off-shore wind energy industry and its project cargo.

Dredging is a common issue affecting cargo operations, water passenger transportation, and recreational boating in all ports, especially Boston and New Bedford. The Port of New Bedford has a substantial and diversified cargo sector and is exploring a trade agreement with the Port of Tuxapan, Mexico, to connect markets of New England and Canada with agricultural products from Mexico that currently move by truck, with back haul export of New England products to Mexico City.

New Bedford cargo operations occur at four major locations described in the analysis in terms of dimension, water depth, condition etc.: North Terminal, Maritime Terminal, State Pier and potentially South Terminal.

Fishing/seafood processing in New Bedford reflects the conditions of the stock and regulatory management as well as dockage and port infrastructure. The New Bedford fishing fleet is docked primarily at five city/HDC owned piers. There is inadequate berth space for the fleet, exacerbated by boats displaced from other ports coming to New Bedford, transient boating unloading fish, and those seeking shelter from storms.
Port of New Bedford rail service is provided by Mass Coastal, a short haul railroad connecting to CSX rail network. New Bedford’s direct access to dock-rail connections is an exceptional asset, but its value is limited by the inability of the Route 6 bridge to accommodate ships larger than the bridge’s 95 ft lateral clearance.

Strategies to expand and diversify New Bedford’s cargo business that could optimize the capabilities of State Pier, North Terminal, and the Maritime Terminal include:

- Perform maintenance dredging to restore port navigational channels to federally-authorized depths of 30 feet.
- Expand berthing space for commercial fishing vessels by extending Homer’s/Leonard’s Wharfs.
- Identify a larger area for berthing excursion vessels connecting Downtown with the waterfront.
- Expand public access to, and use of, the waterfront, consistent with the port’s maritime needs.
- Evaluate restoring the flexible Eligibility Credit Program.
- Replace route 6 bridge
- Analyze the economic benefits of increasing recreational boat access activity to the New Bedford and Fairhaven waterfronts.


The study, sponsored by the East Coast Marine Highway Initiative (Ports of New Bedford, Baltimore, Canaveral, New Jersey and I-95 Coalition), assesses opportunities in the four ports and investigates other services and logistics platforms along the East Coast (American Marine Highway). The American Marine Highway was established to reduce U.S. reliance on over-burdened land-based freight transportation systems by increasing the use of marine transport and multi-modal facilities at ports parallel to congested I-95 routes.

The study identifies future market demand for domestic marine cargo (containerized or trailer), distance (400+ miles) from port to market centers, and estimated regional cargo flows. Parameters influencing M-95 viability as a transport alternative include frequency of service (twice weekly is minimum), transit times comparable to track-rail reliability, and inter-modal capability. A market analysis indicates that 4.7 million tons of cargo could be diverted to marine services, accounting for approximately 4,500 containers/trailer loads from the I-95 highway corridor.

The study evaluates several port-pairs, including the route linking New England and the mid-Atlantic states, focused on New Bedford and Baltimore ports. Marine services tend to be more cost effective for long-haul routes (New York to Miami). An assessment of business plan viability examines competitive rates, possible rates, vessel utilization, and other financial issues affecting costs and projected revenues.
The study’s bottom line is that the operating costs of potential M-95 services exceed projected revenues by $150-$200 per load on the lightest performing routes under the most favorable sensitivity and highest utilization levels. Suggested options to make M-95 competitive with truck and rail modes include government investment and policies to reduce taxes such as the Harbor Maintenance Tax, subsidizing vessel capital costs through government cost sharing (dual-use), and carbon credits.


Most cargo originating in or destined to New England travels by rail or truck; therefore, New England ports need waterborne feeder options or direct rail service in order to be cost effective and competitive. Most New England ports are “import” unbalanced. Scrap metals and used cars account for most of the export shipments from the New England ports of Boston and Davisville, RI. Boston is the only container port in New England and has the largest diversity of export shippers; no one shipper is dominant. Wood and paper constitutes a majority of exports via container from Boston and Eastport, ME.

The Port of New Bedford’s profile indicates it is consistent with other New England ports. Dry bulk commodities are important, and, excluding fish, petroleum dominates inbound cargo in New Bedford (2008). The Port of New Bedford handles the largest amount of perishable food products in New England; most of the incoming cargo consists of North African fruit on reefers. The majority of New Bedford’s export cargo is sand & gravel, accounting for 78% of all New Bedford shipping.

The study recommends that the Port of New Bedford consider ways to capture valuable marine trade, including processed fish, and some amount of New Bedford product (fresh and processed fish) because these products are currently going via truck and rail to other New England ports for export (2008 Landings data). Expanding infrastructure as well as improving the adaptability of port facilities to meet a wide variety of market demand are critical elements in developing and increasing revenue streams. [Note: FXM’s feasibility study for South Terminal showed potential to generate sufficient income to sustain the facility, after proposed Cape Wind operations.]

Opportunities also exist to expand New Bedford port activity in fruit and agriculture. Modifying shipping methods to capture more inbound refrigerated cargo would allow outbound shipments to use empty reefer container vessels for inbound shipments; empty reefer boxes would allow for two-way freight. A transition from cargo on reefer ships to container boxes would use reefer boxes for exporting seafood and agricultural products. Most New Bedford processed seafood is exported via Boston and New York/New Jersey. Most vessels calling at New Bedford have draft of less than 12’ (fishing boats, barges, tugs). Reefer ships are a “unique niche” and an opportunity for growth.
The largest potential growth category for New Bedford port is imported fruit. The port would need to import 37 MT of fruit to justify bi-weekly container service. The New Bedford rail yard is key to the port’s potential: rail is increasingly important to small-medium port development as it increases the ability to attract cargo from larger ports that have become more specialized and lack the ability to handle diverse cargo. Other features of the Port of New Bedford that would add to the port’s attractiveness: US customs, a free trade zone, and cargo processing and storage facilities.

New Bedford is connected to the national rail network via Mass Coastal Railway to CSX. There are also seasonal short-haul rail lines in Massachusetts with commodity distribution facilities that could be linked to the New Bedford port for export/import cargo. The Mass. Central Railroad has expressed interest in establishing a New Bedford port connection for domestic and international cargo, for which a Free Trade Zone would be needed. Other port opportunities include, shipping fruit by rail (135 trucks required per vessel) and shipping Martha’s Vineyard refuse by rail instead of truck. Constraints to expanding port-rail business development: EPA facility is currently in operation, and 16 train track limit. Recommendations include restoring tracks to Maritime Terminal and State Pier and extending tracks to South Terminal.

**New Bedford, Massachusetts Market and Economic Analysis**, HR&A Advisors Inc (undated)

The assessment is intended to provide the basis on which to formulate a strategic economic development plan, with the analysis of the city economy focused on key industries. The analysis focused on the industries (sectors) in New Bedford that are currently driving the economy (according to IMPLAN model outputs): copper wire, sporting and athletic goods manufacturing, wholesale trade, seafood product preparation and packaging, and hospitals. In addition, four industries were included as being of particular importance to the city: financial services, renewable energy, marine science, and the creative economy.

The analysis cites the New Bedford waterfront and harbor as significant assets to leverage job-generating development, such as additional fishing, recreational boating, and marine science projects. The New Bedford port hosts 500 fishing vessels, eight marinas, three barge operators and a fast ferry. The city’s planned public waterfront is centered around a public boathouse near the Upper Harbor gateway that will expand recreational use of the harbor as well as tourism. A marine science sector is identified as a regional (South Coast) economic development opportunity. New Bedford is at the center of a marine science cluster consisting of 500 firms within a 60-minute drive. The study notes that this is not a labor-intensive industry, with fewer than 2,000 jobs in the region. New Bedford has only a few marine science firms with fewer than 12 jobs total. The report suggests targeting marine science technologies transferable to fishing operations. The city
should strengthen its affiliation with Woods Hole Oceanographic Institute (WHOI) by marketing housing and ferry services to employees.

The Fishing/Seafood Processing industry affords opportunities to expand New Bedford waterfront activity by attracting companies from declining ports. The city has approximately 20 seafood production, preparation, and packaging companies, with about 1,000 employees. The largest employers are Kyler Seafood, Inc., Sea Watch International LTD, Northcoast Seafood, MF Foley Inc., and Northern Pelagic Group LLC. The study also encourages efforts to grow seafood processing enterprises on the waterfront and to upgrade maritime infrastructure paired with tourism that supports “sustainable port economy” uses to complement existing activities.

**Hicks-Logan-Sawyer Master Plan**, New Bedford, Massachusetts, BSC Group, April 2008.

This district-level master plan describes an urban revitalization strategy for approximately 150 acres of under-utilized property along the Acushnet River and adjacent to the I-195 interchange and Port of New Bedford. Market opportunities include expansion of existing business and new growth to take advantage of the District’s high visibility, waterfront location and proximity to a future MBTA commuter rail station. A key development goal is to improve public access to the Acushnet River and riverfront, including a public park system along the waterfront, a new marina, as well as extending the public road network and street grid to provide access to the waterfront. Major existing businesses in the seafood district include Kyler and Marlee, whose continued success is considered key to the district’s redevelopment/revitalization.


This comprehensive planning, market assessment, and detailed technical analysis evaluates the feasibility of expanding Pope’s Island 198-slip public Marina and refurbishing an adjacent 10-acre waterside park, including a redevelopment strategy and a 3-5 year implementation schedule. The economic assessment provides a marina development program, economic performance guidelines, HDC business operation plan, and presentation graphics. The market analysis examines the potential for recreational vessels, commercial recreational vessels and waterfront restaurants, while the financial analysis considers property values, preliminary slip rates, income and expense estimates, bonded debt, and cash flow. The study surveyed 83 marinas in the region, in order to assess the Pope’s Island Marina’s competitive position based on an analysis of rates and occupancy. The study was conducted to address increasing market demand for recreational boating and determined that an expanded Pope’s Island Marina could maintain full occupancy with increased slip rates to achieve market parity with comparable
marinas in Southeastern Massachusetts and Rhode Island. The study also examines market demand for charter excursion services. Proposed waterside development includes approximately 102 new slips at the marina and 80-120 new moorings near Crow’s island, an upgrade to docking facilities to comply with ADA guidelines and possibly revenue generating development of HDC public waterside area for a charter fishing business used by Captain Leroy’s.

A marine park repair/redevelopment program concept integrates maritime/recreational uses consistent with the New Bedford/Fairhaven Harbor Public Access and Open Space Study (November 2000). Park improvements would include a boardwalk to connect the east and west ends of the marina, non-boater activities, active and passive recreational elements, opportunities to educate visitors on the story of New Bedford/Fairhaven’s maritime history and improvements to the children’s maritime themed play area to meet Federal guidelines for ADA accessibility and safety specifications.

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New Bedford, Massachusetts Market and Economic Analysis, HR&A Advisors Inc (No date)
Appendix D

RECORDS OF PUBLIC INVOLVEMENT
Appendix D

RECORDS OF PUBLIC INVOLVEMENT
Appendix D will include the following information, to be added prior to submittal to DHCD:

- Presentations from all public forums/workshops
- Minutes of public meetings
- Media reports of public forums/workshops and public hearings
date: 29 January 2015

project name: New Bedford Waterfront Plan

project #: 46225.00

meeting date: January 15, 2015

time: All day

location: New Bedford, MA

recorded by: Sasaki

distribution: NBEDC and HDC client group

purpose: Waterfront tours and work session

ATTENDEES
SA Team: Brie Hensold, Katie Flynn, Hernan Schlosman, Emily Innes (Cecil Group), Frank Mahady (FXM)

NB: Ed Washburn, Derek Santos, Jeff Pelletier

SUMMARY
These notes are for internal team and client group use, and are confidential to this group. Please do not distribute.

NB MORNING TOURS

Whaling City Fish Auction
Perspective from Ritchie and Ray Canastra

The fish industry and the fish auction are entirely subject to the National Marine Fisheries Service which is “killing the industry.”

When Ritchie and Ray started the auction, they had worked in the processing industry. They had noticed that prior to the auction system, fishermen and vessels were not getting a fair end of the deal when subjected to low buying prices. They noticed that vessels and fishermen from Europe (Portugal, Norway) were accustomed to the European auction system.

Ritchie and Ray conceived of the display auction as a more transparent and fair system for setting prices, better for the fishermen and clearer for the buyers. At the outset, they got a lot of pushback from buyers used to the old ways (mentioned mafia activity, very colorful stories). Initial friction between vessels and buyers was mitigated by separating the two groups. They charge vessels 3¢ per pound and that’s it.
The first auction event brought in 300,000 pounds of fish, of which Ritchie and Ray had to buy 90% (thank goodness they were in the processing business so they had something to do with all of the landing.)

Ritchie went to Belgium in 1996 to sell skatefish and met with software engineers who had a system that could work in the auction. He then spent time in Iceland, Americanizing the software, to which the Canastra brothers now have the American rights.

Insight into the scallop industry:
- There are about 30 draggers in NB today as opposed to a historic 150.
- Regulations have changed so that when scalloping in open areas, only 7 people are allowed on a boat. This makes it very costly and difficult to train new crew members and replace skills, and dwindles the number of experienced scallopers, particularly captains (who plays many roles on a vessel – captain, cook, engineer, net mender…)
- Scalloping happens in open or closed areas. The differences are as follows:
  - OPEN AREAS
    - 30 days
    - No pound limit
    - 7 person crew maximum
  - CLOSED AREAS
    - Unlimited crew
    - Poundage limit enforced

The fish auction is busiest in the spring and fall. In the winter, fish command the highest prices. The day of our visit, there was a 70,000 pound landing. A big day can get up to 200,000 pounds. Annually, the fish auction sees about 23 million pounds.

The fish auction has about 60 buyers.

Problems: When the fish auction started, they could not find land to buy, so they leased the space they are in now.

At the moment, no one wants to sell their land on the waterfront because they anticipate the possibility of a casino on the NSTAR site and are holding out to sell at higher prices.

The space they are in now is old, needs repairs. The current building is 44,000 square feet – in the future, they would not need a building that big.

They would like to establish the fish auction as a tourist attraction. For that they would need:
- Nice views
- At least 3 slips (to accommodate 100' boats... so presumably longer than 300' to accommodate getting in and out) Interestingly the length of boats is regulated, so boats are not getting longer, they are getting wider.
- At least 5 truck bays
- 20,000 square feet of refrigerated space.

They mention that Pier 3 would be great.

The fish auction employs 35 people.
Bayline Boatyard

Bob Gardner

Bayline services 350 boats and has a waiting list of 50. They accommodate 36 boats in their indoor facility. They occupy a 7 acres site. They employ 18 people and have tenants who collectively employ 12. Total employment is 30 for the site.

Bayline stands apart from their competitors because of excellent quality, great service

They see NB as an advantageous location because of:
- Diverse customer base
- Central location on the East Coast
- Diversity of suppliers / collaborators in close proximity

New Bedford is becoming a yachting destination. Fishing tournaments are drawing boats to NB.

The government needs a ROW through Bayline to accommodate an easement for the marine commerce terminal.

Bayline would prefer to have their facilities consolidated on a contiguous piece of land; they could use more land (“what’s available?”). Their goal is to grow to another 6-7 acres. They would also like water-side access; an entry point that draws 20’ of water (or at least 10’-12’). He needs a pier.

Each year their profits are up 10% from the past year, and that is after re-investing in the business. There are no worries about capitalizing for an expansion; they could do this and would like to.

The boats they service are on average 41’ long, with a high end of 70’ long. The bigger the boat, the more the owner spends.

Bayline provides a lot of services that are not in their core business. For example, moving big and fragile things, putting up big signs, putting steeples and cupolas on buildings, flagpoles, etc. Hoisting work (they have 2 cranes on site) They could use their skills in many ways, their skills are transferable.

Marine International

David Wachsler

Believes NB should focus on supporting the fishing industry and the niche market of shipping.

Suggests NB not destroy many jobs in the name of tourism (applicable to the Casino issue, to State Pier….)
Could MCT be used for short sea shipping? DW: Possibly, but short sea shipping takes up a lot of space, and you would need to coordinate some cargo to fill ships on the back-haul. Captain sees lots of opportunities for short sea shipping.

The fruit business is big in NB because of specific locational advantages.

Interest in the State investing to refrigerate State Pier. State Pier is falling down – it would take about $35-50 million to fully repair state pier. There wouldn’t be a good return on investment, the point would be to generate JOBS.

Captain encourages us to look at:  
State Pier New Bedford’s Future, Mike E Media Productions, History & Future of State Pier  
https://www.youtube.com/watch?v=M7B5j_qhE2g

NB AFTERNOON WORK SESSION

SA: Brie Hensold, Katie Flynn, Hernan Schlosman  
NB: Derek Santos, Ed Washburn, Jeff Pelletier  
Cecil Group: Emily Innes  
FXM: Frank Mahady

MyHarbor input and edits:
Put key questions right at the beginning – so folks get the most important things first

In addition to interviewing the industrial businesses, we should reach out to:
- The Fairfield hotel
- Restaurants - Black Whale (Louis the restaurant manager), Kevin at Waterfront Grille – to get to the question of public access and amenities
- Parks service / waterfront person – to pay attention to the public sector
- Sprague

NBEDC Cape Wind Update:

There have been a couple of material changes for Cape Wind:

1. Cape Wind had a deal that they had to close on their financing by Dec 31 2014 in order to secure their utility partners financing. They couldn’t do this. They’d sold 75% of their energy to NSTAR and Nat’l Grid – if construction doesn’t start by a certain date, financing milestones, the 2 utility companies could pull out. Cape wind missed construction and financing milestones.

2. Cape Wind says they were unable to meet the financing deadlines because of constant lawsuits – Cape Wind had an option to extend their deadlines by “force of nature” – but lawsuits might not count. This will end in the courts.

3. Before, we had assumed years 2-4 Cape Wind would have exclusive use of the terminal. Now there’s an RFP out for other uses… We’ll get a copy of this RFP. Wind is a clear preference and focus; there are other things.
4. Derek: EMPHASIS: at the end of the month, the feds are auctioning off the wind energy area. 12-15x cape wind area.

5. This project is more about that other piece of wind than “Cape Wind” in particular.

6. They’ll select an operator of MCT Feb 23rd - Presumably they’ll make some assumptions about cargo.

7. One of the benefits of having an operator in first, better to lay the foundation for cargo before wind is the operator will have huge incentive to go after project cargo (wind)

8. Need to site some portions of the supply chain on underutilized portions of the waterfront

9. Port needs to dredge to get it up and running for the next 20 years

10. Cape Wind being stalled is not the end of the world – in fact, perhaps it’s a better scenario

11. Terminal operators are all stevedores

12. Terminal operator takes on all liability

Dan Hodge will coordinate with NBEDC to talk to wind stakeholders

Waterfront discussion

NBEDC hopes the casino issue will soon be resolved one way or the other – so they can make clear decisions about the waterfront and so people will stop waiting for a potential payout if the casino comes.

Carlos is parked at Homers and Leonards – he might soon sell out and his boats go to Nova Scotia. And he’ll sell the permits. He is mad at the State of MA because they short-changed him on disaster relief funds from 2013, which they did because he holds such a large share of the market.

Note: There is no cap on % of market for draggers [Carlos catches 90% of New England ground fish] – for scallopers its 5%

Eastern Fisheries needs 40,000 square feet of real estate on the waterfront for offloading and 250,000 square feet for cold storage

Business Park: The Polaroid site sold

Derek mentioned that there is a site available for Eastern to relocate their 250k of cold storage space – consolidated on rail, lots 10 and 11 at B Park

Fishing Industry Comments:
- There are 13 different sectors
- Look up the Future Fish organization – ground fish report Futurefish.org for “the other side” of the story

Every day 7 million pounds of scallops come in and out of New Bedford, Mostly frozen from China

3-4 million leaving each day

90% of what is processed here is trucked in – both ground fish and scallops
Big Ideas
- Need to identify synergies on the waterfront
- No one size fits all on the waterfront
- Importance of continuing education about working waterfront with public
- You can have it all – it’s not an either or situation (as the Mayor wrote in his op-ed – “all of the above”)

Cargo
- Big question: Is State Pier the right place for cargo? Or is it better somewhere else?
  - Concern about the state of the buildings and their suitability for cargo
  - Concern about the state of the pier below, as it is degraded and in need of major repairs
  - Visitation, national park and public connection to waterfront happens at State Pier, not at Pier 3

Wind
- What are specific needs for supply chain, associated manufacturing, physical infrastructure needs of a wind project, and then what is the length of the project, revenue, jobs created
- Bob Gardner went on the Bremerhaven tour

Map info discussion
- Eastern Fisheries docking happens along HDC north terminal bulkhead
- Sand lot is active – barges going in and out

State Pier
- Back into discussion through uses, zones
- Derek – it’s the edges that are important
- Flexible space – change in use is programmatic not physical
- Need to present past design schemes carefully, working up to the idea of incorporating more public access, demonstrating industrial uses will not be compromised.

SASAKI TO DO:
Send HDC state pier drawing to Frank and Emily
Add sub-station outline to NSTAR site on map (this is a constraint, though KG indicates that they would move it)

The information above will stand as recorded unless Sasaki receives written comments within five days of the distribution date from a recipient requesting an amendment.
date 1 September 2015
to Edward.Anthes-Washburn
cc Brie Hensold, Emily Innes
from Rhiannon Sinclair
project name New Bedford Waterfront Land Use Planning
project # 46225.00
subject 2015-08-24 - Steering Committee Board Comments

The following list is a collection of all comments from the two Steering Committee boards. Each bullet represents a separate sticky note.

How could this site be a catalyst for continuing success of the waterfront?
What are some of the potential future uses?

- Fishing Museum
- People centered areas on the waterfront
- Maritime technology research and testing (tidal energy and others)
- Cruise ship terminal
- Hotel/Convention/Conference Center
- Tourism - commercial fishing experience
- Multiuse sports facility – professional, colleges, local schools. National events
- Fisheries research
- Meeting space and conference center (subsequent comment - concerns with use and cleanup of site)
- Industry could evolve to not need large fish auction anymore
- Shrinking fishing industry, wind energy getting more expensive
- Short trip shipping
- New courthouse? Glassfront to waterfront with secure and active public access
- Marine industry trade school
- Boat repair/service – “dirty” manufacturing contained within renovated energy plant
- Site access to water should happen – but keep industry on the waterfront because industry creates jobs
- Mixed marine flex, utilization
- Opportunity – we actually have a working waterfront, we should continue that and expand it
- Housing, especially for the aging population
- Breathing room for new industry (remediation cost)
- Chopping up industrial waterfront is the beginning of working waterfront’s demise
- NStar – undertaking their own analysis of the site currently
  - Replacement facility or site is needs
  - Remediation is costly
Best uses might include supportive industrial or rail spur that wouldn’t require remediation

Wind power? Unless government will pay for cleanup, industrial appears to be best and an opportunity for the reintroduction of wind

**How does this site fit within the waterfront? What are the site’s strengths and challenges?**

- Boat storage and service, repair and construction
- Consideration to be given to existing businesses and industry that may not be as represented in the process
- Central area for recreational boating to park and have direct access downtown (as either mooring options or direct dock parking at State Pier)
- What is the future of the de-watering facility? Will there be a relationship to rail in the future?
- Brewery
- Rooftop dining
- Condos – mixed demographic in three to six stories with water views
- Commuter rail site = transportation hug or maybe a bus station (or both)
- Waterfront park with light attraction (ex. Ferris wheel)
- Retail like Bowen’s Wharf in Newport
- Fishing, ocean conservation, museum with live fish
- Make sure the flex space can be used for cargo during times of great need
- Check side and need of fish auction
- Retail space that is marine related
- Mix fishing into the mixed use neighborhood
- Cold storage – there is too much of it, power cost will be too high
- Possibility of extending north terminal bulkhead to Route 195
Appendix E

WIND ENERGY MARKETS
Overview and Objectives

The New Bedford Waterfront Land Use Planning project, led by the New Bedford Economic Development Council (NBEDC) and its consultant team led by Sasaki Associates, are developing and implementing a Master Plan and Urban Renewal Plan for the working waterfront of the City. As part of this planning initiative, the City seeks to position New Bedford to maximize the potential economic development benefits of anticipated offshore wind industry projects on coastal waters off of Massachusetts and other Atlantic Coast areas. This plan will allow the City meet the needs of a new and developing industry while continuing to serve the current waterfront activities of commercial fishing, cargo, and tourism.

Sasaki Associates, working under contract for the NBEDC, is leading the development of these plans and has partnered with the University of Massachusetts Donahue Institute (UMDI) to provide analysis of offshore wind economic development potential, with emphasis on:

- Understanding the global and domestic offshore wind energy economy and related industries;
- The types of industries or businesses that could locate or expand in New Bedford; and
- The land use, infrastructure and policy environment to best position New Bedford for the expected economic development benefits of this industry.

This preliminary memo describes our findings in three sections. First, the existing market for offshore wind is examined including domestic and international developments. Next, we describe the needs of the components manufacturers in terms of labor, technology, and site requirements. Last, we end with a discussion of development opportunities in New Bedford that combines the information in the preceding sections with the location-specific attributes of New Bedford, its Marine Commerce Terminal, and the current policy context in Massachusetts for offshore wind. In particular, the Massachusetts Clean Energy Center and the Commonwealth of Massachusetts invested $100 million into transforming South Terminal at the Port of New Bedford into the Marine Commerce Terminal. This new facility is perhaps the most critical asset for New Bedford as a potential site for staging offshore wind projects and is the nation’s first designed to support the construction, assembly, and deployment of offshore wind projects, as well as handle bulk, break-bulk, container shipping and large specialty marine cargo.¹

¹ (Massachusetts Clean Energy Center 2015)
The Domestic and International Offshore Wind Markets

The Existing Market

Currently, the United States does not generate commercial power using offshore wind turbines. This fact stands in contrast to the prominent global place that the U.S. holds in total wind energy production capacity. The U.S. is second only to China with 61.1 gigawatts (GW) of total production capacity at the end of 2013 compared to 91.3 GW in China (of which 1.7 GW is offshore capacity). The following figure shows total wind production capacity for the top 20 countries at the end of 2013.

Figure 1: Existing Wind Power Production Capacity, 2013

![Figure 1: Existing Wind Power Production Capacity, 2013](image)


The capacity shown in the figure is overwhelmingly onshore wind. However, a few countries, for example the United Kingdom, Belgium, and Japan, generate roughly half of their wind energy using offshore turbines. The U.K. is an especially large market for offshore wind with 44% of total global capacity located there (see Table 1 below). For comparison, Germany, a country often associated with wind power, has only 10% of global offshore wind, though it does have three times the total wind capacity of the U.K. when including onshore wind production capacity.

Table 1: Existing Offshore Wind Production Capacity

<table>
<thead>
<tr>
<th>Country</th>
<th>Power (GW)</th>
<th>Turbines</th>
<th>&quot;In Production&quot; Projects</th>
<th>Average Turbine Capacity (MW)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Great Britain</td>
<td>5.6</td>
<td>1,515</td>
<td>44%</td>
<td>41%</td>
</tr>
</tbody>
</table>
Globally, new investments in offshore wind continue at a healthy rate. The total capacity of projects under construction is approximately one-third of existing capacity: 4 GW under construction with 12.5 GW existing. Over 50% of this capacity is being added in Germany with the bulk of the remainder in China and the U.K. On average, these new projects are also expected to use more turbines per project (up to 48 from 37) and those with higher capacity. Currently, the average capacity for an offshore wind turbine is 3.4 MW while new construction projects average 3.8 MW, which coupled with the higher number of turbines moves the average capacity of offshore wind farms up to 180.7 MW from 124 MW, a 56 MW increase.

Table 2: Under Construction Offshore Wind Production Capacity

<table>
<thead>
<tr>
<th>Country</th>
<th>&quot;Under Construction&quot; Projects</th>
<th>Power (MW)</th>
<th>Turbines</th>
<th>% of New Capacity</th>
<th>Average Turbine Capacity (MW)</th>
<th>Percent of Existing Capacity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Germany</td>
<td></td>
<td>2,071</td>
<td>486</td>
<td>52%</td>
<td>4.3</td>
<td>72%</td>
</tr>
<tr>
<td>China</td>
<td></td>
<td>929</td>
<td>304</td>
<td>23%</td>
<td>3.1</td>
<td>55%</td>
</tr>
<tr>
<td>Great Britain</td>
<td></td>
<td>517</td>
<td>130</td>
<td>13%</td>
<td>4.0</td>
<td>9%</td>
</tr>
<tr>
<td>Denmark</td>
<td></td>
<td>288</td>
<td>80</td>
<td>7%</td>
<td>3.6</td>
<td>23%</td>
</tr>
<tr>
<td>Netherlands</td>
<td></td>
<td>129</td>
<td>43</td>
<td>3%</td>
<td>3.0</td>
<td>n/a</td>
</tr>
<tr>
<td>France</td>
<td></td>
<td>40</td>
<td>14</td>
<td>1%</td>
<td>2.9</td>
<td>n/a</td>
</tr>
<tr>
<td>Japan</td>
<td></td>
<td>1</td>
<td>1</td>
<td>0%</td>
<td>0.5</td>
<td>0%</td>
</tr>
<tr>
<td>United States</td>
<td></td>
<td>none</td>
<td>none</td>
<td>none</td>
<td>none</td>
<td>n/a</td>
</tr>
<tr>
<td>Belgium</td>
<td></td>
<td>none</td>
<td>none</td>
<td>none</td>
<td>none</td>
<td>n/a</td>
</tr>
<tr>
<td>GLOBAL TOTAL</td>
<td></td>
<td>3,999</td>
<td>1,063</td>
<td>100%</td>
<td>3.8</td>
<td>32%</td>
</tr>
</tbody>
</table>

In the United States, offshore wind development is moving forward in the post-Cape Wind environment. Cape Wind was a sole-source lease with a high cost. It utilized now outdated technology deployed to an important view shed five miles off of Cape Cod by a small entrepreneurial company.

The antidote to the issues raised during the Cape Wind process appears to be proper planning with all relevant stakeholders. The U.S. Department of Interior’s Bureau of Ocean Energy Management (BOEM) implemented their “Smart from the Start” program in 2010. This planning process effectively takes five years off the permitting process that Cape Wind endured. Hundreds of hours have been spent with Fishery and Habitat working groups that bring stakeholders into the process.

For the Rhode Island - Massachusetts Wind Energy Area and the Area of Mutual Interest in Massachusetts, auctions were held and the areas were competitively bid. The result has been interest in the US market by serious financial institutions. DONG Energy, Blackstone and DE Shaw are in line to develop the areas 15 miles south of Martha’s Vineyard, outside of the view shed. US Wind is the successful lessee in Maryland, where the legislature made a 500 megawatt offshore wind mandate. Deepwater Wind’s pilot project in Rhode Island is fully financed, permitted, and will begin construction off of Block Island in 2015.

In Massachusetts, more progress is being made legislatively. There will be clarity in six to eight months on the status of the energy bill introduced by Representative Pat Haddad (D- Somerset), which mandates 2,000 megawatts of offshore wind over 10 years (400 MW every 12-24 months). As legislation and actual projects progress, there will be ample opportunity for economic
development and other stakeholders from New Bedford to engage with developers to help position the city and region for industry opportunities.

The potential development of an offshore wind industry in New Bedford needs to be considered in light of various obstacles and uncertainties including demand and location. As Table 2 (above) shows, none of the current 4 GW of offshore wind capacity under construction globally is in the U.S. Yet findings suggest manufacturers will require sufficiently high and predictably stable levels of new annual turbine installations prior to undertaking the risk of investing in new plant and equipment. It remains uncertain when the necessary levels of investment will occur in the U.S., although there has been significant progress in the last few months toward development of the areas south of Martha’s Vineyard.

Separate from the question of demand is the question of location. There is no reason that the nascent American offshore wind industry would need to cluster in or near New Bedford. There are other cities and states just as eager to attract the industry to their regions. It remains to be seen whether the forward-looking planning and geographic advantage of the Port of New Bedford is sufficient to lead to industry cluster-building in offshore wind.

The factors influencing demand and location choices for New Bedford begin with known projects. Currently, there are a number of projects in the advanced stages of planning, many of them in close proximity to New Bedford. Of the 14 proposed or permitted projects on the Atlantic coast, 12 are within 300 nautical miles (nmi) of New Bedford, a distance that the Port of Bremerhaven identifies as the radius of its installation vessels.2

This potential demand could provide the needed business case for manufactures to locate facilities in and around suitable ports along the Atlantic coast, with New Bedford well-situated to compete for this investment. Current estimates are that an ongoing annual demand of 100 – 150 turbines or 500 – 800 MW of capacity for at least five years is required before an integrated turbine manufacturer would invest in a new plant.3 A lesser demand of around 300 MW per year is thought to be required for investment by a single component manufacturer4. This level of new annual offshore wind construction may not occur until 2020 or beyond.

The closest proposed project to New Bedford is Cape Wind which has encountered significant difficulties and faces a highly uncertain future. If built, it would be on Horseshoe Shoal in Nantucket Sound5 and under average conditions, the project is estimated to produce 75% of the electricity for the Cape and Islands. With a nameplate capacity of 468 MW, Cape Wind would consist of 130 Siemens 3.6 MW turbines built upon monopile foundations entirely within federal waters. Cape Wind’s difficulties include recent setbacks in obtaining financing and the termination of its power purchase agreements rendering its prospects of coming to fruition heavily in doubt.

Further south from New Bedford is Block Island, RI, the location of another proposed offshore wind project. Located entirely within Rhode Island state waters, the project will consist of five 6 MW Haliade 150 turbines built by Alstom and is expected to generate 125,000 MWh of electricity annually, enough to serve 17,000 homes. The project has recently completed financing and work

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2 (Grabs 2012, 11)
3 (Navigant Consulting 2013, 100)
4 ibid
5 (Cape Wind Associates n.d.)
has begun on the turbines in France and the jacket foundations in Louisiana.\textsuperscript{6} It seems likely that the Block Island project will be the first offshore wind installation in the U.S.

\textbf{Figure 3: Proposed and Permitted Wind Farms (Permitted in Green, Proposed in Orange)}

While not yet in the project phase, the Bureau of Ocean Energy Management (BOEM) has completed a recent auction for two lease areas totaling over 345 thousand acres of Wind Energy Area approximately 12 nmi south of Martha’s Vineyard.\textsuperscript{7} The winning bidders were RES American

\textsuperscript{6} (Kuffner 2015)
\textsuperscript{7} (Bureau of Ocean Energy Management n.d.)
Developments, Inc. and Offshore MW LLC. According to BOEM, two other available areas did not receive any bids. RES Ltd., the parent company of RES Americas, is based in the U.K. and has completed nearly 100 wind projects with a total capacity of over 8 GW.\textsuperscript{8} Offshore MW is a sister company of Bremerhaven-based WindMW that is responsible for the planning, construction, and operations of the Meerwind Süd and Meerwind Ost offshore wind farms which will have a combined 80 3.6 MW turbines.\textsuperscript{9}

BOEM conducted another lease sale in August of 2014 for two Wind Energy Areas off the coast of Maryland, both of which were won by U.S. Wind, Inc. Maryland has been aggressive in seeking to develop its own offshore wind cluster. On April 9, 2013 then-Governor Martin O’Malley signed into law the Maryland Offshore Wind Energy Act of 2013.\textsuperscript{10} This bill seeks to provide the incentives and public policy certainty required to attract developers by funding the Offshore Wind Renewable Energy Credit (OREC) and carving out up to 2.5% of the state’s energy market for offshore wind. The ORECs function much like similar credits long used for solar energy where a developer can sell one credit for every 1 MWh of energy generated. These credits can be sold to help meet renewable energy requirements common under state renewal portfolio standards and in advance of actual generation to provide needed upfront capital.

The market that the Wind Energy Act seeks to create in Maryland is paired with many of the same geographic and industrial advantages found in New Bedford and Massachusetts: developed ports, a long maritime tradition, a defense and marine industrial base, proximity to proposed and permitted projects, and more. For example, the Business Network for Maryland Offshore Wind is a coalition working to build the supply chain for wind in Maryland for its members through networking, advocacy, and workforce development.\textsuperscript{11} Furthermore, judging by the winning bids for the recent leases, developers consider the Wind Energy Areas offshore of Maryland of higher value than those near Massachusetts. The winning bid for the August leases offshore of Maryland was $8,701,098 for 79,707 acres ($109 per acre)\textsuperscript{12} while the numbers for the combined two leases offshore of Massachusetts are $431,482 for 354,409 acres ($1.22 per acre).\textsuperscript{13} While these differences can also be attributed geographic factors like water depth, proximity to shore, and oil prices, the stark difference in price should serve as a reminder that competition for this industry will be influenced by more than suitable land-use planning.

**Case Studies of Offshore Wind Industry Initiatives and Seaports**

In looking to offshore wind as an economic development driver, New Bedford has the benefit of studying other communities that have made similar choices before it. The oft-cited examples Cuxhaven and Bremerhaven in Germany most closely parallel the path that New Bedford would like to follow. In this country, northeast Ohio is working to develop offshore wind in Lake Erie by leveraging both suitable geographic attributes and its existing labor force and supply chain, much like New Bedford.

\textsuperscript{8} (RES Americas n.d.)
\textsuperscript{9} (WindMW n.d.)
\textsuperscript{10} (Business Network for Maryland Offshore Wind n.d.)
\textsuperscript{11} A similar type of networking and advocacy group has recently been established in-state, called OSW Massachusetts.
\textsuperscript{12} (Bureau of Ocean Energy Management n.d.)
\textsuperscript{13} (Bureau of Ocean Energy Management n.d.)
Cuxhaven\textsuperscript{14}

The City of Cuxhaven is located on the shores of the North Sea and the mouth of the Elbe River in the State of Lower Saxony, Germany. The city is a popular tourist destination and an important fishing port. In 2002, Lower Saxony made the decision to develop Cuxhaven into a port to service the offshore wind farms that were expected to arise following the passage of Germany’s Renewable Energy Sources Act (Erneuerbare-Energien-Gesetz [EEG]) in 2000. The EEG aimed to double the share of electricity produced by renewable energy by 2010.\textsuperscript{15} The mechanisms adopted by the EEG included feed-in tariffs for renewable energy, preferential grid access, and tariff digression. Through a number of updates to the law, and contrary to the pattern expected under tariff digression, the EEG has provided increased feed-in tariffs for and put renewed focus on wind power.

Since the completion of Offshore Terminal 1 in 2009, Cuxhaven has had the necessary infrastructure to service the offshore wind industry. Its location provides sufficient water depths for the large seagoing vessels required in the construction of wind farms while the facilities at Offshore Terminal 1 also provide the necessary equipment (such as mobile and gantry cranes), load-bearing capacity, and space at 27 acres. Cuxhaven’s history as a maritime region helps to provide much of the necessary workforce skills and labor to support the logistics and staging at the port. To meet rising demand stemming from the growth of northern Europe’s offshore wind market, the State of Lower Saxony authorized the construction of Offshore Terminal 2 which adds four additional berths, 734 meters of quay length, and 28 acres of space.

As a result of Cuxhaven’s participation in the construction of offshore wind farms, a number of related businesses have established a presence in the port area.

- **Cuxhaven Steel Construction GmbH (CSC):** CSC is a subsidiary of the BARD Group and the first offshore wind company to open in Cuxhaven. The facility produced the patented tripile foundations used in the construction of the BARD Offshore 1 wind farm. These foundations were produced in an 183,000 square foot plant. After the completion of BARD 1, the companies of the BARD Group faced a decline in work and largely ceased activities in the summer of 2014. Furthermore, the BARD 1 wind farm has been plagued with near-constant technical troubles since its completion in 2013 due to problems getting the power ashore.

- **AMBAU GmbH:** AMBAU is a manufacturer of steel foundations and towers for both onshore and offshore turbines in five plants with over 750 employees. It can produce pieces up to 80 meters in length and 900 metric tons in weight. AMBAU’s plant in Cuxhaven recently completed the largest tower to date with a total height of 106 meters and a diameter of 7.33 meters at the base flange.\textsuperscript{16} The tower will be mounted in Scotland to a 7 MW SeaAngel turbine made by Mitsubishi Heavy Industries.

- **Otto Wulf:** Otto Wulf provides wide-ranging seagoing services in towing, salvage, recovery, transport, and floating cranes.\textsuperscript{17} With facilities in Cuxhaven and Rostock, Otto Wulf has had extensive experience in offshore operations playing a large role in the aforementioned

\textsuperscript{14} The section relies heavily on the information from the website for Offshore Base Cuxhaven << http://en.offshore-basis.de/ >>.

\textsuperscript{15} (International Energy Agency 2014)

\textsuperscript{16} (AMBAU GmbH 2014)

\textsuperscript{17} (Otto Wulf GmbH n.d.)
BARD 1 wind farm. Other projects include Alpha Ventus wind farm, FINO 3 monopile research platform, and the Arkona Basin wind measuring platform.

Figure 4: Timeline of Cuxhaven Development

Source: Offshore Base Cuxhaven
Bremerhaven

The City of Bremerhaven is located on the shores of the North Sea and the Weser River in the State of Bremen which is an enclave of Lower Saxony, Germany. Bremerhaven is less than 30 miles from Cuxhaven and is primarily a city with an economy built around its trade port. As of 2013, Bremerhaven was the 23rd busiest container port in the world.

As was the case in Cuxhaven, the passage of the Renewable Energies Act prompted the evaluation of the port at Bremerhaven for its suitability for serving offshore wind projects. A decision was made in 2001 to pursue the necessary upgrades beginning with the port of Labradorhafen and the creation of the industrial areas of Luneort and Luneplate adjacent to the port. In addition, BLG Logistics Group operates a terminal on the ABC-Halbinsel peninsula for shipping offshore wind turbines out to sea. Additional capacity is being built at the Offshore Terminal Bremerhaven which is planned to have sufficient capacity to stage, assemble, and ship 160 turbines per year.

The larger size of Bremerhaven has also resulted in the greater presence of wind-related businesses. Over 660 acres of space is available at Luneplate in addition to the significant space already occupied. Major manufactures have located in Bremerhaven with their presence drawing in suppliers as well, together totaling over a dozen companies.

- **AREVA Wind**: As of March 9, 2015, AREVA Wind and Gamesa have combined with a joint venture called Adwen with 700 employees. The new company will be registered in Spain, home of Gamesa, but will retain its factory in Bremerhaven. It is there that it builds the 5 MW M5000-135, now AD 5-135, turbine. By 2018, Adwen plans to begin serial production of an 8 MW turbine in Bremerhaven. The company currently has a pipeline of 2.8 GW and hopes to capture 20% of Europe’s market by 2020.

- **Senvion SE**: Senvion SE has more than 3,400 employees worldwide with headquarters in Hamburg and multiple manufacturing plants including one in Bremerhaven. On March 19, 2015, Senvion announced that it will supply 54 turbines of the 6.2M126 model for the Nordsee One offshore wind farm. The turbines will be built at the Bremerhaven factory.

- **PowerBlades**: A wholly-owned subsidiary of Senvion SE, PowerBlades builds turbine blades at a factory in Bremerhaven for Senvion SE turbines. The blades for the Nordsee One farm will be built by PowerBlades.

- **WeserWind**: WeserWind built foundations for BARD 1 and other wind farms. However, like CSC in Cuxhaven, WeserWind has suffered from a lack of new business. The company filed for bankruptcy in January 2015.

- **WindMW**: The sister company of Offshore MW, WindMW is responsible for the planning, construction, and operations the Meerwind Süd and Meerwind Ost offshore wind farms which will have a combined 80 3.6 MW turbines. The construction of the project

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18 The section relies heavily on the information from the website for Offshore Wind Port Bremerhaven <http://offshore-windport.de/en/home/>
20 (Gamesa 2015)
21 (Senvion SE 2015)
22 ibid
23 (renNEWS 2015)
24 (WindMW n.d.)
completed on April 4, 2014 on schedule. Meerwind was the first German offshore wind farm to be fully financed by private investors.

**Great Lakes**

The Great Lakes contain significant wind resources with both strong and reliable winds. Additionally, they are near suitable labor and suppliers stemming from both the area’s historical manufacturing roots and their proximity to much of the U.S.’s onshore wind supply chain. Among the five lakes, Lake Erie has the added benefit of having most of the region’s shallow water wind resources thereby making it a prime candidate for the initial projects.

The figure below shows water depths and the available gigawatts of wind energy potential at those depths. The strip of light blue along the Ohio shores of Lake Erie indicate water between 0 and 30 meters. Furthermore, looking throughout the Great Lakes shows that most of the waters at those depths are in Lake Erie. Therefore, it stands to reason that Lake Erie would capture most of the 176.7 GW of wind resources available in the Great Lakes at depths between 0 and 30 meters, a level that is well within the limits of existing offshore turbine foundation technology.

**Figure 5: Wind Power Potential by Water Depth**

The Lake Erie Energy Development Corporation (LEEDCo) is currently planning to build a small-scale project seven miles northwest of Cleveland called Icebreaker.²⁵ It will contain six 3 MW

²⁵ (Lake Erie Energy Development Corporation n.d.)
Siemens direct-drive turbines and will be the first freshwater project in North America and the first to be built in a region that will experience significant foundation icing. The construction of Icebreaker is expected to begin in 2017.

With most of the Lake Erie shoreline, the State of Ohio is expected to be the biggest beneficiary of any offshore wind development in the lake. An economic analysis of the emergence of the wind energy market in Ohio conducted by Kleinhenz and Associates estimates up to 3,000 jobs created in a scenario with 1,500 MW of installed capacity by 2030.26 A larger scenario envisioning 5,000 MW, which is at the low end of the potential capacity in Massachusetts, could create 8,000 jobs in Ohio.

The Kleinhenz study examines two different impact scenario: one that can be described as short-term and the other long-term. The main difference between the two is that short-term scenario assumes all the wind turbine components will be made by outside vendors while the long-term scenario supposes cluster development and local supply from Ohio. These two scenarios are not very different from the vision for the development of the MCT in New Bedford: providing staging and assembly first and attracting manufacturing in the future as demand grows. The nature of the jobs created differs among the scenarios as well. Construction, professional and technical services, and fabricated metal manufacturing dominate in the short-term scenario. With a developed cluster, Ohio would see more water transportation, machinery manufacturing, and primary metal manufacturing.

26 (Kleinhenz & Associates 2010)
Requirements for Manufacturing Offshore Wind Components

Component Manufacturing

In planning for the future, it is important to ascertain which offshore wind turbine components could realistically be manufactured in coastal facilities in the near and medium terms. As the previous section details, there are no existing offshore wind farms domestically but the U.S. does have a robust onshore wind industry. This existing supply chain can prove helpful in building the offshore industry but it does face some limitations. The most obvious and unalterable is location. The size and weight of many of the components required for offshore wind turbines make their transportation across hundreds or thousands of land miles impractical or even impossible. And this physical reality of large turbine components increases the likelihood of component manufacturing at or near U.S. Atlantic coast ports.

The key components of an offshore wind turbine and a brief description of their roles follows:27

- **Towers:** The towers are hollow steel tubes that connect the foundation to the nacelle and place the rotor at a sufficient height above the water to catch the best wind. They are often made of several pieces that are joined together to form the whole structure. Towers also provide the space to run cables connecting the electricity generating equipment in the nacelle to the rest of the system and provide access to personnel.
- **Nacelle:** The nacelle sits atop the tower, supports the rotor, and contains the electrical equipment necessary to turn the rotation of the rotor into electricity. The nacelle bedplate supports the equipment inside and is typically made from iron or steel while the nacelle cover keeps out the harsh offshore elements and provides attachment points for lighting and is typically made of composite materials.
- **Blades:** The blades are attached to the nacelle via the rotor and turn the energy from the wind into torque to spin the generator inside the nacelle. Blades are typically made of fiberglass and epoxy resin though other materials are sometimes used.
- **Main shaft:** The main shaft connects the rotor to the gearbox. It is typically forged from high grade steel.
- **Gearbox:** The gearbox is located inside the nacelle and connects the main shaft to the generator. It converts the rotor rotation of 5 – 15 rpm to around 1,500 rpm for the efficient generation of electricity. It is a critical item in the drive chain and the subject of concern regarding reliability and long-term operation due to the considerable amount of moving parts and internal friction.
- **Generator:** The generator turns the rotational energy created by the blades and rotor and sped up by the gearbox into electricity.
  - **Direct-drive generator:** While still a new technology, direct-drive generators are being developed as a way of removing the gearbox, and its related maintenance and reliability issues, from the drive chain. As the name suggests, direct-drive generators are connected directly to the main shaft coming off the rotor without the need for a gearbox to step up the rpm.

27 (BVG Associates 2010)
- **Forged and cast components**: These components are varied and include the rings, flanges, and hubs that connect the various components together. For example, a cast hub connects the rotor to the main shaft and a forged ring connects the main shaft to the gearbox.

- **Foundation**: The foundations anchor the tower to the seafloor. They come in two common varieties: monopile and jacket. As the name suggests, monopiles foundations consist of a single pile driven in or otherwise secured to the seabed. Larger turbines or those in deeper water use jacket foundations. These foundations are four-legged steel trellises that resemble radio towers.

In summary, Table 3 highlights the land requirements for each turbine component along with the job potential for an assembly/manufacturing company, the number of units of annual production capacity, the investment cost, and the importance of nearby water or portside access for the component. In terms of water access, components are presented as being: a) portside – meaning at or very near a staging port; b) near coast – meaning within 10-15 miles of a staging port; or c) inland – meaning that the assembly facility can be inland and doesn’t need to be located near a port.

**Table 3: Summary of Site Requirements, Economic Impacts of Turbine Components**

<table>
<thead>
<tr>
<th>Component</th>
<th>Land (acres)</th>
<th>Jobs</th>
<th>Annual Capacity</th>
<th>Cost ($M)</th>
<th>Water Access</th>
</tr>
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<tbody>
<tr>
<td>Towers</td>
<td>30-60</td>
<td>100-200</td>
<td>100-200</td>
<td>$20-$35</td>
<td>Near Coast</td>
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<td>275</td>
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</tr>
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As the market transitions to 5 MW and larger turbines, even tower segments and nacelles would need to be built portside.
Figure 6: Components of an Offshore Wind Turbine

Source: Modified from A Guide to An Offshore Wind Farm, BVG Associates
Near Term

According to two comprehensive studies on the supply chain of offshore wind, the turbine components most likely to be built domestically in the near term are towers, gearboxes, and generators with towers being the likeliest to appear first.\(^{29}\) For many of these components, the largest determinant of the economic development opportunity along the Atlantic coast is whether construction and implementation of new manufacturing facilities will be required to serve a new offshore wind market.

Any investments in new plant and equipment will also require new or improved infrastructure. These start-up costs will add to the other costs and risks borne by manufacturers. While the following sections largely focus on the capabilities of the existing U.S. supply chain, it is worth noting that foreign companies already manufacture wind turbine components in the U.S. and they are exploring opportunities to establish additional manufacturing facilities here. Therefore, the components that will require the construction of new, coastal or portside facilities can be built by domestic or foreign firms. According to the U.S. competitive analysis done by GLWN, European and Chinese companies are open to and have shown interest in establishing joint ventures with U.S. companies to reduce risk and hasten the start-up of new operations.\(^{30}\)

Towers

The U.S. has an established industry base for manufacturing towers for onshore wind turbines.\(^{31}\) Not surprisingly, these facilities are located near the nation’s onshore wind farms in the Midwest. While it is possible to transport the towers for 3 MW turbines from these locations to the coast, it is unlikely that many of these turbines will be needed. The offshore wind industry is moving toward 5 – 6 MW turbines in an effort to increase capacity and reduce the per MW capital cost.

The tower sections for 5 MW turbines can have diameters of 6.5 meters (21 feet) making them almost twice as wide as the U.S. standard highway lane width (12 feet) and unlikely to fit under many overpasses. Similar rail network challenges exist. Therefore, it is likely that any domestic manufacturing of towers for offshore wind turbines will be done at new, coastal facilities.

Annual demand of 600 MW would likely result in demand for about 100 towers with the anticipated 6 MW turbines offshore projects will eventually use.\(^{32}\) These towers could be supplied by a single firm with easy port access thus providing the ability to ship towers to projects up and down the Atlantic coast. Furthermore, the technology and capabilities of existing tower manufacturers are highly transferrable to offshore towers which lowers the risk of new investment and increases the likelihood that a current player with coastal access could easily gear up for this market.

Current global leaders in the manufacture of offshore wind turbines are all located in Europe such as AMBAU, BiFab, and Bladt.\(^{33}\) The U.S. has many suppliers for the onshore wind industry including Broadwind, Trinity Structural Towers, and Marmen.\(^{34}\) European companies with a U.S. presence

\(^{29}\) (Global Wind Network 2014) and (Navigant Consulting 2013)
\(^{30}\) (Global Wind Network 2014, xxxvii)
\(^{31}\) (Global Wind Network 2014, 74)
\(^{32}\) (Navigant Consulting 2013, 65)
\(^{33}\) (BVG Associates 2010, 40)
\(^{34}\) (Global Wind Network 2014, 76)
include Vestas and Gamesa. None of the current U.S. suppliers are on the Atlantic coast while there are two on the Great Lakes.

**Gearboxes**

The current manufacturers of gearboxes should be able to supply the demand for smaller offshore turbines of 3 MW capacity. The transportation of these components and technology involved are not materially different. Similarly, sizing up to 5 MW does not present any new logistical challenges but would require investment in existing facilities. In other words, it is unlikely that current U.S. manufacturers would need to build new, coastal facilities but they would need to invest in upgrades to their current plant and equipment. One major uncertainty in this market is a potential shift to direct-drive technology which would remove the need for gearboxes.

It is worth noting that the existing U.S. manufacturers are German companies with extensive wind experience that have established manufacturing here to serve the domestic market. The U.S. manufacturers include Winergy Drive Systems Corporation (headquartered in Friedrichsfeld, Germany with U.S. operations in Elgin, Illinois) and ZF Wind (headquartered in Friedrichshafen, Germany with U.S. operations in Gainesville, Georgia).

**Generators**

The market for generators is somewhat of a mix between what is seen for gearboxes and towers. U.S. manufacturers exist with the capability of building the larger 5 MW generators; however certain logistical challenges could result in new, coastal facilities.

Existing U.S. suppliers would need to make some investments in cranes and finishing tanks in order to handle the larger 5 MW generators. Furthermore, some of the anticipated technology in offshore generators differs from the existing onshore variety which may prove beyond the knowledge of some existing suppliers. However, a single facility could produce both kinds of generators. This fact coupled with transportation constraints for larger generators opens the possibility of new, coastal facilities.

U.S. generator manufacturers include Hyundai Ideal Electric, Indar/Igeteam, Swiger Coil Systems, and Teco-Westinghouse, with Hyundai and Indar foreign-owned companies.

**Medium to Long Term**

According to two comprehensive studies on the supply chain of offshore wind, the turbine components most likely to be built domestically in the medium to long term are blades, foundations, and cast and forged components with blades and foundations offering the best opportunities. Given the size of these components, each will likely require coastal facilities in order to serve offshore wind projects.

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35 (Navigant Consulting 2013, 67)
36 (Global Wind Network 2014, 102)
37 (Navigant Consulting 2013, 39)
38 (Global Wind Network 2014, 82)
39 (Global Wind Network 2014, 84)
40 (Global Wind Network 2014) and (Navigant Consulting 2013)
**Blades**

The blades for 5 MW and larger turbines will require coastal or, ideally, portside facilities. Each blade is approximately 60 – 70 meters long and is therefore too large to be transported from Midwest locations to the coasts.41

The existing U.S. manufacturers of blades likely have the necessary knowledge to build blades for offshore wind turbines and could move some of their capacity to the coasts to meet offshore demand. However, it is likely that investment in new blade manufacturing would coincide with investments in nacelle production (the cover housing for generating components).42 While there are no existing coastal manufacturers for the composite housings, sufficiently-experienced manufacturers exist, in industries such as aircraft or boat building, which could, with some investment, transition to manufacturing nacelles. According to GLWN,

> [I]n GLWN’s interviews with wind turbine OEM’s, they indicate that the U.S. large molded fiberglass boat industry is mature and capable of manufacturing wind turbine component parts. OEMs did not present any major concerns in identifying future qualified U.S. coastal suppliers (current boat manufacturers) for composite housings and covers.43

The major European turbine manufacturers currently build blades in the U.S.: Gamesa in Pennsylvania, Siemens in Iowa, and Vestas in Colorado.44 U.S.-based companies include Energetx Composites, Molded Fiber Glass, and TPI Composites.45 Companies on the east coast with experience manufacturing large-scale fiberglass products and could build nacelles include Fairhaven Shipyard in Fairhaven, MA and Kenway Corporation in Augusta, ME.

**Foundations**

U.S. manufacturers with experience with the type of large fabricated structures required for turbine foundations do exist but are mainly in the oil and gas sector. Therefore, switching to the scale and serial production required to serve the offshore market would require new capital investment and, potentially, the acquisition of new knowledge as well. Due to their size, offshore foundations will require portside facilities for manufacturing. Manufacturers with experience in oil and gas, heavy civil engineering projects, shipbuilding, and related fields could all potentially participate in the manufacture and installation of offshore turbine foundations.

**Cast and Forged Components**

There is no current U.S. capability to produce cast hubs for turbines larger than 2.5 MW and therefore no facilities capable of serving the offshore wind industry. New, modern, coastal cast facilities will be required to address the capability, cost, and transportation constraints presented by the current supply chain.

Contrary to cast components, the U.S. does have manufacturers capable of producing the forged rings and shafts for offshore wind turbines of 5 MW and larger, albeit with sometimes considerable capital investment. However, none of these manufacturers are currently supplying the wind industry, even the domestic onshore wind market. These manufacturers are not competitive with their Asian and European counterparts. The opportunity exists for a company that learns how to

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41 (Global Wind Network 2014, 78)  
42 (Navigant Consulting 2013, 56)  
43 (Global Wind Network 2014, 106)  
44 (Navigant Consulting 2013, 59)  
45 (Global Wind Network 2014, 80)
regain a competitive edge especially if it can compete on transportation costs by locating near offshore wind sites.

**Site Requirements**

One commonality between each of the components above is that their manufacture will require considerable physical space and large parcels (or combined parcels into a larger site), especially for towers, blades, and foundations. These components are also the most likely to be the first built at new portside facilities on the Atlantic coast.

**Towers**

When fully assembled, the towers for 5 MW turbines are expected to be 90 – 120 meters high and up to 6.5 meters in diameter with a total weight of 500 – 600 tons. These extreme sizes not only present transportation challenges but also manufacturing ones. The facilities needed to produce towers are expected to require between 30 and 60 acres. The optimal size facility will require space at the top end of the range with most of that space devoted to staging and laydown areas.

An optimal size facility will be capable of producing 200 towers per year and would employ approximately 200 people. At an investment of $35 million, the plant would be able to produce towers with the dimensions needed for larger capacity offshore turbines: 10 meters in diameter and 100 meter in length. Assuming a 6 MW capacity, the annual output of towers would serve approximately 1,200 MW of new annual offshore wind capacity meaning that a single plant could serve all or most the needs of the Atlantic coast for the next decade or more.

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**Blades**

About a two-thirds the length of towers, the blades for 5 MW turbines are expected to be 60 – 70 meters long and up to 5.5 meters wide with a total weight of 19 – 26 tons. Unlike towers that can be broken down into multiple segments, blade must be manufactured and transported as a single, enormous piece. The facilities needed to produce blades are expected to require nearly as much space as those for towers: 12.5 to 55 acres. The optimal size facility will require space at the top end of the range with 48 acres devoted to staging and laydown areas.

An optimal size facility will be capable of producing 800 blades per year and would employ approximately 600 people. Such a facility would cost approximately $25 million and would be able to produce blades 6 meters in diameter and 100 meter in length. Assuming a 6 MW capacity, the annual output of blades would serve approximately 1,600 MW of new annual offshore wind capacity. Again, a single plant could serve all or most of the medium-term needs of the Atlantic offshore market.

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46 (Global Wind Network 2014, 74)
47 (Global Wind Network 2014, 78)
Nacelles

It is estimated that the composite housing for 5 MW turbine nacelles will weigh 15 tons and be six meters tall by 18 meters wide.\textsuperscript{48} Due to size of nacelles for 5 MW and larger turbines it will be advantageous for these facilities to be as close to the new OEMs as possible, meaning likely coastal, if not portside, facilities. The manufacturing of nacelles could likely occur at existing fiberglass boat buildings with portside access. A new plant will need between 25 and 40 acres.

An optimal size facility, using 150 employees, could produce up to 300 nacelles per year. The plant would cost approximately $30 million and would be capable of producing nacelles of the necessary dimensions for large offshore wind turbines. At 300 turbines per year, a facility could meet 1,800 MW of demand annually, enough for at least the medium term outlook for east coast offshore wind.

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Foundations

The size and weight of foundations for 5 MW turbines are dependent on the water depth of their installation site. Jacket foundations are approximately 45 – 60 meters tall and including foundation piles can weight around 800 tons. Monopiles can be thought of as larger and more robust towers with lengths approaching 70 meters and diameters of 5.0 – 6.5 meters\textsuperscript{49}. The facilities needed to produce foundations are expected to require at least 28 acres with optimally-sized facilities needing almost double that just for laydown and staging: 49 acres with 56 acres for the total site.

A large facility would cost approximately $35 million to build and could produce up to 200 foundations per year. It would be able to produce foundations 100 meters high and 2,000 metric tons in weight using 600 employees. Assuming a 6 MW capacity, the annual output of foundations of a single facility could satisfy 1,200 MW of new annual offshore wind capacity, the foreseeable demand of the Atlantic market.

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Generators and Gearboxes

Generators for 5 MW turbines can weigh in excess of 65 tons with a diameter of 6.5 meters.\textsuperscript{50} Gearboxes are nearly the same size at 62 tons and five meters square.\textsuperscript{51} Less information was available on the investment costs, land requirements, or jobs needed to manufacture these components. However, an evaluation of some of the existing U.S. facilities did reveal a few insights.

\textsuperscript{48} (Global Wind Network 2014, 105)

\textsuperscript{49} (Global Wind Network 2014, 90)

\textsuperscript{50} (Global Wind Network 2014, 82)

\textsuperscript{51} (Global Wind Network 2014, 102)
Based on the existing facilities of Winergy Drive Systems and ZF Wind, manufacturing facilities for gearboxes require 13 to 20 acres of land\textsuperscript{52}, employ 200 to 350 people, and cost $20 million to $100 million to build and equip.\textsuperscript{53} Due to a lack of information, the capacity of these factories is currently unknown.

The land requirement for generators, using Igeteam and Hyundai Ideal Systems as examples, is between 7.5 (with 140,000 sq. ft. under roof)\textsuperscript{54} and 29 acres (with 280,000 sq. ft. under roof).\textsuperscript{55} The smaller Igeteam facility cost $15 million dollars and aims to employ 275 people. The costs for the Hyundai plant are unknown but should be considerably higher given its scale. If costs are proportional to area under roof, the Hyundai plant would cost an estimated $30 million. Exact employment numbers are also unknown for Hyundai but are claimed to be over 250. It seems likely then that although these two facilities differ greatly in size they do not differ greatly in employment.

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\textsuperscript{52} Acreage of site estimated using Google Maps area calculator.
\textsuperscript{53} (Siemens 2008) and (Gill 2011)
\textsuperscript{54} (Dill 2012). Acreage of site estimated using Google Maps area calculator.
\textsuperscript{55} (Hyundai Ideal Electric Co. n.d.)
Potential Development Opportunities for New Bedford

The Port of New Bedford has all of the necessary physical attributes to serve the offshore wind industry in terms of transportation logistics and shipping/receiving components. Its shipping channels are deep enough, bulkheads strong enough, and quay long enough. The hurricane barrier provides assurance in foul weather and the workforce is available 24/7. The waterfront has available acreage for staging and assembly in addition to potential sites for manufacturing. This section will focus on how New Bedford can leverage its natural and manmade advantages to develop an offshore wind industrial base.

Infrastructure and Labor Supply

The Port of New Bedford is located near many of the potential offshore wind sites in New England. For example, Deepwater Wind is months away from the planned start of construction of a 30 MW project near Block Island, RI and potentially two years away from a 1,000 MW project near Long Island, NY. More broadly, New Bedford is within 300 nautical miles\(^{56}\) of the border of Maryland and Virginia to the south and St. John, New Brunswick and Nova Scotia to the north. This area covers almost every permitted or proposed wind farm on the Atlantic Coast.

The previous section discussed how the intermediate needs of the domestic offshore wind industry could be met by one or two manufacturing facilities for towers, blades, and foundations. This small number increases the stakes for being the region that attracts these first coastal facilities as it seems likely any further facilities would also consider that same location. New Bedford has the advantage of the newly-constructed Marine Commerce Terminal (MCT), other potential waterfront space, the nearby New Bedford Business Park, and area research institutions and universities.

The MCT is the nation’s first port designed and built specifically to service offshore wind and therefore has all the necessary infrastructure. With over 21 acres of space, there is sufficient room for staging of turbine components before loading them on ships. There is also nearby storage space for blades. One shortcoming of the MCT is that it does not have enough space for any of the optimal-sized manufacturing facilities. However, other areas of the waterfront could be available for development.

Other facilities can be located very close to the MCT in the Business Park, which is only 10 miles away and has over 100 acres available\(^{57}\), thereby providing both space and appropriate portside staging areas for local manufacturing. The Port of New Bedford is also close to the prominent universities and research centers of Massachusetts such as UMass Dartmouth, the Massachusetts Maritime Academy, the Woods Hole Oceanographic Institute, and the Wind Technology Testing Center.

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\(^{56}\) This distance corresponds to the operational radius of the installation vessels of the Port of Bremerhaven.

\(^{57}\) [http://www.gnbif.com/overview.htm]
If it can be established that New Bedford has the necessary physical attributes of space, location, and infrastructure to adequately service the offshore wind industry, the next question is whether the area has the appropriate labor, supplier businesses, and other market conditions. Due to New Bedford’s long maritime and manufacturing history, it has many firms that could fit into the offshore wind supply chain. Based on a detailed supply chain analysis of active and emerging wind industry suppliers, New Bedford was shown to have the highest concentration of firms that are or potentially could be part of the wind supply chain of any city in Massachusetts, Rhode Island, and Connecticut. The Global Wind Network identifies 31 businesses in the city.

**Figure 7: Wind Supply Chain**

The top ten manufacturing sectors in New Bedford by the number of firms are shown in the table below. Many of these sectors can play a direct role in the supply chain for offshore wind. Labor availability is aided by the relatively high unemployment in the city.

**Table 4: Top Ten Industries in New Bedford by Number of Firms**

<table>
<thead>
<tr>
<th>NAICS</th>
<th>Industry</th>
<th>Firms</th>
<th>Jobs</th>
</tr>
</thead>
<tbody>
<tr>
<td>3117</td>
<td>Seafood Product Preparation and Packaging</td>
<td>22</td>
<td>1,138</td>
</tr>
<tr>
<td>3323</td>
<td>Architectural and Structural Metals Manufacturing</td>
<td>11</td>
<td>107</td>
</tr>
<tr>
<td>3399</td>
<td>Other Miscellaneous Manufacturing</td>
<td>10</td>
<td>558</td>
</tr>
<tr>
<td>3327</td>
<td>Machine Shops; Turned Product; and Screw, Nut, and Bolt Manufacturing</td>
<td>8</td>
<td>91</td>
</tr>
<tr>
<td>3344</td>
<td>Semiconductor and Other Electronic Component Manufacturing</td>
<td>7</td>
<td>810</td>
</tr>
<tr>
<td>3333</td>
<td>Commercial and Service Industry Machinery Manufacturing</td>
<td>5</td>
<td>95</td>
</tr>
<tr>
<td>3339</td>
<td>Other General Purpose Machinery Manufacturing</td>
<td>5</td>
<td>56</td>
</tr>
<tr>
<td>3391</td>
<td>Medical Equipment and Supplies Manufacturing</td>
<td>5</td>
<td>515</td>
</tr>
<tr>
<td>3261</td>
<td>Plastics Product Manufacturing</td>
<td>4</td>
<td>196</td>
</tr>
<tr>
<td>3262</td>
<td>Rubber Product Manufacturing</td>
<td>4</td>
<td>352</td>
</tr>
</tbody>
</table>
Operation and Maintenance Economic Opportunities

Operation and maintenance (O&M) of wind farms provides a valuable economic development and job creation opportunity for host ports. Unlike construction which provides a temporary economic boost, O&M begins early in and continues over the full lifespan of an offshore wind farm. Overall, the goal of O&M services is to maximize the availability of the turbines to generate power while minimizing costs. Current average availability is 90% to 95% while costs are roughly 25% to 30% of the levelized cost of electricity (LCOE).

The majority of the time and cost of O&M is devoted to maintenance. It includes a wide-range of both proactive (preventive) and reactive (corrective) activities. Operations includes monitoring and back-office activities. One of the key aspects of O&M economic opportunities that distinguishes it from the component manufacturing discussed above is that the land requirements are much lower with some activities more focused on boat slips and port infrastructure (rather than large production sites) and other activities that can be operated through offices and warehouses near (but not necessarily on) the waterfront.

- **Operations**
  - Remote monitoring of turbines via SCADA system (supervisory control and data acquisition)
  - Weather forecasting
  - Back office: sales, marketing, and administrative support
- **Maintenance**
  - Onshore logistics: warehousing, staging, and delivery of parts and supplies
  - Offshore logistics: transportation from port to wind farm of labor, tools, parts, and supplies via ships and, potentially, helicopters
  - Turbine maintenance
    - Preventative maintenance: routine maintenance and surveys
    - Corrective maintenance: repair and replacement of components due to unexpected wear and tear or failure
  - Repair and maintenance of electrical systems: cables, transformers, and offshore substation
  - Repair and maintenance of foundations

When choosing a port as a base for operations and maintenance, the wind farm owner will seek a choice that minimizes the cost of the components discussed above. The daily trip technicians take to the turbines is the most sensitive to distance while overhauls and component replacement are more sensitive to the availability of necessary port infrastructure like heavy-load-bearing quaysides, staging areas, and crane capacity. Therefore it is possible that some operators will choose a multi-port O&M strategy using one port as the routine O&M base and another for the movement of large components.

As wind farms move farther from shore, new O&M strategies will be needed. The most likely first step is the integration of helicopter support for the workboats. Yet further from shore, the O&M strategy may begin to incorporate offshore bases in the form of floating (“floatels”) or fixed
accommodations. As distances grow and offshore bases become viable, the O&M costs will become less sensitive to the distance from the base port.

**Economic Development Opportunities of O&M**

The first economic development opportunity in O&M is in providing a base for onshore logistics. These activities require office and warehouse space. They are usually located at or near the port but many activities are not required to be. It seems likely that the region near the port winning the business for other aspects of O&M will also become the site for the back office activities.

In the case of routine maintenance, proximity to the installation is of paramount importance. While there is nothing a port can do to change its location or the location of wind farms, there could still be multiple suitable ports within similar distances of the wind farm. However, if one port is ready to accept turbine work crews while another needs new investment, the cost equation can be shifted.

Routine O&M brings with it demand for specialized labor and capital. Each turbine will need yearly servicing which takes a four-man team four to five days to complete. However, given weather delays and the desire to minimize production losses, routine maintenance is not conducted 52 weeks per year but focuses on the summer months. If a location has a longer window with favorable seas and calm winds, then a smaller team of workers and vessels can service the same number of turbines.

Routine maintenance also requires different vessels to transport labor, supplies, and parts to the turbines. These logistics needs provide opportunities for the operators of workboats, jack-up vessels, and floating cranes. Wind farms farther out to sea will also require the use of a helicopter. These vessels are not typically owned by the wind farm owner but hired through long-term contracts which provide a stable business for the vessel owners.

Some aspects of preventative and corrective maintenance will require the installation of large components such as blades, gearboxes, transformers, and the like. The port used for these activities will have the same attributes as that needed for construction: large areas for staging, heavy-lift cranes, strong quaysides, etc. The selection process for this port will focus much more heavily on the existence of these capabilities rather than distance to the wind farm. It is important to note that wind farm owners are not opposed to using two different ports for construction and O&M operations if one location does not provide both the proximity and infrastructure desired.

Among all of the required O&M activities, there are opportunities for local small and medium sized enterprises (SMEs) especially in areas that are sensitive to location or require flexibility, innovation, and specialization. For example, the workboats and helicopters must be at the support ports. Firms that can provide underwater surveying and repair with both divers and remote-operated vehicles (ROVs) can find a niche in this market as well. Finally, any company, product, or innovation that can improve access to turbines, reduce downtime, or improve reliability will be in high demand from wind farm owners such as methods of maintaining access to turbines through rougher seas, ensuring the integrity of underwater cables, or better SCADA system software.

While it is difficult to estimate the exact economic impacts without actual project parameters, many previous studies have strived to answer this question for known projects. Table 55 shows estimates
derived from 12 previous studies and the National Renewable Energy Lab’s (NREL) Jobs and Economic Development Impact (JEDI)\textsuperscript{58} model. From the previous studies, the average number of jobs per megawatt of wind farm nameplate capacity is 0.29 to 0.33\textsuperscript{59}. For example, using these numbers, a 500 MW offshore wind farm can be expected to create between 145 and 165 jobs during its O&M phase.

Table 5: Estimates of O&M Jobs per Megawatt of Nameplate Capacity

<table>
<thead>
<tr>
<th>Study</th>
<th>Estimated Total Operations Period (FTE/MW)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Global Insight (2003)</td>
<td>0.37</td>
</tr>
<tr>
<td>Flynn and Carey (2007)</td>
<td>0.20 - 0.33</td>
</tr>
<tr>
<td>Coad and Antunes (2010)</td>
<td>0.3</td>
</tr>
<tr>
<td>Oxford Economics (2010)</td>
<td>0.28 - 0.43</td>
</tr>
<tr>
<td>Boettcher et al. (2008/2010)</td>
<td>0.34</td>
</tr>
<tr>
<td>Carbon Trust (2008)</td>
<td>0.27 - 0.36</td>
</tr>
<tr>
<td>Goulden and Isola (2009)</td>
<td>0.12 (Direct)</td>
</tr>
<tr>
<td>Global Wind Energy Council (GWEC; 2008)</td>
<td>0.33</td>
</tr>
<tr>
<td>Ladenburg et al. 2005 (Horns Rev)</td>
<td>0.31</td>
</tr>
<tr>
<td>Ladenburg et al. 2005 (Nysted)</td>
<td>0.11</td>
</tr>
<tr>
<td>Cambridge Econometrics; University of Warwick Institute for Employment Research; IFF Research (2011)</td>
<td>0.34 - 0.38</td>
</tr>
<tr>
<td>Bloomberg New Energy Finance</td>
<td>0.13 - 0.17 (Direct)</td>
</tr>
<tr>
<td>Offshore JEDI</td>
<td>0.4 - 0.6 - 1.1\textsuperscript{61}</td>
</tr>
<tr>
<td><strong>Average (excluding JEDI and estimates of direct only)</strong></td>
<td><strong>0.29 - 0.33</strong></td>
</tr>
</tbody>
</table>


An earlier report by Tetra Tech for the Massachusetts Clean Energy Center estimates the economic impacts on Massachusetts from the installation and O&M of an offshore wind farm out of the MCT. This site, referred to in the report as a ROWEI (representative offshore wind energy installation), was assumed to be built over three years and have 130 turbines. The report estimates that the construction phase would create 1,700 job years\textsuperscript{62} and a cumulative $457 million of new business activity.\textsuperscript{63} The ongoing O&M would create 110 jobs and $27.5 million of business activity, an

\textsuperscript{58} NREL originally developed JEDI to model wind energy impacts and the model is widely used in the U.S. to estimate impacts of renewable energy projects. The estimates from JEDI are typically for the state level.

\textsuperscript{59} These numbers exclude the two studies that only provided estimates of direct jobs as they are not measuring the total employment ratio like the others.

\textsuperscript{60} The full citations for the studies can be found in the Resources section starting on page 20 of Jobs and Economic Development Impact (JEDI) Model: Offshore Wind User Reference Guide published by NREL at http://www.nrel.gov/docs/fy13osti/58389.pdf.

\textsuperscript{61} Impacts for local content of 35%, 60%, and 100%.

\textsuperscript{62} A job year is one job for one year akin to the concept of man hours. For example, the same job persisting for three years would be three job years. Therefore a count of job years should not be confused with the number of new job openings or job slots on an ongoing basis.

\textsuperscript{63} (Tetra Tech EC, Inc. 2012, 7-2)
estimate consistent with the examples in Table 5 thus showing that O&M related economic activity could support approximately 100 to 200 jobs depending on the scale of O&M operations.64

Comparison of Incentives among Massachusetts and Its Neighbors

Regionally, Massachusetts is joined by Maryland, New Jersey and Rhode Island in hosting the most active environments for offshore wind policy development. Each state has implemented policies to encourage the growth of the industry within its borders. A summary of these actions follows.

Maryland’s efforts are led by the Offshore Wind Energy Act of 2013 which strives to create a market for offshore wind. The Act creates the Offshore Wind Renewable Energy Credit (OREC) which is expected to support 200 MW of offshore wind capacity. Furthermore, the Act requires that 2.5% of the state’s energy come from offshore wind. Maryland has taken actions to create a business climate conducive to the industry by providing tax and financial support. In addition, private industry has taken the initiative to create an association to advocate for the industry. Maryland’s incentives include property tax exemptions on solar and wind energy property, clean energy tax credits, and the Market Entry Program which reduces the costs associated with establishing commercial offshore wind through administrative and capital cost grants.

New Jersey has passed a bill similar to Maryland’s called the Offshore Wind Development Act. This act also creates ORECs and provides incentives to manufactures and wind farm owners. New Jersey provides ORECs for up to 1,100 MW of offshore wind which is considerably more than Maryland. In addition to the Offshore Wind Development Act, the state has a Wind Manufacturing Tax Credit that covers 100% of qualified capital investment of at least $50 million for wind energy facilities that employ at least 300 new full-time workers.

It seems likely that Rhode Island will be the home of the nation’s first offshore wind farm with the 30 MW, 5 turbine pilot project near Block Island. Based on preliminary research, Rhode Island has few incentives or supports for offshore wind. There are no ORECs and only small credits and focused tax breaks. However, in 2008, Rhode Island issued an RFP for a project to generate 15% of the state’s electricity demand with offshore wind thereby creating an immediate market demand. It is this RFP that has led to the subsequent relationship with Deepwater Wind to build the 30 MW pilot near Block Island and a future 500 MW to 1,000 MW site further offshore.

Massachusetts aggressively pursued renewable energy throughout the two Patrick administrations. This policy focus gave rise to a number of programs and incentives to court offshore wind. Many of these efforts are led by the Massachusetts Clean Energy Center (MassCEC), which is funded mainly by the Renewable Energy Trust Fund. MassCEC is charged with promoting and growing the renewable energy sector in the Commonwealth and oversees important infrastructure investments such as the Marine Commerce Terminal and the Wind Technology Testing Center. Massachusetts also has the largest offshore wind planning area of any of the east coast states. Furthermore, the Commonwealth, through the Ocean Management Plan, has taken steps to preapprove areas for wind development while simultaneously protecting ocean life and resources.

The offshore wind industry in New Bedford could also receive a boost from the legislative environment in Massachusetts. In the recent past, public policy in the Commonwealth has been friendly to alternative energy through various credits, renewable portfolio standards, and participation in the Regional Greenhouse Gas Initiative (RGGI). House bill 2881, currently before

64 Ibid.
the legislature, seeks to continue this trend by promoting energy diversity. Among other provisions, the bill would require the purchase of at least 8.5 million MWh of electricity from offshore wind by distribution companies in the Commonwealth by 2030, an amount of production implying the need for roughly 400 6 MW turbines. This provision could further increase demand for wind projects near New Bedford.

While the mix of incentives among the states contain many similarities, Massachusetts presents a mixed picture when compared to its regional competitors. The Commonwealth currently does not offer ORECs nor, like Maryland and Rhode Island, has it yet made any commitments to devote some the electricity market to offshore wind. House bill 2881, if passed, will address these missing pieces. On the positive side, it appears that Massachusetts has displayed commitment to providing the necessary infrastructure to attract manufacturers or stage the construction of an offshore wind farm though it does not appear to provide the same focused tax incentives as Maryland, New Jersey, and, to a smaller extent, Rhode Island.

**Potential Obstacles to Development**

While the Commonwealth of Massachusetts and the City of New Bedford have invested resources into developing an infrastructure prepared to accept offshore wind, many obstacles remain to developing an industry cluster of value-added industries that would supply the offshore wind energy market.

**Demand and Investment**

Perhaps the single greatest factor in determining new investment in plant and equipment is new annual demand for offshore wind turbines. As mentioned above, manufacturers are seeking at least five years of high and stable demand before risking capital on expansion in the U.S. The timing of this demand is highly uncertain and is affected by many factors such as policy, fossil fuel prices, and technological development.

The public policy environment, especially at the federal level, has been subject to swings depending on the prevailing policies of the governing party and does not provide the reassurance developers seek. There have been efforts at the state level to provide some policy clarity such as the Offshore Wind Energy Act in Maryland and the pending H2881 bill in Massachusetts. However, as more states enact such policies, the competition among attractive locations increases adding yet more uncertainty to the ultimate site selection choices of manufacturers and logistics operators.

The current low fossil fuel prices have led to decreases in the cost of energy that make new and expensive technologies, like offshore wind, less attractive. The advent of hydraulic fracturing, also known as fracking, has caused a significant increase oil and gas extraction in the U.S. Much higher supply coupled with continuing rules strictly limiting the export of oil and the lack of a global liquefied natural gas infrastructure has caused domestic supply to stay within the country further pushing down fossil fuel prices already kept low by a slow global economy.

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65 The stated, or nameplate, capacity of a wind turbine is not equal to its constant production but rather its maximum output. The difference between maximum and average output is the capacity factor. For offshore wind turbines, the median capacity factor is 39%. In order to generate a cumulative 8.5 million MWh of electricity annually, a wind farm would need to generate 970 MW per hour every hour (8,760 hour per year). A 6 MW turbine on average only uses 39% or 2.34 MW of its capacity. So 970 MW divided by 2.34 MW equals 415 turbines. See the Transparent Cost Database at OpenEI (http://en.openei.org/apps/TCDB/) for more information on capacity factors for different generation technologies.
In a related area, offshore wind farms continue to be expensive to build and maintain. The cost per kilowatt hour of building and operating generation, known as the levelized cost of electricity (LCOE), is much higher for offshore wind than competing fossil fuels. The rate of future cost decreases depends heavily on technological development in the sector which is difficult to predict.

**Land Availability**

The section on site requirements shows that the manufacturing of wind turbine components is a space-intensive activity. A region will require dozens if not hundreds of acres of available land, much of it with direct or nearby water access, in order to meet the needs of component manufacturers of current and future generation offshore wind turbines. The land needs coupled with uncertain demand leads to a complex land use development planning situation in New Bedford since the waterfront area does not currently have large vacant sites available. That said, as part of the broader waterfront planning study, the City and its partners have begun to identify a few larger underutilized areas that could potentially be sites for component manufacturing and other economic opportunities related to offshore wind development.

In the near-term, the City and its economic development partners will likely have an opportunity to meet with offshore wind developers who have acquired (via auction) rights for development of larger-scale wind farms. It is virtually impossible to predict which types of component manufacturing may be most desired for local, waterfront locations in New Bedford since the waterfront area does not currently have large vacant sites available. That is, as part of the broader waterfront planning study, the City and its partners have begun to identify a few larger underutilized areas that could potentially be sites for component manufacturing and other economic opportunities related to offshore wind development.

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**Transportation**

The logistics capabilities of the port are obviously important for staging and assembly of offshore wind farms, however, the transportation access to the port from the land side may be just as important. Some components, such as towers, gearboxes, and generators may not need to be built portside but will have to find their way there. Given the size and weight of these components, one cannot assume that they can be hauled anywhere at any time. The road and rail access to the port will determine the size of goods that can be transported to any staging or assembly areas that exist. Currently there is no rail access to the Marine Commerce Terminal (though there is rail access to sections of the broader waterfront area) and the road network in and around the port or from the Business Park may limit the size of acceptable loads.

**Local Business Environment**

Local business costs will affect the attractiveness of otherwise suitable locations. Massachusetts is known for high energy costs and above average levels of business and environmental regulation especially concerning waterfront activities. It remains to be seen how the permitting rules and business costs in Massachusetts affect its competitive standing among other states seeking to attract an offshore wind cluster.

**Other Issues**

Other obstacles to development include other markets, continuing imports, and the size of the market. Maryland, Texas, Louisiana, and more could potentially capture some of the market that
Massachusetts and New Bedford are targeting. For example, the foundations for the Block Island project are being built in Louisiana not in the Northeast. The turbines are coming from France which highlights another uncertainty.

Even with growing domestic demand, if transportation costs remain low and Europe’s demand for offshore wind remains high, will European OEMs choose to use their limited capital to invest in new plant and equipment in the U.S.? If not, can existing U.S. onshore manufacturers build new portside facilities and produce components cost-competitively with manufacturers that have had a considerable head start growing their productivity and amortizing their costs? The U.K. market provides evidence for a scenario where very high demand (44% of global offshore wind capacity) has not lead to the development of a domestic manufacturing supply base.

The question of sufficient demand is further complicated by the size of the market. Given the capacities described in the Site Requirements section, most if not all of the foreseeable demand for the major components could be satisfied by one facility. This fact coupled with past patterns of cluster growth implies that the location of the first major component manufacturer could be the location of any eventual east coast cluster.

### Summary of Opportunities

The Commonwealth of Massachusetts has shown a broad commitment to renewable energy and has recently begun to focus on offshore wind. Through its investments in MassCEC, the Marine Commerce Terminal, and the introduction of H2881, Massachusetts is gradually laying the groundwork for the growth of the offshore wind industry. While not yet a leader with financial incentives, Massachusetts is exploring a policy environment conducive to the industry that is at least similar to other east coast states seeking to attract offshore wind.

The City of New Bedford is well-placed to leverage the state policy environment into local economic growth. It is the location of the MCT and is taking into account the needs of the offshore wind industry in its redevelopment plans. The city is also home to a long maritime and manufacturing tradition which provides many of the necessary businesses and labor to meet the demands of the new firms the city wants to attract.

Alongside the regional advantages, there are also many potential obstacles to development. The growth in demand for offshore wind turbines will determine when there is a business case for new investment in plant and equipment yet the timing of this demand is highly uncertain. Furthermore, many of the costs of doing business in Massachusetts are high and could dissuade some companies from locating there. Finally, any incoming component manufacturing would require the availability of large sites for a factory and laydown space, meaning that for the City to have a chance to compete for this kind of economic opportunity, they will at least need to demonstrate vision and a commitment to creatively developing larger, available sites at and near the waterfront.
DETERMINATION OF BLIGHTED CONDITIONS
Determination of Blighted Conditions in Subareas 1, 3, 6 and 8

New Bedford Waterfront Redevelopment Plan
The purpose of this technical memorandum is to describe the type and level of blighted conditions as defined by Section 1 of the Massachusetts General Laws Chapter 121B (Chapter 121B) that exist in Subareas 1, 3, 6, and 8 of the New Bedford Waterfront Area. Such blighted conditions are those that prevent the private market from undertaking development on its own, and require public investment to address those barriers.

The existence of these blighted conditions allows the New Bedford Redevelopment Authority to create a redevelopment plan under Chapter 121B. Such a plan grants the Authority to take certain actions with respect to development of land and public infrastructure improvements within the boundaries of the subareas.

The following are the key findings of this technical memorandum:

- Blighted Conditions: Decadent Area
- Blighted Conditions: Blighted Open Area
- Description of Subareas
- Methodology
- Summary of Blighted Conditions

One important note: our understanding is that no acquisition by eminent domain is proposed at this time. While we believe the conditions of blight are sufficient to justify the role of the New Bedford Redevelopment Authority in the proposed subareas, this technical analysis is not sufficient to determine a taking by eminent domain. At the time of this report and within the waterfront planning process, no takings by eminent domain have been considered.
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SUMMARY OF BLIGHTED CONDITIONS

The four subareas described on pages 10-13 are part of the larger waterfront district which is the subject of the Master Plan. The condition of the sites, public infrastructure, and buildings, the degree of environmental contamination related to current and previous land uses, and the subdividing conditions of existing land use with respect to the recommendations of the Master Plan factor into the determination of blighted conditions.

Each subarea meets the definition of Decadent Area in different ways. The condition of the sites, public infrastructure, and current ownership and parcelization patterns of land are all related to lower assessed values in Subareas 1, 3, and 6, and indicate the difficulty of developing these subareas for the uses recommended by the Master Plan. Subarea 6 has significant environmental problems and a public figure for mitigation – $50 million – that is likely to negatively influence the perception of developers interested in pursuing options for this site.

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This memorandum determines that the current conditions within the four subareas meet the definition of a Decadent Area.

Summary of Blighted Conditions

DECADENT AREA

The four subareas described on pages 10-13 are part of the larger waterfront district which is the subject of the Master Plan. The condition of the sites, public infrastructure, and buildings, the degree of environmental contamination related to current and previous land uses, and the subdividing conditions of existing land use with respect to the recommendations of the Master Plan factor into the determination of blighted conditions.

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NEW BEDFORD WATERFRONT REDEVELOPMENT PLAN

METHODOLOGY

Definitions

Massachusetts General Laws Chapter 121B contains three definitions for blighted conditions:

• Blighted Open Area
• Decadent Area
• Substandard Area

The relationship of the conditions in the Chapter 121B contains these definitions for blighted conditions:

A Decadent Area is one in which the poor condition of the buildings is detrimental to the “safety, health, morals, welfare, or sound growth of a community.” The conditions included in the definition that are applicable to this analysis are as follows:

- Existence of buildings which are out of repair or physically deteriorated or in need of major maintenance or repair
- Improbable redevelopment of area by the private market due to the diversity of ownership, irregular lot sizes, or obsolete street patterns
-aprinciples of buildings which are out of repair or physically deteriorated or in need of major maintenance or repair

A Blighted Open Area is one in which the underlying site conditions and surrounding conditions make development by the private market infeasible. The conditions included in the definition that are applicable to this analysis are as follows:

- Required improvements that are unduly expensive, such as measures for waterproofing structures, draining the area, or preventing flooding
- Required improvements that are unduly expensive, such as measures for waterproofing structures, draining the area, or preventing flooding
- Improbable redevelopment of area by the private market due to the diversity of ownership, irregular lot sizes, or obsolete street patterns

A Substandard Area is one in which the poor condition in business or economic conditions around or over rights-of-way

Substantial change in business or economic conditions around or over rights-of-way

Improvements to make the area appropriate for sound development that are unduly expensive, such as building improvements to make the area appropriate for sound development that are unduly expensive, such as building.
A Substandard Area applies to areas with a high residential density, and does not apply to this area. Only two of the Subareas contain housing, and neither qualifies for blighted conditions under the definition.

Methodology

The analysis of existing conditions for the four subareas included the following sources:

- City of New Bedford GIS (Geographic Information Systems)
- City of New Bedford Assessors’ Parcel Database
- Massachusetts Department of Environmental Protection Database of Water Quality Information
- The visual and analysis of photographs taken within the waterfront planning process, no takings by eminent domain have been considered.

The available data was evaluated to determine whether existing conditions and the implications of future conditions were sufficient to meet the requirements of the definitions under Chapter 121B.

Within the waterfront planning process, no takings by eminent domain have been considered. A Substandard Area applies to areas with a high residential density, and does not apply to this area. Only two of the Subareas contain housing, and neither qualifies for blighted conditions under the definition.

While we believe the conditions of blight are sufficient to justify the role of the New Bedford Redevelopment Authority in the proposed subareas, this technical analysis is not sufficient to determine a taking by eminent domain. Should the NBRA consider a project under the New Bedford Waterfront Redevelopment Plan that requires a taking, the NBRA would have to undertake a specific study of the conditions of blight to justify the taking. At the time of this report and the NBRA’s consideration of a project under the New Bedford Waterfront Redevelopment Plan that requires a taking, the NBRA should in the proposed subareas.

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Redevelopment Subareas within New Bedford Waterfront Master Plan Area
The four subareas are described in full detail with the potential role of the NBRA in each. They focus on understanding potential blighting conditions - ownership, parcelization, building and land values, and building age (potential for lead and other environmental contaminants).

The focus of these tables is on those conditions and the conditions as recorded in the property records of the City of New Bedford Assessor's Office. The following tables provide a snapshot of building and land values, and building age (potential for lead and other environmental contaminants).
Table 2: Comparison of Selected Parcel Data for Consolidated Subareas and Waterfront

<table>
<thead>
<tr>
<th>Subarea</th>
<th>Waterfront LESS</th>
<th>SUBAREAS</th>
<th>1, 3, 8</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of Parcels</td>
<td>162</td>
<td>189</td>
<td>149</td>
</tr>
<tr>
<td>Number of Buildings</td>
<td>8</td>
<td>13</td>
<td>27</td>
</tr>
<tr>
<td>Number of Owners</td>
<td>8</td>
<td>10</td>
<td>6</td>
</tr>
<tr>
<td>Number of Owners of One Parcel Only</td>
<td>52</td>
<td>79</td>
<td>48</td>
</tr>
<tr>
<td>Total Assessed Value of Property</td>
<td>$132,135,700</td>
<td>$177,776,700</td>
<td>$52,085,900</td>
</tr>
<tr>
<td>Total Buildings (square feet)</td>
<td>6,269,619</td>
<td>10,904,165</td>
<td>4,859,155</td>
</tr>
<tr>
<td>Total Buildings (square feet)</td>
<td>2,847,370</td>
<td>3,484,614</td>
<td>2,495,904</td>
</tr>
<tr>
<td>Number of Buildings pre-1978</td>
<td>67</td>
<td>58</td>
<td>11</td>
</tr>
<tr>
<td>Percentage of Buildings pre-1978</td>
<td>83%</td>
<td>56%</td>
<td>84%</td>
</tr>
</tbody>
</table>

Table 1 shows that Subarea 3 has the lowest assessed value per parcel, which has the smallest median building size. The highest residential population has the second highest average building age, and the smallest median building size.

It is important to compare the individual subareas with the waterfront as a whole, and then remove the subareas from the waterfront to reconsider the impact. Table 2 shows that the collective and average value of properties of all four subareas are less than that of the remainder of the waterfront. The contrast is more stark when Subarea 6, the site of active uses by Sprague Oil and Eversource Energy (formerly NSTAR), is removed from the totals for the subareas.

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</tbody>
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CITY OF NEW BEDFORD

DRAFT: FOR REVIEW AND COMMENT ONLY

Subarea 1: Transit-Oriented Mixed-Use

DESCRIPTION

• GENERAL BOUNDARY – I-195, North Front Street, Wamsutta Street and Route 18

• PURPOSE – Mixed residential and commercial uses in close proximity to the planned South Coast Rail improvements and the existing Wamsutta Mill complex.

The proposed uses for this area are a mix of housing and retail/commercial – and not all are consistent with the current neighborhoods. Uses include single-family, two-family, and three-family homes, a mill that has been converted to a combination of mixed use, business, industrial, and institutional use with a recreation pond and other sites associated with the Wamsutta Mill complex.

The NBRA could be involved in parcel assembly, including acquiring land for a recreation area to replace the one in Subarea 2. Significant conditions of higher recreation areas to replace the one in Subarea 2. Significant conditions of higher density residential and commercial use could provide a potential role for the New Bedford Redevelopment Authority.

POTENTIAL ROLE OF THE NEW BEDFORD REDEVELOPMENT AUTHORITY

The NBRA could be involved in parcel assembly, including acquiring land for a recreation area to replace the one in Subarea 2. Significant conditions of blight are probable, including the tire recycling facility, the auto repair sites, and the retention pond.

The PROPOSED area for this area is a mix of housing and retail/commercial – and not all are consistent with the current neighborhoods. Uses include single-family, two-family, and three-family homes, a mill that has been converted to a combination of mixed use, business, institutional, and institutional use with a recreation pond and other sites associated with the Wamsutta Mill complex.

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Subarea 3: South Coast Rail and Transit-Oriented Development

**DESCRIPTION**

- **GENERAL BOUNDARY**
  - Wamsutta Street, Herman Melville Boulevard, Route 18

- **PURPOSE**
  - South Coast Rail is planning commuter rail services to Boston. Freight rail already exists. Transit-oriented development here should be connected to the mixed-use in Subarea 1. Preferred connections should be made to Subareas 4 and 6, and 7, if possible.

- **TRANSIT-ORIENTED DEVELOPMENT**
  - *Purpose -* South Coast Rail is planning commuter rail services to Boston.
  - *General Boundary -* Wamsutta Street, Herman Melville Boulevard.

**WHY A REDEVELOPMENT AREA IS APPROPRIATE**

The NBRA is a landowner in this area and has had a role along with the City of New Bedford in managing the rail spur that connects the EPA site to the freight rail. This subarea does not currently have a mixture of uses appropriate for a core city waterfront, including some water-dependent industrial uses that would support the adjacent water-dependent industrial use. In addition to South Coast Rail and the NBRA, other stakeholders and property owners in this subarea include Housing 70, a nonprofit corporation; the City; and some smaller property owners including the Commonwealth and the Wamsutta Warehouse Co. Inc. Depending on the South Coast Rail plans and timeline, the NBRA or other stakeholders may have an opportunity to play a larger role in creating supporting development.

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Subarea 6: Cargo-Handling

**Description**

- **General Boundary**
  - Leonard’s Wharf, the New Bedford/Fairhaven Harbor, the southern boundary of parcel 42-178 (NSTAR/Commonwealth Electric), MacArthur Drive

- **Purpose**
  - Water-dependent industrial. No public access along the waterfront.

- **Historical Note**
  - The southern boundary of parcel 42-178 (NSTAR/Commonwealth Electric), General Boundary:
  - Leonard’s Wharf, the New Bedford/Fairhaven Harbor

- **Authority**

**Potential Role of the New Bedford Redevelopment**

If the prohibition on purchasing these lands is still in place, the NBRA could be the entity to purchase any land that is needed to fulfill the implementation stage.

**Why a Redevelopment Area is Appropriate**

- From an architectural perspective:
  - Purpose — Water-dependent industrial. No public access along the waterfront.

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CITY OF NEW BEDFORD

DRAFT: FOR REVIEW AND COMMENT ONLY
NEW BEDFORD WATERFRONT REDEVELOPMENT PLAN

Draft for Review Only

Subarea 8: South Terminal

DESCRIPTION

• GENERAL BOUNDARY
  - Gifford Street, the harbor, Cove Street, South Front Street, one-two parcels depths in back to Gifford Street

• PURPOSE
  - Waterfront-related uses such as processing or cold storage. This area is outside the DPA.

WHY A REDEVELOPMENT AREA IS APPROPRIATE

This subarea is currently zoned Industrial B. Along South Front Street and South Street is a block away from the neighborhood to the south, and a baseball field that is accessible from the neighborhood to the west via a pedestrian overpass and a freestanding club along South Front Street, uses include an auto-body shop and a freestanding club along South Front Street, other inconsistent uses include Wine/Bar with Live Music, Gun Shop, and other residential uses are not allowed under existing zones and permits. These existing residential uses are not allowed under existing zones and permits. This subarea is currently zoned Industrial B. Along South Front Street and

Potential Role of the New Bedford Redevelopment Authority

The NBRA already owns some land in this area, including the baseball field. Under a redevelopment plan, the NBRA could have the responsibility for relocating property owners and tenants of uses that are not compatible with the overall vision for the area. According to the amendment in Chapter 193 of the Acts of 1960, companies engaged in the fishing business are exempt from the lands the HDC can acquire. In order to fulfill the strategies for this subarea and for Subarea 6, the NBRA could be the entity to purchase land and arrange land swaps between various property owners in the redevelopment subareas.

Source: Esri, DigitalGlobe, GeoEye, i-cubed, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community
Blighted Conditions:

The conditions of blight that contribute to a determination of the subareas as Decadent Areas are based on the following existing conditions:

- Land uses that are either incompatible with recommended future uses or indicate the presence of environmental contamination.
- A structure of ownership and parcelization that makes land assembly and development of large-scale projects more difficult for the private market to achieve.
- Public infrastructure improvements to support pedestrian and bicycle connections between the neighborhoods and the proposed rail station and support connections between theKegety Rail and the waterfront industries.
- The presence of these conditions indicate a need for public intervention to create the conditions necessary to attract and support private investment to the land areas.

Implications for the New Bedford Redevelopment Authority:

The NBRA can undertake certain actions to address these existing conditions, including the following:

- Support the creation of design guidelines and the implementation of a coordinated design review process to ensure land uses that new development meets public needs and that the land uses and the transitions between uses is fully considered.
- Support zoning changes to allow recommended uses and reduce incompatible uses.
- Support zoning changes to allow recommended uses and promote compatible uses.
- Public infrastructure improvements to support pedestrian and bicycle connections between the neighborhoods and the proposed rail station and support connections between theKegety Rail and the waterfront industries.
- Public infrastructure improvements to support pedestrian and bicycle connections between the neighborhoods and the proposed rail station and support connections between theKegety Rail and the waterfront industries.
- Acquisition of land to assist private developers in assembling multiple parcels.
- Relocation of incompatible uses to other areas of the City.
- Acquisition of land to assist private developers in assembling multiple parcels.

The presence of these conditions indicates a need for public intervention to create the conditions necessary to attract and support private investment to the land areas.

Support public intervention to those land areas where public intervention is needed to create the conditions necessary to attract and support private investment.
Land Use and Existing Conditions

The recommendations of the Master Plan focus on strengthening and supporting the existing water-dependent uses in the waterfront area. The implications for the four subareas are two-fold: determining 1) whether existing land uses are incompatible with the proposed uses and 2) if existing building and site conditions prevent the development of the proposed uses. The discussion that follows identifies some of the general concerns; pages 18-33 contain specific discussions of each subarea.

**LAND USE**

Land uses in Subareas 1, 3 and 8 are not fully compatible with the proposed uses for those areas. The general land uses shown on the maps on pages 18, 20, 22, and 24 were provided by the City of New Bedford Office of the Assessor and mapped using information from the City's GIS database.

**BUILDING CONDITIONS**

Building conditions are not a major factor in the determination of blighted conditions for the subareas, but should be considered in the investigative work that KG Urban did on the NSTAR sites. The general building conditions shown on the maps on pages 19, 21, 23, and 40 were provided by the City of New Bedford Office of the Assessor and mapped using information from the City's GIS database.

**SITE CONDITIONS**

No information exists in the parcel database about site conditions, but a visual inspection of the subareas and an understanding of current and past land use reveals important information about the potential for environmental contamination.

**LAND USE AND EXISTING CONDITIONS**

Land use and existing conditions
The cost of $50 million for environmental cleanup to allow the uses it had proposed for a gaming facility. These contaminants could make improvements to the site too expensive for the private market to remediate in order to site new development in both the commercial and residential areas. The improvements between ownership and more difficult to redevelop. The assembly of those smaller parcels to create structures and for larger projects is difficult overall. The parcels that are divided into smaller, more rectangular parcels are easier to develop than those that are more irregular. The regularity of the parcel lines in the subarea assists the likelihood of redevelopment.

The ownership data shown on the maps on pages 26, 28, 30, and 32 was provided by the City of New Bedford Office of the Assessor. The parcel divisions shown on the maps on pages 27, 29, 31, and 33 were provided by the City of New Bedford Office of New Bedford Office of the Assessor. The parcel divisions shown on the maps on pages 27, 29, 31, and 33 were provided by the City of New Bedford Office of the Assessor. The parcel divisions shown on the maps on pages 27, 29, 31, and 33 were provided by the City of New Bedford Office of the Assessor. The parcel divisions shown on the maps on pages 27, 29, 31, and 33 were provided by the City of New Bedford Office of the Assessor. The parcel divisions shown on the maps on pages 27, 29, 31, and 33 were provided by the City of New Bedford Office of the Assessor.
The area between Washington Street and Route 18, as well as the lot at Wamsutta Place, although having active uses, is not connected to the rest of the city's urban core. The proposed rail station in Subarea 3 has the potential to increase property values in this area.

The condition of streets and public sidewalks in this area is poor, with the exception of some improvements to Acushnet Avenue across from the Lofts at Wamsutta Place.

Land Use and Existing Conditions:

**Subarea 1**

Land Use: Subarea 1

Wamsutta Mill. The north side of Hicks Street is lined with warehouse buildings, and the south side is a mix of single-family, two-family, and three-family homes. The condition of streets and public sidewalks in this area is poor, with the exception of some improvements to Acushnet Avenue across from the Lofts at Wamsutta Place.

The condition of streets and public sidewalks in this area is poor, with the exception of some improvements to Acushnet Avenue across from the Lofts at Wamsutta Place.
Building Condition: Subarea 1

- Sidewalk on Wamsutta Street
- Weeds along public under development and development
- Wamsutta mill building
- Public infrastructure along Acushnet Avenue: facing the lots
- Front Street next to Wamsutta Site (right)
- Sidewalk next to the pond on Hicks Street (left); along North Washburn Street
Subarea 3

Land Use and Existing Conditions:

Subarea 3 has few buildings, most of which face Acushnet Avenue. The remainder of the subarea includes parking, the railroad rights-of-way and tracks, and land that appears to have been previously developed and is now cleared.

A challenge for redeveloping this area will be how to work with existing businesses and property owners to take advantage of the proximity to the rail station for both freight and commuter uses. The uses in this subarea are not necessarily incompatible with the proposed land uses. The need to evaluate the presence of environmental contaminants will depend on the types and locations of the uses proposed and the potential communities in the proposed mixed-use area of Subarea 1. Public infrastructure improvements will be needed to link the rail station with the area is similar to those in Subarea 1. Public infrastructure in this subarea is rated C to C-2 and in general condition.
On-site storage of rail cars

Subarea 3

MacArthur Dr
Acushnet Ave
Herman Melville Blvd
Route 18
Wamsutta St
Hillman St

Building Condition: Subarea 3
Land Use and Existing Conditions:

Subarea 6

The land uses within this subarea are primarily industrial or related to industrial. The presence of environmental contaminants has been discussed in the media as part of the KG Urban proposal for a gaming facility. The figure presented as part of this proposal was $50 million. Kostow Greenwood Architects, who worked with KG Urban, described the project on their website:

Given the industrial use of the site, the property has extensive contaminants including fuel, oil, tar, coal, and petroleum products. The classification of these buildings as D reflects the underlying use for oil storage and delivery and the electrical substation. Several parcels within this subarea listed on MassDEP’s database of release sites.

The level of remediation required will be an important component of any redevelopment plan. The KG Urban proposal would have allowed significant public access to the site, requiring a higher standard of decontamination than may have been specified. The Level of Remediation required will be an important component.

The map shows the boundary of the subarea and the existing land use, including industrial and commercial properties. The diagram also includes the directions and access points for the site.
NEW BEDFORD WATERFRONT REDEVELOPMENT PLAN

Building Condition: Subarea 6

- Homer’s Wharf
- Walnut St
- Leonard’s Wharf
- Pine St
- JFK Memorial Highway
- MacArthur Dr

Source: Esri, DigitalGlobe, GeoEye, i-cubed, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community.
Excessive history of industrial use. Land use and existing conditions:

- **Subarea 8**: The land use profile of Subarea 8 is primarily industrial.
- **Land Use**: The land use profile reflects the industrial nature of the area, with buildings rated D in Subarea 8 being former mill buildings. While some of the buildings contain active uses and are economically productive, others are in various stages of demolition. Environmental contaminants are present in these buildings, which have an extensive history of industrial use. The buildings rated D in Subarea 8 are all former mill buildings.

- **Housing**: The housing area is probably former mill housing, based on age and style. Additional housing is present at the corner of South Front Street and Blackmer Street. The housing along Morton Court is probably former mill housing.

- **The ball field**: The ball field is accessible to the neighborhood to the west by an overpass crossing JFK Memorial Highway and to the south by Morton Court. The picture on page 41 was taken on a weekday in July; no children were observed on the ball field or its surroundings.

- **Historical Context**: Several land uses, including residential, smaller auto-related uses, and a ball field are consistent with the proposed uses which would support waterfront industrial uses.
NEW BEDFORD WATERFRONT REDEVELOPMENT PLAN

Subarea 8

Building Condition: Subarea 8

Incompatible uses in Subarea 8: Housing (left) and ball field (right)

Public infrastructure in Subarea 8: Cover Street (bottom left), Harbor Street (right), and Blackmer Street (top left)

Removal of mill building next to lay-down site for wind turbine blades

Source: Esri, DigitalGlobe, GeoEye, i-cubed, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community
The ownership of land owners may be challenging to trace given the number of parcels. Wamsutta Warehouse owns in excess of number of parcels. Wamsutta Warehouse can be identified over time. Landlord Inc. is the largest owner of land and a candidate for discussions on how the area can be redeveloped. An interesting and related pattern can be seen in the parcelization of this subarea (see figure on page 27). The patterns on the north side of Hicks Street and along both sides of Washburn Street show that the parcel lines of Hicks Street and along both sides of Washburn Street appear to be in a regular grid. However, a closer look at the parcels between Washburn and Hicks Street shows that the parcel lines are staggered, so that adjacent parcels are not of similar depth. On the north side of Washburn Street, there is a line of irregular parcels that appear to be left over from the creation of the I-195 on-ramp. The parcels can be seen in the parcel patterns on the north side of Hicks Street and along both sides of Washburn Street. The City has a presence in the area and should use their own-interests and existing patterns to approach discussions on how the area can be redeveloped. Existing parcels and patterns can be seen in the parcel patterns on the north side of Hicks Street and along both sides of Washburn Street. The City of New Bedford is a candidate for discussions on how the area can be redeveloped.
Ownership and Parcelization: Subarea 3

This area is known as the Whale’s Tooth and the shape, created by the layout of the railroad rights-of-way, Acushnet Avenue and Herman Melville Boulevard, is a significant determinant of the irregularity of the parcels (see diagram on page 45).

Ownership in this area is divided between public and private entities, with significant land holdings spread among a number of different owners. The ownership of the parcels in this area is more consolidated than that of Subarea 1. However, discussion with private owners along Acushnet Avenue will be needed to ensure that the area is developed in conformance with the overall vision for the rail station. This area is known as the Whale’s Tooth and the shape and size of the parcels are significant to the overall vision for the development around the proposed rail station. Partnerships among the public agencies should be easier to achieve as part of the development around the proposed rail station. However, discussion with private owners along Acushnet Avenue will be needed to ensure that the area is developed in conformance with the overall vision for the rail station.
Parcelization: Subarea 3

Subarea 3: Top 8 Owners

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<td>Gilchrist Trustee</td>
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<td>84,839</td>
<td>New Bedford Harbor Development</td>
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<td>Aguirre Trustee</td>
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<tr>
<td>209,631</td>
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<td>490,272</td>
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<td>548,814</td>
<td>Penn Central Co.</td>
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<table>
<thead>
<tr>
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Ownership and Parcelization: Subarea 6

Ownership and Parcelization: Subarea 6

Subarea 6 has the least fragmented ownership of the subareas. However, the parcels are irregular in shape, in part because of the combination of piers and shoreline, but also due to the historical division of ownership. The parcels are much larger in size than those in Subareas 1 and 8, and this makes it easier to manage as a part of a larger development.

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Parcelization: Subarea 6

<table>
<thead>
<tr>
<th>OWNER</th>
<th>TOTAL SQUARE FEET</th>
</tr>
</thead>
<tbody>
<tr>
<td>Commonwealth Electric Co. (Eversource?)</td>
<td>556,827</td>
</tr>
<tr>
<td>Sprague Manganese</td>
<td>52,953</td>
</tr>
<tr>
<td>Luzo Properties LLC</td>
<td>476,458</td>
</tr>
<tr>
<td>Commonwealth Gas Co. (Eversource?)</td>
<td>40,172</td>
</tr>
<tr>
<td>W Trading Inc.</td>
<td>25,862</td>
</tr>
<tr>
<td>New Bedford Redevelopment Authority</td>
<td>1,164</td>
</tr>
</tbody>
</table>

Subarea 6: Top 7 Owners

NEW BEDFORD WATERFRONT REDEVELOPMENT PLAN

DRAFT FOR REVIEW ONLY
Ownership and Parcelization: Subarea 8

The older housing in Subarea 8 is similar to Subarea 1 in terms of the range of ownership and parcelization. The parcels are relatively small, with many owners. The properties were mostly single-family homes built in the 1960s and 1970s. The JFK Memorial Highway was constructed in the 1960s, and the South Shore Drive was built to the north of the South Shore Drive property. The JFK Memorial Highway was built to the north of the South Shore Drive property, and the South Shore Drive was built to the south of the JFK Memorial Highway. The South Shore Drive property had been cleared out of the mill. The irregularity of the parcels is most apparent on Morton Court, where mill housing had been cleared out of the mill. The South Shore Drive property had been cleared out of the mill.

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<table>
<thead>
<tr>
<th>Owner</th>
<th>Total Square Feet</th>
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</thead>
<tbody>
<tr>
<td>South Coast Mills LLC</td>
<td>369,051</td>
</tr>
<tr>
<td>Finicky Pet Food Inc.</td>
<td>275,336</td>
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<tr>
<td>JR Mills LLC</td>
<td>234,613</td>
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<tr>
<td>City of New Bedford</td>
<td>231,020</td>
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<tr>
<td>Outer Harbor LLC</td>
<td>121,012</td>
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<tr>
<td>New Bedford Redevelopment Authority</td>
<td>107,336</td>
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<tr>
<td>Commonwealth of Massachusetts</td>
<td>104,084</td>
</tr>
<tr>
<td>Commonwealth of Massachusetts</td>
<td>64,261</td>
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</tbody>
</table>

Parcelization: Subarea 8