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State Enhanced Remedy in New Bedford, South Terminal

The Massachusetts Department of Environmental Protection (the Department) submits the following materials in support of its request that the US Environmental Protection Agency (EPA) approve a CDF at the location known as the South Terminal as a component of the State Enhanced Remedy (SER) in New Bedford harbor[1]. The goal of the proposed action is to develop a multi-purpose marine terminal, to provide critical infrastructure to serve offshore renewable energy facilities and other uses. Additional, secondary goals include beneficially re-using sand from navigational dredging and, if approved by the EPA, construction of Confined Aquatic Disposal facilities within New Bedford Harbor by using the sand for construction of the proposed multi-purpose marine terminal.

Organization

The materials are organized to be consistent with EPA guidance, as follows:

1. Introduction
2. Project Purpose
3. Explanation of why South Terminal within New Bedford is the preferred location for the multi-purpose terminal
4. Discussion of why South Terminal is the least environmentally damaging practicable alternative that meets the Project Purpose
5. Detailed impact assessment (not in this draft)
6. Mitigation alternatives proposed for unavoidable impacts (not in this draft)

[1] The EPA may consider these materials as a scope of work within the meaning of the Memorandum of Understanding between EPA and DEP dated January, 2005.

SDMS Doc ID 70004597

1. Introduction

The Massachusetts Department of Environmental Protection (the Department) requested that EPA include an expansion of the State Enhanced Remedy of the New Bedford Harbor to allow the construction of three confined disposal facilities (CDFs) in a forthcoming Explanation of Significant Differences that EPA is planning to issue for the New Bedford Harbor Superfund Site[2]. In response to the Department's initial request, EPA verbally notified the Department that EPA considers the proposed South Terminal CDF to be covered by the initial Record of Decision[3] and that it could be included in the SER without need for inclusion in the ESD. However, EPA has noted that the proposed project must still meet all substantive requirements and evaluations that would normally be conducted for this proposal as part of the regulatory review and permitting process.[4] The EPA has provided guidance regarding the information required to conduct this review. The overall purpose of this report is to provide EPA with the information that it has requested to complete its review. This portion of the report shows that the South Terminal is the least environmentally damaging practicable alternative. The report also provides more detail on the other anticipated uses of the terminal. Other sections of the report, to be submitted in the near future, will show that the impacts of the project have been identified, and have been mitigated.

2. Project Purpose

[2] Letter dated January 20, 2010 to Mr. Curtis Spalding, Regional Administrator, EPA Region 1, from Mr. Gary Moran, Deputy Commissioner, MADEP.
[3] Record of Decision, EPA Region 1, September, 1998
[4] Letter dated February 11, 2010, from Mr. Curtis Spalding, Regional Administrator, EPA Region 1, to Mr. Gary Moran, Deputy Commissioner, MADEP.

Project Purpose

The purpose of the project is *to develop a multi-purpose marine terminal, as a component of the approved State Enhanced Remedy for New Bedford Harbor, a primary purpose of which will be to provide critical infrastructure to serve offshore renewable energy facilities, and which is also capable of beneficially re-using sand from navigational dredging or the construction of confined aquatic disposal facilities to the extent approved by US EPA.*

The Project Purpose has been defined to meet the primary objective of creating port infrastructure with the capacity to support the development, operation and maintenance of offshore renewable energy facilities, place the project in the context of the state enhanced remedy, and acknowledge the on-going Superfund remediation of the Harbor as context for potential future benefits associated with the facility.

Multi-purpose Terminal Capable of Supporting Offshore Renewable Energy Projects

Plans for the development of major offshore wind energy generation are under development in most of the Atlantic coastal states. Projects are expected to be under development in Massachusetts and Rhode Island in the near term, and the states have identified areas in federal waters off their coasts for further evaluation for development in the mid-term, and both states (and many of the Atlantic coastal states) are working closely with the Minerals Management Service to initiate the offshore leasing process. A key component of developing offshore wind energy generation is the shore-side infrastructure necessary to support construction, assembly and transshipment of foundation and turbine components. Without a well-positioned, marine-industrial terminal to receive store, stage, assemble, and maintain wind turbine components and their supporting infrastructure, the development of off-shore wind facilities cannot be accomplished. As described in detail below, such facilities have specific

operational requirements associated primarily with the scale of the turbine and foundation components: factors such as proximity to the offshore facilities, horizontal and vertical clearances, laydown area, and access to both deep water navigation and rail lines constitute 'hard criteria' site requirements. This would also be case for tidal or wave energy projects should those technologies become viable in the long term.

The City also proposes to use the terminal for other cargoes, which may include container, break bulk, and bulk cargo shipping. Additionally, the terminal would facilitate implementation of America's Marine Highway (Short-Sea Shipping) and would also serve as a location to temporarily store sand generated during CAD Cell construction, so as to facilitate reuse of the material.

The anticipated future uses (container shipping, break-bulk cargo shipping, bulk cargo shipping, short-seas shipping and CAD Cell sand storage) each require approximately the same type of facilities: deep water berthing, quae-side loading and unloading area, and upland storage and staging area. Major demands for berthing and upland storage and staging space will be temporary, and will fluctuate based upon the size of the shipments anticipated to arrive or leave. Break-bulk cargo, containers, trucks, or bulk cargo may require temporary storage prior to loading and transport of vessels; however, only a small portion of the site (1-2 acres) would be required for any one method of transportation on a with any regularity. Reserving a portion of the site for the storage of CAD Cell sand will therefore not be difficult.

The intent is to use the terminal for the purpose of offshore renewable energy development until late 2012 or early 2013 (the anticipated completion date of the first offshore renewable energy construction project) and, subsequent to that date, utilizing the facility for, other cargoes (until such time as another alternative energy support project requires the use of

the site). Thus, the terminal would be constructed to the specifications required for wind energy development but would be designed so as to accommodate a range of future uses.described above.

Additionally, the proposed terminal represents an opportunity to beneficially reuse and/or manage material dredged from the harbor as part of the State Enhanced Remedy and ongoing EPA Superfund harbor cleanup activities as described below:

Although the terminal is intended to serve multiple purposes, the primary purpose is to provide support for offshore renewable energy development. Hence, when considering whether alternative locations are practicable, we primarily assessed the ability of each location to serve this primary purpose.

3. Alternative Site Analysis

Initial Screening

In order to evaluate practicable locations for this terminal within Massachusetts, an independent consulting firm (Tetra-Tech EC, Inc.) was commissioned by the Massachusetts Clean Energy Center to perform a study, which was entitled "Port and Infrastructure Analysis for Off-Shore Wind Energy Development" (attached as **Appendix 1**). Ports reviewed by Tetra-Tech include Gloucester, Salem, Boston, Quincy, Fall River, and New Bedford. In addition, ports in Maine, New Hampshire, Rhode Island, Connecticut, New York, New Jersey and Pennsylvania were more generally characterized for the capacity to support some level of construction and/or operations and maintenance services for offshore wind energy facilities.

Based on specifications developed in consultation with port managers, the marine construction industry, and offshore wind energy developers, port facilities were screened for

their consistency with the following 'hard criteria' – i.e., those basic requirements without which a facility could not support a renewable energy terminal. Specifications included:

- Sheltered harbor (protected from bad weather by means of a barrier);
- Unobstructed vertical (overhead) clearance;
- Minimum horizontal clearance greater than 40 m (approximately 150 feet);
- Minimum low tide navigational channel depth of 7.3 m (24 feet);
- 24/ hour/day and 7 days/week operational availability;
- Exclusive use of the staging facility;
- Minimum berth length of 138 m (approximately 450 feet);
- Minimum berth water depth of 7.3 m (24 feet);
- Lay down storage and assembly backland area larger than 4 hectares (10 acres); and
- Proximity to likely offshore wind farm site.

Based upon the screening contained within the report, the following locations were selected for in more depth analysis of their practicability within this document:

- Port of Davisville, Quonset, Rhode Island;
- Fall River State Pier, Fall River, Massachusetts;
- Dry Dock #4, Boston, Massachusetts;
- North Terminal, New Bedford, Massachusetts;
- Pope's Island, New Bedford, Massachusetts;
- New Bedford State Pier, New Bedford, Massachusetts
- South Terminal, New Bedford, Massachusetts.

<u>Refinement of the Screening Criteria</u>

The criteria used within the Tetra Tech study have been further refined, and in some cases modified, based upon a recent meeting with off-shore wind-energy manufacturers. On Thursday, April 8, 2010, representatives from the Power Systems Division, Wind Power Division, and Power Generation Division of Siemens met with New Bedford personnel to discuss the requirements of an offshore renewable energy support facility, based upon their experiences installing wind turbines in Europe (see summary memo attached as **Appendix 2**). The following information was provided by Siemens at that meeting:

- There are a few types of vessels that would be used to transport wind turbine components from the manufacturer to the support facility. However, the approximate range in sizes of an international vessel is between 140 - 150 meters (460 – 490 feet) in length, 30 - 35 meters (98 - 115 feet) in width and requires 7 – 9 meters (23 – 29.5 feet) of draft.
- The international vessel can only carry components for 6 turbines at one time. Therefore, for constructing an offshore wind energy facility for 130 turbines, 22 separate shipments from international vessels would need to be received at the support facility. The international vessel will require 3-4 days of docking for unloading each trip.
- Offshore renewable energy facility installation ships would consist of jack-up barges that would be approximately 91 meters (300 feet) in width and 30 meters (100 feet) in width.
- In order to keep the installation vessels stable during dockside loading, the barges would deploy their spuds to "jack-up" the vessel for stability. This is to prevent the vessel from tipping over from uneven loading. Due to the loads anticipated to be borne by the spuds, it is necessary to ensure that the harbor floor at the quae-side is of a stable material. An unstable harbor bottom could cause the spuds to sink unevenly, which could tip the

vessel and sink it. Harbor bottoms consisting of a thick layer of silt or clay could also cause the spuds to sink too deeply as it is loaded, and prevent the spuds from being withdrawn, which will trap the vessel at the facility.

- In order to efficiently run construction of the offshore renewable energy facility, multiple installation vessels must be utilized. At a minimum, one installation vessel will be at the construction site, one installation vessel will be loading at quae-side, and one installation vessel will be returning from the construction site. During much of construction, at least two installation vessels will be at quae-side either being loaded or arriving from the construction site and awaiting loading. Therefore, it is required that berthing space for the international vessel and two installation vessels be available.
- Vertical restrictions of any kind are not acceptable. This is because of the extremely large cranes (600 ton crawler cranes, which have boom lengths of up to 475 feet) necessary for loading and unloading of vessels and pre-assembly of wind turbines prior to delivery, the large spuds that are integral to the functioning of jack-up barges, which, as stated before, have multiple spuds that extend up to 250 feet above the barges when they are mobile) that will be utilized to transport pre-assembled wind turbines to the wind farms during construction, as well as the pre-assembled wind turbines themselves that will extend up to 250 feet into the air above the barges as they are transported to the construction site.
- The anticipated loading requirements for the entire facility will be 20 tons/square meter (4,000 pounds/square foot), due to the use of 600 ton crawler cranes (an example of which is a Lieberr 750 Crane) anticipated to be utilized throughout the facility to transport, stack, load, and unload renewable energy facility components.

- Due to the anticipated loading requirements, an asphalt or concrete surface would not work. The heavy cranes would demolish such a surface in very short order. Therefore, the preferred surface is crushed stone.
- If possible, it is preferred to have a facility closer to 35-40 acres in size (the specific request was for 150,000 square meters for an ideal facility); however, 20 acres is the minimum amount of space required for the staging, preconstruction, and storage of renewable energy components for the construction of a 130 wind turbine offshore renewable energy facility.
- The heavy cranes must be able to reach within a meter of the target loading area on the installation vessels.
- Interest was expressed for an area (outside of the 20 acre facility) for parking for up to 200 people. A 20 acre facility would not be large enough to accommodate parking as well as storage, assembly, etc.
- A high priority is to find a location within which vessels can dock and exit the harbor without waiting for other vessels.

The additional information gathered during the April 8, 2010 meeting has been utilized to further refine, and in some cases modify, the criteria utilized to determine the practicability of potential locations for an offshore renewable energy support facility. For example, the Tetra-Tech study assumed that the minimum offshore renewable energy support facility size should be 10 acres; as is shown above, the meeting with Siemens personnel has shown that 20 acres is the minimum required size (and a much larger facility is preferred). This new information was reviewed by Tetra-Tech, who prepared a summary memo indicating agreement with this new

information and its effect upon the subsequent refinement of Tetra-Tech's initial evaluation (see **Appendix 3**).

Based on both the Tetra-Tech study and the results of the meeting with Siemens, we set forth below a number of minimum criteria that are necessary for any off-shore wind energy support terminal. Many of these criteria are ubiquitous between locations; for the purposes of determining practicability, only the most crucial and differentiating criteria are listed below:

Horizontal Clearance: In order for the facility to be practicable, nothing can restrict the horizontal (lateral) clearance for vessels moving to and from the facility to less than 130 feet. We based this horizontal clearance criteria on the range of anticipated widths of international vessels (98-115 feet) plus anticipated space requirements on either side of the vessel ranging from 10-15 feet. This width is necessary to accommodate potential drift of vessels from wind and currents as they move past the horizontal restriction.

Jack-Up Barge Access: As stated earlier, berthing space at the facility needs to accommodate both one international vessel and two installation vessels, which consist of jack-up barges. As stated earlier, discussions with offshore wind energy personnel indicated that the jack-up barges used for wind turbine construction are approximately 300 feet long and 100 feet wide. The vessels float like a normal barge, and have three to four spuds that are raised while the vessel is in motion. Recent offshore wind energy construction in Germany has shown that the installation vessels have spuds up to 78.85 meters in length (259 feet), which are lowered to the ocean bottom when the vessel is loaded or is in operation during construction, at which time, hydraulic

winches raise the barge itself out of the water onto the spuds (see **Appendix 4**). In order for the jack-up barges to be able to access the facility, therefore, the ocean bottom in front of the bulkhead must be of a uniform, hard consistency.

Overhead Clearance: In order for the facility to be practicable, no overhead restrictions can be present either at the facility, or in the approach to the facility by water. This includes bridges, electric lines or other utilities, or restrictions due to other potential uses surrounding the facility (such as airspace restrictions). The restrictions apply both to the cranes (which, as stated earlier, have booms that reach up to 475 feet) as well as the spuds of the installation vessels (which, as stated earlier, are as long as 259 feet).

Total Wharf and Yard Upland Area: The minimum total wharf and yard upland area for the facility to be practicable is 20 acres. The 20 acres is needed within one contiguous parcel, or multiple adjacent parcels (that are also adjacent to the harbor). Due to the size of the wind energy components (particularly wind blades which are 180 feet in length), it is infeasible to transport those pieces to other remote supporting locations via rail or road due to the limitations on turning radius of the vehicles (truck or rail) that would be utilized to transport the wind blades for most conventional roads or railways. To fulfill these tasks it is important that landside facilities have adequate acreage, warehouse space, onsite equipment, and high load bearing capacity, all adjacent to the water.

Berthing Space: The marine terminal will receive, store, assemble and ship off-shore wind energy components. The terminal will receive components via international vessel, the size of

which is approximately 450 feet in length, 100 feet in width. The components will be constructed via jack-up barge. Jack-up barges will typically be approximately 300 feet in length and 100 feet wide, and will transport pre-assembled wind turbine components to the wind farm construction site. At a minimum, the off-shore wind energy facility must be capable of berthing the international vessel and at least two jack-up barges. This is necessary as there will be multiple international vessel berths taking place over the course of construction of an off-shore wind farm construction project. While the international vessels are being unloaded, the construction must move forward. To ensure that construction proceeds smoothly, berthing must be available for two jack-up barge vessels (one being loaded, and one awaiting loading). Therefore, for a facility to be considered for off-shore wind energy support, it must have at least 1,200 linear feet of bulkhead space (450 feet for the international vessel and 600 feet for 2 jack-up barges).

Site Control/Site Availability: In order for the facility to be practicable, it must be free (or easily obtainable) to be utilized for an off-shore wind energy support facility within the timeframes mentioned above (i.e., not later than fall 2011). Thus, we examined whether potential locations are: 1). owned by a party that is currently utilizing the area and does not wish to sell or relocate, 2). currently leased by another party and breaking that lease is impracticable, or 3). already servicing a number of different essential services that would be difficult or impossible to replace elsewhere. Additionally, in order for the facility to be practicable, other simultaneous uses at the location (if any) must be compatible with off-shore wind support equipment. For example, due to the type of equipment necessary to transport and load/off-load wind turbine parts (600 ton crawler cranes), off-shore wind facility support requires

a surface (crushed stone) that is non-compatible with other marine industrial activities (container shipping, roll-on/roll-off shipping, or parking of vehicles require relatively level asphalt or concrete surfaces).

Proximity: In order for the facility to be practicable, it must be within a reasonable distance to the proposed locations for future off-shore wind facilities. Some of the reasons for this can be quantified in raw economic terms, while others add elements of risk, which are more difficult to fix definite costs to. Some factors that must be considered are: the cost of transport, the direct and potential environmental impacts, potential cost-increasing construction delays, and loss due to weather conditions. These factors are accounted for by project developers, who (upon being interviewed) have expressed the importance of locating the shore side support facility close to the proposed development site, and note that this is an important consideration when determining the viability of a particular offshore renewable energy project. Separate conversations with Cape Wind and Deepwater Wind (two separate companies involved in offshore renewable energy development) have indicated that some locations are simply too far away to be a practicable location for an off-shore renewable energy support facility.

Ability to beneficially re-use sand: In addition to the above factors, which focus on the requirements for the terminal to support off-shore wind, an additional project purpose is to beneficially re-use sand from navigational dredging and potentially from superfund remediation. While this screening factor was not a dispositive one, it was considered in the evaluation, and this factor weighed against the three alternative sites outside of New Bedford.

PORT OF DAVISVILLE, QUONSET BUSINESS PARK, QUONSET, RI

The Port of Davisville has been determined to be an impracticable location for an off-shore wind energy facility for the reasons enumerated below:

Site Control/Site Availability: Site availability is the primary issue with utilizing the Port of Davisville for an off-shore wind energy support facility. In order for the facility in question to be utilized, either total site control must be granted, or existing uses must be compatible with off-shore wind energy support. The entire Quonset Business Park is reportedly 3,160 acres; however, the vast majority of the area of the Park is located far inland from port facilities. Port facilities at which an off-shore wind energy support facility could be constructed are located at the Port of Davisville, a much smaller part of the overall facility.

The Port of Davisville is already committed to utilizing its facilities to support water-dependent industries that are incompatible with off-shore wind energy support. According to a March 16, 2009 article within the Providence Business News, Quonset's Port of Davisville ranks as the fifth busiest auto importer in North America. J. Michael Saul, Economic Development Corporation (EDC) Interim Executive Director and Chairman of the Quonset Development Corporation Board is quoted within the article as stating that he anticipates "further increases" in the "growing auto import business" at the Port. Aerial photos as well as photographs of the Port facility (see **Appendix 5**) show that the two main piers (Pier 1 and Pier 2) and a large section of upland area are fully utilized for the automobile import operation. The Piers (and the majority of the rest of the Port of Davisville), are filled with automobiles that are periodically staged during unloading and loading for international transportation.

An off-shore wind energy support facility will require the use of enormous 600 ton crawler cranes that would destroy asphalt or concrete surfaces as they load, unload, and transport extremely heavy wind energy components around the facility. Pier 1 in particular (the southern pier) is a pile supported, concrete slab structure that would be incapable of supporting the anticipated loading due to offshore renewable energy support activities. The ideal surface for offshore renewable energy support is crushed stone (that can be easily filled as differential settlement occurs from the extreme loads from the cranes and components). An uneven crushed stone surface is not compatible with loading, unloading, or staging new automobiles for international import. It is extremely unlikely that the Port of Davisville would cancel its commitment to auto importers, and the Commonwealth of Massachusetts has no legal authority to take by eminent domain land in Rhode Island. Therefore, it is infeasible that the northern portion of the Port of Davisville (Pier 1 and Pier 2 and the immediate vicinity) can be utilized for an off-shore wind energy support facility due to Site Availability limitations.

The area immediately to the south of Pier 1 has approximately 1,000 linear feet of bulkhead and approximately 27.5 acres of area. However, a plan noting the "Current Status" of leasing agreements at the Quonset Business Park (available on the Quonset Development Corporation website) notes that a 14.5 acre parcel of the 27.5 acre area (which abuts 790 linear feet of the 1,000 linear feet of bulkhead space) is "Under Agreement" (see **Appendix 6**). It is not likely or feasible that this agreement could be broken (and the operators evicted) in a relatively short period of time such that an off-shore wind energy support facility could be constructed at the Port of Davisville.

Total Wharf and Yard Upland Area: The area immediately to the south of Pier 1 has approximately 27.5 acres of wharf and upland area. However, a plan noting the "Current Status" of leasing agreements at the Quonset Business Park (available on the Quonset Development Corporation website) notes that a 14.5 acre parcel of the 27.5 acre area is "Under Agreement", which leaves only 13 acres available for an offshore wind energy support facility. Additional inland space is not immediately adjacent to the main parcel under consideration. Therefore, it is infeasible to bring the usable area up to the area required for an off-shore wind energy support facility (20 acres, as stated earlier).

Berthing Space: As stated earlier, the areas with the most berthing space (Pier 1 and Pier 2 area) are currently occupied with automobile importation operations. The area immediately to the south of Pier 1 has approximately 1,000 linear feet of bulkhead, which is below the minimum bulkhead space required to support an off shore wind energy support facility. However, a plan noting the "Current Status" of leasing agreements at the Quonset Business Park (available on the Quonset Development Corporation website) notes that a 14.5 acre parcel of the 27.5 acre area abuts 790 linear feet of the 1,000 linear feet of bulkhead space, and is "Under Agreement", which leaves only 210 linear feet of bulkhead space available for use for an off shore wind energy facility.

Overhead Clearance: Vertical clearance is also a significant constraint for the Port of Davisville. The Newport Bridge imposes a height restriction of approximately 62 m (206 feet). As stated earlier, is likely that the large spuds that are of the jack-up barges (clearance required up to 250 feet) and the pre-assembled wind turbines (clearance required up to 200 feet) will not

meet the vertical restrictions. The Newport Bridge would need to be altered in order to allow the Port of Davisville to be a practicable alternative, which is extremely unlikely.

Ability to beneficially re-use sand: Utilization of the Port of Davisville as a staging point for reuse of CAD Material is infeasible as the location would be beyond the control of the Commonwealth of Massachusetts, would require multiple handling, and would require transportation a great distance from the generation point (CAD Cells within New Bedford Harbor).

DRY DOCK #4, BOSTON, MASSACHUSETTS

Dry Dock #4 (which is located in the Marine Industrial Park in South Boston) has been determined to be an impracticable location for an off-shore wind energy facility for a number of reasons, enumerated below:

Total Wharf and Yard Upland Area: The immediate backland at Dry Dock #4 is approximately 13 to 14 acres, which does not meet the landside criterion. The parcel is bound to the south by Northern Avenue, which is a very active roadway and would severely hinder transportation of renewable energy components to an adjacent upland location. Northern Avenue is not constructed to accommodate the turning radius required for transportation of large wind blades to more remote locations. Immediately across the street is the Mass Bay Brewing Company. There is no direct land connection to the north or to the west of the property. To the east of the property is the Harpoon Brewery. In order to develop this area into an off-shore wind energy facility, specific owners would have to agree to sell their facilities, such that several

adjacent areas could be utilized to create the new facility. In particular, the Harpoon Brewery facility would need to sell its land to be able to add land to the facility to generate 20 acres. The Harpoon Brewery has operated out of this location for many years, and is a well known landmark in South Boston. It is logistically infeasible to believe that this property could be purchased (and the operators evicted or relocated) in a relatively short period of time such that an off-shore wind energy support facility could be constructed here. The process of freeing the land would take many years.

Jack-Up Barge Access: Due to the geologic nature of the sediments within, and underlying, Boston Harbor, it is infeasible to utilize jack-up barges in the manner that is necessary to support off-shore wind facility construction. The material underlying Boston Harbor consists of fine-grained organic material, underlain by Boston Blue Clay. The presence of Boston Blue Clay below Boston Harbor as well a large portion of the City of Boston and adjacent towns is well documented. As stated within *Remaking Boston: An Environmental History of the City and It's Surroundings,* edited by Anthony N. Penna and Conrad Edick Wright, "Boston Blue Clay…was deposited about fourteen thousand years ago. The clay settled out from a mixture of seawater and glacial meltwater and covers much of the landscape in the Boston region. Up to seventy-five feet thick in the Boston area, it has filled in many low-lying areas. The clay extends inland to an elevation of sixty-five feet, and it can be found as far west as Watertown, which indicates the extent of (historic) inundation at its greatest point. In Boston there is clay throughout the city, in the harbor, and at least nine miles offshore." As stated earlier, unstable harbor bottoms would allow the spuds of the jack-up barges to sink within the substrate. Potential side-effects of the spuds sinking include listing of vessels that are unevenly loaded as well as the potential that the spuds could not be extracted. It is unreasonable to expect that any other methodology could be

utilized to secure the jack-up barges when the loads are placed upon the barges (anticipated be hundreds of tons of material). The stability necessary for the jack-up barges requires the use of the spuds during loading. Due to the inability to utilize jack-up barges in Boston Harbor, it is infeasible to site the facility at Dry Dock #4.

Overhead Clearance: The entire Port of Boston is affected by air traffic at Logan Airport. While maritime operations are not restricted, according to the Coast Pilot, all vessels with air draft greater than approximately 25.9 m (85 feet) must advise air traffic control of their presence (U.S. Department of Commerce, National Oceanic and Atmospheric Administration and National Ocean Service 2009).

A long-term Federal Aviation Administration approval and/or permit would be required in order to operate the facility at Dry Dock #4. A review of previous FAA decisions associated with Wind Power projects located within 10 miles of Massachusetts Airports, conducted in January of 2007 is attached as **Appendix 7**. Wind turbines ultimately constructed at the Deer Island Wastewater Treatment Plant (located approximately 2 miles from Logan and approximately 2,000 to 4,000 feet to the northeast and/or east of two regularly used take-off and landing routes) were originally designed to be 394 feet high. A Determination of Presumed Hazard by the FAA required redesign of the turbines to a height of 190 feet. Wind turbines originally designed to be installed in Lynn (located approximately 5.7 miles from Logan) were originally designed to be 397 feet high. A Determination of Presumed Hazard by the FAA required redesign of the turbines to a height of 254 feet.

Dry Dock #4 is located less than 1 mile from Logan Airport and is located only a 2,000 to 3,000 thousand feet to the northwest of one of the main landing strips for the airport. Installation

vessels would be unable to exit and enter Boston Harbor except by directly crossing the airspace associated with that same landing strip. As stated earlier, the cranes necessary for loading and unloading of vessels are up to 475 feet in height. The large spuds that tower over the jack-up barges are up to 250 feet and the pre-assembled wind turbines are up to 200 feet in height. It is clear that the use of Dry Dock #4 for offshore renewable energy support would represent a Determination of Hazard or a Determination of Presumed Hazard to air traffic, based upon the FAA's previous history of determinations, as outlined above.

Proximity: The Port of Boston is located a significant distance from the anticipated construction locations for Off-Shore Wind facilities, which will make it logistically infeasible to site an off-shore wind support facility. Boston is located 130 nautical miles from Nantucket Sound (a potential location for the Cape Wind Off-Shore Wind development) as opposed to 75 miles for Fall River, 70 miles for Quonset and 45 miles for New Bedford. Boston is located 295 miles from the proposed Deepwater Wind construction location off of the coast of Rhode Island, as opposed to 45 miles for Fall River, 50 miles for New Bedford, and 35 miles for Quonset. An analysis of the feasibility of utilizing Dry Dock #4 can be found within **Appendix 8**. The conclusions of this analysis were that it is infeasible that Dry Dock #4 can be utilized as an off-shore wind energy support facility due to its proximity to the anticipated future locations of off-shore wind developments.

Ability to beneficially re-use sand: Utilization of Dry Dock #4 as a staging point for reuse of CAD Material is infeasible as the location would require multiple handling, and would require

transportation a great distance from the generation point (CAD Cells within New Bedford Harbor).

FALL RIVER STATE PIER

Fall River State Pier has been determined to be an impracticable location for an off-shore wind energy facility for a number of reasons, enumerated below:

Total Wharf and Yard Upland Area: The total wharf and yard upland area at Fall River State Pier is approximately 9 acres, which does not meet the landside criterion for creation of an off-shore wind energy support facility. The Braga Bridge (135 foot clearance) is located directly above approximately 20% of Fall River State Pier, making a large portion of the area of the pier inaccessible to the large cranes required for operation of an offshore renewable energy support facility. Water Street is located directly to the east and southeast of the facility, which is a very active roadway and would severely hinder transportation of renewable energy components to an adjacent upland location. Water Street is not constructed to accommodate the turning radius required for transportation of large wind blades to more remote locations. Immediately across the street is an active railyard. Additionally, the properties to the east, southeast, and south are currently owned and occupied by other port users (see Site Control/Site Availability section below).

Overhead Clearance: Vertical clearance is the most significant constraint for the Port of Fall River. The Braga Bridge, Mt. Hope Bridge, and Jamestown Verrazzano Bridges each impose a

height restriction of approximately 41 m (135 feet). The Braga Bridge is located directly above approximately 20% of Fall River State Pier, making a large portion of the area of the pier inaccessible to the large cranes required for operation of an offshore renewable energy support facility. The Newport Bridge imposes a height restriction of approximately 62 m (206 feet). As stated earlier, is likely that the large spuds that are of the jack-up barges (clearance required up to 250 feet) and the pre-assembled wind turbines (clearance required up to 200 feet) will not meet the vertical restrictions. Multiple bridges would need to be altered in order to allow the State Pier at Fall River to be a practicable alternative, which is extremely unlikely.

Site Control/Site Availability:

While the Fall River State Pier is currently owned by the Commonwealth of Massachusetts, the current operation accommodates multiple different users of the pier. These uses include: an off-loading location for break-bulk cargo and container ship cargo, a roll-on roll-off terminal, as a storage location for cargo, and as a berthing and terminal location for cruise ships. Relocation of these existing users is extremely infeasible as there is no other public location in Fall River for these services to be relocated to.

These existing users represent a significant public benefit to the City of Fall River and southern New England. The Massachusetts Waterways Regulations (Chapter 91) require that any displaced water-dependent use be relocated as cited below:

> 310 CMR 9.36(4): The project shall not displace any water-dependent use that has occurred on the site within five years prior to the date of license application, except upon a clear showing by the applicant that said use:
>
> (a) did not take place on a reasonably continuous basis, for a substantial period of time; or

(b) has been or will be discontinued at the site by the user, for reasons unrelated to the proposed project or as a result of voluntary arrangements with the applicant.

Absent the above showings, the project shall include arrangements determined to be reasonable by the Department for the water-dependent use to be continued at its existing facility, or at a facility at an alternative location having physical attributes, including proximity to the water, and associated business conditions which equal or surpass those of the original facility and as may be identified in a municipal harbor plan, if any. Permanent relocation to an off-site facility may occur in order to accommodate a public service project for which relocation arrangements are governed by law, or if the Department determines that it is not appropriate for the water-dependent use to continue on the site. Otherwise, only temporary relocation may occur as necessary for project construction.

If an off-shore wind energy facility is sited at State Pier in Fall River, it would consume all available space at State Pier. A new public terminal would need to be constructed to harbor these users would need to be constructed if they were displaced to make way for an off-shore wind energy terminal.

Additionally, in order to increase the existing area at the facility, adjacent properties would need to be obtained. The properties in the area of Fall River State Pier are summarized in more detail below:

Fall River State Pier and Adjacent Properties

Parcel ID	Owner Name	Site/Use	Acreage
N-13-0020	COMMONWEALTH OF MASSACHUSETTS	FALL RIVER STATE PIER	7.18
N-13-0021	COMMONWEALTH OF MASSACHUSETTS	STEAMSHIP DOCK	2.02
N-16-0011	NASSER REAL ESTATE TRUST	WATERFRONT CAFÉ	0.744
N-15-0002	BORDEN & REMINGTON F R LLC	MILL COMPLEX (TEXTILE RUBBER AND CHEMICAL MANUFACTURING)	29.22
N-16-0030 and T-03-0019	NEW YORK CENTRAL LINES, LLC	RAIL YARD	2.013
N-13-0003	COMMONWEALTH OF MASSACHUSETTS	PARKLAND	2.06
N-16-001	AZAR JEANNE ETALI	RESTAURANT/BAR	0.396

N-16-0001	FALL RIVER INC MARINE MUSEUM	MARINE MUSEUM OF FALL RIVER	0.438

Additional supporting information is included within **Appendix 9**. In order to develop this area into an off-shore wind energy facility, specific owners would have to agree to sell their facilities, such that several adjacent areas could be utilized to create the new facility. In particular, the only property that is large enough to cede land to the new facility is the Borden & Remington Rubber and Chemical Manufacturing facility located to the south of Fall River State Pier (although at least one other property would have to sell its land in order for a connecting roadway to be constructed).

It is logistically infeasible to believe that these properties could be purchased (and the operators evicted or relocated) in a relatively short period of time such that an off-shore wind energy support facility could be constructed here. The process of freeing the land would take many years. Additionally, it may be impossible to find another location for the existing water-dependent uses.

Ability to beneficially re-use sand: Utilization of the State Pier in Fall River as a staging point for reuse of CAD Material is infeasible as the location would require multiple handling, and would require transportation a great distance from the generation point (CAD Cells within New Bedford Harbor).

LOCATIONS WITHIN THE NEW BEDFORD SUPERFUND SITE

The following locations are within the New Bedford Superfund Site, and therefore can store or dispose of sand generated from CAD Cell construction; however, the sites are

impracticable for the primary purpose of offshore renewable energy support due to other criteria, as detailed below:

NORTH TERMINAL AND POPE'S ISLAND, NEW BEDFORD, MASSACHUSETTS

Horizontal Clearance: The horizontal clearance along the access pathway along the water to both the North Terminal and Pope's Island facilities is restricted by the Route 6 New Bedford-Fairhaven Bridge. The Route 6 New Bedford–Fairhaven Bridge is approximately 92 feet wide, far short of the minimum 130 feet that is required. Efforts have been made by the City of New Bedford and the Town of Fairhaven over the last decade to reconstruct this bridge in such a manner as to increase the horizontal clearance and allow for smoother operation of the bridge (the current construction causes significant delays for vessels traveling north of the bridge and traffic crossing the bridge); however, the efforts over the last decade have not yet borne fruit (the project is still in the conceptual phase and neither permitting, nor design is complete). As a result, it will likely be many years before this project is complete and the horizontal clearance issue can be overcome.

Site Control/Site Availability: Both North Terminal and Pope's Island are not currently under the control of an entity that can develop an off-shore wind energy support facility, because the existing property is either owned by an outside source or is currently under a long term lease. All of the properties that could conceivably allow the creation of an off-shore wind energy support facility are currently in use by either a water-dependent or non-water dependent user.

Pope's Island: The following is a list of the current owners of properties located to the north of Route 6 in New Bedford:

Pope's Island Properties North of Route 6

Parcel ID	Owner Name	Address	Acreage
60 18	POPES ISLAND HARBOR DEV CORP	243 255 POPES ISLAND	1.485
60 12	POPES ISLAND HARBOR DEV CORP	173 235 POPES ISLAND	10.57
60 26	POPES HAVEN MARINA INC	161 POPES ISLAND	0.652
60 13	NERI REALTY CO LLC	137 143 POPES ISLAND	3.011
60 19	MITCHELL MARK S "TRUSTEE"	83 POPES ISLAND	1.559
60 22	PANAGAKOS MICHAEL	53 POPES ISLAND	0.775
60 20	POPES ISLAND REALTY ASSOCIATION	23 POPES ISLAND	1.98

In order to develop this area into an off-shore wind energy facility, a number of these owners would have to agree to sell their facilities. Many of the owners of these properties currently are in long-term leases with the operators at their facilities. The operators are business owners of water-dependent businesses (in many cases) that include shipyards, marinas, boat repair facilities, and marine supply businesses. In accordance with The Massachusetts Waterways Regulations (Chapter 91), any displaced water-dependent use would need to be relocated as stipulated within 310 CMR 9.36(4). It is unlikely that these facilities would be able to be relocated within the Port of New Bedford without the creation of a new marine terminal. It is logistically infeasible to believe that these properties could be purchased (and the operators evicted or relocated) in a relatively short period of time such that an off-shore wind energy support facility could be constructed here. The process of freeing the land would take many years.

North Terminal: Although the New Bedford Harbor Development Commission currently owns the land associated with a potential North Terminal off-shore wind energy support facility, the Commission is currently in long-term lease agreements with all of the operators that currently exist in the area. The following is a list of the current lessees of properties located at North Terminal in New Bedford:

North Terminal Property Tenants

Parcel ID	TENANT	PROPERTY ADDRESS	Acreage
72 291	ROBERT C. COOK (NB WELDING)	272 HERMAN MELVILLE BLVD.	1.033
72 248	MARINE HYDRAULICS (DAVID CHAMBERS)	256 HERMAN MELVILLE BLVD.	1.986
72 292	ROBERT C. COOK	286 HERMAN MELVILLE BLVD.	0.966
72 297	MARVIN L. DOLINSKY	300 HERMAN MELVILLE BLVD.	1.485
72 299	ACUSHNET RIVER SHIPYARD	302 HERMAN MELVILLE BLVD.	1.531
72 293	TISBURY TOWING AND TRANSPORTATION	352 HERMAN MELVILLE BLVD.	3.479

The leases that these tenants have with the Commission are 99 years in length. A sample copy of a lease is attached as **Appendix 10**. The leases do not offer an option for the Commission to unilaterally cancel the agreement, and, therefore, in order to develop this area into an off-shore wind energy facility, these operators would have to agree to break their leases with the Commission. The operators are business owners of water-dependent businesses (in

many cases) that include shipyards, boat repair facilities, and marine bulk transport businesses. In accordance with The Massachusetts Waterways Regulations (Chapter 91), any displaced water-dependent use would need to be relocated as stipulated within 310 CMR 9.36(4). It is unlikely that these facilities would be able to be relocated within the Port of New Bedford without the creation of a new marine terminal. It is logistically infeasible to believe that the lease agreements could be broken (and the operators evicted) in a relatively short period of time such that an off-shore wind energy support facility could be constructed here. The process of freeing the land would take many years.

Total Wharf and Yard Upland Area: As outlined above, the existing total wharf and yard upland area at North Terminal is approximately 10.5 acres, which does not meet the landside criterion for creation of an off-shore wind energy support facility. Additionally, the parcels that are available are not contiguous. In order to construct the facility at this location, a CDF would have to be constructed to connect the facilities together and create an additional 9.5 acres of usable land, which would be created by filling intertidal and sub-tidal areas (significantly more than the 4.58 acres that needs to be filled to construct the South Terminal CDF).

As described above, Pope's Island could be utilized as is (approximately 20 acres of land exist north of Route 6 on Pope's Island). An offshore renewable energy facility could also be constructed by utilizing only the land on the northwestern portion of Pope's Island (approximately 12 acres) and constructing a CDF to provide an additional 8 acres of usable land. In order to create this extra usable land, 8 acres of intertidal and sub-tidal area would need to be filled (significantly more than the 4.58 acres that needs to be filled to construct the South Terminal CDF).

New Bedford Public Acceptance: From 2008 to 2010, New Bedford has undertaken a public process in evaluating the best location for harbor operations while promulgating its New Bedford/Fairhaven Harbor Plan. During the harbor planning process, although both North Terminal and Pope's Island were proposed as potential Confined Disposal Facilities (in support of navigational dredging), neither facility was evaluated as a stand-alone marine terminal. No public support for a large marine terminal was garnered for either facility. CDFs in these areas were anticipated to supplement the land of existing lessees of the Commission. Therefore, North Terminal and Pope's Island are not accepted locations for an off-shore wind energy facility in the eyes of the public of the City of New Bedford.

STATE PIER, NEW BEDFORD, MASSACHUSETTS

State Pier has been determined to be an impracticable location for an off-shore wind energy facility for a number of reasons, enumerated below:

Total Wharf and Yard Upland Area: The immediate backland at State Pier is approximately 7 to 8 acres, which does not meet the landside criterion. The land use adjacent (to the north, south, and west) of State Pier cannot accommodate an off-shore wind energy support facility. MacArthur Drive is located directly to the west of the facility, which is a very active roadway and would severely hinder transportation of renewable energy components to an adjacent upland location. MacArthur Drive is not constructed to accommodate the turning radius required for transportation of large wind blades to more remote locations. Immediately across to the north is Fisherman's Wharf, which is currently dedicated to supporting commercial fishing activity.

Immediately to the south is Steamship Pier, Homer's Wharf and Leondard's Wharf, which are similarly dedicated to supporting commercial fishing activity. Similar to the activities on State Pier, 10 CMR 9.36(4) would require the relocation of commercial fishing activities should either of the facilities to the north or south be utilized. Commercial fishing berthing is already sorely lacking within New Bedford Harbor. It would be extremely difficult to locate additional commercial fishing berthing within New Bedford Harbor without constructing a new Marine Terminal at another location. Therefore, it is infeasible to expand the site in any way to bring the usable area closer to the area required for an off-shore wind energy support facility (20 acres, as stated earlier). The site is bounded on the west by Herman Melville Avenue and Route 18; monopiles and wind blades would have to move from State Pier to another, more remote location along roadways or rail lines that are not designed to accommodate the required turning radius.

Site Control/Site Availability: While the New Bedford State Pier is currently owned by the Commonwealth of Massachusetts, the commonwealth operates the pier in a manner that accommodates multiple different users of the pier. These uses include: a fast ferry terminal for transportation to Martha's Vineyard, an off-loading location for break-bulk cargo, as a storage location for refrigerated cargo, as a berthing and terminal location for cruise ships, as a berthing and terminal location for pleasure cruise boats, as a berthing location for ferry service to Cuttyhunk Island, as a staging location for emergency services vessels, and as a seasonal berthing location for the Ernestina.

The facility can support freighter service and store over 135 containers. American Cruise Lines operates out of the facility with a minimum of 20 ports of call on an annual basis and up to 89 passengers per trip. Ferry services also operate out of the State Pier, including passenger and

cargo service to Cuttyhunk Island and passenger service to Martha's Vineyard. Ferry service brings over 115,000 passengers through the port annually. The Quick Start Ferry facility on the State Pier allows intermodal transfers of waterborne freight and freight carried by truck and rail. Relocation of these existing users is extremely infeasible as there is no other public location in New Bedford for these services to be relocated to.

These existing users represent a significant public benefit to the City of New Bedford and southern New England. If an off-shore wind energy facility is sited at State Pier in New Bedford, it would consume all available space at State Pier. In accordance with The Massachusetts Waterways Regulations (Chapter 91), any displaced water-dependent use would need to be relocated as stipulated within 310 CMR 9.36(4). It is unlikely that these facilities would be able to be relocated within the Port of New Bedford without the creation of a new marine terminal. A new public terminal would need to be constructed to harbor these users would need to be constructed if they were displaced to make way for an off-shore wind energy terminal.

New Bedford Public Acceptance: From 2008 to 2010, New Bedford has undertaken a public process in evaluating the best location for harbor operations while promulgating its New Bedford/Fairhaven Harbor Plan. During the harbor planning process State Pier in New Bedford was not evaluated as a stand-alone marine terminal, it was assumed that the facility would continue to serve as a multi-use facility. An excerpt from the New Bedford Harbor Plan, outlining the proposed future uses of the New Bedford State Pier is included as **Appendix 11**. No public support for a large marine terminal was garnered for the facility. Therefore, State Pier

in New Bedford is not an accepted location for an off-shore wind energy facility in the eyes of the public of the City of New Bedford.

SOUTH TERMINAL, NEW BEDFORD, MASSACHUSETTS

South Terminal in New Bedford has been determined to be the only practicable alternative for siting of an offshore renewable energy support facility. South Terminal meets each of the evaluation criteria as summarized below:

- The entrance to the Hurricane Barrier of New Bedford Harbor is 150 feet across and therefore presents no Horizontal Clearance restriction.
- The geologic material located within the subsurface of New Bedford Harbor is sufficient to allow Jack-Up Barges to access and stabilize themselves without sinking into the substrate. Previous experience in multiple locations throughout the harbor has shown that the subsurface material (glacial till) located at approximately -30 MLLW is very competent. Borings completed at the New Bedford State Pier (included within **Appendix 12**) show that the predominant substrate (below organic maintenance material that has accumulated over the years) is a combination of very compact sand, silt and gravel (glacial till), which is competent enough to support jack-up barge operations.
- There are no Overhead Clearance issues associated with accessing the South Terminal location.
- The proposed terminal to be constructed will consist of approximately 20 acres, which is sufficient to support off-shore renewable energy construction projects.
- The proposed terminal will have approximately 1,450 linear feet of berthing space, which is sufficient to support one international vessel and two jack-up barges simultaneously.

- The majority of the area in which the proposed facility is anticipated to be constructed is currently unoccupied, and the sole existing owner has indicated a willingness to sell his property.
- New Bedford nearby proposed offshore renewable energy project construction locations.
- Finally, South Terminal is very close to the anticipated location of CAD Cell construction; therefore, it is able to accept material from future CAD Cells both during construction, and for staging in the future to allow reuse of the clean sand material.

Anticipated Future Uses of South Terminal CDF

EPA also asked us to describe in more detail the other future anticipated uses for the terminal. Use of the South Terminal CDF for off-shore wind energy support terminal is anticipated to start as early as November 2011 (immediately subsequent to construction of the terminal). Operation of the facility for off-shore wind energy support for the first major off-shore wind energy project is anticipated to last until February of 2013. We understand that the South Terminal CDF must be in place no later than November 2011, so that the first major offshore wind energy project can be operational in time to qualify for sizable federal tax incentives that significantly lower the cost of the electricity for Massachusetts ratepayers.

Although off-shore wind energy support operations will utilize the entire facility until February of 2013, subsequent to that date, the facility is anticipated to be utilized in a number of non-off-shore wind energy related means, including: as a terminal for container shipping, a terminal for break-bulk cargo shipping, a terminal bulk cargo shipping, and as a location to store sand generated via CAD Cell construction, so as to facilitate reuse of the material.

International marine cargo through the Port of New Bedford consists mostly of perishable food, including seafood and fresh fruit. Break-bulk frozen seafood from Norway is discharged from ships for distribution throughout New England, cranberries are exported, South American fruit is imported seasonally, and locally caught fish is frozen in New Bedford plants and 80% containerized for export to Europe and the Far East. International marine cargo through the Port of New Bedford is anticipated to grow in the near term by 3% (fish and frozen product) and 5% (container services) annually.

Existing break-bulk cargo and refrigerated cargo is currently accommodated at State Pier, Maritime Terminal and Bridge Terminal; however, the Route 6 Bridge restriction (limiting vessel width to no greater that approximately 90 feet) and the depth restrictions (current maximum depth is approximately -23 feet MLLW) at the two terminals prevents vessels of a certain size from accessing Marine Terminal and Bridge Terminal, and keeps vessels that can access the terminals from being fully loaded at these locations. Maritime International estimates a significant annualized loss of income from less than fully loaded vessel, and that any availability at the South Terminal CDF would be quickly utilized to expand its break-bulk operations. The increased capacity would allow a significant increase in international cargo vessels with break-bulk cargo to utilize the Port.

South Terminal would also be ideal for shipment of bulk cargo, such as sand, gravel, or other bulk material. Multiple terminals within New Bedford already service bulk cargo. The R.M. Packer facility ships sand, gravel, fuel, modular homes, and “heavy lift” items. Island Barge transports construction materials and scrap to and from Nantucket. D.W. White recently suspended bulk shipment operations from its location at Pope’s Island, from which it transported salt, gypsum, cement, and scrap lumber, due to inefficiencies caused by lack of minimum storage

space as well as lack of an appropriate bulkhead with sufficient draft for loading and unloading of bulk cargoes. Access to an available South Terminal CDF would allow larger barges, and potential increased shipments for these organizations.

FXM Associates states within its Business Plan that "The handling of cargoes not related to an offshore renewable wind energy installation (OREI) – including container, break bulk and bulk cargoes projected for South Terminal – is estimated to expand business output in *Bristol County* by $15.7 million annually, providing 130 permanent jobs and $5.9 million in new household income each year. These economic impacts include total direct, indirect, and induced economic effects within Bristol County estimated to occur annually following facility construction and do not include support of offshore wind energy projects."

The Port of New Bedford is also in negotiations to set up South Terminal as a major shipping location within America's Marine Highway (Short-Sea Shipping). Short-sea shipping operations are the diversion of wheeled cargo (truck traffic) from congested highways to the open sea – as well as on inland waterways to absorb a significant part of the future projected growth in highway freight traffic, reduce air pollution, traffic congestion, and shipping costs.

A study on short-sea shipping was prepared by Reeve & Associates in March, 2006 (attached as **Appendix 17**), which assessed the viability of implementation of short-sea shipping for the Ports of New Bedford and Fall River. The report stated that the establishment of only two short-sea shipping lines (a daily short-haul to New Jersey and a twice weekly long-haul to Jacksonville, Florida or Wilmington, North Carolina) would generate an estimated total direct income of $45 million dollars per year, would also generate indirect income of $72 million dollars per year, would generate 300 direct jobs in the short-seas industry, would generate an additional 500 jobs that provide goods and services to short-sea employees and companies.

The Reeve & Associates report concluded that "New Bedford's current cargo facilities in terms of berth and yard capacity need to be improved to effectively support a short-sea service." The South Terminal CDF is precisely the type of improvement that will facilitate implementation of short-seas shipping in New Bedford. The New Bedford Harbor Development Commission is already soliciting vendors for use of the facility once the first off-shore wind energy facility is complete (one of the many brochures currently being utilized for marketing of the new facility after off-shore wind energy use is complete is attached as **Appendix 18**. The minutes from one meeting with a prospective shipping company (Jersey Harborside) are also attached as **Appendix 18**.

The South Terminal CDF will also serve to store sand generated during CAD Cell construction, in order to phase and sequence reuse of the sand at other locations. Although no space will be available for CAD Cell sand staging or storage during construction of the first off-shore wind energy facility, space will be set aside within the facility after the anticipated February 2013 completion date. A portion of the facility (anticipated to be unused by the various cargo operations that are anticipated to populate the site once off-shore wind energy support is complete) will be set aside for storage of sand from CAD Cell construction. The space will be utilized for storage of sand from navigational dredging and/or Superfund-related dredging, that may be reused in beach nourishment, upland near-shore reuse, CAD Cell capping, or sediment capping operations.

The anticipated future uses (container shipping, break-bulk cargo shipping, bulk cargo shipping, short-seas shipping and CAD Cell sand storage each require approximately the same type of facilities: deep water berthing, quae-side loading and unloading area, and upland storage and staging area. Major demands for berthing and upland storage and staging space will be

temporary, and will fluctuate based upon the size of the shipments anticipated to arrive or leave. Break-bulk cargo, containers, trucks, or bulk cargo may require temporary storage prior to loading and transport of vessels; however, only a small portion of the site (1-2 acres) would be required for any one method of transportation on a with any regularity. Reserving a portion of the site for the storage of CAD Cell sand will therefore not be difficult.

Refrigerated cargo does require refrigerated storage areas; however, refrigerated storage areas are available in other areas of the harbor, and cargo would be transported to refrigerated storage locations after offloading at the facility. Break-bulk cargo will need shelter from the elements; but will be shipped to a warehouse after unloading at the facility. Bulk cargo will need space onsite for temporary storage prior to loading, but will be staged and delivered to limit its footprint at the site. Truck staging will be required for short-seas shipping; but the trucks will only be onsite immediately before and after a short-seas vessel arrives or leaves.