A photograph of the Salem Harbor Power Station. The image shows several large industrial structures, including a tall, light-colored cylindrical tower on the left and a brick chimney in the center. A large, multi-story building is visible on the right. In the foreground, there is a paved area with a metal railing and some construction materials. The sky is blue with some clouds.

SALEM HARBOR REVITALIZATION **TASK FORCE**

Pathway to Renewal: A Review of Site
Remediation and Redevelopment Options
for Salem Harbor Power Station

Distinguished Members

Richard K. Sullivan, Secretary of Energy and Environmental Affairs, Chair

Gregory Bialecki, Secretary of Housing and Economic Development

Ken Kimmel, Commissioner, Department of Environmental Protection

Paul Stakutis, Massachusetts Attorney General's Office

Marty Jones, President and CEO, MassDevelopment

Ron Gerwatowski, Senior Vice President, US Regulation & Pricing, National Grid

Dan Dolan, President, New England Power Generators Association

James Simpson, Business Manager/Financial Secretary, IBEW Local 326

Kimberley Driscoll, Mayor, City of Salem

John D. Keenan, Massachusetts House of Representatives, 7th Essex District

Michael Knapik, Massachusetts Senate, 2nd Hampden & Hampshire District

Staff Assistance Provided By:

Dan Burgess
Lauren Farrell
Zachary Donah
Chris Eicher
Liam Holland
George Chapman

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I. Introduction

Massachusetts is undergoing a transformation in how it produces and uses energy. As the state has reaffirmed its commitments to energy efficiency and renewable energy, outside factors such as more protective air quality regulation, historically low natural gas prices and an aging fleet of generators have created a difficult economic climate for coal and oil fired power plants to remain in operation in the Commonwealth. While Massachusetts is innovative and forward looking with many aspects of its overall energy policy, there remains a complex set of unanswered questions related to the impacts of this transformation. Massachusetts will undeniably benefit from reduced carbon emissions and pollution with reduced use of coal or oil for electricity generation, but communities that host this older fleet of fossil fuel plants will soon have to face a sober reality that these once economically vital facilities, along with the local tax revenue and jobs created, may close indefinitely with little productivity. Despite these challenges, a power plant closure may also present a unique opportunity to the host community to anticipate the reuse, redevelopment, or repowering of the site with proper planning and partnership among relevant stakeholders. One community, the City of Salem, presents the first significant case of state and local leaders cooperating to review the options for the site of a former coal-fired power plant.

Salem Harbor Power Station is a 720 MW coal and oil fired power generation facility located on a 65 acre land parcel on Salem's waterfront and slated to close and fully retire in June 2014. The City of Salem and the Commonwealth of Massachusetts will confront several significant choices about how to best transition from the site's traditional use while maintaining, and possibly enhancing, its economic importance to the city and the state. Among the many considerations stakeholders must entertain are the impacts to Salem's property tax base, the

reliability of the region's electric grid, public access and use of the waterfront, and the highest and best use of the location. While the site offers complex challenges for remediation and redevelopment, the power plant's location and access to infrastructure also present intriguing opportunities for reuse.

In recognition of the coming closure, on August 3, 2012, Governor Deval Patrick signed into law *An Act relative to competitively priced electricity in the Commonwealth* ("the Act"). Section 42 of the Act created a Plant Revitalization Task Force to adopt a plan to ensure the demolition, remediation, and redevelopment or repowering of the Salem Harbor Power Station by December 31, 2016, as well as a plan for the decommissioning of other coal-fired power plants that may face imminent closure throughout the Commonwealth. The Task Force, chaired by Secretary of Energy and Environmental Affairs Richard Sullivan, convened regularly beginning in September, 2012 for a series of public meetings to discuss the many issues surrounding the decommissioning of coal-fired power plants in the Commonwealth, with particular focus on the impending closure of Salem Harbor Power Station. The Task Force is required to address two statutory requirements and timeframes. The first is a June 15, 2013 deadline to submit its plan for the revitalization of Salem Harbor Power Station to the Department of Public Utilities, the Department of Energy Resources, and the Joint Committee on Telecommunications, Utilities and Energy. The second requirement is a December 31, 2013 deadline to identify and develop a plan for other coal-fired power plants located within the Commonwealth.

This report addresses the first requirement of the Act, narrowly focusing on Salem Harbor Power Station, the future plans for appropriately remediating and redeveloping the site of Salem's coal plant, and state policy options, goals, and recommendations for facilitating the

transition facing Salem once the power plant shuts down. Furthermore, the report shall serve as a blueprint for state and local officials and agencies, as well as other stakeholders, that outlines the procedures, impacts, impediments to reuse, and policy options surrounding such a site closure.

A. Task Force Members and Roles

The Task Force is comprised of 11 members representing state and local leaders in energy policy and economic development. These members include:

1) Secretary Richard Sullivan, Energy and Environmental Affairs, Chair

Secretary Richard K. Sullivan Jr. oversees the Commonwealth's six environmental, natural resource and energy regulatory agencies: the Departments of Environmental Protection, Public Utilities, Energy Resources, Conservation & Recreation, Agriculture, and Fish & Game. He also serves as Chairman of the Massachusetts Water Resources Authority, the Energy Facilities Siting Board, and the Massachusetts Clean Energy Center.

2) Secretary Gregory Bialecki, Housing and Economic Development

Secretary Greg Bialecki oversees the Commonwealth's business development, housing & community development and consumer affairs & business regulations agencies. As the Governor's chief economic development and housing advisor and cabinet member, Secretary Bialecki is responsible for strengthening and accelerating the economy by supporting job creation in every region of the state

3) Commissioner Ken Kimmel, Department of Environmental Protection

Commissioner Ken Kimmel oversees the Department of Environmental Protection, the state agency responsible for ensuring clean air and water, the safe management of toxics and hazards, the recycling of solid and hazardous wastes, the timely cleanup of hazardous waste sites and spills, and the preservation of wetlands and coastal resources.

4) Assistant Attorney General Paul Stakutis, Office of Ratepayer Advocacy Designee for Attorney General Martha Coakley

The Attorney General's Office represents the Commonwealth's ratepayers in matters involving the price and delivery of natural gas, electricity, water, and telecommunication utility services before federal and state government regulators. The Attorney General's Office also works to ensure that the Commonwealth's utility companies make adequate investments in infrastructure, such as power lines and pipelines, to avoid delivery failures. The Attorney General's Office participates in administrative proceedings before the regulatory agencies, negotiates settlement agreements, and conducts litigation, either in state or federal courts.

5) Marty Jones, President and CEO, MassDevelopment

Created in 1998 when the Massachusetts General Court enacted M.G.L. Chapter 23G, MassDevelopment is the state's finance and development authority. A lender and developer, the Agency works with private and public-sector clients to stimulate economic growth by eliminating blight, preparing key sites for development, creating jobs, and increasing the state's housing supply. MassDevelopment works with businesses, nonprofits, and local, state, and federal officials and agencies to strengthen the Massachusetts economy.

6) Ron Gerwatowski, Senior Vice President, US Regulation & Pricing, National Grid USA

National Grid USA is a utility holding company that owns regulated utility companies in Massachusetts, as well as other New England states and New York. These regulated companies all do business under the d/b/a of "National Grid," individually and collectively.¹ One of the regulated National Grid companies is Massachusetts Electric, who is the electric distribution company that services the City of Salem and much of the surrounding area. In addition, another National Grid company operating in Massachusetts is New England Power Company, who owns

¹ National Grid USA, in turn, is a subsidiary of National Grid plc, a global energy company based in the UK.

and operates an interstate transmission business. New England Power Company owns a transmission substation on the Salem Harbor Power Station site. Prior to restructuring, New England Power Company owned the Salem Harbor Power Station.

7) Dan Dolan, President, New England Power Generators Association (NEPGA)

NEPGA is the largest trade association representing competitive electric generating companies in New England. NEPGA's member companies represent approximately 27,000 megawatts (MW) of generating capacity in the region.

8) James Simpson, Business Manager, IBEW Local 326

The International Brotherhood of Electrical Workers (IBEW) represents approximately 750,000 active members and retirees who work in a wide variety of fields, including utilities, construction, telecommunications, broadcasting, manufacturing, railroads and government. IBEW Local 326 represents the workers and their interests at Salem Harbor Power Station.

9) Kimberley Driscoll, Mayor, City of Salem

Mayor Driscoll began her tenure in office in 2006, and has been an active leader in planning for the coming transition for the Salem Harbor power plant. She helped secure funding for the Salem Harbor Reuse Study and convened a task force of local leaders and neighborhood organizations to discuss possible reuse and redevelopment of the site.

10) Chairman John D. Keenan, State Representative, 7th Essex

Chairman John Keenan serves as the state representative for the City of Salem in the House of Representatives. Chairman of the Joint Committee on Telecommunication, Utilities and Energy, he was one of the chief authors of *An Act relative to competitively priced electricity in the Commonwealth*, which created this task force. The Chairman represents both Salem's interests in keeping the Salem Harbor Power Station site economically productive while also

ensuring the Commonwealth retains a reliable electric grid at the lowest possible cost to its ratepayers.

11) Senator Michael Knapik, State Senator, 2nd Hampden and Hampshire District

Senator Michael Knapik serves the towns of Chicopee, Holyoke, Westfield, Agawam, Granville, Montgomery, Russell, Southwick, Tolland, Easthampton and Southampton in the Massachusetts State Senate. Also a member of the Joint Committee on Telecommunications, Utilities and Energy, the Senator has a coal-fired power plant in his district, Mt. Tom Power Station, which faces the possibility of closure, and therefore faces many similar issues to Salem Harbor Power Station.

B. Statutory Obligations and Mandatory Considerations²

Section 42 of *An Act relative to competitively priced electricity in the Commonwealth* states:

“There shall be a plant revitalization task force established to implement a plan, adopt rules and regulations and recommend necessary legislative action to ensure the full deconstruction, remediation and redevelopment or repowering of the Salem Harbor Power Station by December 31, 2016. The task force shall prepare a plan of action for Salem Harbor Station that includes: (i) the full deconstruction of the existing facility, including financing, if necessary, of such deconstruction; (ii) remediation of environmental issues on the site; (iii) maintenance of jobs and preexisting municipal tax revenue associated with the site; (iv) ensuring the responsible parties are held liable for costs of environmental remediation; and (v) additional mitigation efforts necessary for the redevelopment or repowering of the site.

In developing and implementing a plan for Salem Harbor Power Station, regulations and proposed legislation, the task force shall, at a minimum, consider the following: (1) options for the full financing of the cleanup of Salem Harbor Power Station, including the creation of decommissioning funds, bonding programs through the Massachusetts Development Finance Agency, long term contracting mechanisms, regulatory or financial incentives for redevelopment or other means to secure such financing; (2) the identification of existing state or federal programs available that may assist in the redevelopment or repowering of the site; and (3) the creation of new programs, grants or other incentives to encourage the redevelopment or repowering of the site...”³

² This report is specific to the statutory mandate to ensure the redevelopment and remediation of the Salem Harbor Power Station. The Task Force, pursuant to the Act, will issue a second report relative to other coal facilities by December 31, 2013.

³ Chapter 209 of the Acts of 2012

The Act sets a clear legislative mandate that the Task Force formulate a plan of action, including recommended regulatory and legislative changes, **to ensure the existing power station located in Salem is remediated and deconstructed by December 31, 2016, as well as, at a minimum, ensuring the conditions exist for either the redevelopment or repowering of the site by that deadline.** The plan must address the deconstruction of existing structures on the site, environmental remediation under M.G.L. c. 21E and the Massachusetts Contingency Plan, 310 CMR 40.0000 et seq. (“MCP”), the maintenance of jobs and tax revenue, the identification of responsible parties for the financial costs of site remediation, and other mitigation efforts to promote the redevelopment or repowering of the Salem Harbor Power Station.

In determining a plan of action, the Task Force must consider financing options for the clean-up and demolition of existing structures on the site, identify existing programs that could provide resources to the clean-up or redevelopment, and suggest new programs that may be necessary to achieve the goals of the Task Force.

In addition to these mandatory considerations, the Task Force will take this opportunity to put its recommendations into historical and procedural context. This report shall serve as a “one-stop” document to outline both the physical details of the Salem Harbor Power Station site and its history, but also outline the various regulatory procedures and requirements that will guide the transformative process moving forward.

C. Task Force Process and Activities

Beginning in September 2012, the Salem Harbor Revitalization Task Force held a series of public meetings in Salem, Boston, and Holyoke.⁴ In order to accomplish its mandate, the

⁴ See meeting agendas and minutes: <http://www.mass.gov/eea/energy-utilities-clean-tech/salem-harbor/prtf-meetings.html>

Task Force formed the following three subcommittees, each chaired by the Task Force members who are also elected officials:

- A demolition and remediation subcommittee, chaired by Representative John Keenan, to ensure the full deconstruction of the existing facility and remediation of the site.
- A redevelopment subcommittee, chaired by Mayor Kimberley Driscoll, to ensure the redevelopment or repowering of the site to maintain its jobs and preexisting tax revenue.
- A decommissioning subcommittee, chaired by Senator Michael Knapik, to develop language for the Legislature ensuring decommissioning of coal plants upon retirement throughout the Commonwealth.

At each of its meetings, the Task Force held energetic discussions and welcomed input from members of the public. Presentations were given to the Task Force or its subcommittees by the Energy Facilities Siting Board staff, Department of Environmental Protection staff, Mayor Kimberley Driscoll, Footprint Power, National Grid, MassDevelopment, Attorney General Martha Coakley's Office, the Sierra Club, and Clean Water Action. The Task Force completed a full tour of the Salem Harbor Power Station facility and site on September 27th, 2012.

This report provides an overview of the discussions and presentations that occurred during this process, and culminates in recommendations by the Task Force on how to support the clean-up and redevelopment of Salem Harbor Power Station.

II. Description and History of Salem Harbor Power Station

A. Early History

The Salem Harbor Power Station site has a long maritime industrial history, beginning with the construction of India Wharf in 1800 for commerce and shipping with the Far East by the India Company. India Wharf, once home to thriving trade with the Far East, was bought in 1836

by Stephen Phillips, who brought the Salem and Lowell Railroad to the wharf connecting Salem Harbor with Lawrence and Lowell so coal and cotton could be transported efficiently. This twenty-four mile railway line opened in 1850 making Salem a key link in the delivery and distribution of coal shipments to inland mill cities. The Philadelphia and Reading Coal and Iron Company built the Philadelphia Pier next to Phillips Wharf in 1873 in order to provide for larger shipments of coal from Philadelphia, and at its peak, ninety thousand tons of coal arrived annually. The Philadelphia and Reading Company eventually purchased Phillips Wharf. By 1916, however, Salem had been eclipsed as a coal importer and the Philadelphia and Reading operation had all but shut down. The company ignored pleas from the community to either use the property or sell it to someone who would. After years of disuse, the Philadelphia and Reading property, including Phillips Wharf, Philadelphia Pier, the mud flats and other land totaling nearly ten acres, were purchased by the Tenney Company, the manager of Salem Electric Light, with the intent of building a power plant on the site. With demolition complete and the site cleared, site preparation was started for the power plant, which was estimated to cost \$10 million. By the time the site preparation was completed, nearly thirty acres of mud flats had been converted into waterfront land for the future power plant.⁵

Once operational, the new site was used as an active coal terminal for over twenty years prior to the power plant being built. Amid the Depression era, the coal business did well. However, due to the economy, as well as World War II, actual construction of the power plant was significantly delayed. New England Power Company finally began construction on Salem Harbor Power Station in 1948. The first coal-fired generation unit on the site cost \$30 million and commenced operation in 1951. A second generating unit began operation in 1952, while a

⁵A Site Assessment Study on Potential Land Use Options at the Salem Harbor Power Station Site” by Jacobs, Sasaki Associates, and LaCapra Associates (“Site Assessment Study”), January 2012, page 14

third unit was added in 1958. In 1969, the facility's units were converted to oil, and in 1978 a fourth oil-fired unit was added.⁶ New England Power began plans for a fifth 880MW oil-fired unit in 1971, but cancelled the plans in 1973 after the oil embargo and associated energy crisis.⁷ The crisis also resulted in New England Power converting Units 1, 2, and 3 back to coal.⁸

B. Restructuring

In November 1997, the Massachusetts Legislature passed *An Act Relative to Restructuring the Electric Utility Industry in the Commonwealth, Regulating the Provision of Electricity and Other Services, and Promoting Enhanced Consumer Protections Therein* (“the Restructuring Act”), which resulted in each Massachusetts electric utility divesting their electricity generation assets. In that process, New England Power Company sold Salem Harbor Power Station, including its onsite environmental liabilities, to U.S. Gen New England, Inc, (“U.S. Gen”) a subsidiary of Pacific Gas & Electric Company, as part of a group of fossil-fuel powered generation facilities including Salem Harbor Power Station, Brayton Point Power Station, and Providence's Manchester Street Power Station⁹ for \$1.59 billion with an additional \$85 million for employee severance and retraining costs.¹⁰ National Energy Group, another Pacific Gas & Electric subsidiary, assumed operation of the plant.

C. U.S. Gen Bankruptcy

On June 8, 2003, U.S. Gen filed for Chapter 11 bankruptcy protection. As part of the bankruptcy reorganization, U.S. Gen announced an agreement for Dominion Energy Salem Harbor, LLC., to acquire the Salem Harbor, Brayton Point, and Manchester Street plants on

⁶ Salem Harbor EFSB Petition p. 35-6, EFSB 12-2

⁷ *NEPCO Municipal Rate Committee v. FERC*, 668 F.2d 1327, (D.C. Cir. 1981); New England Power Annual Report to FERC for the year ending 12/31/77

⁸ Salem Harbor EFSB Petition p. 35-6, EFSB 12-2

⁹ <http://www.env.state.ma.us/dpu/docs/electric/97-94/testww.pdf>

¹⁰ DPU Order 97-94

September 7, 2004, for \$536 million and an adjustment for inventory and reimbursement¹¹ for certain capital expenditures incurred prior to closing estimated at \$120 million making the total sale price \$656 million. The bankruptcy court approved the sale on November 23, 2004 and the acquisition was completed in January 2005.

D. Dominion Ownership and Delist Bid

Dominion Energy Salem Harbor, LLC, a subsidiary of the Richmond, Virginia based electric utility holding company, Dominion Resources, Inc., owned and operated the power plant between January, 2005 and the summer of 2012. During Dominion's ownership, it became clear that the United States Environmental Protection Agency ("EPA") would require new and existing coal and oil fired power plants to reduce mercury and other toxic emissions under the Clean Air Act as part of proposed Mercury and Air Toxics Standards. Compliance for Salem Harbor Power Station was estimated to cost hundreds of millions of dollars.¹² In June 2009, Dominion submitted delist bids in ISO New England's¹³ ("ISO-NE") third Forward Capacity Auction for the June 1, 2012 to May 31, 2013 commitment period for all four of its units. Rejected delist bids allow generators to receive above-market capacity payments for their generating units if the ISO determines the capacity is necessary to maintain reliability of the electric grid. If the ISO accepts the delist bid within the auction, the generator is not committed to operate during the commitment period.

In this auction, the ISO accepted the delist bids for Units 1 and 2 setting the stage for Dominion to retire these two units in June 2012, while it rejected the bids for units 3 and 4. Again, in June 2010, the ISO rejected Dominion's delist bids for Units 3 and 4 in the fifth

¹¹ Site Assessment Study at 98

¹² Site Assessment Study at 18

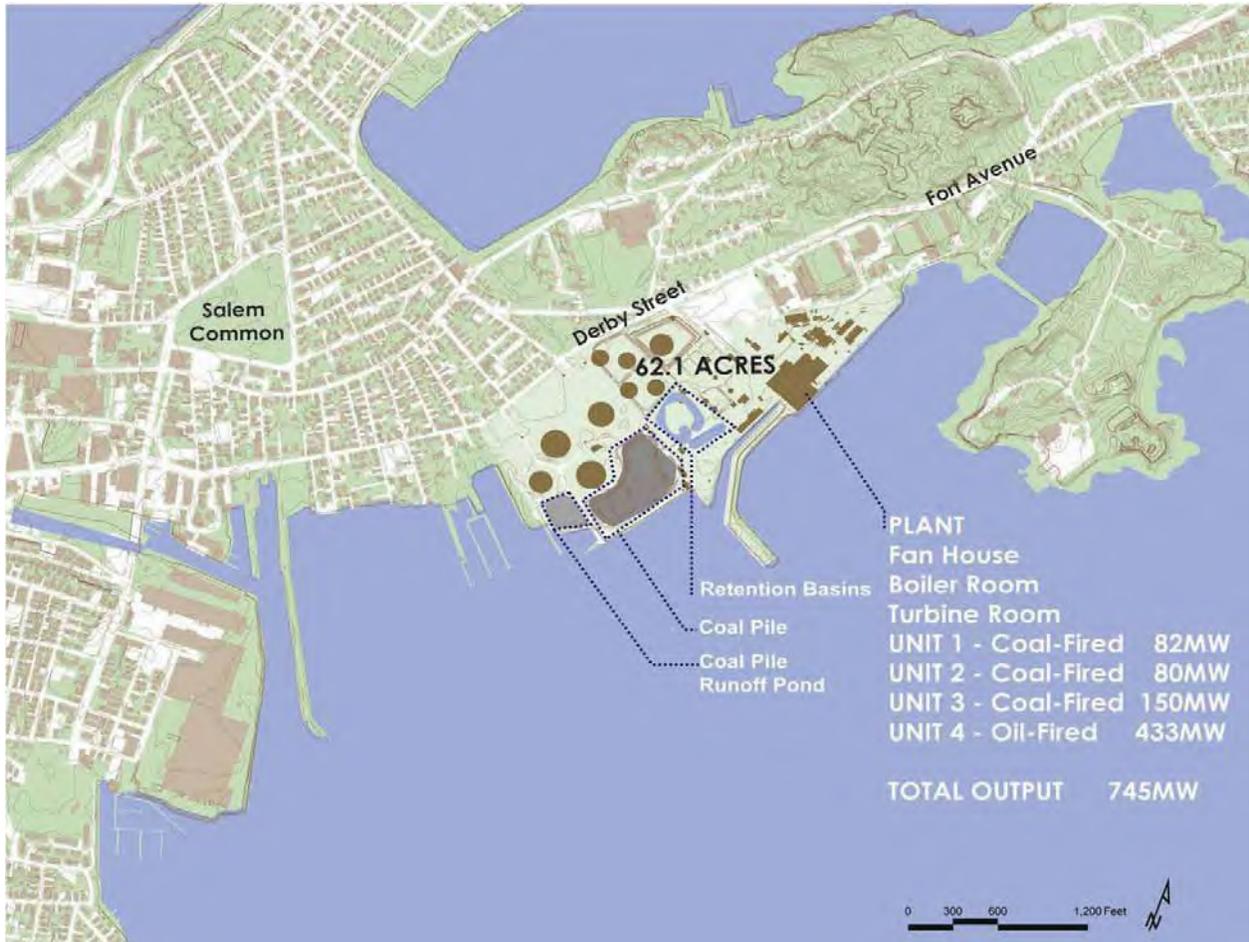
¹³ ISO New England is the independent system operator that administers the whole electricity markets in the New England control area.

Forward Capacity Auction, reserving capacity for the June 1, 2013 to May 31, 2014 commitment period. However, in October 2010, Dominion notified ISO-NE that, despite ISO-NE's rejection of the delist bids for Units 3 and 4, Dominion intended to retire the units anyway, as was its right under the ISO-NE tariff, ending its capacity commitments after May 31, 2014. At the time of notification, Dominion cited pending EPA one-hour ozone rules as contributing to the decision to close the plant.¹⁴

E. Footprint Purchase

On June 29, 2012, Dominion and Footprint Power filed an application with the Federal Energy Regulatory Commission requesting authorization for Footprint to acquire Salem Harbor Station from Dominion. Footprint Power is a New Jersey company that describes its purpose as acquiring coal and oil fired power plants that have reached or are approaching the end of their useful lives while structuring environmentally responsible solutions to the challenges posed by the historical uses of such sites. The company is led by Peter G. Furniss, its CEO, and Scott G. Silverstein, its President and COO. The Commission approved the transaction on July 27, 2012.

¹⁴ *Dominion to shut Mass. Salem Harbor coal/oil plant*, Reuters, Nov. 18, 2010, retrieved at: <http://www.reuters.com/article/2010/11/18/utilities-dominion-salem-idUSN1811822820101118>



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F. Present Day Detailed Description of Site, Including All Structures

Salem Harbor Power Station is situated between Derby Street and Salem Harbor. The site is bounded to the west by residential properties, to the north by the South Essex Sewage District, to the east/southeast by Salem Harbor, and to the southwest by commercial properties including the Salem Ferry port and parking lot.

The site includes major facilities associated with power generation, fuel storage, and waste treatment. Major facilities include the power house building, an aboveground fuel oil tank farm and associated piping transfer system, a coal storage pile and coal moving equipment, a marine terminal, and a wastewater treatment system. National Grid’s transmission company,

¹⁵ Site Assessment Study at 19

New England Power Company has easement rights to a substation which is located to the west of the power plant building and three smaller warehouse buildings located north of the power plant building.¹⁶

There are several fuel tanks on the site; many are no longer in use. Most are designed for storing No. 6 fuel oil, while some store diesel ignition fuel. The diesel ignition fuel tanks store 338,520 gallons of fuel, while the No. 6 fuel oil tanks store up to 6.0144 million gallons of fuel each.¹⁷ Northeast Petroleum Corporation, a subsidiary of Cargill, Incorporated, either owned or leased from New England Power Company several of these fuel tanks.

A list of all structures located on the site is included in the Salem Harbor Redevelopment Project Petition before the Energy Facilities Siting Board (EFSB), and includes; (i) the India St Water Metering Building, (ii) the Wastewater treatment pump house, (iii) a Heat Trace Building, (iv) the Oil Transportation Pump House, (v) the Coal Pile Runoff Pond Pump House, (vi) the Coal Tunnel Building, (vii) the S. Dock Motor Control Center Building, (viii) the Dock Office, (ix) the Boat Storage and Machine Shop, (x) Garage/Storage House, (xi) Junc. House T-U, (xii) Yard Office, (xiii) Breaker House, (xiv) CO2 Storage Building & Hydrogen Storage Slab, (xv) Gate House, (xvi) Security Building, (xvii) Ash Sluice Pump House, (xviii) Hydrobin, (xix) Switchgear Building, (xx) Fans/Elec./Precip/ Bldg, (xxi) Garage, (xxii) Sub-station building, (xxiii) Training Center & Warehouse, (xxiv) Power Plant, (xxv) Fan House, (xxvi) F.A.R. Building, (xxvii) Warehouse, (xxviii) Fly-Ash Silo Building, (xxix) Warehouse, (xxx) Change House, (xxxi) Warehouse, (xxxii) Relay House, (xxxiii) Oil Pump House, (xxxiv) Chlorine

¹⁶ Footprint Salem Harbor Redevelopment Project Petition, EFSB 12-2, Page 14

¹⁷ Id.

Analyzer Building, (xxxv) Derby Street Water Metering Building, (xxxvi) N Dock Motor Control Center Building, and two unknown structures.¹⁸

Industrial activity at the site involving hazardous materials and other substances has led to over 22 environmental notifications to the Department of Environmental Protection (“MassDEP”) triggering the Massachusetts Contingency Plan (“MCP”) process. All of those previous matters have been addressed and “closed out.”¹⁹

Environmental filings relating to the former wastewater treatment basins on the site were impactful. MassDEP never approved the groundwater discharge permit for these unlined basins after Salem Harbor Station applied for the permit in 1983, although the Department authorized the operation of these systems while the applications were pending. Wastes that had been treated in the unlined basins included oil fly ash, coal pile runoff, and washwater. In September 2000, MassDEP issued an administrative consent order, requiring U.S. Gen to file a plan with the Department to replace the unlined treatment basins with above ground tanks, cease its discharge of wastewater from the oil Fly Ash Recycle system to the unlined basins, submit and implement a closure plan for removal of accumulated solids from within the unlined treatment basins, and cleanup the underlying soils and groundwater in accordance with the requirements of the MCP process.²⁰ Cleanup at the former wastewater treatment basins involved an “Activity and Use Limitation” covering 7 acres in the former basin area allowing normal industrial operations and excavation of up to 15 feet, but restricts the use of this area as residence, school, nursery, daycare or non-industrial use.

Buildings, boilers, turbines, and other aspects of the site are likely to contain a number of hazardous materials, including lead paint and asbestos, considering the date of their construction.

¹⁸ Salem Harbor Redevelopment Project Petition Before the Mass EFSB, Figure 1.5 - 4

¹⁹ MassDEP presentation to Task Force, November 18, 2012.

²⁰ MassDEP Administrative Consent Order#ACO-BO-00-2002

Asbestos surveys of the existing Salem Harbor Station Facility have been conducted in the past, and these are available to inform future pre-demolition asbestos abatement work.²¹ Prior to demolition, this material will need to be tested, a plan must be developed, and the material will need to be removed. This will be an expensive and time-consuming process and contribute to the expense associated with demolition.²²

III. Necessary Remediation and Deconstruction

A. Current Legal and Regulatory Requirements

i. Department of Environmental Protection Remediation Requirements

The MCP requires responsible parties to take necessary response actions at properties where there has been a release of oil or hazardous material. If the responsible parties do not take the necessary response actions MassDEP is authorized by M.G.L. c. 21E to have the work performed by its contractors, with the responsible parties liable for those costs, as well as additional sanctions.²³

A site subject to the requirements of the MCP must implement one or more permanent solutions, to the extent feasible, to achieve a level of No Significant Risk.²⁴ In addition, the MCP requires responsible parties to engage a Licensed Site Professional (LSP) to manage, supervise or perform the necessary response actions at the site. All remediation waste must be disposed of in accordance with 310 C.M.R. § 40.0030 including, without limitation, contaminated soil and debris.

The cleanup standard required at a site is based on the site uses, including current and foreseeable uses. Cleanup standards are more stringent for certain uses, such as residential than

²¹ Final Environmental Impact Report, EEA # 14937 at 9-3.

²² Site Assessment Study at 50

²³ *MCP Regulatory Process and Standard*, available at:

<http://www.mass.gov/eea/agencies/massdep/cleanup/regulations/mcp-regulatory-process-and-standards.html>

²⁴ *Id.*

for other uses, such as industrial or manufacturing. Currently, the site is zoned for marine/industrial use. MassDEP informed the Task Force that the current owner, Footprint, as the potentially responsible party, has hired an LSP to perform a site investigation pursuant to M.G.L. c. 21E and the MCP, 310 CMR 40.0000.

ii. Responsible Parties Under Current Law

Liability under Chapter 21E is joint, several, and without regard to fault.²⁵ Chapter 21E does allow the equitable apportionment of response costs between and among responsible parties. Therefore, while the Commonwealth can hold a current owner responsible for cleanup, that owner may seek to recover its costs from the prior owner or operator responsible for the contamination pursuant to M.G.L. c. 21E § 4. In addition, if an owner of a site did not cause the release, they are considered an “eligible person” and cannot be held liable to the Commonwealth or for third party claims for property damage or contribution (other than claims arising from a contract) once a permanent solution or remedy operation status exists and is maintained or has been achieved and maintained. This liability protection extends to all subsequent property owners so long as they maintain the remedy.

Therefore, the Commonwealth could potentially hold both the current and former owners responsible for the remediation. Alternatively, the Commonwealth could hold a current owner responsible, who could then seek to recoup their costs from prior owners responsible for the contamination.

²⁵ Liability for releases of oil includes current owners and operators and any person who has “otherwise caused or is legally responsible for a release or threat of release of oil or hazardous material. Liability for releases of hazardous material is broad, including current and former owners and operators, any person who owned at the time of storage and disposal, and person who arranged for transport, disposal, storage or treatment of hazardous material, any person who directly or indirectly transported any hazardous material, and any person who “otherwise caused or is legally responsible for a release of threat of release of oil and or hazardous material”.

Consequently, Footprint, Dominion and National Grid's transmission company (New England Power Company), as well as additional former owners or operators, may be jointly and severally liable for the costs of remediation at Salem Harbor Power Station, which they could seek to apportion among themselves. National Grid has stated that they have committed to work with Footprint regarding their potential liability for remediation costs.²⁶ Additionally, other parties, such as Cargill/Northeast Petroleum, may also have remediation responsibility for portions of the site they previously owned or operated, unless the contamination associated with their ownership/operation is solely "oil". Former owners and operators are not liable for oil-contaminated sites unless they meet another condition of M.G.L. c. 21E § 5 (a).

Private agreements can be used to allocate environmental liabilities under Chapter 21E between and among private parties. Private agreements cannot, however, serve to protect a party from liability to the Commonwealth. While National Grid transferred on-site remediation costs to U.S. Gen with the purchase and sales agreement for the Salem Harbor Power Station, the subsequent bankruptcy eliminated U.S. Gen's ability to provide that protection.²⁷ Additionally, no responsible party would be required to pay for remediation costs beyond the applicable standard, in this case likely a standard based upon an industrial use of the property.

iii. What Action is NOT Required

The cleanup standard required at the site is based on the site uses, including current and foreseeable uses. Because any site can be re-zoned and re-developed for residential uses, all sites are required to consider residential use as a foreseeable future use, unless it is restricted by an Activity and Use Limitation (AUL) – a likely scenario for the site of a power plant.

²⁶ It is important to note that, according to National Grid, a significant portion of any remediation costs incurred by New England Power Company could ultimately be borne by electric customers in Massachusetts under agreements that were approved by the Federal Energy Regulatory Commission.

²⁷ Ron Gerwatowski presentation to Task Force, February 4, 2013.

Additionally, the MCP is designed to respond to releases (and threats of release) to the environment resulting in hazardous material and oil contamination of soil, water, air or other media; it is not designed to require the demolition or removal of structures that do not pose an environmental hazard. Currently, there are no requirements for owners of decommissioned power plants to remove any non-hazardous structures on the site.

Therefore, due to the existence of hazardous environmental conditions in the ground, the land and buildings on the site are subject to different treatment. The Site Assessment Study stated that the owner of the site “will be required to remove the four large tanks on the southwestern portion of the site within one year of the plant’s closing.”²⁸ However, this statement has not been verified, and the basis for this determination is uncertain. There may be a requirement to remove abandoned oil tanks under 527 C.M.R. § 9.00; however it is unclear if and when the tanks on the site might be considered “abandoned” under the regulations.

Additionally, the current structures are located on lands subject to Chapter 91, the Massachusetts Public Waterfront Act, and associated Waterways Regulations. Under 310 C.M.R. § 9.27, MassDEP can require the removal of previously licensed structures upon the nullification, expiration or revocation of a Chapter 91 license. However, it is unclear when the Chapter 91 license for the current structures is set to expire, and it is uncertain whether this license could be nullified or revoked under current MassDEP guidelines. Finally, the authority of this section is not generally applied to large structures such as the current buildings on the site, and there are many unused or largely abandoned structures subject to Chapter 91 regulations throughout the Commonwealth. It is not known whether MassDEP would seek to apply its authority under the regulations to these structures, or whether it would deem this the best use of resources.

²⁸ Site Assessment Study at 86

Footprint has stated on many occasions their commitment to demolish the structures on the site, but there is currently no requirement for them to do so. The Energy Facilities Siting Board could require the site's owner to demolish the structures as part of their approval process. However, such a requirement would not be enforceable if Footprint is unable to build a new power plant on the site. If a new plant is not built, Footprint has stated they will still demolish the structures, although without an anchor tenant in place to help finance those costs the timing of such a demolition is unknown. Furthermore, Footprint likely would not be legally bound to demolish the structures.

B. Environmental Conditions – Tetra Tech Report²⁹

i. *Tetra Tech Report Background*

Footprint commissioned Tetra Tech to perform a subsurface investigation on the site, in preparation for the filing of a Release Notification Form under the MCP. The results of this study provide an overview of the current site conditions, as well as areas to monitor throughout the MCP process.

ii. *Conditions*

As previously stated, over the years there have been over 22 notifications triggering the MCP process on the site. All of those previous matters have been addressed and “closed out” although one cleanup involved an “Activity and Use Limitation”, covering 7 acres at the former wastewater treatment basins. This limitation allows normal industrial operations and excavation up to 15 feet, but restricts the use of this area as residence, school, nursery, daycare or non-industrial use.³⁰

²⁹ Final Environmental Impact Report, EEA # 14937 Appendix L.

³⁰ MassDEP Presentation to Task Force, November 19, 2012.

Tetra Tech recently performed a subsurface investigation to provide a broad-based assessment of soil and groundwater conditions across the site.³¹ The investigation overlapped the footprint of some past releases of oil or hazardous materials, but was intended to provide general site coverage of areas not previously investigated. The investigation program included the installation and sampling of 78 soil borings and 25 groundwater monitoring wells at locations across the site. In addition, 40 shallow test pits were excavated to provide additional evaluation of shallow soil conditions. During the installation of the borings/wells and excavation of the test pits, soil samples were collected and evaluated for evidence of oil and hazardous materials.

A review of the soil and groundwater analytical results indicates that there are no imminent risks associated with conditions at the site, nor are there conditions at the site that warrant the MCP's 2-hour or 72-hour reporting requirements. There are some contamination levels above the 120-day reporting requirements in the soil, primarily elevated concentrations of certain metals, polycyclic aromatic hydrocarbons (PAHs) and petroleum-related hydrocarbon compounds. The majority of the detected contaminants above the reporting thresholds for soil was consistent with the conditions documented in past and now closed notifications. Specific exceedances of MCP reporting thresholds that are not necessarily attributable to past closed releases include:

1. In the vicinity of the current coal storage stockpile, elevated concentrations of arsenic, nickel, vanadium and PAHs. The area of highest nickel and vanadium levels is nearest to the former wastewater treatment system lagoons, where oil ash was historically managed. The existing power plant is permitted to burn oil ash in the coal fired boilers, and it is likely that such activity would have included blending of oil ash residues with coal for co-combustion at the facility.
2. Lead was detected above reportable concentrations at two discrete locations at the southwesterly limits of the site. These impacts may be attributable to a lead release documented on the southerly abutting property.

³¹ Final Environmental Impact Report, EEA # 14937 at 9-1.

3. Beneath a former oil storage tank, screening showed concentrations of bromomethane and 1, 3, 5-trimethylbenzene above reportable levels. The source of this contamination remains unknown; however, the extent of this release is limited.
4. Site-wide, metals including arsenic, nickel, and vanadium were occasionally reported above their respective reportable concentrations.

Tetra Tech and Footprint stated that site-wide concentrations of metals and organics in the soil were “very encouraging.”³² Furthermore, none of groundwater samples detected targeted compounds above reporting levels. Additionally, the samples did not detect any levels of PCBs or asbestos above the reporting threshold. Footprint reiterated its commitment to resolving issues in conformance with the MCP and consistent with reuse expectations, and is working closely with MassDEP to alleviate all environmental issues.

*iii. DEP Regulatory Process*³³

The first step is determining whether MassDEP must be notified of a contaminated site. The MCP clearly identifies specific thresholds and time frames for notification for sudden spills, historical releases, imminent hazards, and threats of release. If one of these thresholds is exceeded, then MassDEP must be informed of the contamination. In January 2013, Footprint reported a release of hazardous material(s) to soil or groundwater at 120-day reportable concentrations.

Once a release of oil or hazardous material is reported to MassDEP, a regulatory clock starts, and Preliminary Response Actions must occur. Within 1 year, the site must either be cleaned up, or it must be classified as either Tier I or Tier II, and undergo a comprehensive assessment and cleanup program. In addition, Immediate Response Actions are required when

³² Footprint and Tetra Tech Presentation to Task Force, January 22, 2013.

³³ *MCP Regulatory Process and Standard*, available at:
<http://www.mass.gov/eea/agencies/massdep/cleanup/regulations/mcp-regulatory-process-and-standards.html>

the release is time-critical, such as a sudden spill or an Imminent Hazard identified. Another type of MCP Response Action, Release Abatement Measures, are appropriate for situations where time-critical actions are not required, yet the responsible party wishes to conduct early risk-reduction activities prior to completion of the phased MCP process. If early risk reduction measures do not result in a complete cleanup of the contamination within one year of the date of notification, the contaminated property must be Tier Classified. If classified as Tier I, a permit must be obtained from MassDEP before proceeding with a cleanup. Tier I sites are further classified as Tier IA, Tier IB, or Tier IC, depending on the complexity of the site conditions and the compliance history of the owners or other responsible parties. Cleanups at Tier II sites may proceed without a permit.

Cleanups follow a phased process. Reports are submitted to MassDEP at each phase to document the cleanup activities. During Phase I, a determination is made on whether notification and early risk reduction measures are required based on preliminary assessment data. A more comprehensive assessment is performed during Phase II, which defines the source, nature, extent, and potential impacts of the contamination, and the potential harm to health, safety, public welfare, and the environment.

If the results of Phase II indicate that a condition of No Significant Risk to public health, welfare, safety and the environment has not been achieved for current and foreseeable future uses, cleanup is required. Phase III evaluates and selects the cleanup options. The determinations made during the Phase III result in a Remedial Action Plan (the site cleanup plan), which is implemented during Phase IV. Finally, Phase V is implemented when there is an on-going treatment system, and maintenance or monitoring of the remedy is needed.

The standard used for deciding when a cleanup is complete is when a condition of No Significant Risk of harm to health, safety, public welfare, or the environment is achieved. When possible, the property should be restored to the conditions that would have existed if the property had never been contaminated. When a cleanup is complete, a Response Action Outcome Statement must be submitted to MassDEP. This Statement must be submitted within five years of the date of the tier classification.

*iv. Timelines*³⁴

Footprint reported a release of hazardous material(s) to soil or groundwater at 120-day reportable concentrations in January 2013, starting the regulatory clock. In year one (2013) the site tier must be Tier Classified and a Phase 1 assessment must take place. The deadline for submitting the Phase 1 and Tier Classification is January 2014. By January 2016 (year three) a detailed site assessment is required and cleanup options will be evaluated and selected. By January 2017 (year four) a cleanup plan will be implemented. Finally, by January 2019 (year six) all MCP requirements must be met.

This timeline extends beyond the December 31, 2016 Task Force deadline for full demolition and remediation prescribed by the statute. However, Footprint has stated that if their proposed power plant is built on schedule they will achieve all of the legislative goals of full demolition, remediation and redevelopment of the site within this deadline. Footprint has also noted that “unless the Commonwealth were to take the Site by eminent domain and pursue a redevelopment project on its own, it is difficult if not impossible to conceive of a project that could implement a plan for redevelopment of the Site by December 31, 2016.”³⁵

³⁴ MassDEP Presentation to Task Force, November 19, 2012.

³⁵ Final Environmental Impact Report, EEA # 14937 at 6-9.

Footprint has also stated that the bid process is underway for demolition, which will take place in phases. The first phase will include the oil tanks and other structures not necessary for current plant operations, which could start as early as this year. The remainder of demolition will occur after shut down of the existing facility.

C. Structures

i. Oil and Water Tanks

Current oil and water tanks include: 1) Tanks B-1, B-2, B-3, B-5; 2) Tanks D-1, D-2, D-3, D-4, D-6; 3) Tanks S-1, S-2.



Footprint has stated that demolition of the oil and water tanks will begin by the fall of 2013 as part of the site preparation for their proposed new facility. However, under current law while these tanks may need to be remediated and made safe, there is no requirement that they be torn down.

ii. Generating and Administrative Buildings

Current generating and administrative buildings include: 1) India Street Water Metering Building; 2) Wastewater Treatment Pump House; 3) Heat Trace Building; 4) Oil Transfer Pump House; 5) Coal Pile Runoff Pond Pump House; 6) Coal Tunnel Building; 7) Junction House T-U; 8) Breaker House; 9) CO2 Storage Building & Hydrogen Storage Slab; 10) Ash Sluice Pump House; 11) Hydrobins; 12) Switchgear Building; 13) Fans Electric Precipitation Building; 14) Sub-Station Building; 15) Power Plant; 16) Fan House; 17) F.A.R. Building; 18) Fly-Ash Silo Building; 19) Change House; 20) Relay House; 21) Oil Pump House; 22) Chlorine Analyzer Building; and, 23) Derby Street Water Metering Building.

It is likely that none of these structures would be required to be demolished under current law. However, Footprint has committed to demolishing all of the buildings on the site.

According to Footprint, the Community Relations Building at the entrance of site and the structural steel of the existing turbine hall are under consideration for reuse in light of their representation of mid-century architectural design. The Community Relations Building would be renovated and reused while the structural steel of the turbine hall would be used as a skeleton of a new commercial/industrial building.

iii. Other

Additional structures include: 1) Dock Office; 2) South Dock Motor Control Central Building; 3) North Dock Motor Control Center Building; 4) Boat Storage & Machine Shop; 5) Garage/Storage House; 6) Yard Office; 7) Gate House; 8) Security Building; 9) Garage; 10) Training Center & Warehouse; and, 11) Warehouse(s).

It is likely that none of these structures would be required to be demolished under current law. However, Footprint has committed to demolishing all of the buildings on the site. The only

anticipated exceptions according to Footprint's current plans will be the existing parking area to the north which will be reused, the existing guardhouse which is expected to remain and an additional building to be renovated to accommodate a proposed visitor's center at the facility entrance, all of which are noncritical facilities and will remain at their existing elevations.

D. Estimated Costs

Cost estimates vary, and are difficult to determine, particularly in light of the ongoing remediation efforts. Furthermore, the salvage value of the plant is unknown, including the potential value of scrap metal, such as iron or copper, and also of larger components such as boilers which may be sold whole or in pieces in other markets. It is also unknown how much asbestos remediation may be necessary in demolishing the structures, and those costs could have significant impacts. Finally, the remediation costs are highly dependent on what level of remediation is required, as determined by future uses of the site.

According to published comments by TRC Solutions general remediation and demolition costs can run from \$5 - \$20 million for projects ranging from 100 MW to very large projects more on the scale of 1GW, depending on the salvage value as well as levels of required remediation.³⁶ In comparison, the Site Assessment Study estimated the demolition of the existing structures and the cleanup costs specific to the 65 acre site.³⁷ The cost for site cleanup was estimated to be in the range of \$5 - \$20 million, while building demolition costs are estimated to be in the range of \$80 - \$85 million. Including a credit for the salvage value of materials of \$20 - \$25 million, the study estimated that the building demolition cost would be reduced to a net of \$55 - \$60 million. The study concluded that the total cost of the site cleanup and demolition would likely be in the range of \$60 - \$80 million.

³⁶ *Fossil-Fired Plant Decommissioning Call: Transcript and Thought*, UBS Investment Research, July 30 2012.

³⁷ Site Assessment Study at 51.

IV. Salem’s Reuse Study and Redevelopment Priorities

A. Background

The City of Salem, led by Mayor Driscoll, has long had concerns over the future of Salem Harbor Power Station. The plant is a vital source of property tax revenue and regularly contributes to the community. In addition to being the largest taxpayer, the plant was one of the city’s major employers, with about 150 workers in 2010. However, many residents are eager to move beyond the plant’s operations, its greenhouse gas and pollution emissions, and its “obstructive” presence upon Salem’s waterfront. With its closure now imminent, the Mayor embarked on an extensive public outreach to city residents about the site and its redevelopment, an outreach that is ongoing today. As a Designated Port Area and zoned for commercial/industrial uses only, finding a balance between realistic redevelopment of the site while also allowing for expanded waterfront access is difficult, but not impossible. Yet all stakeholders agree that one outcome is unacceptable: an abandoned former coal power plant site padlocked and unused.



B. Site Assessment Study

The future of Salem Harbor Power Station has been in question for many years. As a result, in January 2010, before its previous owner, Dominion, announced the closure of the plant, the Massachusetts Clean Energy Center awarded the city a \$200,000 grant for a 12-month feasibility study to examine potential reuse options for the plant site (“Site Assessment Study”). The study looked at the owner’s short- and long-term investment plans to meet environmental regulations, potential clean energy and green technology alternatives, the plant’s role in meeting the region’s future energy needs, and the potential costs of cleaning up the site and decommissioning the plant in the event of a closure.³⁸ Conducted by consultants Jacobs, Sasaki Associates, and LaCapra Associates, the study drew the following main conclusions:³⁹

1. A preliminary cost estimate of \$60 Million to \$85 Million was developed for both site clean-up and demolition of the existing power station structures. The estimate is based upon public records, a brief walk through of the facility and past experience of the consultant team with design, construction and modifications to utility scale power generating facilities.
2. Site preparation costs of this magnitude will seriously burden any redevelopment – no matter what the planned use is.
3. As a Designated Port Area with very limited road and rail access, there may not be sufficient allowable land uses to keep the site economically viable.
4. Limited landside infrastructure, such as narrow, inadequate roadways, may cause an impediment to redevelopment.
5. A phased development, focused on an initial reuse (such as a cruise ship terminal or power plant), is the best way to redevelop the site.
6. The advantages the site offers for a potential new natural gas power plant – proximity to the existing substation and the offshore natural gas network –are significant. However, such a plant would face a lengthy regulatory process to become feasible.

³⁸ “State awards \$200K to study future of Salem Harbor Station.” The Salem News, January 29, 2010.

³⁹ Site Assessment Study at p.101 and following.

7. While there is much community sentiment in favor of developing a green energy solution on the site, it does not appear to be a formula that will provide a regional benefit. Since neither wind nor solar will generate more than 10–15 MW utilizing the entire site area, neither appear to be economically viable relative to regional scale power generation. However, both have potential to provide a portion of the on-site power required by new development.

The study concluded that the vast majority of the site should remain dedicated to industrial, port oriented uses. The current dock could be converted to a cruise ship terminal, while areas located by the current ferry terminal should be a combination of open public space, expanded parking and mixed use development.



C. Use of Port and Expanding the Ferry Terminal

The Site Assessment Study encompassed the city's hope to expand the use of its ferry terminal and wharf. Previously, in 2005, Salem began a lease (for \$1/year) of an approximately two acre site on Blaney Street from Dominion in order to build a temporary pier and parking lot so that it could initiate round trip ferry service from Salem to Boston as of 2006. The success of the ferry spurred interest in expanding service to include the cruise ship industry. In 2010, the city purchased the Blaney Street property from Dominion for \$1.7 million using a Massachusetts Seaport Advisory grant in order to develop a comprehensive vision for the wharf.

The Salem Wharf project consists of the redevelopment of 10 Blaney Street into a multi-use port facility to serve a variety of vessels, including the existing ferry, excursion boats, water taxis, commercial fishing boats, visiting ships, and cruise ships. The project consists of two main components: the first involves the development of the ferry terminal and surrounding Blaney Street property, the second includes expanding to an adjacent property, currently owned by Footprint, allowing for the docking of larger cruise ships, as well as continued development of the waterfront area. The project proposes upland improvements including traffic changes on Derby Street, parking, a terminal building, landscaping and pedestrian amenities including a Harborwalk, and piers for fishing and viewing. Proposed waterside improvements include the construction of a fixed pile supported pier, a floating dock and barge system, and increased and enhanced facilities for both cruise ships and commercial fishing vessels.⁴⁰

The long-term vision for Salem Harbor is to create a continuous "Salem Harborwalk" along the entire water's edge from Palmer Cove to Winter Island including a segment encircling the South River Basin. The city has stated an intention to develop missing segments of the proposed Harborwalk in the central waterfront wherever public right-of-ways currently exist,

⁴⁰ Notice of Project Change, EEA #14234, Project Narrative: Footprint Power Site, May 2013 at 2.

while utilizing the Chapter 91 licensing process to expand public access. The vision calls for establishing new view and public access corridors connecting the waterfront with nearby existing walkways and other inland public spaces and popular attractions. In the Blaney Street area, the city proposes increased pedestrian access to the waterfront through a series of pathways as part of the overall Harborwalk, leading to the site of the Salem Wharf.⁴¹

Footprint maintains an existing ship berth adjacent to Blaney Street for unloading coal used in the current power plant. While Footprint owns this berth at 24 Fort Avenue, the city has obtained rights to utilize the property to allow for public access to the berth from the ongoing Salem Wharf development. This Footprint berth could accommodate future larger cruise ships of up to 800 feet and is an integral component to the proposed development of the port area. The city has sought to both obtain access to the site as well as make improvements necessary to support use as a cruise ship terminal. Obtaining this access cost the city approximately \$155,000. Furthermore, improvements at the berth including dock and fender pile renovations are expected to cost an additional \$428,000.⁴²

The Salem Wharf project includes two main sections and is expected to be completed in several phases. The first section is the proposed expanded wharf and terminal for enhanced ferry access and other smaller ships. The second section includes the Footprint berth and access for much larger vessels, most notably larger cruise ships. The first phase includes temporary landside improvements and shoreline stabilization along Blaney Street. The second phase includes the first 250 feet of wharf construction, as well as bulkhead wall and dredging projects. Future expected project phases include embayment dredging, construction of a terminal building,

⁴¹ Salem Harbor Plan at *x*.

⁴² Task Force Presentation by Mayor Driscoll, November 19, 2012.

and construction of a T-shaped berth at the end of the wharf.⁴³ The total projected cost for this project is expected to reach approximately \$20 million.

In June 2012, the Seaport Advisory Council awarded Salem an additional \$1.75 million to help advance the Salem Wharf project. This funding was designed to support the first phase of dredging, which once complete, will allow Salem to accommodate ferries, excursion and other visiting vessels and coastal cruise ships of up to 250 feet in length. Additionally, this award will support other projects on the site, including Harborwalk construction improving pedestrian access to the pier on Blaney Street, a pier extension of 100 feet and other land side site improvements including lighting, landscaping and pavement.

The city believes that it has an opportunity to be an integral part of a growing niche market in the cruise industry. Furthermore, Salem has identified the potential to utilize additional land adjacent to Blaney Street on the Footprint site for parking and supporting retail and commercial activity after the Salem Harbor site is closed. The Site Assessment Study underscored the viability of an expanded cruise port citing a 2008 Salem State University study which found that cruise tourism has expanded at an annual rate of over 7% since 1990, with port of call passenger visits more than doubling in a four year period in Boston.

Proposals for the expanded Salem Wharf project also envision a public access promenade and waterfront lawn connecting the cruise ship berth with the Salem Wharf development. The Salem Wharf plan also proposes expanding slips for commercial fishing vessels along Blaney Street. Finally, plans for the site envision potential mixed-use development, including buildings combining retail use on the first level with residential apartments on higher floors, in addition to potential light industrial uses. Parking and other supporting uses are also proposed for the site.

⁴³ Salem Wharf Project Analysis of Existing Port Expansion Plans and Development of Preferred Plan, December 2008, at 21.

D. Property Tax Concerns and Support for Repowering

One major concern for the city is maintaining a strong property tax base from the use of the Salem Harbor site. At its height, the city received upwards of \$10 million of property tax revenue from the power plant. Today, Salem only receives \$4.75 million of revenue from direct payments from the power plant, including funds from the Regional Greenhouse Gas Initiative.⁴⁴ This decline in property tax revenue has put strain on the Salem's budget and could lead to an increase of residential and commercial property tax rates if the site remains undeveloped beyond the operation of the existing coal plant.

The city believes that the highest and best use of a portion of the site would be another power plant, especially if such a plant were an efficient, low fuel cost plant that could generate power regularly. This would allow Salem to collect sufficient property tax revenue from the plant in a timely manner with the hope of expanded public access to the waterfront as well. The city supports current proposals for repowering the site with a new power plant in partnership with Salem's priorities and goals identified and supported in its reuse study, and subject to conditions related to harbor security, plant inspections, and road improvements.⁴⁵

E. Neighborhood and Local Concerns

Local residents, neighborhood organizations, and environmental groups are actively engaged in the conversation about how the city should encourage the redevelopment of Salem Harbor, and express a variety of concerns about the future of the site. Residents along Derby Street, among others living adjacent to the existing power plant, worry about noise and traffic associated with any future industrial or commercial uses of the site, and they are eager to have more access to the waterfront and public open space. Moreover, living within view of the

⁴⁴ Chapter 21A, Section 22(c)(1)(i). This property tax protection expires in 2019.

⁴⁵ See City of Salem's Initial Brief, DPU Docket EFSB 12-2.

existing power plant, these residents hope for a quick demolition of these existing structures, particularly the large smoke stacks that dominate the Salem's skyline. Most recently, the Historic Derby Street Neighborhood Association raised concerns about safety and health impacts of the new site, among others cited above.⁴⁶ Worries about increased property taxes and the impacts of necessary infrastructure improvements have also been voiced at public gatherings held by Mayor Driscoll and Footprint.

Local environmental groups are increasingly concerned, albeit divided, about any proposals for a new, natural gas generating plant for the site as well (discussed in detail below). Salem's Alliance for the Environment (SAFE) has supported plans for repowering the site, given conditions regarding environmental remediation and requirements for the demolition of existing structures are included in any approval. Marblehead's Healthlink and the Conservation Law Foundation (a statewide group) oppose any new power plant, citing the continued emission of greenhouse gases, environmental impacts, and arguments against the need of such a plant in the Commonwealth.

F. Labor Concerns

As recently as 2010, there were as many as 150 employees at Salem Harbor Power Station. As the plant ran less frequently over the past few years, many of these employees have been laid off. The remaining jobs are slated to disappear when the plant retires in 2014. IBEW Local #326, representing the workers at the plant, is working aggressively with Footprint Power, the Massachusetts Office of Business Development, the Massachusetts Department of Industrial Accidents, the Massachusetts Executive Office of Workforce Development Rapid Response Team, the Massachusetts Workforce Training Fund, and the Massachusetts AFL-CIO Workforce Development Programs to take advantage of any retraining opportunities and future employment

⁴⁶ See HDSNA Reply Brief, May 17, 2013, DPU Docket EFSB 12-2.

at the site, particularly if a new generating station is built. Many of these employees are the most familiar with the Salem Harbor site, and could be valuable assets to a future plant operator, including throughout the demolition process.



V. Footprint's Plans to Repower

A. The Proposal

Footprint proposes to construct and operate a 630 MW (692 MW summer) natural gas-fired, quick-start combined-cycle generating facility at the Salem Harbor Power Station site. Construction of the proposed plant is scheduled to begin in June 2014 and to continue for a period of 23 months. The new facility is expected to commence commercial operations in June 2016.

After retirement of Units 3 and 4 on June 1, 2014, Footprint has committed to removing all above ground features, including power plant buildings and equipment, stacks and precipitators, coal handling equipment, storage tanks and associated appurtenances such as spill prevention berms, and intake screen and pump house structures.

The proposed facility will be constructed on approximately 16 acres in the northwestern portion of the 65-acre site. The facility will include quick-start natural gas turbine generators, pollution control equipment, administrative/warehouse/shops space, a water treatment facility, step-up transformers, an ammonia storage tank, two to three water tanks, and air-cooled condensers. Footprint is also considering additional landscaping to reduce the visual impacts of the facility.

A 34,000 gallon above-ground ammonia storage tank, for pollution control processes, will be located east of the building structures and shielded from street viewing. In order to mitigate the potential impacts of an accidental ammonia release, the entire tank and diked area will be located within another enclosure. The walls of the structure will be fully sealed, and the structure will be ventilated by means of roof vents.

The proposed facility will interconnect with the National Grid system at the northeast corner of the existing 115 kV switchyard. In order to interconnect, Footprint will construct a new facility switchyard, a 115 kV underground cable connection from each of the four generator step-up transformers to the new facility switchyard, and 700 feet of overhead 115 kV transmission lines, one for each unit. These lines will be carried over three new 95-foot high steel poles similar to the poles which presently hold lines running between Unit 4 and the switchyard.⁴⁷

Natural gas will be delivered to the site via a new 16-inch pipeline owned and operated by Spectra Energy (“Spectra”). Spectra will also construct an on-site metering and regulator station. Spectra will obtain all federal, state and local approvals, as necessary. In order to interconnect with the new Spectra pipeline and on-site meter station, Footprint will construct a piping system to supply natural gas fuel to the gas turbines and to other auxiliary uses. The final design is expected to require approximately 1200 linear feet of underground 12-inch piping.

⁴⁷ Salem Harbor EFSB Petition at 9, EFSB 12-2

With demolition of nearly all elements of the existing facility and construction of the proposed facility on the landward portion of the 65-acre site, Footprint proposes that the harbor side of the site can be devoted to other marine-related purposes. Footprint further states that property no longer needed for power generation can be made available for redevelopment as a ferry or cruise ship terminal, commercial marina, and other appropriate uses.

B. ISO-NE Auction and 2016 Generating Commitment

Footprint has formalized its commitment to begin operating its new facility by 2016 through its recently acquired capacity supply obligation procured through the Forward Capacity Market (“FCM”). The FCM seeks to ensure grid reliability by providing payments for adequate electricity generating capacity on the grid to serve electricity demand, or load. In addition, capacity needs differ throughout locations on the grid because of transmission constraints.

ISO-NE relies on the FCM, as approved by the Federal Energy Regulatory Commission (“FERC”), in order to purchase this electric generating capacity. The ISO conducts annual auctions to procure capacity for a commitment period, three years after the auction. Prior to these auctions, the ISO determines the installed capacity requirement for the entire grid, and also for specific regions of the grid where there are transmission constraints. Auctions are conducted for each of the capacity zones created by these installed capacity requirements. New generators and demand response resources, which have not participated in any previous auction, set the value of capacity by competing to provide that capacity at the lowest price using a descending clock auction, beginning at \$15/kw-month. Existing resources in the auction’s capacity zone are paid the clearing price, unless they submit a delist bid to leave the auction and the bid is accepted.

After a new resource in the forward capacity market clears, that resource is subject to the capacity supply obligation during the commitment period. This means that the resource must be available at the beginning date of the capacity commitment period.

ISO-NE conducted the region's seventh forward capacity auction in February 2013 for the capacity commitment period beginning in June 2016. At the conclusion of the auction on February 5, 2013, 721 MW of new capacity had cleared in the auction, including 674 MW of new capacity from Footprint Power, all receiving a capacity price of \$14.99/kw-month. If all capacity from the plant is operational by the date that the company's capacity supply obligation begins in June 2016, the auction provides Footprint with approximately \$121 million each year for five years for the facility's capacity.

C. Ongoing Regulatory Process at the Energy Facilities Siting Board

Footprint must receive project approval from the Energy Facilities Siting Board ("EFSB") in order to proceed with its power plant proposal. The EFSB is an independent, 9-member review board charged with ensuring a reliable energy supply for the Commonwealth with a minimum impact on the environment at the lowest possible cost.⁴⁸ Located administratively within, but not under the supervision or control of the Department of Public Utilities, the EFSB's primary function is to license the construction of major energy infrastructure in Massachusetts, including large power plants (with a capacity of 100MW or more), electric transmission lines, natural gas pipelines and natural gas storage facilities. Parties to an EFSB adjudicatory proceeding are generally represented by attorneys, are allowed to file information or document requests, participate in public and evidentiary hearings, and can call or cross-examine expert witnesses related to any project proposal. For electric generating facilities, the EFSB is limited to reviewing the environmental impacts of the facility.

⁴⁸ See M.G.L. c. 164, § 69H.

Footprint filed its petition with the EFSB on August 3, 2012, and the review process is underway. Parties to the proceedings have recently filed initial and reply briefs discussing and debating the merits of the project. Footprint's proposed power plant will not move forward prior to a final decision by EFSB. In addition, parties may appeal an EFSB decision directly to the Supreme Judicial Court, pursuant to M.G.L. c. 25, §5.

D. Local Infrastructure Needs for Footprint's New Plant

i. Transmission Cable Project

In addition to EFSB approval, infrastructure upgrades within Salem are necessary to ensure the power plant is operational by 2016. Currently, National Grid's transmission company, New England Power Company, is beginning the review process to replace two underground cable systems between the Salem Harbor Power Station site and the Canal Street substation. The current cables are over 40 years old and are nearing end-of-life. Furthermore, they have experienced oil leaks in recent years, causing unplanned electrical system outages and major disruptions to the grid.

National Grid began the planning process for this project in 2009, with construction scheduled to begin after the current plant is taken offline in 2014. However, in order to meet its FCM obligations, Footprint requires that the project be completed in an expedited manner in order to meet its 2016 timeframe. Therefore, as part of the FCM eligibility process, Footprint and ISO-NE received assurances from National Grid that it would fast-track the 115 kV cable project to allow for completion by that time.⁴⁹

National Grid plans to file this transmission project with the EFSB in the near future. During the EFSB process project alternatives will be reviewed against regulatory mandates and

⁴⁹ National Grid noted certain conditions and milestones that need to be met to achieve the deadline.

the selected project must be superior to alternative approaches in terms of cost, environmental impact and the ability to meet a previously identified need. Once a project alternative is selected National Grid plans to install two new 115 kV cables in a new duct bank system within public ways in the preferred route, as well as remove the old direct buried cables from the existing transmission corridor. National Grid expects the permitting and review to be completed in 2014, with construction taking place between late 2014 and 2016 in order to meet Footprint's timeframe.⁵⁰

ii. Pipeline project

Footprint plans to have natural gas delivered to the site from the HubLine pipeline in Beverly Harbor via a new 16-inch pipeline that will enter the site in the vicinity of Derby Street and Webb Street. The pipeline will be owned and operated by Spectra. Plans for the construction and operation of the Spectra pipeline, including any route for that pipeline, have not been finalized. Those plans will also have to go through the FERC approval process, including community outreach and assessment of project alternatives. Spectra will conduct the federal, state and local approval and permitting process for its project through Algonquin Gas Transmission, LLC.

Algonquin owns and operates the HubLine facilities, extending from Beverly to Weymouth, Massachusetts, in the immediate vicinity of Footprint's proposed project at Salem Harbor. Algonquin expects to initiate the pre-filing process at FERC for authorization to construct, own, operate, and maintain the pipeline facilities needed to provide service to Footprint. Algonquin also will submit the pipeline project to the MEPA Office as a separate project, and Algonquin will obtain all federal, state, and local approvals, as necessary.

⁵⁰ National Grid presentation to Salem.

Footprint will not control the location of the marine- or land-side connections or other aspects of the pipeline construction. Footprint, however, will construct an on-site piping system that connects the pipeline to the gas turbine generators, heat recovery steam generator duct burners and the auxiliary steam boiler.⁵¹

E. Zoning Changes

The site is located on filled tidelands subject to Commonwealth laws and regulations collectively known as “Chapter 91”. These laws and regulations seek to ensure that the Commonwealth's tidelands are utilized for water-dependent uses or otherwise “serve a proper public purpose which provides greater benefit than detriment to the rights of the public in said lands.”⁵² Chapter 91 authorization, in the form of a state-issued license, is generally required for the placement of fill, building of structures or dredging in tidelands.

The site is also located almost entirely in a Designated Port Area (DPA) that was created as part of the Chapter 91 regulatory framework. The DPA generally directs future water and land use decisions to protect the needs of marine industrial uses as a statewide priority. The rationale behind this program is that once space for water-dependent industry is lost to other development, it is difficult to retrieve. Finally, the site is subject to the Salem Municipal Harbor Plan (“MHP”) as approved by the Secretary of Energy and Environmental Affairs.⁵³

Projects occurring within Chapter 91 jurisdiction on the harbor are required to meet current Chapter 91 regulatory requirements, unless an approved MHP (or DPA Master Plan in a DPA) has modified state Chapter 91 standards to meet local planning objectives. The City of Salem’s MHP and DPA Master Plan set forth the city’s objectives, standards, and policies for

⁵¹ Final Environmental Impact Report, EEA # 14937 at 2-2

⁵² M.G.L. c. 91, §18.

⁵³ EFSB Filing at 98.

guiding public and private use of the land and water areas of its harbor, and offer an implementation program to achieve the desired plan.

The MHP serves to guide EOEEA agency actions including regulatory decisions of the DEP under Chapter 91. When a state-approved MHP or DPA Master Plan exists, any project seeking a Chapter 91 license from DEP must be in conformance with that plan. In essence, DEP is required to use its regulatory authority to help implement the goals and objectives articulated in the MHP and DPA Master Plan.

The current DPA Master Plan supports only projects that are entirely or predominantly maritime industrial. Furthermore, according to the DPA Master Plan, in the terminology of the regulations, the only uses eligible for a Chapter 91 license on the site are Water-dependent Industrial Uses (with accessory uses), Marine Industrial Uses and certain Temporary Uses.⁵⁴

Additionally, Salem's MHP recognizes the continued use of the site as an electric generation facility, including the use of natural gas. The Salem MHP notes that "the Industrial Port planning area with its DPA is envisioned to continue to be a site suitable and appropriate for energy production into the foreseeable future." The Office of Coastal Zone Management (CZM) recently stated that Footprint's proposed project meets the intent and provisions of the MHP and would not require an amendment to the MHP.⁵⁵

Footprint has filed its Chapter 91 License Application, including a Request for Variance. While Footprint maintains that the proposed power plant constitutes a Marine Industrial Water-dependent use of the site, after consultations with DEP it has chosen to pursue an application for a non-water dependent use and request a variance pursuant to DEP regulations. Footprint also requested a variance from regulations restricting fill and structures in DPAs to marine industrial

⁵⁴ Decision on the City of Salem's Request for Approval of the Salem Municipal Harbor Plan Renewal, at 13

⁵⁵ CZM letter in support of Footprint proposal as part of MEPA process, re EEA 14937.

uses, including a variance from the Salem DPA Master Plan restricting Chapter 91 licenses on the site to Water-dependent Industrial Uses, Marine Industrial Uses and certain Temporary Uses. Furthermore, while Footprint, in agreement with CZM, believes that the project is consistent with the Salem MHP, it has also requested a variance to the extent there is any lack of clarity regarding the project's consistency with the MHP.⁵⁶ Finally, section 18B of Chapter 91 requires the Secretary of Energy and Environmental Affairs to conduct and complete a public benefit review for any proposed project subject to the chapter's licensing provisions. On June 17, 2013, The Secretary completed an analysis and concluded that the project will provide a public benefit.⁵⁷

Footprint is also working with Salem and other stakeholders to provide appropriate public access opportunities at the site, including a pathway from Derby Street towards the Harbor in order to offer a public viewing opportunity as well as a corridor to the Harbor.

Additional development at the site will similarly have to conform with Chapter 91 regulations, including DPA restrictions and conformance to the Salem MHP, or else seek a variance. DPA regulations allow up to 25% of the total DPA land area to be devoted to supporting commercial uses. A DPA Master Plan can specify where in the DPA these uses could or should be sited and contain provisions to ensure that the DPA is managed in conformance with the MHP. While most industrial or commercial uses can be considered a supporting use, certain uses are specifically not allowed by regulation, including hotels, nursing homes, hospitals, major entertainment or sports venues, recreational boating facilities, and new buildings intended primarily for office use.

⁵⁶ Final Environmental Impact Report, EEA # 14937 at 6-1

⁵⁷ Public Benefits Determination of the Secretary of Energy and Environmental Affairs, EEA # 14937

However, the provisions of a DPA Master Plan can voluntarily amplify numerous discretionary requirements of Chapter 91, such as restricting the list of uses allowed in a DPA to those the community wishes to promote. The Salem DPA Master Plan and MHP prohibit supporting uses at the site, and require that 100% of the land area of the DPA at the site be used for Water-dependent Industrial Uses (with accessory uses), Marine Industrial Uses and certain Temporary Uses.⁵⁸ Therefore, any proposed use of the site beyond these specified uses, such as, retail and service, non water-dependent industrial, or restaurants may require a Chapter 91 variance or changes to the DPA Master Plan and MHP. Any office space (other than those reusing existing structures) would not be prohibited within the DPA. Finally, while a small 1.1 acre portion of the site is zoned residentially, any proposed residential use of the site may be prohibited by both the DPA Master Plan and MHP.

F. Financing Status

Despite clearing the Forward Capacity Auction and creating a capacity supply obligation for 2016, Footprint's ability to obtain financing for the power plant project has remained unclear. While FCA-7 provides the company with approximately \$606 million over a five year period if it meets its capacity supply obligation, the market rules leave Footprint Power dependent upon sales in the electricity and other volatile markets and short-term bilateral energy contracts to recover its revenue needs above and beyond the revenue committed to the company from the capacity market. Revenue from ongoing sales would have to be high enough to cover operating expenses and debt payments on the initial investment cost. Even though a modern, efficient plant like the one proposed by Footprint Power should not face difficulty recovering these costs in future energy sales, it is not clear whether Footprint will be able to secure financing. Some

⁵⁸ Salem Harbor Plan at 116.

developers and industry analysts⁵⁹ have maintained that traditional investors are reluctant to lend to generator project developers without a long-term power purchasing agreement for a substantial amount of the energy with terms favorable enough to assure the investor that the initial debt will be recovered. Competitive electricity suppliers and others have not expressed interest in signing these long-term power purchase agreements, because they would assume a risk of lower future prices in the energy markets, and they face the uncertainty of their customers' long-term load growth.

i. DPU 12-77

On October 1, 2012, the Department of Public Utilities opened an investigation into the need for additional capacity in the NEMA/Boston load zone within the next ten years, pursuant to Section 40 of Chapter 209 of the Acts of 2012. Section 40 required the Department to open the investigation and determine if additional generation is needed. If the Department found a generating capacity need, it was authorized to order the electric distribution companies to issue requests for proposals for long-term contracts for new generation. In comments filed in the proceeding, Footprint Power stated that the FCM process is flawed and “will not support the investment necessary to address reliability requirements for NEMA/Boston.” The company stated that it has engaged in comprehensive discussions with bankers and other financial institutions and states “to secure necessary financing for any new generation resource under current economic conditions, a long-term contract for a substantial portion of the project’s output is likely necessary.” On March 15, 2013, the Department issued its order in the investigation, finding a need for additional generating capacity in the NEMA/Boston load zone. However, the

⁵⁹ Shaw Consultants International, Inc., Benchmark Price Model Inputs, Final Report at p. 11. Provided with ISO-NE’s Forward Capacity Market Redesign Compliance Filing, Dockets ER 10-787, EL 10-50, EL 10-57, ER 12-953.

Department declined to issue any requirement that electric distribution companies enter into long term contracts for capacity resources.⁶⁰

ii. Current Status

Without a long-term power purchase agreement in place to recover the proposed facility's costs above the amount provided by the capacity markets, Footprint will need to obtain other equity partners or arrange other financing methods to go forward with construction of the proposed generation facility. Footprint is already working with Toyota Tsusho Corp., a member of the group of companies that includes Toyota Motors Corp. who will be actively involved in the development process while contributing financially to the project, as well as providing its expertise in development and operation of electric generating facilities. While continuing to seek financing, Footprint Power selected General Electric's FlexEfficiency 60 technology to generate electricity in the proposed facility in May 2013.

G. Footprint's Nonbinding Pledges, Representations and Commitments

The Task Force takes this opportunity to emphasize that Footprint has made significant pledges in various official and non-official proceedings before state and local boards, agencies, and other government entities, including during its presentation before the Task Force on January 22, 2013 regarding the clean-up and redevelopment of Salem Harbor Power Station. The Task Force will take the opportunity to formally recognize these pledges here:

- Footprint Power will remediate any environmental contamination at the subject site under Chapter 21E and the MCP, regardless if a new power plant is constructed in the future.
- Footprint Power will fully demolish any existing structures on the subject site that will not be used for redevelopment, regardless if a new power plant is constructed in the future.

⁶⁰ DPU Final Decision at p.32; DPU Docket 12-77.

- Footprint will begin taking down some of the existing, unused oil tanks on the subject site by the end of the fall of 2013.
- Footprint Power has not requested any state or local funds for the remediation of the subject site, and has no plans to request such funds.
- Any future redevelopment of the subject site, including the development of a power plant, will expand city and public access to the waterfront.
- Footprint Power will coordinate with the City of Salem on expanding the deep water port to allow for cruise ship access.
- Footprint Power will enter into a Community Benefits Agreement with the City of Salem as a condition for developing a new power plant.

The Task Force believes that Footprint has made these pledges in good faith, but recognizes that none of these representations are currently legally enforceable on their own. By and large, many will depend on an approval by the EFSB of its power plant petition; possibly with conditions mandating Footprint follow through on its promises. As stated earlier in this report, there are no statutory requirements mandating Footprint to demolish any existing structures on the site. Additionally, the Task Force was without authority to ascertain confidential and proprietary business information as to the financial condition of Footprint Power and any funds it may or may not have allocated towards remediation and demolition efforts. Finally, Footprint has (perhaps understandably) not set firm timelines or benchmarks on remediation and demolition efforts while it proceeds through its various regulatory obligations. While awaiting the outcome of Footprint's power plant proposal before the EFSB, the Task Force is unable to determine whether the subject site will be remediated, and existing, unused structures fully demolished, by 2016 or by 2036.

VI. Considering Other Options

Many members of the Task Force have expressed support for the Footprint proposal to build a new generating facility at Salem Harbor Power Station, given Footprint proceeds without

direct state financial assistance and stands by its pledges. Continued coordination and oversight by Task Force members with Footprint is encouraged throughout the regulatory process to help speed the transition and redevelopment of the site, provided Footprint adheres to all legal and regulatory conditions, procedures, and requirements.

While Footprint has made commitments to clean up the site, and has publicly stated that it does not require, and is not seeking, assistance from the Task Force in funding site demolition and environmental remediation activities, the Task Force is statutorily required to prepare a plan to *ensure* the deconstruction, remediation, and redevelopment or repowering of Salem Harbor Power Station by December 31, 2016. Therefore, the Task Force must consider and prepare for the event that Footprint Power is unable or unwilling to follow through with its commitments, in order to achieve the goal of demolishing the remediating the site by December 31, 2016 and prevent an abandoned facility from blighting the city for an extended period of time.

Given the statutory mandate, the Task Force now outlines several options that were either previously considered or contemplated by particular Task Force members during its deliberative process. It is important to note that the Task Force is NOT recommending the pursuit of any of these options at this time, but is required to discuss various policy options in this report as outlined in the second paragraph of section 42 of the Act.

A. Decommissioning Funds

Several Task Force members, as well as other stakeholders interested in power plant decommissioning, suggested during discussions the development of a decommissioning fund to assist retired power plant owners with any associated remediation or demolition costs of tearing down abandoned or unused structures. One basic structure would involve requiring current or new power generators to contribute to a decommissioning fund held in trust by the state, which

could then award owners funding for remediation and demolition when a power plant ceases operations. This funding could be contingent on the owner's appropriate remediation of the site. An additional option considered would require all new or existing generators within the Commonwealth to set up their own decommissioning fund as a condition to operating in Massachusetts. A new or existing generator would set aside certain funds to be used to pay for remediation and demolition efforts at the end of the useful life of the generating facility in a timely manner.

B. Bonding Programs

When considering existing or potential programs to demolish and remediate the property in the case that the developer is unwilling or unable to do so, the demolition and remediation activity could require a significant upfront cost. This makes a decommissioning fund program, a plausible solution in the long-term, very problematic in the short term; sufficient up-front funds will be unavailable for years while the fund matures. Focusing on Salem Harbor Power Station, a decommissioning fund would not raise sufficient revenue to cover the worst case cost estimates for demolishing the retired plant by 2016.⁶¹ In the case of a site owner with little or no assets which is financially unable to complete the clean-up and demolition activities, a state or local entity could use a bonding mechanism to raise the necessary capital.

Funds derived from a bonding mechanism could be used to cover unfunded remediation and demolition expenses, including demolition expenses that are not legally required and for which no previous owner bears responsibility. Additionally, the entity responsible for repaying the bondholders could recover remediation expenses from the liable parties to the greatest extent possible, while providing interest on the bonds. In this scenario, there are multiple options for

⁶¹ The Site Assessment Study concluded that the total cost of the site cleanup and demolition could be in the range of \$60 – \$80 million.

bondholder repayment including: (i) the full faith and credit of the Commonwealth, (ii) sale proceeds from the Regional Greenhouse Gas Initiative, (ii) non-bypassable surcharges levied on all electricity customers in the commonwealth, (iii) increases in the transition charge for National Grid customers which has recovered other stranded costs associated with plants built by the New England Power Company, (iv) surcharges levied upon load serving entities, and (v) surcharges levied upon other generators in Massachusetts.

While all of these sources could lead to some costs borne by ratepayers or other residents of the Commonwealth, they would provide a significant incentive to redevelop electric industry properties that otherwise may sit, unused and vacant, representing a significant burden on their host communities.

i. Regional Greenhouse Gas Initiative (RGGI) Revenue

The RGGI program is designed to cap and reduce greenhouse gas emissions from the power sector in participating states, including Massachusetts. Generators must purchase allowances from the Commonwealth in order to emit carbon dioxide. Revenue raised by the Commonwealth from the program is deposited in the RGGI Auction Trust Fund⁶², which is currently used⁶³ to support utility-administered energy efficiency programs, the green communities program, and municipal reimbursement for communities such as Salem for reductions in property tax revenue as a result of a decommissioned power plant or a power plant that has changed operating status resulting in a reduction in taxes from said plant, and certain other spending provisions.

Currently, RGGI fund administrators are required to prioritize payments from the fund to municipalities with reductions in property tax revenue resulting from decommissioned power

⁶² Established in section 35II of chapter 10 of the Massachusetts General Laws

⁶³ M.G.L. c. 21A, §22

plants. In addition, eighty percent of revenue from RGGI allowance sales is dedicated to the utility-administered energy efficiency programs. If bonds are issued against future revenue from RGGI allowance sales to help demolish and remediate the Salem Harbor site, ensuring quick redevelopment and maintenance of property tax revenue from the site, RGGI payments to the City of Salem for property tax revenue reductions may be reduced or eliminated, allowing the predominance of RGGI auction revenue to be spent on utility-administered energy efficiency programs, which is a cost effective use of the revenue for ratepayers and the economy.⁶⁴

Furthermore, if RGGI auction revenue is used as a backstop for bonds issued to finance the repowering of the site, primarily repaid using revenue from ISO-NE capacity markets, energy markets, and other markets, a new plant would restore preexisting property tax revenue, and bondholder debt payments may not be dependent upon the RGGI backstop if energy market revenue is sufficient to pay back bondholders. Unlike other surcharge and rate recovery options, the RGGI revenue option does not require additional surcharges on electricity bills and therefore a direct increase in rates. As long as bondholder payments are made with revenue from RGGI not currently spent on energy efficiency, the net economic impact may be negligible compared to current RGGI revenue spending on green communities program grants and other purposes.

ii. New Electricity Surcharges or Regulatory Assets

Additional options to consider for bondholder repayment could be non-bypassable surcharges levied on all electricity customers in the commonwealth, recovery from electric distribution companies with accompanying regulatory orders or statutes permitting distribution company recovery from customers, surcharges levied upon load serving entities, and contributions from new and existing generators in Massachusetts dedicated to decommissioning

⁶⁴ Paul J. Hibbard et al., *The Economic Impacts of the Regional Greenhouse Gas Initiative on Ten Northeast and Mid-Atlantic States 1* (2011), available at http://www.analysisgroup.com/uploadedFiles/Publishing/Articles/Economic_Impact_RGGI_Report.pdf

and deconstruction of retired power plants. Currently, certain state-wide surcharges exist on consumer electric bills in order to fund public policy programs and spending. These include, for example, the mandatory charge of .5 mills per kWh charged pursuant to Section 20 of Chapter 25 of the general laws which fund the Massachusetts Renewable Energy Trust Fund, administered by the Massachusetts Clean Energy Center to advance renewable energy in the Commonwealth. A decommissioning surcharge could ensure that retired plants created by the electric industry are cleaned up and demolished even when responsible parties are unable or unwilling to fund remedial and demolition activities.

Possible demolition and remediation bondholders could also be repaid with monetary contributions from competitive suppliers or other generators. In the 2011-2012 Legislative session, certain generators presented a proposal to develop such a fund to repay bondholders for demolition and remediation expenses in the event that the current owner was unwilling or unable to clean up the site. Such policies or teardown requirements would have to be carefully crafted to ensure they account for wholesale electricity rate impacts paid for by regional ratepayers.

C. Long Term Contracting Mechanisms

Financing can be difficult to secure for new electric generation projects in Massachusetts. One way to facilitate the development of new electric generating facilities is to require the state's utilities to enter into long term power purchasing contracts for the power generated by facilities the Commonwealth believes are in the best interests of the state. For instance, the Legislature requires the state's utilities to enter into long term contracts for power produced by renewable resources, such as wind or solar facilities. These contracts must be procured competitively, reviewed, and approved by the Department of Public Utilities, and are designed to facilitate the financing of renewable projects.

In 2012, the House of Representatives proposed allowing long term contracts for new generating facilities that are located on the site of retired, coal-fired power plants, with the condition that the project owner of the subject site remediate environmental concerns and demolish unused existing structures. The design of the legislation would provide incentives for the repowering of sites traditionally used for electric generation, addressing the fundamental issues of tax revenue and economic productivity for local communities with such sites as well as environmental concerns. This legislation was ultimately not adopted due to concerns about the impact on the regional electric market, electricity prices, electric distribution companies, and existing electric generators. Instead, developers, generators, and regulators will continue to review existing market rules in stakeholder forums, and, if necessary, make modifications to enhance the long-term viability and sustainability of the markets to support generation investment, reliability and cost effective power supplies for consumers.

D. Existing Incentives and/or Programs

i. Seaport programs

The Seaport Advisory Council (“SAC”) advises the Governor about seaport development policy and coordinates seaport development activities in Massachusetts ports. The Legislature authorizes bonds, including \$280 million under the Seaport Bond Act, for port revitalization projects, and an additional \$85 million through the Environmental Bond Bill currently before the Legislature (H. 3332). The Council makes recommendations to the Governor to spend the funds on various strategic projects that will improve ports, create jobs for Commonwealth citizens, and stimulate economic growth. The funds are used to improve traditional waterfront facilities, such as docks, piers, cold storage and warehousing, and other projects that support seaport development. While the SAC cannot issue bonds, it does recommend projects to be funded

through these bonding mechanisms. Funds through the SAC have already been used by Salem to support the Salem Wharf project, including the purchase of the Blaney Street property from Dominion. There is an opportunity to provide the SAC guidance to direct bonds towards further waterfront development in Salem, including site cleanup and demolition, as well as to increase the level of funding for SAC bonds in the Environmental Bond Bill.

Finally, the Legislature could establish a Salem Harbor Commission, similar to New Bedford Harbor Development Commission (“HDC”). The HDC is the governing body for New Bedford’s harbor and city-owned waterfront properties and supports the Port of New Bedford by upgrading port resources. The HDC oversees all commercial and recreational vessel activity within New Bedford city limits, manages all municipal property on the waterfront, including multiple wharves and slips, collects fees for the use of these facilities, and receives funding from numerous grants to support harbor related activity. A similar Salem Commission could collect fees from the use of Salem Harbor, including any new activity linked to the Salem Wharf project and the expansion of facilities to accommodate larger cruise ships. Furthermore, it could apply for state and federal grants and programs to support harbor and waterfront development. These fees and applicable grants could be used to support the redevelopment of the Footprint site, as well as the continued development of the Salem Wharf project and other waterfront priorities.

ii. MassDevelopment programs

MassDevelopment provides consulting services to cities and towns for development projects on municipally-owned property and has significant experience working to manage the remediation and demolition of blighted buildings on a priority development site, such as the services they have previously provided to the City of Chicopee. While Salem does not own the Footprint site, it does own the adjacent Blaney Street property currently being developed as part

of the Salem Wharf project. Additionally, Salem has certain access rights to the Footprint berth, with the potential for development as a terminal for larger cruise ships. Therefore, Salem may be able to access MassDevelopment resources and expertise in preparing these sites for economic development and managing the development process. Furthermore, this expertise could assist Salem in expanding additional waterfront development, including proposed commercial and residential uses on the current Footprint site. The precise nature of the resources provided by MassDevelopment for the municipally owned properties may have to be determined through continued engagement between the city and the Agency.

Furthermore, the Agency may be able to assist Salem by forging strategic alliances with the city to craft an urban renewal plan. MassDevelopment has significant experience working closely with its partners to remediate the environmental conditions on priority sites. While MassDevelopment has a number of programs that could be utilized in the redevelopment of Salem Harbor site, these programs may need to be recapitalized. For example, in Fall River the Agency was able to assist in obtaining state and local permits and infrastructure improvements, building a 60,000-square-foot office facility, constructing a parking lot and detention pond, and creating a waterfront park for public access. A similar partnership between Salem, the Agency, and other private and public partners may provide opportunities for a comprehensive development package for the Footprint site and the Salem Wharf project.

Additionally, MassDevelopment can issue both tax exempt and taxable bonds to assist development projects. Because they are exempt from federal taxes and in certain cases state taxes, tax-exempt bonds are usually the lowest interest rate option for real estate projects and new equipment purchases. However, there are limitations to which types of projects are eligible for tax exempt bonds. Projects eligible for such financing under the federal tax code include

public infrastructure projects, manufacturing facilities and equipment and municipal and governmental projects. To the extent that any of these potential uses are proposed for the site, tax-exempt bonds may provide an attractive financing option.

Finally, MassDevelopment can issue taxable bonds for both industrial and commercial real estate. While taxable bonds are often used as a “tail” in a tax-exempt financing, they may provide an option for projects that do not meet tax exempt qualifications. The precise nature of potential taxable bonds will depend on the proposed development project, and will require input from the city and the potential developer, including Footprint.

*iii. Brownfields Program*⁶⁵

In 2008, the Legislature passed the Brownfields Act, containing several provisions designed to limit the liability of purchasers of property similar to the Salem Harbor site. The Act created protections for “an owner or operator that did not own or operate the site at the time of the release and did not cause or contribute to the contamination of the site.” These eligible owners are protected from claims by the Commonwealth for response action costs, claims by third parties for contribution, response action costs and property damage under Chapter 21E and property damage under common law, once a permanent clean up or remedy operation status is achieved. Under these provisions, a new owner of the Salem Harbor site could be protected from such claims if they take the necessary steps to achieve a permanent cleanup of the site.

In addition to this liability relief, the Act established the Attorney General’s Covenant Not to Sue Program. This program provides the Attorney General's Office with the authority to enter into Brownfields Covenant Not to Sue Agreements for the sites not addressed by the automatic liability protections. In exchange for a commitment to clean up a site and to undertake

⁶⁵ As mentioned below, MassDevelopment’s Brownfields Redevelopment Fund is fully committed and not presently able to fund new requests. Any assistance from the Fund will require recapitalization.

a project that contributes to the economic or physical revitalization of the community, the Attorney General can provide individually-tailored liability relief to property owners and developers at the most difficult sites. Between the liability relief established through the Act caused and the establishment of the Brownfields Covenant Not to Sue Program, there are significant protections in place to enable potential developers to limit their liability and assist in redevelopment of the Salem Harbor Site. The Attorney General's office notes that to date, Footprint has not sought a covenant not to sue.

Several stakeholders and agencies are involved in the cleanup and redevelopment of Brownfields, most notably the Attorney General's Office, MassDEP, MassDevelopment and the EPA. Currently, funding provided by MassDEP and EPA typically applies only to the assessment and remediation of contaminated properties, and does not apply to the demolition of buildings, except in certain limited circumstances. While MassDevelopment grant funds can be used for building demolition, the scope and magnitude of coal plant demolition requires more funding than MassDevelopment typically issues. It should be noted that as of April 12, 2013, MassDevelopment's Brownfields Redevelopment Fund is fully committed and not presently able to fund new requests. Any assistance from the Fund will require recapitalization.

While liability under the MCP and Chapter 21E for releases of hazardous materials at sites such as Salem Harbor attaches to both current and prior owners and operators, as well as other responsible parties in certain circumstances, this liability does not typically apply to building demolition. While there are circumstances in which building demolition is necessary in order to adequately investigate and/or remediate contamination, this is not usually the case, and is not expected to be the case at the Salem Harbor site. Even with the liability protections and funding available, one of the biggest challenges in the achieving the full deconstruction,

remediation and redevelopment or repowering of the Salem Harbor Power Station by December 31, 2016 is the demolition of the coal plant.

iv. Specifics of Brownfields Programs to Consider

Currently, the Brownfields Remediation Loan Program provides flexible loans up to \$500,000 for environmental clean-up of Brownfields sites. Site assessment loans and grants up to \$100,000 are made from the Fund to private property owners, prospective developers, and municipalities, while remediation loans and grants may be made up to a maximum of \$500,000. If the redevelopment of a badly contaminated site is a high priority of the host municipality, then MassDevelopment may find the site to be a Priority Project, allowing for assessment and remediation financing from the Fund up to a maximum of \$2 million. On sites where a building is to be demolished, the Fund may be used for above-ground remediation, including lead and asbestos abatement, in conjunction with the assessment or remediation of soil or groundwater. While this program has limited funding, and the current site may not meet program guidelines, there may be an opportunity to increase program funding while expanding the eligibility criteria to account for the contamination hazards, and redevelopment opportunities, of decommissioned power plants.

The Brownfields Tax Credit Program, administered by Massachusetts Department of Revenue, offers eligible businesses a tax credit for the costs incurred to remediate contaminated property owned or leased for business purposes and located in an Economically Distressed Area (“EDA”). These tax credits may be used against state tax liabilities, or transferred or sold to third parties. This tax credit could be expanded to allow for credits for remediating and demolishing decommissioned power plants, regardless of their location in an EDA. Furthermore, while the current program provides a tax credit of up to 50% after a cleanup is completed, this

could be expanded to cover a greater percentage of cleanup costs, allow for recovery prior to the completion of a cleanup, or both.

Finally, the Economic Development Incentive Program (EDIP), through the Massachusetts Office of Business Development, offers tax and other incentives to attract new businesses in targeted areas. The program offers an Investment Tax Credit, an Abandoned Building Tax Deduction, and local real estate tax incentives such as Tax Increment Financing (TIF) or Special Tax Assessment (STA). There are three categories of projects that may be certified as eligible for the EDIP Investment Tax Credit (ITC): full-time job creation and investment projects within Economic Target Areas, projects with exceptional employment growth across the Commonwealth and projects within gateway communities that sustain and grow manufacturing jobs. Salem is a gateway community, and the eligibility requirements for the program could be expanded to include the development of projects on the site of decommissioned power plants.

VII. Salem Harbor Revitalization Task Force's Recommendations

After considering its history, site conditions, policy options for remediation, and stakeholder redevelopment priorities and proposals, pursuant to Section 42 of Chapter 209 of the Act of 2012, the Salem Harbor Revitalization Task Force offers the below recommendations regarding the remediation and redevelopment of Salem Harbor Power Station.

It is important to note that, currently, Footprint Power's petition to build a new power plant in Salem is before the Energy Facilities Siting Board. Therefore, the first three recommendations exclude any consideration by members of the Task Force who also serve on the Siting Board, including Secretary Sullivan, Secretary Bialecki, and Commissioner Kimmel. These members offer no opinion on recommendations 1, 2, and 3.

- 1) The Task Force encourages the Energy Facilities Siting Board to condition any approval of Footprint's petition to build a new power plant with a requirement that Footprint Power demolish all existing, unused structures located on the site, including, but not limited to, all oil tanks and smoke stacks.
- 2) The Task Force encourages the Energy Facilities Siting Board to condition any approval of Footprint's petition to build a new power plant with a requirement that the site be environmentally remediated to a level consistent with currently expected future uses.
- 3) The Task Force encourages the Energy Facilities Siting Board to condition any approval of Footprint's petition to build a new power plant with a requirement that Footprint meet certain remediation and demolition benchmarks to ensure the full decommissioning and clean-up of the retired coal power plant by December 31, 2016.

The following recommendations are offered by the full Task Force membership:

- 4) The Task Force shall continue to monitor and provide support for remediation, demolition and regulatory actions taken by Footprint Power.
- 5) All Task Force members shall continue to be available for assistance to facilitate, inform and streamline any regulatory process related to the remediation and demolishing of existing structures at Salem Harbor Power Station to the extent feasible, with the understanding that the Task Force has a statutory mandate to ensure such actions occur prior to December 31, 2016.
- 6) The Task Force acknowledges that Footprint Power does not seek any state or local financial assistance for remediation at this time, and therefore does not recommend any public financing options.
- 7) The Task Force formally adopts Footprint Power's representations and pledges to clean up and redevelop Salem Harbor Power Station, as previously discussed in this report.
- 8) Without formally endorsing the present owner's plans, the Task Force supports repowering the Salem Harbor Power Station with a new generating facility as the best means to ensure the full demolition and remediation of the site by December 31, 2016.
- 9) In the event Footprint Power fails to receive approval to build a new power plant, this Task Force shall reconvene to discuss other options, including those discussed within this report, or other policy proposals from Task Force members to ensure the revitalization of this site.
- 10) To the extent feasible, the Task Force encourages Footprint Power to retain as many current Salem Harbor Power Station employees as possible during its redevelopment activities, and provide retraining programs to the extent necessary for such employees consistent with future uses of the site.

- 11) The Task Force encourages Footprint Power to partner with the City of Salem on providing expanded public access to the existing deep water dock, including but not limited to, use of the dock and adjacent land for cruise ships, visiting vessels, Salem Wharf pedestrian and vehicular access and related parking and public open space.
- 12) The Task Force encourages the City of Salem to evaluate the current Salem Harbor Plan and DPA Master Plan in light of the proposed uses for the site. If the City determines that preferred reuses are not within the scope of the Harbor Plan, the Task Force encourages the City to consider amending the plan to allow for such uses, in particular, public access in connection to the City's Harbor Walk, consistent with current statutes and regulations.
- 13) The Task Force encourages the City of Salem to partner with MassDevelopment, Footprint, and other private and public stakeholders, to pursue redevelopment opportunities at the site, including a comprehensive redevelopment plan encompassing both the site and the Salem Wharf project.
- 14) The Task Force encourages Footprint Power to explore ways of collaborating with the South Essex Sewage District that would benefit plant operations and increase cost efficiencies and environmental benefits for both entities.
- 15) The Task Force encourages Footprint Power to enter into a comprehensive community benefit agreement with the City of Salem that includes provisions for long-term property tax payments as well as other negotiated community benefits.

VIII. Appendix

- A.** Section 42 of chapter 209 of the Acts of 2012
- B.** Salem Harbor Reuse Plan
- C.** DPU 12-77 Order
- D.** Task Force Presentations
- E.** EFSB Public Handbook
- F.** Public Benefits Determination of the Secretary of Energy and Environmental Affairs

APPENDIX A: SECTION 42 OF CHAPTER 209 OF THE ACTS OF 2012

Section 42 of Chapter 209 of the Acts of 2012

An Act relative to competitively priced electricity in the Commonwealth

There shall be a plant revitalization task force established to implement a plan, adopt rules and regulations and recommend necessary legislative action to ensure the full deconstruction, remediation and redevelopment or repowering of the Salem Harbor Power Station by December 31, 2016. The task force shall prepare a plan of action for Salem Harbor Station that includes: (i) the full deconstruction of the existing facility, including financing, if necessary, of such deconstruction; (ii) remediation of environmental issues on the site; (iii) maintenance of jobs and preexisting municipal tax revenue associated with the site; (iv) ensuring the responsible parties are held liable for costs of environmental remediation; and (v) additional mitigation efforts necessary for the redevelopment or repowering of the site.

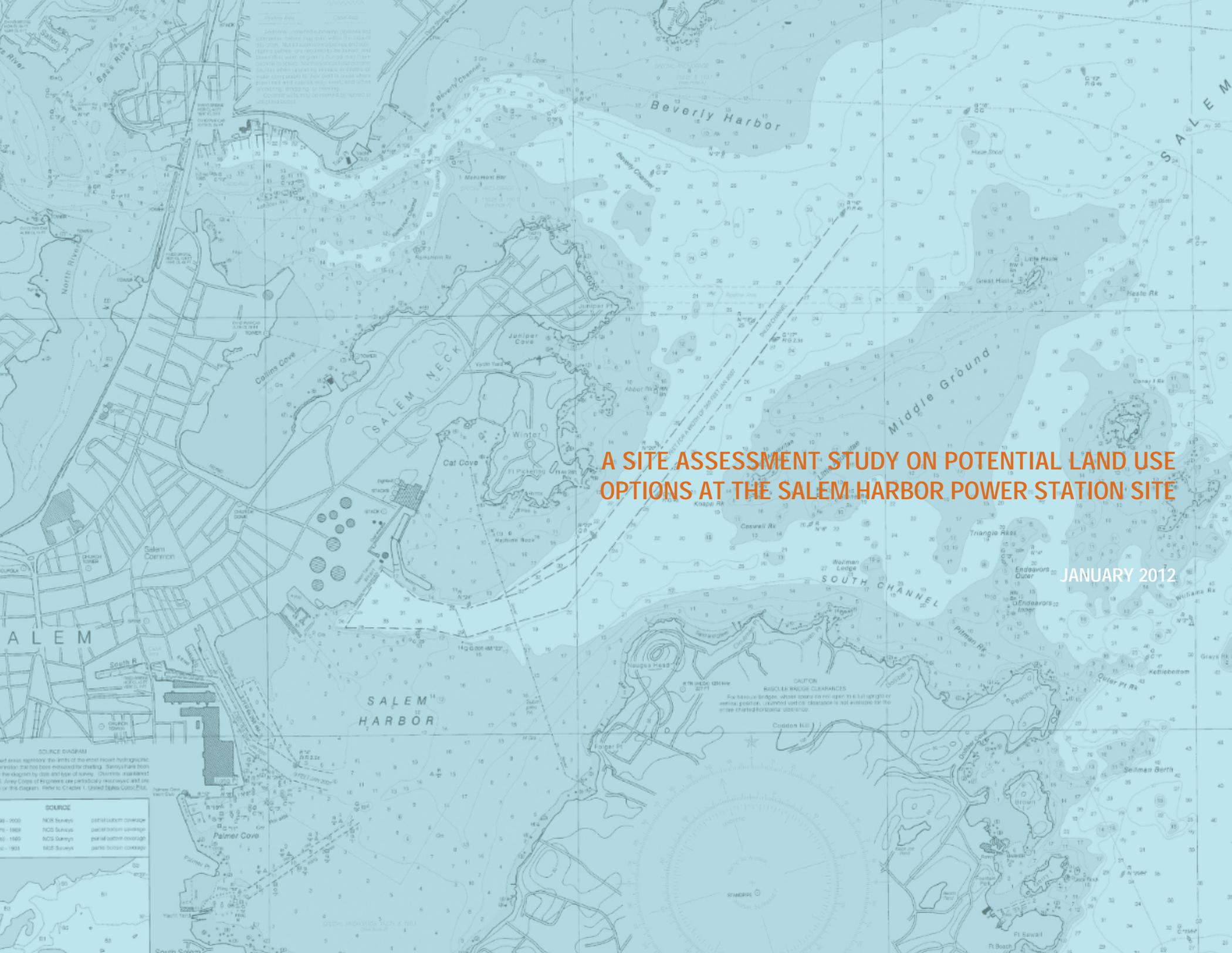
In developing and implementing a plan for Salem Harbor Power Station, regulations and proposed legislation, the task force shall, at a minimum, consider the following: (1) options for the full financing of the cleanup of Salem Harbor Power Station, including the creation of decommissioning funds, bonding programs through the Massachusetts Development Finance Agency, long term contracting mechanisms, regulatory or financial incentives for redevelopment or other means to secure such financing; (2) the identification of existing state or federal programs available that may assist in the redevelopment or repowering of the site; and (3) the creation of new programs, grants or other incentives to encourage the redevelopment or repowering of the site.

The governor shall establish the task force by September 15, 2012, which shall consist of 11 members, including: (1) the secretary of energy and environmental affairs or a designee, who shall serve as chair; (2) the secretary of housing and economic development or a designee; (3) the commissioner of environmental protection or a designee; (4) the attorney general or her designee, in her capacity as the ratepayer advocate for the commonwealth; (5) a representative of Mass Development; (6) a representative of an electric utility; (7) a representative of the New England Power Generators Association; (8) a representative from the International Brotherhood of Electrical Workers; (9) a mayor of a city hosting a coal-fired generating plant; (10) a state representative representing a community with a coal-fired generating plant, appointed by the speaker of the house of representatives; and (11) a state senator representing a community with a coal-fired generating plant, appointed by the president of the senate.

The task force shall present its plan for Salem Harbor Power Station and suggested rules and regulations to the department of energy resources, the department of public utilities and the joint committee on telecommunications, utilities and energy by June 15, 2013, after which the department of energy resources and the department of public utilities shall promulgate rules and regulations under the plan of action under this section.

The task force shall also identify and develop a plan for other coal-fired generation facilities in the commonwealth that may face closure prior to December 31, 2017 that ensures the deconstruction, remediation and redevelopment or repowering of such sites. The Task Force shall present its analysis of other coal-fired generation facilities in the commonwealth by December 31, 2013.

APPENDIX B: SALEM HARBOR REUSE PLAN



Additional uncharted obstructions and structures should be noted when in close proximity. Not all obstructions are shown and their nature, size, and location are subject to change. Users should exercise caution when navigating in close proximity to these structures. The chart is not intended to be used as a substitute for a current nautical chart. The chart is not intended to be used as a substitute for a current nautical chart. The chart is not intended to be used as a substitute for a current nautical chart.

A SITE ASSESSMENT STUDY ON POTENTIAL LAND USE OPTIONS AT THE SALEM HARBOR POWER STATION SITE

JANUARY 2012

SOURCE DIAGRAM

and areas, respectively, the limits of the most recent hydrographic survey that has been evaluated for dredging. Soundings have been the diagram by date and type of survey. Obstructions are shown in Army Corps of Engineers are periodically re-surveyed and are shown in the diagram. Refer to Chapter 1, United States Coast Pilot.

SOURCE	COVERAGE
60-1900	partial bottom coverage
76-1869	partial bottom coverage
10-1865	partial bottom coverage
10-1903	partial bottom coverage

CAUTION
 RASCLES-BRIDGE CLEARANCES
 For beam bridges, whose spans do not open to a full upright or vertical position, rounded vertical clearance is not available for the entire of rated horizontal clearance.



NOON ARCHIVES, TABLE 4-101
 2008 EDITION

PREPARED FOR THE CITY OF SALEM BY:

Jacobs

343 Congress Street
Boston, Massachusetts 02210
617.242.9222

Sasaki Associates

64 Pleasant Street
Watertown, Massachusetts 02472
617.926.3300

LaCapra Associates

One Washington Mall
9th Floor
Boston, Massachusetts 02108
617.778.5515

Robert Charles Lesser Co.

7200 Wisconsin Avenue
7th Floor
Bethesda, Maryland 20814
214.644.1300

JANUARY 2012

ACKNOWLEDGEMENTS

The consultant team would like to recognize the following participants for their contributions during this study which was funded by a grant from the Massachusetts Clean Energy Center.

City of Salem

Kimberley Driscoll, Mayor

Jason Silva, Chief Administrative Aide

Lynn Duncan, Director, Department of Planning & Community Development (DPCD)

Frank Taormina, Staff Planner/Harbor Coordinator, DPCD

Kathleen Winn, Deputy Director, DPCD

Captain Bill McHugh, Harbormaster

Stakeholders

State Senator Fred Berry

State Representative John Keenan

Charles Payson, District Director for US Congressman John Tierney

Joanne McBrien, Massachusetts Department of Energy Resources

Richard Chalpin, Massachusetts Department of Environmental Protection

James Bowen, Massachusetts Clean Energy Center

Robert McCarthy, City Councilor Ward 1

Lamont Beaudette, Dominion Energy at Salem Harbor Station

Malia Griffin, Dominion Energy at Salem Harbor Station

James Smith, Dominion Energy at Salem Harbor Station

Cynthia Carr, Derby Street Neighborhood Association

Fred Atkins, Harbor Plan Implementation Committee (HPIC)

Barbara Warren, Salem Sound Coastwatch & HPIC

Patricia Gozemba, Salem Alliance for the Environment (SAFE)

Marjorie Kelly, SAFE

Jeffrey Barz-Snell, Renewable Energy Task Force & SAFE

William Luster, North Shore Alliance for Economic Development

Additionally, the consultant team would like to thank the citizens of Salem and other attendees who participated at the public meetings.

Furthermore, the consultant team would like to acknowledge the following organizations for their cooperation during this study:

Bentley Elementary School

Dominion Energy New England, Inc.

National Grid

Salem Five Bank

South Essex Sewerage District

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The results of the study are intended to ensure that the City of Salem will have the ability to accurately plan its finances and understand what potential economic development options exist...

1

INTRODUCTION

In 2010 the City of Salem issued a Request for Proposals (RFP) for “*Consulting Services for a Site Assessment Study on Potential Land Use Options at the Salem Harbor Power Station Site*”. The *Study* was funded by a grant from the Massachusetts Clean Energy Center. As stated in the RFP, the City’s goal was to study re-use options and the potential and timing for permanent shut down of the power station. The results of the study are intended to ensure that the City of Salem will have the ability to accurately plan its finances and understand what potential economic development options exist.

The RFP requested that the scope of the study be divided into the five distinct tasks outlined below:

- **Task 1 – Background and Definition of Current Conditions**
 - Relevant Examples of Reuse of Power Generating Sites
 - Range of Costs to Position the Site for New Development
 - Basic Project Related Data Collection
 - Existing Conditions Assessment
- **Task 2 – Evaluate Possible Necessity of Current and Future Power Plant Operations**
 - Short and Long Term Regional Power Demands
 - Investment Required for Regulatory Compliance
- **Task 3 – Alternate Uses and Approaches**
 - Identify Potential Alternative Uses
 - Options for Economic Reuse Consideration
 - Summary of Stakeholders and Key Challenges for Each Option
 - Economic Benefits of Alternative Schemes
- **Task 4 – Draft and Final Report**
 - Draft Report including Recommendations and Executive Summary
 - Review Findings with Stakeholders
 - Final Report / Presentations / Conclusions
- **Task 5 – Final Presentation and Report**
 - Up to Two Public Meetings to Present Conclusions

The consultant team selected by the City was required to have knowledge of the New England energy market, engineering and cost estimating experience relative to utility scale power generating facilities, an understanding and ability to assess the commercial real estate market in New England and planning capability to frame a vision for future development on the site.

The selected consultant team includes the following firms:

Jacobs

343 Congress Street
 Boston, Massachusetts 02210
 617.242.9222

Overall Project Management
 Energy & Power Consultant

Sasaki Associates

64 Pleasant Street
 Watertown, Massachusetts 02472
 617.926.3300

Master Planning

LaCapra Associates

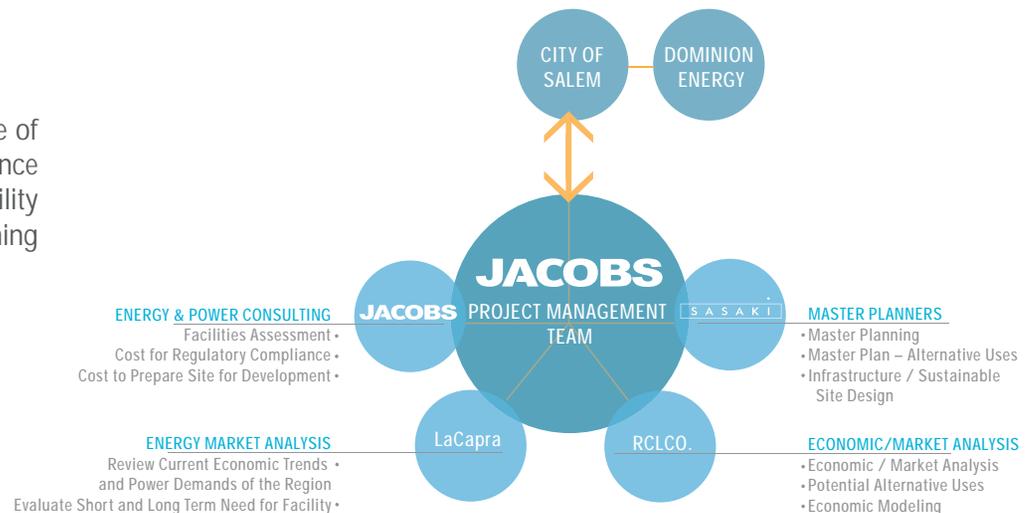
One Washington Mall
 9th Floor
 Boston, Massachusetts 02108
 617.778.5515

New England Energy
 Market Analysis

Robert Charles Lesser Co.

7200 Wisconsin Avenue
 7th Floor
 Bethesda, Maryland 20814
 214.644.1300

Economic / Market
 Analysis



The Consultant Team suggested that the five tasks be addressed within a phased approach to the project. Distinct project phases included:

- **Goal Setting**
- **Analysis**
- **Development Options**
- **Conclusions**

Together with the City, an approach to the project was mapped and an overall schedule established.



Proposed Project Schedule

Circumstances changed in May of 2011 when Dominion announced that it would take the entire Salem Harbor Power Station out of service as of June 1, 2014.

At that point, the consultant team's focus shifted from determining the role of the Salem Harbor Power Station in the New England energy market and speculation about the time frame for the eventual decommissioning of the plant, to a focus on a new list of priorities which included:

- **Costs**
 - Clean up of the site
 - Demolition of the power station structures
- **Potential for new power generating sources**
 - Natural gas
 - Renewable energy solutions such as wind or solar / photovoltaics

- **Regulatory constraints**
 - Massachusetts General Laws Chapter 91
 - Coastal Zone Management - Designated Port Area (DPA)
- **Market conditions impacting development**
 - Viable uses
 - Absorption
- **Vision**
 - Reuse options
 - Tax and community benefits

Over the course of the project, five workshops were held with a stakeholder group identified by the City. Two public meetings were held at the Bentley School – the first in June of 2011, the second in October. At the first meeting the consultant team described overall project background collected and preliminary site analysis. Also at that meeting, specific comments/preferences were solicited from members of the community who attended. At the second public presentation, an overall summary of conclusions was discussed. A presentation was also made to the Derby Street Neighborhood Association in June.

While this Study has been commissioned by the City of Salem, they do not own the Power Station site – which remains the property of Dominion Energy New England LLC, a subsidiary of Dominion Resources, Inc. of Richmond, Virginia. The City's goal is to understand the site and regulatory constraints that will effect redevelopment, identify land use opportunities based upon market analysis and a potential overall framework for achievable redevelopment. The City can then potentially help generate interest in the redevelopment and work at the State and local level to assist and influence – perhaps both financially and from a regulatory perspective - future redevelopment initiatives.

While this Study includes analysis of a new natural gas fired power station, renewable energy and a long list of potential commercial and industrial uses, the consultant team has no bias towards any of the potential uses outlined. The team has sought only to describe what is possible so that there can be informed participation by the community in the market's response to this key real estate parcel on Salem Harbor.

CITY OF SALEM Part of Wards 1-2

Published by Walter Lithograph & Publishing Co Boston

Scale 1 inch = 100 feet

—	Water	•	Station
—	Drain	•	Fire Dept.
—	Water	—	—
—	Drain	—	—



As the quadricentennial of the founding of Salem approaches it is interesting to consider that throughout its history, this waterfront has not only contributed significantly to Salem's identity — it has had an important and varying role in serving the New England region as a whole...

2

A BRIEF HISTORY

Portions of the following section are based upon information taken from the following sources:
Salem Patch, Part I: Before the Power Plant, Jerome Curley, May 12, 2011
Salem Patch, Part II: Salem Harbor Power Station in the Last Century, Jerome Curley, May 16, 2011
The Tide Rises, The Tide Falls - Three Centuries of Salem Waterfront, Madelyn Holmes, 1982

When Roger Conant landed with his band of settlers in Salem in 1626, they found a practically pristine environment. Then called Naumkeag, the landscape was forested with gentle rolling hills that were surrounded by the waters of the North and South Rivers and a protected harbor. The area that would eventually become the site of the Salem Harbor Power Station consisted of woods, hilly terrain, mud flats and harbor waters.

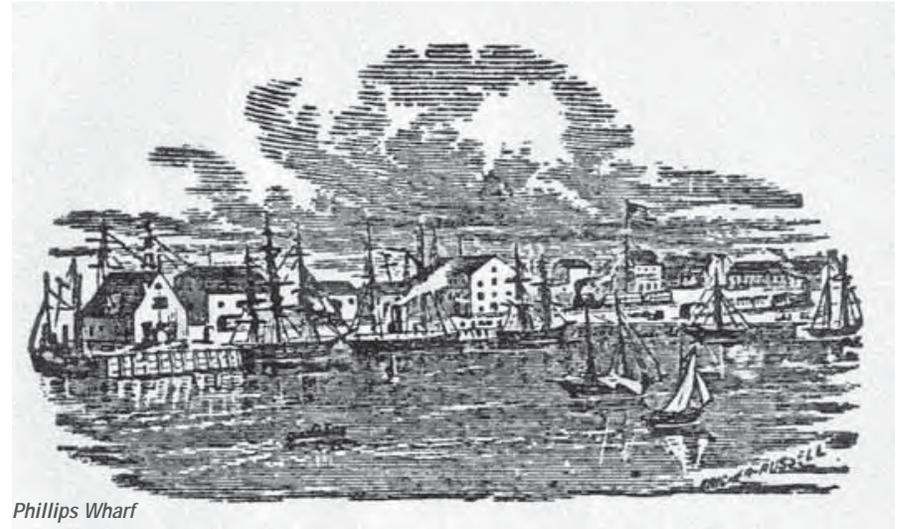
As the colonists settled along the rivers and bays of their new home, the waterfront, the sea and its bounty became a significant focus of their lives and futures. A fishing industry developed that was centered around Winter Harbor, the area between the Neck and Winter Island. As fishing grew in importance, fishermen were given much of the land along the Neck and Winter Island to use for drying and storing fish. The waterfront became the focus of much of Salem's early commerce and life.

By 1790, Salem was the sixth largest city in the country, and a world famous seaport – based particularly on its trade with China. Cod fish was exported to the West Indies and Europe. Sugar and molasses were imported from the West Indies, tea from China and pepper from Sumatra. Salem ships also visited Africa, Russia, Japan and Australia.

Ships from Salem were crisscrossing the globe opening new ports to commerce. The India trade was flourishing. As a result, the number of wharves along Salem's waterfront increased greatly as merchants expanded their businesses. The first mention of a wharf in the area of the Salem Harbor Power Station property was the India Wharf, built in 1800 for commerce and shipping with the Far East by the India Company. Throughout the 19th century however, trade from Salem was increasingly eclipsed by Boston and New York, larger cities with deep harbors and more overall economic strength. Shipping from Salem Harbor gradually declined as a result. In 1855, the last ship bringing a cargo from Batavia (now Jakarta, Indonesia) entered the port; in 1858 the last entry from Manila arrived and in May of 1870, the last shipment of goods from Zanzibar, East Africa arrived. The last shipments from Cayenne in South America's French Guiana made port in Salem in 1877. In 1878, only two vessels cleared the Salem Port in the entire year; one for the West Indies and the other for Liverpool.

As Salem's role in global trade diminished and international trade moved to Boston and New York, business leaders in the City turned towards new opportunities in New England. India Wharf, once home to thriving trade with the Far East, was bought in 1836 by Stephen Phillips, who was interested in building a railway connection between Salem Harbor and the industrial mill towns of Lawrence and Lowell. He brought the railroad to the wharf so that coal and cotton could be transported efficiently. The Salem and Lowell Railroad was created and the 24 mile railway line opened in 1850 making Salem a key link in the delivery and distribution of coal shipments to inland mill cities.

As manufacturing in New England grew, so did the coal piles along the wharves of Salem, particularly at the new Phillips Wharf, built near India Wharf. The increasing demand for coal was again confirmed in 1873, when Philadelphia Pier was built next to Phillips Wharf by the Philadelphia and Reading Coal and Iron Company. This pier extended southeasterly half way across the harbor, for nearly 2000 feet. The company started shipping coal to Salem from



Phillips Wharf

Philadelphia in 1875 and at its peak, 90 thousand tons of coal arrived annually at Philadelphia Pier. The coal trade grew unabated in New England, but bigger ports such as Boston, with equal or better access to the railroads, eventually became the center of the coal trade. These larger, better equipped ports led to the decline of Salem's prominence as a booming coal port.

In 1907, the Philadelphia and Reading Coal and Iron Company, having purchased the adjacent Phillips Wharf property previously, proposed to buy land and the mud flats at the bottom of Derby Street from the City so that they could expand their holdings. After much discussion the sale was approved – driven by hopeful individuals who believed the company would move its primary shipping operation from Boston and secure federal funding to deepen the harbor, enabling access by bigger ships and reestablishing Salem as a major coal terminal. With City approval, the land and the mud flats, were sold.

By 1916, however, the Philadelphia and Reading operation had all but shut down. The hopes and plans for a major new coal terminal never came to be. The company ignored pleas from the community to either use the property or sell it to someone who would. Philadelphia and Reading spent minimal money to maintain the stone sea wall and were adamant that the coal business was not profitable and would not be revived. The impasse became so dire that legislation was filed to take the wharf by eminent domain.

After years of disuse, the Philadelphia and Reading property, including Phillips Wharf, Philadelphia Pier, the mud flats and other land totaling nearly ten acres, were purchased by the Tenney Company, the manager of Salem Electric Light, with the intent of building a super power plant on the site. The new owners sold the equipment and buildings on the wharf to Pickering Coal Company, which moved the equipment to their property at Derby and Union Streets (currently the Pickering Wharf area). With demolition complete and the site cleared, site preparation was started for the super power plant, which was estimated to cost \$10 million. In 1924, the Middlesex, an ocean-going ship called a sand sucker, was brought in and used to vacuum sand from the harbor bottom and dump it onto the mud flats behind a granite retaining wall, expanding the site for the plant while deepening the ship channel.

The process lasted many months, filling the mud flats between Phillips Wharf and Philadelphia Pier as well as the cove near Derby Street. While filling in the flats, workers also constructed a huge coal bridge to transport coal from ships to storage areas. Rail lines in a loop from Derby Street were also added. By the time the site preparation was completed, nearly 30 acres of mud flats had been converted into waterfront land for the future power plant.

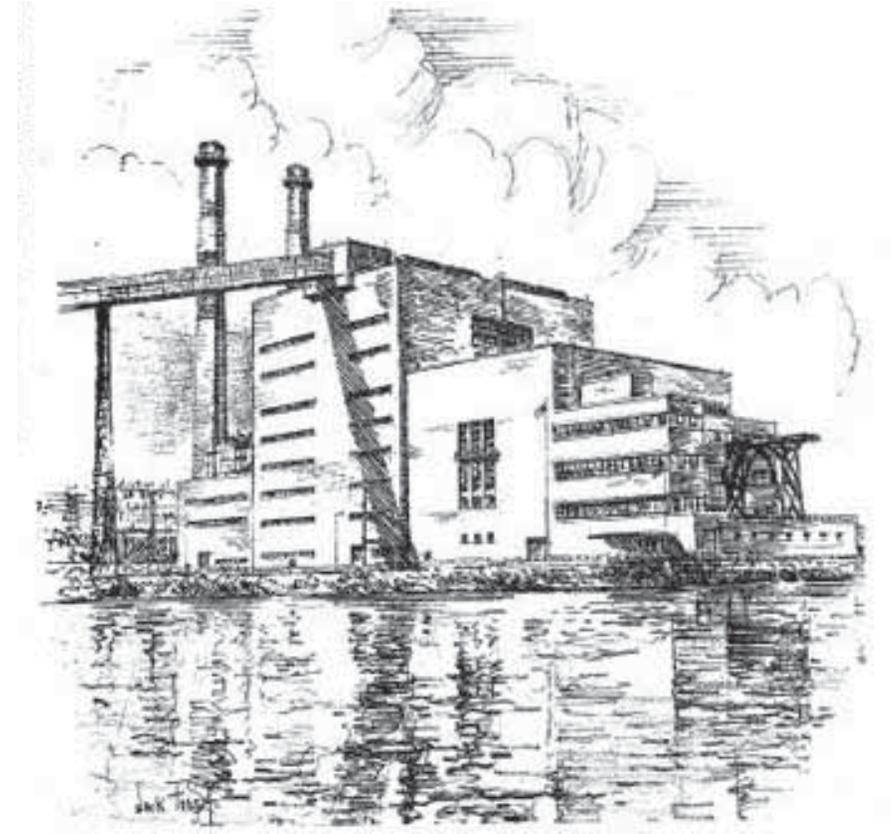
Once operational, the new facility was used as an active coal terminal for over 20 years prior to the power plant being built. Tons of both hard and soft coal were imported – some of which was shipped to other power plants in the region. Amid the Depression era, the coal business did well. Unfortunately, due to the economy, as well as World War II, actual construction of the power plant did not start until 1948. The plan was to build the power plant in units, each unit having a generating capacity of approximately 100 MW. Units would be added as the proposed distribution network – then some 60 miles of high tension wires – grew. With new piers, conveying systems and a connection to the power distribution grid, the first phase of the power plant went on line in November 1951. Its cost at the time was estimated to be \$30 million.

This brief summary is included to illustrate the relevant history of the Derby Street waterfront and the land and mud flats that became the Salem Harbor Power Station site.

Consider that for well over 200 years, this waterfront area functioned as a working and industrial port – first focused on the fishing industry, then global trade and then as a major coal terminal – prior to its use as a power station.

As the 400th anniversary of the founding of Salem approaches and new uses are contemplated on the power station site, it is interesting to consider that throughout its history, this waterfront has not only contributed significantly to Salem's identity – it has had an important and varying role in serving the New England region as a whole. Fishing, global trade, coal distribution and power generation have all historically benefited the New England region and established Salem as an important point of origin. Its inclusion on the list of key Designated Port Areas is testament to its continuing importance as one of only 11 deep water harbors recognized by the Commonwealth.

As Salem moves forward beyond its quadricentennial and into the 21st century, it would be entirely appropriate and historically consistent for the City and its residents to help identify a new use or uses for the Power Station site that maintain tradition, and contribute to both Salem and the region as a whole.



Salem Harbor Power Station



Of the coal powered units, Unit 1 produces 82 MW, Unit 2 produces 80 MW, and Unit 3 produces 150 MW. Unit 4, the oil fired generating unit, is the largest at the facility, producing 433 MW. In total, the plant generates 745 MW, enough electricity to power approximately 745,000 homes...

3

SALEM HARBOR POWER STATION

Salem Harbor Power Station is located on a 62 acre site along the Salem Harbor waterfront at 24 Fort Avenue. Originally built by the Tenney Corporation and operated by New England Power, the first generating unit was completed at a cost of \$30 million. Commercial operation began in 1951. Once the first unit was up and running, construction of Phase 2 commenced, adding a second generating unit that was completed in late 1952. New England Power continued to run the plant and in 1958 added a third generating unit. In 1978, the fourth and final generating unit was added.

Units 1, 2 and 3 were originally designed to produce electricity by burning coal but were converted to oil fired generating units in 1969. However, amid shortages of oil caused by the first oil crisis in the 1970s, and under pressure from the U.S. government to reduce our dependence on oil, New England Power requested and received permission to change the fuel source from oil back to coal, thus saving 180,000 barrels of oil a month. They completed the conversion of generating units to coal by 1982, resulting in today's operating configuration of three coal fired units and one (Unit 4) oil fired unit. Of the coal fired units, Unit 1 produces 82 MW, Unit 2 produces 80 MW and Unit 3 produces 150 MW. Unit 4, the oil fired generating unit, is the largest at the

facility and produces 433 MW. In total, the plant generates 745 MW, enough electricity to power approximately 745,000 homes.

In 1998, USGen a subsidiary of Pacific Gas & Electric of California (PG&E) bought the power plant from Tenney Corporation. National Energy Group (NEG) another subsidiary of PG&E assumed operation of the plant.

In 2000, a study by Harvard School of Public Health and Sullivan Environmental Consulting Group, identified a number of power plants, including Salem Harbor and one other in Massachusetts as part of the “filthy five” – power stations in the New England region that were exempt from adhering to current health limits on smokestack emissions because they began operating before the 1977 Clean Air Act took effect. The study cited significant health impacts from air and water pollution on populations living within a 30 mile radius of the plants.

In 2003, USGen filed for bankruptcy and a buyer was sought for Salem Harbor as well as additional properties in the USGen portfolio. In 2005, Dominion Resources, Inc., bought the Salem Harbor Power Station as part of a package deal that included Brayton Point, a coal fired power plant in Somerset, MA and the gas fired Manchester Street Station in Providence, RI. The total price paid by Dominion was \$656 million. Dominion Energy New England LLC, a subsidiary of the Richmond, Virginia based parent company, has operated the power station since that time.

Dominion’s ownership tenure has been difficult. Plagued by competition from newer more efficient power generators, increasing community concern and at times protest over emissions, the power station suffered additional negative press in 2007 when, sadly, an explosion at the plant killed three workers, prompting a state investigation and OSHA review of plant safety. More recently, falling energy prices and pending emissions legislation raised new questions about the viability of the 60 year old Salem Harbor facility. The plant’s future has been closely linked to federal energy regulations on ozone that are scheduled to go into effect between 2015 and 2017

In October of 2010, Dominion filed to permanently delist its four generating units, a request that was eventually approved by ISO-NE. Units 1 and 2 will shut down by the end of 2011. The two additional units and the entire station will close by June 1, 2014.

Of the decision not to “seek to negotiate an agreement that could keep the station operating,” David A. Christian, chief executive officer of Dominion said “This was a decision we had to make given the significant costs required to keep the station in compliance with pending environmental regulations and the falling margins for coal stations selling electricity in New England...Salem Harbor employees are dedicated professionals who will continue to operate the station safely as we move toward retirement in 2014.” The plant currently employs approximately 143 people.¹

Today, the Salem Harbor Power Station pays a total of \$4.75 million in taxes to the City of Salem - \$3 million in taxes and \$1.75 million in pilot host fees. With its current reduced operation – available typically for reliability purposes only, the number of homes in New England powered by Salem Harbor has been reduced from 745,000 to approximately 300,000.

Despite negative publicity, Mayor Kimberley L. Driscoll has said that the plant has been a good corporate citizen for the City. Recently for example, Dominion gave \$1 million to Salem’s public schools. Mayor Driscoll said the city will create an endowment fund with the \$1 million, which Dominion provided to support science, technology, engineering, and math instruction for the first through eighth grades. “They’ve always been very generous,” Mayor Driscoll said of Dominion, noting its past contributions to support community needs.²

In the context of much current discussion in the community about re-use of the Salem Harbor site, several parties have apparently expressed interest in the property. Mayor Driscoll said that despite challenges associated with redeveloping the site she’s hopeful it will be attractive to developers. “They definitely have some folks kicking the tires but ... a large industrial 62-acre, highly contaminated parcel isn’t your usual transaction,” she said. “It has some challenges, demolition costs, existing regulations ... but it’s also a great opportunity to redevelop our waterfront.”³



Salem Harbor Power Station Site

SALEM HARBOR

Newest System plant now in full operation

THE most modern steam-electric generating station in New England is now in full operation at Salem Harbor. The second of two 75,000-kilowatt turbogenerators went on the line in October.

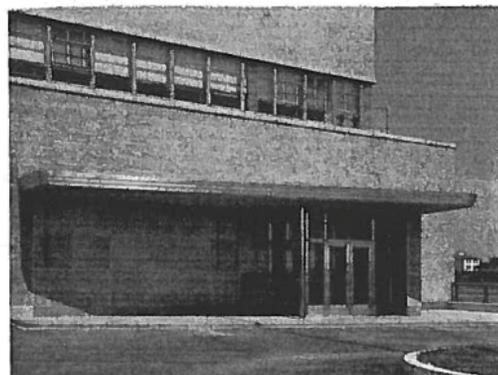
Construction of the new Salem Harbor Station of New England Power Company was begun in December, 1948. The first of the huge turbogenerators went into operation late in 1951. With the completion of the second unit, the plant has a capacity of 150,000 kilowatts and a combined annual output of over 1,000,000,000 kilowatthours. The two turbogenerators can supply the electric needs of eight cities the size of Salem.

The \$30,000,000 station is a steel frame, brick wall structure built on solid rock. Located on the shore of historic Salem Harbor, the plant is 14 stories high, 144 feet wide and 355 feet long.

The plant operates on either coal or oil and each unit uses about two-thirds of a pound of coal or an equivalent amount of oil for each kilowatthour generated. In full operation these units consume 1350 tons of coal a day or if oil is being used, 252,000 gallons per day.

The Salem Harbor Station is tied into the interconnected transmission network of New England Electric System.

TESTING in the new coal laboratory at the Salem Harbor Station



MAIN ENTRANCE to the station presents this attractive appearance

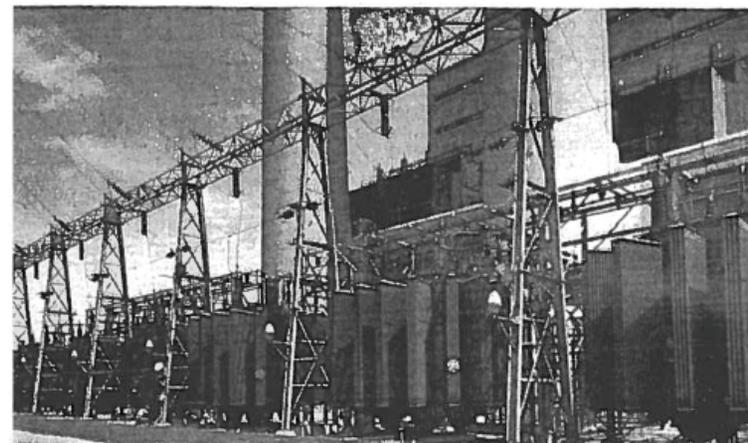
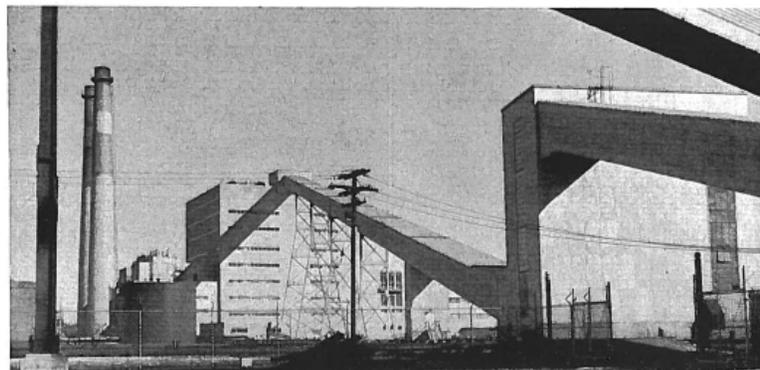


FRANK BELL, superintendent, Salem Harbor

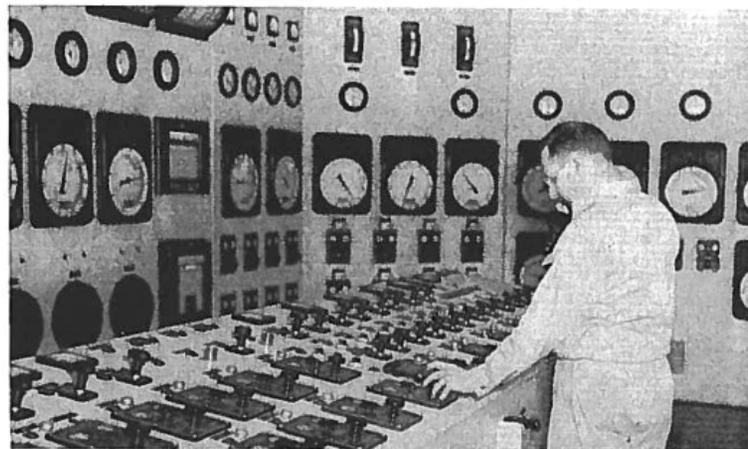
THESE TWO TURBOGENERATORS combine to produce 150,000-kw



COMPOSITION of the station from Terminal



MAIN TRANSFORMER BANK at the new Salem Harbor Station



MECHANICAL CONTROLS room contains hundreds of dials and meters as shown above





The electric power industry's model of regulated local utilities worked well for many years, however, by the late 1990s the industry began moving towards a new model...

4

NEW ENGLAND ELECTRIC POWER MARKET

OVERVIEW

*Portions of the following section are based upon information taken from the ISO-NE website as of September, 2011.

New England's electric power industry, like that of the entire nation, has changed dramatically during the past few decades. Until the 1970s, the industry was comprised of individual utilities that handled every aspect of providing electricity - generating it, transmitting it and then distributing it to homes and businesses. These utilities were essentially regulated local monopolies that, in general, operated independently of each other.

The Great Northeast Blackout of 1965 marked a turning point for the region's electric power industry. Concerned about the system's reliability, the Northeast region's utilities formed "power pools" or sharing arrangements that were set up to ensure a dependable supply of electricity. The New England Power Pool (NEPOOL), formed in 1971 by the region's private and municipal utilities, was intended to foster cooperation and coordination among utilities in the six-state New England region. During the next three decades, NEPOOL created

a regional power grid that now includes more than 300 separate generating plants and more than 8,000 miles of transmission lines—all interconnected and dedicated to ensuring that New England never again has a region-wide power failure.

The electric power industry's model of regulated local utilities worked well for many years, however, by the 1990s the industry began moving towards a new model. At that time, Congress and the Federal Energy Regulatory Commission (FERC)—which oversees the electricity industry nationally—began enabling the restructuring of the wholesale electric power market. They believed competition would improve service and minimize consumer costs while also providing needed renewal and investment in the power industry, much as it had with the transportation, telecommunications and financial service industries.

ISO-New England

*Portions of the following section are based upon information taken from the ISO-NE website as of September, 2011.

The FERC goal was to create competitive markets comprised of independent power generators, each of whom would have equal access to transmission grids. As part of that goal, states were encouraged to require individual utilities to sell their power plants to private competitive interests. Gradually, existing regulator-set rates were eliminated in favor of prices determined by competitive markets. FERC also created independent system operators, or ISOs, to oversee the market restructuring on a regional basis. These ISOs were given significant responsibility for ensuring system reliability and establishing and overseeing competitive wholesale electricity markets.

Created by FERC in 1997, ISO-New England (ISO-NE) has helped lead the nation's most advanced effort in energy market restructuring. To date, five of the six New England states have required individual utilities to sell off their power plants, and 88 percent of the region's power generation is unregulated and competitively priced. Working closely with NEPOOL, ISO-NE implemented a wholesale market structure in 1999. Today, about 400 market participants complete \$10 billion in wholesale electricity transactions annually.

As a result of ISO-NE's initiative, between 1999 and 2003 the unregulated New England electric power market experienced a 34% (approximately 10,000 MW) increase in new power generating capacity from new, primarily natural gas fired power plants, significantly improving reliability and enhancing market competition. Since 1999, generator availability has increased from 81% to 89%. Suppliers have responded to economic incentives to keep their plants running when demand is highest and have scheduled planned maintenance during off-peak periods, allowing for greater efficiency and reduction in consumer cost of electricity. Volatility in the price of natural gas and oil, which together fuel more than 60% of the region's generating units, has kept overall wholesale electricity prices high—a trend that likely will continue until the region reduces its reliance on these fuels to produce electricity. Factoring out the cost of fuel that plants use to generate electricity, whole electricity prices continue to remain stable.

Since the new power plants typically use more efficient and cleaner-burning natural gas technology, they also produce fewer pollutants. This has reduced emissions of nitrogen oxides (NO_x), sulfur dioxides (SO₂) and carbon dioxide (CO₂), which is thought to contribute to global climate change.

At the same time, system reliability has been enhanced. For instance, ISO-NE is working to eliminate artificial barriers that add to the cost of importing or exporting power from other areas, and ISO-NE is developing additional market mechanisms that promote investment of needed generating resources in the right locations.

The lights stayed on in almost all of New England during the August 2003 system failures that blacked out much of the Northeast, Midwest and Canada.

ISO-NE enhanced the energy market structure, notably in 2003, when it adopted "Standard Market Design." SMD added features such as a Day-Ahead Market, intended to protect against price volatility, and a pricing structure that is intended to accurately represent the true cost of producing and supplying power anywhere in the region.

In 2005, FERC formally designated ISO-NE as the transmission organization for the six-state region. While ISO-NE continues to fulfill its original responsibilities, it has gradually been given broader authority over the day-to-day operation of the transmission system and greater independence to manage the power grid and wholesale markets, ensuring that energy needs are met for New England's 6.5 million households and businesses. Serving the six New

England states - Connecticut, Maine, Massachusetts, New Hampshire, Rhode Island and Vermont - it is an independent, not-for-profit corporation whose Board of Directors and 400 employees have no financial interest in or ties to any company doing business in the region's wholesale electricity marketplace.

ISO-NE has three primary responsibilities:

- **Reliability** - The ISO-NE is responsible for the minute-to-minute reliable operation of New England's bulk electric power system, providing centrally dispatched direction for the generation and flow of electricity across the region's interstate high-voltage transmission lines and thereby ensuring the constant availability of electricity for New England's residents and businesses.
- **Market Administration** - The ISO-NE is responsible for the development, oversight and fair administration of New England's wholesale electricity marketplace, through which electricity is bought, sold and traded.
- **Planning** - The ISO-NE is responsible for planning for the future through management of the comprehensive bulk electric power system and the wholesale market's planning processes that address New England's electricity needs well into the future.

To properly execute these responsibilities, the ISO-NE uses a number of wholesale markets to maintain reliability. These markets, Energy, Ancillary, and Capacity are briefly described in the sections to follow. Each market contributes to the overall cost of energy to consumers. Roughly 85% of the total wholesale market cost to consumers originates in the Energy Market, Ancillary Markets represent roughly 5%, while the Capacity Market represents approximately 10%.

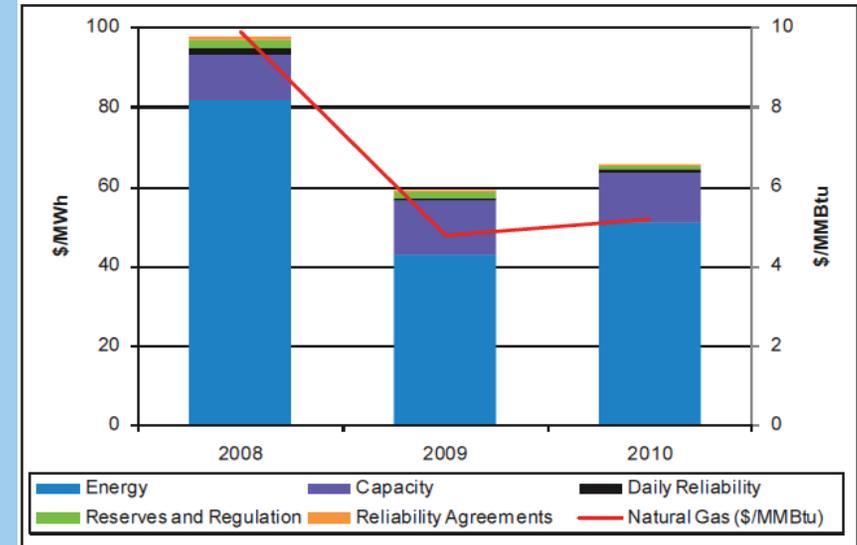
Energy Market

*Portions of the following section are based upon information taken from the ISO-NE website as of September, 2011.

A fundamental tenet of the power markets is that electricity cannot be stored, at least not cost effectively in large quantities. As a result, a real time balance must be maintained between load requirements and power generation at all times. The responsibility for maintaining this balance rests with ISO-NE.

ALL-IN WHOLESALE POWER PRICE

The figure below illustrates the average annual total wholesale electricity cost compared to natural gas prices for 2008 through 2010. This all-in wholesale cost is only a portion of the bill that consumers pay at retail. Wholesale costs do not include local charges for distributing and moving power across the grid. At the retail level, the price homes and businesses pay to their power provider includes other charges in addition to the wholesale costs. The all-in wholesale cost includes the cost of electric energy, forward reserves, regulation, capacity, daily reliability commitments, and FERC-approved Reliability Cost-of-Service Agreements (Reliability Agreements). The all-in wholesale cost of electric energy in 2008 was just below \$100/MWh. It dropped to approximately \$60/MWh in 2009 and increased to \$65.60/MWh in 2010. The graphic illustrates that the cost of energy is the largest component of wholesale power costs. Given the significant percentage of power generating facilities that use natural gas, the price of power follows the price of natural gas very closely. Another significant component of the cost of power at the wholesale level is capacity.



Source: http://www.iso-ne.com/markets/mkt_anlys_rpts/annl_mkt_rpts/2010/amr10_final_060311.pdf

The primary objective of ISO-NE is to ensure a reliable and economical supply of electricity. Supply and demand for power in real time can change for a variety of reasons. For example, power generators could be on or off line unexpectedly or consumer usage patterns could change. Real time oversight of the grid by ISO-NE must address and balance instantaneous changes in supply and demand and ensure that adequate generating resources are available to operate the system and provide power, as needed for consumers.

The Energy Market compensates power generating resources for providing energy to the electricity grid and charges entities that serve load for the energy used from the grid. Typically “entities that serve load” are thought of as utilities such as NStar, National Grid, etc., who are financially responsible for their consumers’ electricity use at the wholesale market level.

The Energy Market at the wholesale level is a commodity market where entities buy and sell power which is priced on an hourly and location basis. There are, in fact, over 900 price points for energy in New England. The Energy Market is very structured and follows a complicated set of market rules. While the details of the Energy Market are beyond the scope of this report, basic information and a brief background description are provided as context for understanding the current activity of Dominion related to the Salem Harbor Power Station.

Hourly electricity prices are determined by an equilibrium point between offers of supply (the price at which generators are willing to sell electricity) and demand bids (the price utilities are willing to pay). Generator supply offers are typically influenced by their production costs and the other operating characteristics of their power plants. For most electricity generators, the cost of fuel represents the largest variable in the overall cost to produce power, and as fuel costs change, the prices at which generators submit offers in the market change correspondingly – ultimately impacting the cost to consumers. The demand bids (the price utilities are willing to pay) for electric energy reflects the price a utility is willing to pay as well as any accompanying market related uncertainty. The market-clearing process is set on an hourly basis, at various price points or locations in the system.

Dominion places bids for Salem Harbor into the wholesale Energy Market every day, quoting a price at which it is willing to produce electricity. Their offer price is based on the plant’s operating design, cost of burning either

coal or oil, and any other costs that they deem relevant to its supply offer to generate power. Today coal and oil fired plants are not as economical to operate as newer generating units, particularly those that burn natural gas. As a result, Salem Harbor is selected infrequently by the ISO-NE to run for daily energy production purposes. Frequently, there are cheaper generating resources the ISO-NE can utilize to meet load requirements. However, the ISO-NE does select Salem Harbor to run occasionally based upon economic merit, reliability needs or constraints on the system. As a result of the infrequent power production at Salem Harbor, it is likely that revenue from the Energy Market is sufficient only to cover the cost of oil and coal and other variable costs that are incurred when the plant runs to make electricity. Given the lack of potential profit from the Energy Market, in recent years Dominion has focused on other market areas – particularly the Forward Capacity Market.

Ancillary Markets

*Portions of the following section are based upon information taken from the ISO-NE website as of September, 2011.

Ancillary Markets in New England provide services that are intended to assure reliability and support for the transmission of electricity. The Ancillary Markets are primarily comprised of Reserve and Regulation Markets. The Reserve Markets pay power generating resources that can quickly come on line in the event of an unexpected outage of another generator or transmission line failure. The Regulation Market pays power generating resources for instantaneous responses to small changes in electrical load. Both markets are set by an auction mechanism.

Forward Capacity Market

*Portions of the following section are based upon information taken from the ISO-NE website as of September, 2011.

The Forward Capacity Market (FCM) was started in 2010 by ISO-NE and replaced another market structure focused on capacity that was deemed ineffective by FERC. The prior capacity market was called the Installed Capacity Market.

The FCM is a long-term market designed to promote economic investment in power generation resources with a goal of assuring that a sufficient number of resources are available in the region to cover peak electrical load conditions. Capacity may be provided by new or existing power generation resources or through reduction in energy use as a result of consumer focused energy reduction initiatives (referred to as demand side resources). Power generation resources participating in the FCM are paid a fixed amount, established by an ISO-NE administered auction process, for the capacity potential that they make available to the grid. The FCM compensates power generation and demand side resources regardless of whether they produce energy or not.

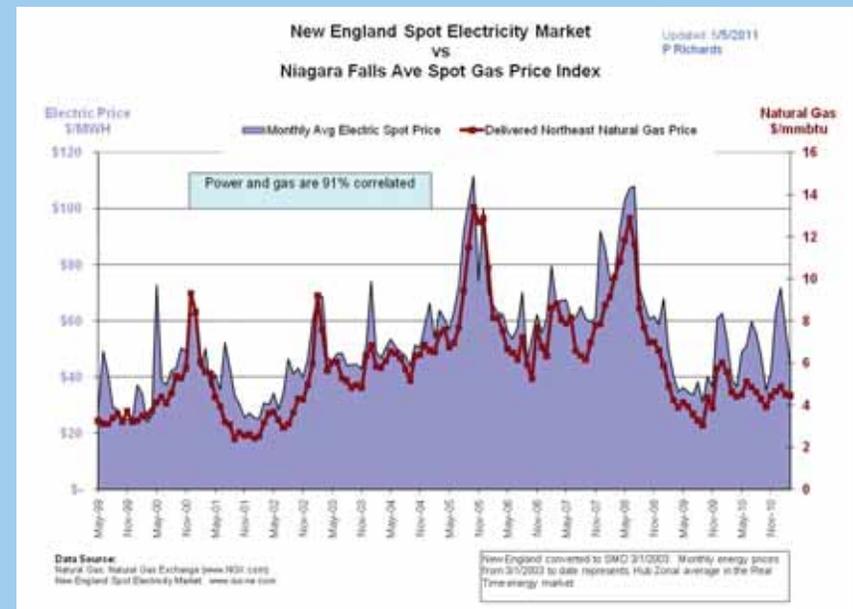
To purchase enough power generation capacity to satisfy the region's future needs and allow enough time to construct new capacity resources if needed, ISO-NE conducts auctions each year, approximately three years in advance of the time period when capacity resources must provide service or be online. Generating resources compete in the annual auction, referred to as a Forward Capacity Auction (FCA), to obtain what is called a "commitment to supply capacity," in exchange for a payment established by ISO-NE as part of the auction.

Generating resources participating in an FCA are categorized as either "new" or "existing" resources. A "new" resource is one that has not been constructed but is being planned to come on line in the near future. "Existing" resources are those that have been built and/or resources that were on line in a previous auction period. The four power generating units at the Salem Harbor Power Station are considered existing resources by ISO-NE. Only new resources are allowed to establish the market price for forward capacity in the annual FCA. Existing resources are paid the price that is ultimately set by those new resources. As a result, new and more efficient resources significantly influence the market price determined by an FCA. The auction is referred to as a descending clock auction. The process begins with a high starting price and the price is lowered in successive rounds until a floor (equilibrium) price is reached – the lowest price at which enough capacity supply is available to meet New England's electricity needs. Once the equilibrium price is determined, then all capacity resources are paid that price regardless of whether they are a new or existing generating resource. Existing resources such as Salem Harbor are considered to be "price takers" - they take whatever the cleared price is from the auction.

NATURAL GAS AND ELECTRICITY PRICES

In May 1999, the New England power markets were restructured and wholesale market competition was introduced. Since that time, the price of natural gas has been a key determinant in the price of electricity and is graphically illustrated below.

In the New England markets, the wholesale price of electricity has been highly correlated to the price of natural gas. In fact, the real time New England monthly average price for power has been 91 percent correlated to the price of natural gas since the implementation of wholesale markets began in 1999. The figure illustrates this relationship by comparing natural gas and electricity prices from 1999 through May of 2011.



An existing generating resource included in the FCM must remain in the market annually or follow a very specific process to withdraw. An existing generating resource can officially withdraw from the auction by submitting delist bids or notices of intent to leave. Delist bids are accompanied by a price - generally the price a generator proposes they be paid to not delist and remain as an available resource.

There are several types of delist bids. A brief summary of each is outlined below:

- **Dynamic Delist** – A request to leave the Forward Capacity Market for one year (and avoid a capacity supply obligation, but only for that year).
 - A request to delist is submitted during the auction.
 - Certain high bids may trigger a detailed review of the price by ISO-NE staff to assure it is just and reasonable
 - Delist requests may be subject to review by ISO-NE relative to overall reliability.
 - If a delist request is accepted, the capacity resource no longer participates in the Forward Capacity Market for that year but it can still participate in the Energy, Forward Reserves, and other markets if it so chooses.
- **Static Delist** – A request to leave the Forward Capacity Market for one year (and avoid a capacity supply obligation but only for that year).
 - A request to delist is submitted before the auction.
 - Certain high bids may trigger a detailed review of the price by ISO-NE staff to assure it is just and reasonable.
 - Delist requests are subject to review by ISO-NE relative to overall reliability.
 - If a delist request is accepted, the capacity resource no longer participates in the Forward Capacity Market for that year but it can still participate in the Energy, Forward Reserves, and other markets if it so chooses.
- **Permanent Delist** – A request to remove a generating resource from the Forward Capacity Market for a specific commitment period and all future periods.
 - Certain high bids may trigger a detailed review of the price by ISO-NE staff to assure it is just and reasonable.

- Delist requests are subject to review by ISO-NE relative to overall reliability.
 - If delist request is accepted the capacity resource can still participate in the Energy, Forward Reserves, and other markets.
- **Non-Price Retirement Request** – A binding request to retire from the Forward Capacity Market at the start of a specified commitment period and for all future commitment periods
 - A request is submitted to retire regardless of market pricing.
 - ISO-NE has 90 days to review and establish whether the power generating resource is required for reliability purposes. If approved by the ISO-NE, the capacity resource's interconnection agreement is terminated. As a result, the resource cannot participate in any other ISO-NE market. In order to return to the markets, the power generating resource must go through a full new generator interconnection process, a lengthy (possibly multiple years) and complicated undertaking.
 - If a non-price retirement request is rejected for reliability reasons, the capacity resource will receive its choice of either its accepted delist bid or a Cost of Service Contract. A Cost of Service Contract is an agreement between the generating resource and ISO-NE requiring ISO-NE to pay the cost to run and operate the capacity resource, (including the fixed and variable costs while under a Cost of Service agreement). Cost of Service agreements must be filed and approved by the Federal Energy Regulatory Commission (FERC). However, even if approved, the capacity resource has the ability to refuse a Cost of Service agreement offer.

All types of delist bids submitted are binding and may not be withdrawn or modified after the submittal deadline. Except for Permanent Delist bids and a Non-Price Retirement Request, all delist bids are effective for one year, during the relevant commitment period.

All types of delist bids are subject to review relative to system reliability by ISO-NE. If a generator submits a delist bid and the generator is deemed unnecessary for reliability by ISO-NE for that period, and the market price determined by the auction is lower than the generator's delist bid price – they will likely be allowed to delist or leave the auction for the designated period. However, if ISO-NE determines there is reliability need for that power plant, the plant will be tagged as necessary for reliability. When this occurs,

compensation will be determined not by the auction process but by the ISO-NE Internal Market Monitoring group or through negotiation process for a permanent delist – starting with the (higher) bid submitted with the delist request. In the end, the negotiated price most probably will be higher than the rate established by the auction.

Salem Harbor’s Participation in Forward Capacity Auctions

It would appear that Dominion has benefitted financially from the FCM’s delist mechanism for several years. They have remained in the FCM for reliability purposes but have submitted delist bids as part of recent auctions. As a result they have had the opportunity to receive a higher level of compensation than the price determined by the FCA. The Conservation Law Foundation went so far as to contend that Dominion was “gaming the system” by filing to delist in the hope of being ordered to keep operating for reliability reasons and, as a result, receiving higher payments. The CLF said that the strategy could cost ratepayers in this region of the state \$30 million in “above-market costs.”

The ISO-NE requirement for availability for reliability purposes does not, however, supersede State or Federal operating controls such as emissions requirements or local permits. While the FCM had provided what appears to have been a satisfactory revenue stream for Dominion, compliance with pending emissions requirements initiated a change in strategy.

The Environmental Protection Agency’s Clean Air Act requires power plants to meet environmental standards. As a result of the EPA’s proposed Mercury and Air Toxics Standards, new and existing coal and oil fired power plants were asked to reduce mercury emissions as well as other acid gases and particulate matter. Power plants were given up to 4 years to comply, a requirement that was expected the cost to Dominion hundreds of millions of dollars for Salem Harbor Power Station.

2000 TO 2010 NATURAL GAS-FIRED ENERGY PRODUCTION

The relationship between gas and power prices is driven by the fact that the fleet of generation in New England has become highly dependent on gas-fired power plants to produce power. Most of the time, these plants are setting the price that all generation is paid for electricity transmitted to the grid. In fact, from 2000 to 2010 natural gas-fired energy production increased from just under 15% to almost 46%, respectively. This shift toward a natural gas emphasis and the mix of generation resources from 2000 to 2010 is displayed graphically in the figure below. In 2010, natural gas-fired generation set the wholesale price of electricity approximately 70% of the time which further emphasizes the link between natural gas and electricity prices.

2000 Vs. 2010 Capacity and Energy



Through June 2011, ISO-NE has conducted five Forward Capacity Auctions (FCA) with the most recent, FCA5, conducted in the first week of June 2011.

Salem Harbor's participation in the auctions can be described in three phases over the course of the five auctions. These three phases include:

- **Phase 1** - Full auction participation in FCA1 and FCA2
- **Phase 2** - A Static Delist strategy in FCA3 and FCA4
- **Phase 3** - A Permanent Delist/Retirement strategy for FCA5

All four of Salem Harbor's generating units were included in the Forward Capacity Market's first two auctions, FCA1 and FCA2, and Dominion will be paid for the availability of all four units at the unit price established by those auctions. As an approved participant in those auctions, all four units must be available to provide capacity to the markets for the first two commitment periods which run through May 30, 2012.

Starting with the third auction, FCA3, Dominion's participation in the process changed. Dominion sought to delist (or withdraw) all of Salem Harbor's generating units from the auction, but only for one year at a time, unless certain price levels were reached in the Forward Capacity Market. Specifically, Dominion submitted a Static Delist bid for FCA3, a mechanism that they used again as part of FCA4. In response to those delist requests, ISO-NE performed both a review of the reasonableness of the price requests included in the Dominion's bids as well as the potential impact on reliability. ISO-NE ultimately concluded that the price levels requested by Dominion in the delist bids for all four generating units were higher than allowed as part of the Forward Capacity Market rules (details of the price review process are beyond the scope of this report but there is a prescriptive process defined in the market rules that the ISO-NE must follow). They did conclude that generating Units 1 and 2 were not required for reliability and were therefore permitted to be withdrawn or not have a Capacity Market obligation for one year. The ISO-NE determined that generating Units 3 and 4 were required to remain on line for reliability purposes. The price requested for these units by Dominion as part of their delist request was reduced by ISO-NE but remained above the price established through the auction.

The latest auction, FCA5 was held June 6, 2011 and resulted in an approved market price of \$2.86 kW/month. With an aging power station that does not compete effectively in the Energy Market, no revenue growth in the Forward Capacity Market and facing a costly requirement to meet emission standards, Dominion submitted a Non-Price Retirement Request and officially notified ISO-NE of its plans to retire Units 3 and 4 as of June 1, 2014. At that point, the interconnection rights for the power station will cease. Additional revenue generation from ISO-NE markets would only be possible if Dominion applied to re-connect to the system. With FCA prices trending downward, it would appear that Dominion made a determination that while revenue from the FCM, might cover capital and operating costs, the revenue would not be adequate to address future environmental compliance obligations. A Cost of Service Agreement also would not provide adequate financial certainty. Faced with millions of dollars in costs for environmental compliance and an apparently inadequate revenue stream, Dominion opted to push for permanent retirement of all four generating units through the Non-Price Retirement Request.

As a result of not reaching agreement with the ISO-NE on a Cost of Service agreement, Dominion submitted its notice to the ISO-NE that all of the Salem Harbor generating units will be taken off line at the end of the FCA4 period on May 30, 2014.

Auction Date	Commitment Period	Capacity Supply Obligation
FCA1 June 2007	June 1, 2010 - May 31, 2011	Units 1-4 have capacity supply obligation by clearing FCA as existing generation
FCA2 June 2008	June 1, 2011 - May 31, 2012	Units 1-4 have capacity supply obligation by clearing FCA as existing generation
FCA3 June 2009	June 1, 2012 - May 31, 2013	Units 1-2 have no capacity supply obligation due to ISO-NE acceptance of delist bids Units 3-4 have capacity supply obligation due to ISO-NE rejection of delist bids for reliability reasons
FCA4 June 2010	June 1, 2013 - May 31, 2014	Units 1-2 have no capacity supply obligation due to ISO-NE acceptance of delist bids Units 3-4 have capacity supply obligation due to ISO-NE rejection of delist bids for reliability reasons
FCA5 June 2011	June 1, 2014 - May 31, 2015	Units 1-2 have no capacity supply obligation due to non-price retirement request being accepted by the ISO-NE Units 3-4 have no capacity supply obligation due to Dominion's intention to not pursue a cost-of-service agreement with the ISO-NE.

Salem Harbor Power Station's Participation in the Past Five Auctions

ISO-NE Assessment of Reliability

The Salem Harbor Power Station has contributed significantly to the reliability of the electricity grid in the New England region since it first opened in 1951 and has continued in a key role since Dominion assumed ownership in 2005. ISO-NE and the Forward Capacity Market structure have been key to maintaining Salem Harbor's necessary role in an unregulated competitive marketplace even in a context of increasing environmental regulations. All of the 745 MW capacity was available to the grid for reliability purposes as part of FCA1 and FCA2. During FCA3 (2012 – 2013) 580 MW from Salem Harbor were determined to be needed for reliability. The roughly 160 MW attributable to generating Units 1 and 2 were not required. During FCA4 (2013 – 2014) a study by ISO-NE identified a 460 MW need for reliability. The decrease from FCA3 was due to changes in load distribution for the Northeast Massachusetts (NEMA) area. In the context of Dominion's Non-Price Retirement Request as part of FCA5 (2014 – 2015) ISO-NE determined a need of 415 MW to 560 MW from Salem Harbor – or specific improvements to the grid that would eliminate the need for that reserve capacity.

Greater Boston Study Objective

As a part of its on-going transmission planning process, and, as a result of Dominion's FCA5 Non Price Retirement request, ISO-NE undertook a reliability assessment study referred to as the Greater Boston Study. This study is a reliability needs assessment of the power grid in and around the Boston area. The goal of the study was to identify issues with meeting future load growth and load usage patterns in the greater Boston area, North Shore and Merrimack Valley areas, assuming the Salem Harbor Power Station was no longer on line.

The Study was carried out using a stakeholder working group consisting of representatives of ISO-NE, National Grid, NSTAR, Northeast Utilities, and Public Service of New Hampshire (PSNH). The main charter for the working group was to evaluate all aspects of reliability, determine alternative transmission solutions, and select the most cost effective solution.

The Study used Electrical Reliability Engineering standards and applied peak loads and various levels of power imports into the Boston area. During the first level stress testing (called N-1 contingencies), several overloads or "hot spots" were identified in the system. These theoretical overload or hot spot areas indicate the potential for system outages that would adversely impact reliability of the region should no improvements be made.

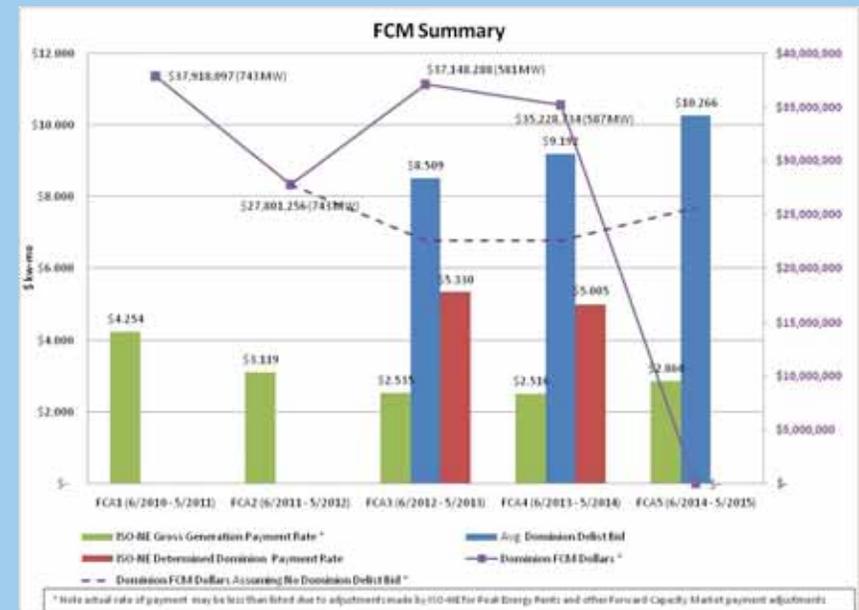
The Greater Boston study then identified a preferred transmission solution to address the hot spots. This solution includes upgrading a number of existing 115 KV lines in the North Shore area. The estimated cost is \$60 million and ISO-NE estimates that the upgrade could be done by June 2014. A complete reliability study will be finalized by the end of 2011. Subsequent to finalization of the study, Transmission Owners (TOs) must seek state and local approval to build the transmission projects. The transmission project construction would begin shortly after all applicable permits and financing are obtained.

Forward Capacity Auction Revenue

	Unit	MW Cleared	Gross Generation Payment Rate	Maximum FCM Dollars Assuming NO Delist Bids	Dominion Submitted Delist Bids	ISO-NE Determined Rate for Salem Harbor	Maximum Anticipated FCM Dollars
FCA1	1	81.988	4.254	\$ 4,185,323	\$	---	\$ 4,185,323
6/10-5/11	2	80.000	4.254	\$ 4,083,840	\$	---	\$ 4,083,840
	3	149.805	4.254	\$ 7,647,246	\$	---	\$ 7,647,246
	4	431.000	4.254	\$ 22,001,688	\$	---	\$ 22,001,688
	TOTAL	742.793		\$ 37,918,097			\$ 37,918,097
FCA2	1	81.988	3.119	\$ 3,068,647	\$	---	\$ 3,068,647
6/11-5/12	2	80.000	3.119	\$ 2,994,240	\$	---	\$ 2,994,240
	3	149.805	3.119	\$ 5,606,902	\$	---	\$ 5,606,902
	4	431.000	3.119	\$ 16,131,468	\$	---	\$ 16,131,468
	TOTAL	742.793		\$ 27,801,256			\$ 27,801,256
FCA3	1	---	2.535	\$ 2,494,075	\$ 9.836	---	\$ -
6/12-5/13	2	---	2.535	\$ 2,433,600	\$ 9.836	---	\$ -
	3	149.805	2.535	\$ 4,557,068	\$ 6.720	5.330	\$ 9,581,528
	4	431.000	2.535	\$ 13,111,020	\$ 7.644	5.330	\$ 27,566,760
	TOTAL	742.793		\$ 22,595,763			\$ 37,148,288
FCA4	1	---	2.516	\$ 2,475,382	\$ 9.830	---	\$ -
6/13-5/14	2	---	2.516	\$ 2,415,360	\$ 9.830	---	\$ -
	3	149.805	2.516	\$ 4,522,913	\$ 9.830	5.005	\$ 8,997,288
	4	436.754	2.516	\$ 13,186,477	\$ 7.279	5.005	\$ 26,231,445
	TOTAL	586.559		\$ 22,600,131			\$ 35,228,734
FCA5	1	---	2.86	\$ 2,813,828	\$ 10.266	---	\$ -
6/14-5/15	2	---	2.86	\$ 2,745,600	\$ 10.266	---	\$ -
	3	149.805	2.86	\$ 5,141,308	\$ 10.266	NA	NA
	4	436.754	2.86	\$ 14,989,397	\$ 10.266	NA	NA
	TOTAL	586.559		\$ 25,690,133			

A SUMMARY OF SALEM HARBOR'S CAPACITY OBLIGATIONS AND EXPECTED REVENUES

The following chart indicates market activity related to FCA1 – FCA5, including Dominion's submitted delist bids, the ISO-NE determination related to reliability, negotiated rates for Salem Harbor (in response to delist bids) and revenue projections for Salem Harbor. After FCA1 and FCA2, ISO-NE determined that only Salem Harbor's Generating Units 3 and 4 were required for reliability purposes. Although Dominion operated Salem Harbor at lower capacity, their delist strategy for FCA3 and FCA4 significantly enhanced their expected revenues for those commitment periods. The rates determined by ISO-NE, although lower than requested by Dominion, exceeded corresponding rates established by the auction. The resulting revenue is greater than it would have been had Dominion participated conventionally in the FCA with all four generating units. Based upon the ISO-NE reliability determination, Dominion will retire Units 1 and 2 at the end of the 2011-2012 commitment period.





There are significant regulatory controls impacting future redevelopment of the Salem Harbor Power Station site. The most significant of these is the Massachusetts Office of Coastal Zone Management's Designated Port Area....

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CONSTRAINTS, AMENITIES & ADVANTAGES

There are a wide range of issues impacting future development the Salem Harbor Power Station site. To understand the potential for redevelopment the consultant team has examined regulatory and other constraints, precedent developments, market demand, financial return on investment and impacts on the community. Amenities and advantages that could drive the ultimate direction of redevelopment on the site have also been outlined. This study focuses on realistic development scenarios, first evaluating a number of options, and then focusing further study on those that are economically viable and ultimately achievable.

While it would appear that redevelopment of this prime waterfront property might very easily focus on a mixed use development driven by residential and commercial uses, it is precisely that land use formula that will be particularly difficult to achieve. Significant land side limitations relative to traffic generation, protection of the waterfront through Massachusetts General Laws Chapter 91 and most importantly Salem Harbor's classification as a Designated Port Area, will all significantly impact the eventual redevelopment program. This section provides a brief summary of the myriad issues involved.

REGULATORY CONSTRAINTS

City of Salem Zoning Ordinance

The vast majority of the 62 acre Salem Harbor site is currently zoned Industrial (I) by the City of Salem. There is a small area (less than two acres) on the northwest corner of the site along Derby Street that is zoned for Residential Two-Family (R2). The City still owns the right-of-way for three abandoned streets (Beckett Lane, India Street and English Street). The zoning ordinance lists the following allowable uses and dimensional requirements in Industrial (I) zones:

■ Principal and Accessory Uses

- Child care facilities
- Municipal facilities
- Agriculture/horticulture
- Religious
- Educational use, nonexempt
- Arts and crafts studios and workshops
- Bank, financial agency
- Business or professional office, including medical
- Retail store, except department store
- Golf course
- Historic buildings open to the public
- Motor vehicle light service
- Museum
- Restaurant; drive-in or fast food
- Restaurant; no services of alcoholic beverages
- Sale and storage of building supplies
- Assembly or packaging
- Computer hardware development
- Food and beverage manufacturing
- Publishing and printing
- Wholesale, warehouse, or distribution facility

■ Other Dimensional Requirements

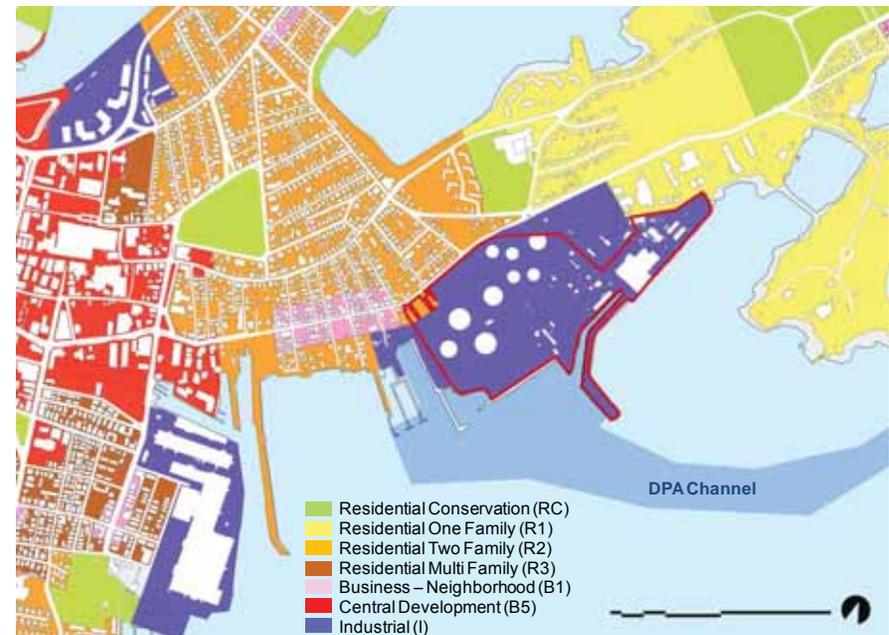
- Maximum lot coverage - 45%
- Minimum front, side and rear yard depth - 30 feet
- Maximum Building height - 45 feet (exceptions for wind facilities)

■ Uses Allowable by Special Permit (Zoning Board of Appeals)

- Institutional – Essential services
- Adult day care
- Animal clinic or hospital; kennel
- Commercial recreation, indoor
- Marina
- Motor vehicle general and body repair
- Contractor's yard; landscaping business
- Junk yard or automobile graveyard
- Light manufacturing
- Livery facility, yard, or terminal
- Manufacturing
- Mini-storage warehouse facility
- Research, laboratories, and development facilities
- Transportation terminal

■ Uses Allowable by Special Permit (Planning Board)

- Planned Unit Development (PUD) Residential
- Drive-through facilities (fast-food and other)
- Wind energy facility, commercial scale
- Wind energy facility, residential scale



Zoning Map

In addition to the “As of Right” uses and process, special regulations, districts, and approvals have been put in place by the City to guide other development scenarios.

- Planned Unit Development** - Planned Unit Developments (PUDs) were developed to allow “desirable departures from the strict provisions of specific zone classifications” which allow multiple uses that are compatible to coexist as part of totally planned development.¹ PUD’s provide flexibility for the Department of Planning and Community Development (DPCD) and potential developers and become an important vehicle to promote development. As stated in the City of Salem Zoning Ordinance the purpose of a PUD is “...designed to provide various types of land use which can be combined in a compatible relationship with each other as part of a totally planned development. It is the intent of the Section to ensure compliance with the master plan and good zoning practices, while allowing certain desirable departures from the strict provisions of specific zone classifications. The advantages which are intended to result from the application for planned unit development are to be ensured by the adoption of a precise development plan with a specific time limit for commencement of construction”.²

- Overlay Districts** - There are three overlay districts in Salem, the Wetlands and Flood Hazard Overlay District (WFHOD), the Entrance Corridor Overlay District (ECOD), and the Conservation Overlay District (COD). The site is only partially impacted by the Flood Hazard Overlay District, as the western portion of the site has a flood hazard Zone A4 designation. Construction in this area would be by special permit as approved by the Planning Board, and the lowest floor of construction would need to be above the 100 year flood level. Only the very perimeter of the site (primarily the jetty area) is designated as Zone 3, as a high hazard area, subject to wave action. Further restrictions would apply, but the overall area involved on the site is negligible. See the Flood Zone map below.
- Derby Street Historic District** - Although the main 62 acre parcel itself is not in the Derby Street Historic District, it is immediately adjacent. One small 1,350 square foot lot at 65 Derby Street is owned by Dominion (and contiguous to the larger 62 acre parcel), is in the Historic District, and would be subject to a Historic Commission review. See the Historic District map below.



Flood Zone Map

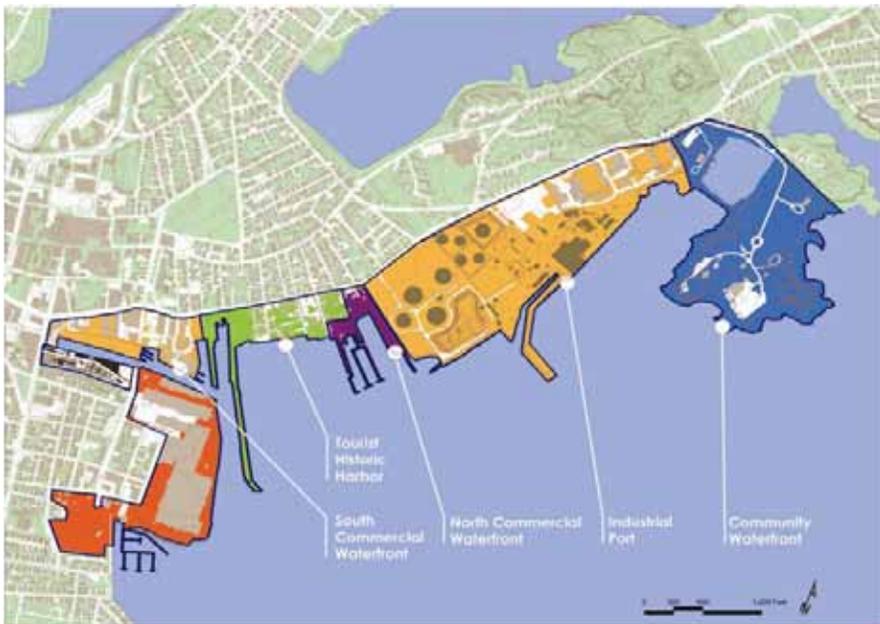


Derby Street Historic District Map

- **Site Plan Review** - Future site redevelopment will be regulated by the City of Salem Zoning Ordinance and can include “As of Right” the Principal and Accessory Uses allowed under the Industrial zone classification. Given that the potential size of the development will exceed 10,000 square feet, both “As of Right” and Planned Unit Developments will be subject to the Site Plan Review process, which will include public meeting(s) and Planning Board approval. Through this process, the City of Salem Department of Planning and Community Development, acting on behalf of its citizens, can be an active and influential entity in future development discussions.

Salem Municipal Harbor Plan

The Salem Municipal Harbor Plan was created in 2000 by the City of Salem and its planning consultant, The Cecil Group, as a planning document that creates a vision for future development in and around Salem Harbor. The Plan was updated in 2008, by Fort Point Associates, working with the City, stakeholders and community residents and with renewed approval by the Massachusetts Executive Office of Energy and Environmental Affairs (EEA).



Municipal Harbor Plan Map

The “Industrial Port” designation for the site in the Municipal Harbor Plan did not anticipate the closure of the power plant & alternative uses were not identified as part of that planning process.

Although the Harbor Plan assumes continued operation of the power station in the “Industrial Port Area”, it also sets forth many valuable concepts for future development including public access along the water’s edge, promotion of the maritime heritage, support for marine industrial uses (in the Industrial Port Area), and promotion of tourism, cruise ships, and the Salem Wharf district.

■ Goals of the Harbor Plan

- Re-establish the identity of Salem as an active seaport
- Maximize the economic potential of the harbor
- Promote the waterfront as a focal point for Salem’s visitor economy
- Protect and enhance access to the waterfront
- Identify and preserve those aspects of Salem’s waterfront experience that should be preserved and protected from change
- Protect and preserve those aspects of Salem’s waterfront experience which can beneficially link the City to its maritime past
- Ensure that public investment in waterfront infrastructure will support and encourage private investment
- Protect and enhance the environmental quality of the harbor ³

The Power Station site is, in fact, significantly influenced by the Harbor Plan and its classification by Coastal Zone Management as a Designated Port Area, both of which are interrelated. When the Harbor Plan was updated in 2008, the renewal approval letter by Ian Bowles, then Secretary of Energy and Environmental Affairs (EEA), reinforced that relationship, stating the following:

“Because the Salem Harbor Plan is intended to be, in part, a master plan for the DPA, I must find that the Plan is consistent with DPA approval criteria at 301 CMR 23.05 (2)(e). Specifically, I must find that the DPA Master Plan preserves and enhances the capacity of the DPA to accommodate water-dependent industrial use, and prevents substantial exclusion of such use by any other use eligible for licensing in the DPA pursuant to 310 CMR 9.32. The master plan should also identify industrial and commercial uses allowable under local zoning that will qualify as a supporting DPA use, and identify a strategy for the ongoing promotion of water dependent industrial use.

Currently, the entire land area of the DPA is used for water-dependent industrial use, and the City continues to be steadfast in its intent to preserve and enhance this irreplaceable working waterfront. The Plan, like the 2000 version, voices a long-term commitment to maritime use at the power plant site, and to maintaining the industrial character of the entire site. In the event of any unforeseen discontinuation of the current uses, the Plan supports only projects that are entirely or predominantly maritime industrial. Accordingly,

in the vocabulary of the waterways regulations at 310 CMR 9.02, the only uses that will now be eligible for a Chapter 91 license on this site are Water-dependent Industrial Uses (with accessory use), Maritime Industrial Parks, and Temporary Uses.

Further, the Plan limits the scope of uses that may qualify for a project as a supporting DPA use to include only boat yards, business offices (as adaptive reuse of existing buildings), general storage and warehousing, retail and service, restaurants, and off-street parking, and sets forth a strategy to assure the ongoing promotion of water dependent industrial use within the DPA, consistent with 301 CMR 23.05(2)(e).⁴

Note the strong emphasis on the legal obligation to promote Marine Industrial Uses within the Designated Port Area. This will be a major limitation on the types of development that could occur on the Power Station site.

More importantly, the Salem Municipal Harbor Plan renewal of 2008 includes an amplification which pertains to the Industrial Port (which includes the Dominion site) that states since “...it is unlikely that the current uses of Dominion’s Energy’s Salem Station Power Plant site will be discontinued within the 10 year duration of the Plan, the City chose to include provision that would guide MassDEP licensing decisions in that event. The Plan recommends that only the following uses be eligible for licensing in the Industrial Port District: water-dependent industry, marine industrial parks, and temporary uses as defined in the Waterway Regulations”. Most importantly, “any proposed new uses(s) for this site beyond energy production, marine industry, and temporary uses... will require a renewal or amendment to this Harbor Plan.”⁵

As a result the Supporting Uses which can typically account for 25% of a DPA have been excluded from Salem’s Industrial Port District which includes all of the Dominion site. The Salem Wharf/North Commercial Waterfront portion of the property is not effected. (See map on previous page)

As the master plan for Salem’s Designated Port Area, the Harbor Plan is the overall vehicle to seek consideration of amendments to the description of the Designated Port Area. Any revision to the Harbor Plan that includes an amended Designated Port Area would need to be approved by the Secretary of the EEA with review and guidance from the Massachusetts Office of Coastal Zone Management (CZM) and the Department of Environmental Protection (DEP), Waterways Regulation Program (WRP).

Massachusetts General Laws Chapter 91

The majority of the Salem Harbor site is subject to Massachusetts General Laws Chapter 91, The Massachusetts Public Waterfront Act, which is the Commonwealth’s vehicle for protecting and promoting the public use of its tidelands and other waterways. The program was established in 1866, but it’s principles date back to the 17th century, and the Colonial Ordinances which represented a belief that the air, sea, and shore belonged to the public.⁶

As noted on the Massachusetts Department of Environmental Protection website, Chapter 91 “regulates activities on both coastal and inland waterways, including construction, dredging and filling in tidelands, great ponds and certain rivers and streams.” Furthermore, through Chapter 91 the Commonwealth “seeks to preserve and protect the rights of the public, and to guarantee that private uses of tideland and waterways serve a proper public purpose. While other agencies, including the Department of Environmental Management, Massachusetts Coastal Zone Management and the Division of Fisheries and Wildlife, play a role in preserving public rights in public trust lands, the Waterways Regulation Program, the section of Mass DEP that oversees Chapter 91, is the primary division charged with implementing the public trust doctrine.”⁷



Chapter 91 Map

The Chapter 91 line identifies the historic high-tide line and limits land uses along the water’s edge to those that are water-dependent.

The area subject to Chapter 91 is the land on the water side of the line of the “historic high tide established by farthest landward tide line prior to human alteration”.⁸ Approximately two-thirds of the Salem Harbor Power Station site is subject to Chapter 91 limitations.

Chapter 91 serves to protect traditional maritime industries, such as fishing and shipping, from displacement by commercial or residential development” setting the framework for future development.⁹

■ **Chapter 91 regulations specifically work to promote the following:**

- Preserve pedestrian access along the water’s edge for fishing, fowling and navigation and, in return for permission to develop non-water dependent projects on Commonwealth tidelands, provides facilities to enhance public use and enjoyment of the water.
- Seeks to protect and extend public strolling rights, as well as public navigation rights.
- Protects and promotes tidelands as a workplace for commercial fishing, shipping, passenger transportation, boat building and repair, marinas and other activities for which proximity to the water is either essential or highly advantageous.
- Protects areas of critical environmental concern, ocean sanctuaries and other ecologically sensitive areas from unnecessary encroachment by fill and structures.
- Protects the rights of waterfront property owners to approach their property from the water.
- Encourages the development of city and town harbor plans to dovetail local waterfront land use interests with the Commonwealth’s statewide concerns.
- Assures the removal and repair of unsafe or hazardous structures.¹⁰

Chapter 91 applies to flowed tidelands, filled tidelands, great ponds and non-tidal rivers and streams. The Salem Harbor Power Station site is a filled tidelands area. The regulations apply to both new and existing site activities.

■ **Regulations include the following:**

- placement of structures (including seasonal structures)
- structural alterations or demolition of structures
- change in use
- filling and dredging

Final project approval is a public process and according to the Mass DEP website can involve the following steps:

■ **Project Approval**

- Pre-Application Meeting with Waterways Regulation Program
- Environmental Notification Form (ENF) Filing with Massachusetts Environmental Protection Agency
- Chapter 91 Application Filed – preliminary review by Waterways Regulation Program
- Determining Water Dependency by Waterways Regulation Program
- Public Notice by Waterways Regulation Program
- Public Hearing
- Written Determination needs to pass these three criteria:
 - The structures or fill serves a proper public purpose
 - The purpose provides greater public benefit than detriment
 - Determination is consistent with policies of Massachusetts Coastal Zone Management
- Appeal Period – 21 days
- File Completion – applicant submits outstanding information and summary of public comments
- License Issuance and Fee Payment
- Recording of License
- Certificate of Compliance¹¹

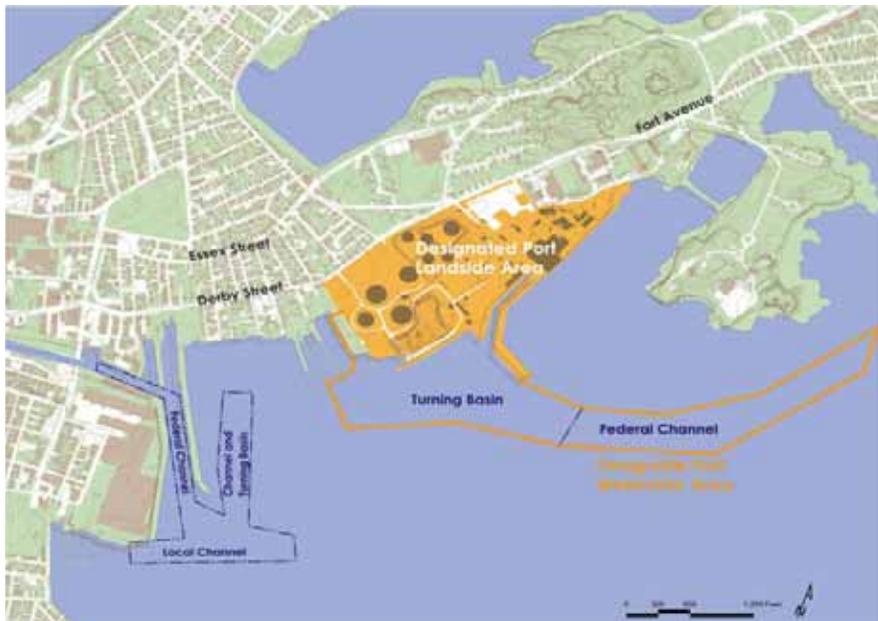
While seeming fairly specific, there is flexibility in the Chapter 91 regulations. In exchange for public use and public access to the water’s edge, the MassDEP Waterways Regulation Program (WRP) is often willing to allow for non water-dependant use, as long as the “non water-dependent projects... provide greater benefits than detriments to the public’s right in waterways.”¹² Typically, a determination is made as to whether the applicant’s project is water-dependent or non water-dependent. Non water-dependant uses “are those which may be located on waterfront property” and may include retail and commercial outlets, hotels, offices, restaurants, gas stations and residences.¹³ The amount of public benefit that must be provided to offset the proposed non water dependent use is determined by how much of the project is located on Commonwealth tidelands (areas seaward of mean low water) versus private tidelands (areas landward of mean low water).

In summary, there is flexibility in the Chapter 91 process, and opportunities to have non-water dependent uses within the project boundaries. However, the Designated Port Area regulations do not provide as much flexibility.

Designated Port Area

In 1978, the Massachusetts Office of Coastal Zone Management (CZM) established the Designated Port Area (DPA) program which was created to *“help maintain existing port infrastructure that was built over the years at great public expense. The policy protects and promotes appropriate marine industrial development in port areas with key industrial attributes, such as deep-water channels, established rail and transportation links, and public utility services conducive to industry.”*¹⁴

In 1979, Massachusetts Department of Environmental Protection incorporated the DPA program into its Waterways Regulations to prevent *“types of development that conflict with maritime industrial use including condominiums and other residential development, hotel, and recreational boating facilities. This approach is critical – once space for water-dependent industry is lost to other development, it is virtually irretrievable. Creating new infrastructure in other areas requires dredging deep channels, altering natural shorelines with extensive fill and structures, and connecting into existing transportation and utility network. Such measures are prohibitively costly in both monetary and environmental terms.”*¹⁵



DPA Map

The Designated Port Area includes all of the land area of the Dominion site, as well as the deep water channel that connects it to Salem Harbor.

There are presently 11 Designated Port Areas in Massachusetts including Gloucester, Beverly, Lynn, Mystic River, Chelsea Creek, East Boston, South Boston, Weymouth/Fore River, New Bedford-Fairhaven, Fall River/Mt. Hope Bay and Salem Harbor.

In Salem, virtually all of the Salem Harbor Power Station site is included within the boundary of the Designated Port Area. The waterside portion of the DPA includes the turning basin and the federal channel. As defined by 310 CMR of the Waterways Regulation, uses protected and supported by the DPA include the following:

■ Water Dependent Uses

- Marine terminals
- Commercial fishing facilities
- Marine repair and construction facilities
- Manufacturing facilities that rely primarily on bulk receipt
- Facilities accommodating the shipment of goods by water
- Industrial uses or infrastructure facilities which cannot be reasonably located at an inland site as determined by 310 CMR¹⁶

■ **Supporting Uses** - Permitted under DPA regulations, and defined as *“industrial or commercial use within a DPA that provides water-dependent industrial uses within the DPA with direct economic or operational support, to an extent that adequately compensates for the reduced amount of tidelands.....(that) will be available for water –dependent use.”*¹⁷ The following have been defined as Supporting Uses and are limited to 25% of the DPA area:

- Storefront retail and service facilities
- Shops operated by self-employed tradespersons
- Eating and drinking establishments
- Small-scale administrative offices¹⁸

■ **Accessory Uses** - Permitted under DPA regulations, and defined as *“accessory to a water dependent use upon a finding by DEP that said use is customarily associated with and necessary to accommodate a principal water dependent use.”* It must be found to be *“integral to the function of the water dependent use”* and... *“commensurate in scale.”*¹⁹

The following have been defined as Accessory Uses:

- Parking facilities
 - Administrative offices
 - Restaurants
 - Retail facilities ²⁰
- **Temporary Uses** - The DPA regulations defined in 310 CMR identify temporary uses as *“warehousing, trucking, parking and other industrial and transportation uses which occupy vacant space or facilities within a DPA for a maximum of ten years.”* ²¹ From a development standpoint, temporary uses are of limited value.
- **Excluded Uses** - Defined by 310 CMR as incompatible and potentially considered to be a threat to the purpose and principle of the DPA. The following have been defined as Excluded Uses:
- Residential units
 - Hotels and motels
 - Recreational boating facilities
 - Large sport/amusement complexes

The publication *“Designated Port Areas - A Manual for Lawyers”* prepared by the New England School of Law in 2009 summarizes the DPA designation and its limited flexibility:

“In sum, the DPA regulations protect and preserve DPAs for water-dependent industrial uses and collateral uses associated with such industrial uses. Such flexibility as can be found in the regulation does not extend to non-commercial or commercial recreational uses that would encourage members of the public to enter DPAs for purposes other than accessing a water-dependent industrial or collateral operation.” ²²

As a reminder, the current Salem Municipal Harbor Plan which runs through 2018, has an amplification which excludes Supporting Uses on the Dominion portion of the site. In order to overturn this restriction, an amendment of the Harbor Plan will be required.

DPA Precedents

It is useful to look at the other ports in the Commonwealth to understand current practices, challenges, and long term master-planning efforts as a way of understanding what may be possible in Salem.

As previously mentioned, there are 11 DPAs in the Massachusetts. Following is a description of some which seem to be most relevant to Salem.

- **Port of Boston** - The Port of Boston is the western hemisphere’s oldest continually operating seaport functioning as a busy trading area even prior to settlement by Europeans. ²³

According to The Boston Harbor Association website, Boston’s working ports generate \$2.4 billion in economic benefit and provide 34,000 jobs annually. ²⁴ Four of the 11 DPAs are located (fully or partially) in the Port of Boston, including South Boston, Chelsea Creek, Mystic River and East Boston. The Massachusetts Port Authority (Massport) plays a key role in developing and managing the seaports and other transportation infrastructure. The port typically has a 40 foot deep channel which is being dredged to a depth of 48 feet at the South Boston terminal.

- South Boston - The South Boston DPA is an active seaport which includes the Conley Terminal, Black Falcon Cruise Terminal, Boston Fish Pier, Massport Marine Terminal, Fargo Street Terminal and the International Cargo Port.

The Conley Container Terminal handles over one million tons of containerized cargo and is a state of the art facility that has four post-Panamax container cranes and access to transportation infrastructure. ²⁴

Over 16 million tons of bulk cargo, (including petroleum, LNG, salt, cement and gypsum) is handled in South Boston at the International Cargo and Massport Marine Terminal annually. ²⁶ In addition, over 27,000 vehicles per annum are handled in South Boston as well. ²⁷

The Fish Pier was acquired by Massport in 1972 and remains a destination for seafood dealers and a major location for fish processing facilities.

The Black Falcon Cruise Terminal is the focal point of Boston's growing cruise ship industry and has more than 100 ship calls with nearly 300,000 passengers annually.²⁸ It is an active terminal with cruises to Bermuda, seasonal cruises to New England and Canada, as well as transatlantic cruises to Europe.

- Chelsea Creek - The Chelsea Creek DPA is home to the Eastern Salt Company, a major distributor of road salt. Additionally, it is the site for jet fuel storage for Logan Airport, as well as diesel fuel, gasoline, and home heating oil storage.
- Mystic River / Charlestown - The Boston Autoport is located at the former Moran Container Terminal and Mystic Pier One and handles 50,000 automobiles a year, including covered storage for high end automobiles.²⁹ Mystic River handles bulk cargo, including the storage and distribution of road salt, as well as home heating, liquefied natural gas and gasoline storage. A \$60 million wind turbine blade testing facility has recently been opened in Charlestown, the largest of its kind in the United States and funded by the Department of Energy with federal stimulus money.³⁰
- East Boston - The East Boston Port contains Pier 1 and the East Boston Shipyard, a ship building and repair facility and is home to commercial offices and other industry. The City of Boston has also been considering a proposal to construct a wind turbine manufacturing/staging location at the East Boston port.

- **Port of Gloucester** - Gloucester has a long tradition of commercial fishing, but has fallen on hard times in recent decades due to depleted fish stocks (halibut, haddock, yellowtail, flounder, ocean perch and Atlantic cod) and increased regulations.³¹ The industry has consolidated, but Gloucester remains a regional hub and leader in the fishing industry. Gloucester is a popular destination due to its fishing heritage, colonial history, and renowned art colony, Rocky Neck, and also offers whale watching excursions.

Gloucester has a large DPA area, about twice the size of Salem's DPA, which is subdivided into three areas: Harbor Cove, Industrial Port and East Gloucester. The DPA includes a 20 foot deep navigational channel and a 600 foot long dock that can accommodate vessels up to 500 feet long. In their approved 2009 Municipal Harbor Plan (MHP), Gloucester was successful in using a combination of municipal zoning and special permits to limit commercial development in some DPA areas and increase it in others. The net result was an overall decrease in commercial development and a port area characterized by the recently completed Cruiseport Marine Terminal which accommodates seasonal cruise ships from Canada. Other potential uses being considered are an aquarium, and a Harbor Innovation Center which could include a visitors center, expanded fishing port facilities, marine research and education center, historical research center, public marketplace, seafood culinary school, town landing, and harbor walk.³² Gloucester is also home to the Ocean Alliance, a non-profit whale research institute, and Neptune's Harvest, a wholesale fish and seafood company who also processes fish remains to sell as liquefied fertilizer to farmers.³³

An article from the Boston Sunday Globe, dated October 2, 2011 detailing Gloucester's current plans for their harbor is included in the following sidebar.

Gloucester's plan: to rework its working port

By Steven A. Rosenberg
GLOBE STAFF

The business of fishing is holy in Gloucester, and the heart of the industry sits at the mouth of the Atlantic in Cape Ann. Here, where nearly everyone has either lost a relative at sea or known someone who perished there, officials took steps about 25 years ago to keep Gloucester Harbor as a working port, designating the area for maritime use while excluding the construction of condos and marinas.

So over the last decade, even as the fishing industry nearly collapsed after tough regulations were implemented to rebuild stocks like cod, flounder, and haddock, the harbor has retained its gritty look. But with nearly half of the harborfront underutilized and numerous piers rotted or falling into the ocean, the city is looking not to abandon its working harbor approach, but to update it for the 21st century.

Its plan: to bring a new generation of Atlantic-oriented business into town — an ocean technology cluster, if you will — to bring in a new flow of revenue.

The city could certainly use the money, more than \$200 million of it to rebuild schools and roads and repair its water and sewer system. As things now stand, less than 1 percent of the city's tax base — around \$750,000 — comes from harborfront property tax-

es. And while federal and city officials say fishing stocks will return in a few years, Gloucester lost 21 fishing boats last year and its once-proud fleet of hundreds of vessels is now down to 75.

Hoping to stimulate interest in the empty waterfront properties, the city will hold a two-day maritime industry gathering next month. The conference will be organized by the Metropolitan Area Planning Council, and is being funded by a federal grant of \$45,000. Gloucester Mayor Carolyn Kirk said the conference goal will be to reach a consensus regarding the best types of new maritime businesses to attract to the harbor.

"We need jobs and investment on the working waterfront. That is the bottom line for the city," said Kirk, who added that diversifying the harbor's economy would be compatible with the fishing industry, which she said would always be the port's focal point. Still, she is hoping that a new "niche" maritime industry puts down roots and invests in the city. Kirk wants to usher in a burst of economic activity that would include universities, biotech companies that create drugs from ocean research, ocean scientists, aquaculture, "green" boatbuilders, and other companies that support the local fishing industry.



Jason Edwards labels a bottle of Neptune's Harvest fish-derived fertilizer.

"Reinventing Gloucester as a prestigious maritime center is much harder to do than to attract tourists and open up shops and have condos. And, in true Gloucester fashion, we're taking the hard route," she said. "The working waterfront is what resonates with the community and what makes Gloucester authentic."

Jack Wiggins, director of the Urban Harbors Institute at UMass-Boston, believes the city has to properly market its greatest natural resource, a centuries-old, natural deepwater harbor that he says is ripe for academic institutes that generate research used to spin off new businesses. He said one model for marketing the city is to list available waterfront properties, provide demographic information about the city's residents and workforce, and also detail infrastructure

support, such as tax breaks, that Gloucester could offer new businesses.

Research institutes are not new in the city. The former Bureau of National Fisheries was located in Gloucester and conducted some of the first exploratory cruises into the Atlantic from

research vessels that left the harbor. The National Oceanic and Atmospheric Administration, a scientific agency focused on the condition of the air and the oceans, has offices in the city. And colleges such as University of Massachusetts Amherst have had research facilities in the city for decades.

"The potential is phenomenal," said Molly Lutcavage, who directs UMass-Amherst's Large Pelagics Research Center. The Gloucester facility works with local fishermen to conduct research on bluefin tuna, bigeye tuna, swordfish, and leatherback sea turtles. "I think the new focus for the Gloucester waterfront cannot just be fishery science, but ocean exploration and new approaches to ocean energy."

In 2008, the whale research institute Ocean Alliance bought a cluster of old brick factory build-

ings known as the Paint Factory for \$2 million. The nonprofit, which focuses on the effect contaminants have on whales, is spending \$8 million more to renovate and outfit the site with state-of-the-art machinery.

"I think we're the first wave of ocean innovators that will be coming to the area," said Iain Kerr, Ocean Alliance's chief executive officer. "I think as we look to the future, as we look to new drugs and alternate sources of energy — whether it be wave power, wind power, or ocean currents — the ocean is an emerging new frontier."

Ann Molloy, who co-owns Neptune's Harvest, a wholesale fish and seafood firm, believes existing fishing businesses on the water need to diversify. The harbor business has been in her family for more than a century.

Until the early 1980s, just 30 percent of the fish the firm was filleting was edible, and the gurry — the head, bones and skin — was dumped at sea. That's when her family stumbled upon a way to expand their business.

Turning to UMass-Amherst researchers in the city, they established a way to grind the remains of the fish into organic liquid fertilizer. Each day, the company grinds at least five tons of fish and bottles the liquid, which is then packed in 4,500-gallon tanker trucks and shipped to farms throughout the country.

"The North Atlantic is the perfect source for nutrients, and if we had the right researchers here a number of products could be developed," said Molloy.



A planned Harbor Walk could stretch along Gloucester's waterfront as soon as next June.

- **Port of New Bedford** - New Bedford has a rich history and once was one of the most important whaling ports in the world. It is now the leading port for commercial fishing in the United States.³⁴

New Bedford also has a large DPA area, which is across the Acushnet River from the Fairhaven DPA. The New Bedford DPA includes a 28 foot deep navigational channel and a 450 foot long dock. The New Bedford DPA is also a Foreign Trade Zone which offers duty-free opportunities for importers and exporters. Dry and liquid bulk cargo is received in New Bedford with intermodal freight transfer at the Quick Start Ferry facility. The DPA has access to a good transportation infrastructure including trucking (I-95), air (New Bedford Regional Airport, a towered Class D airport), water, and rail (CSX rail service).³⁵

Maritime International offers cold storage for the perishable food industry. The Port also is home to the Sprague Energy Petroleum Terminal which offers storage for home heating, diesel, gasoline, and natural gas. D.N. Keeley & Sons Shipyard also performs boat repairs and has been steady fixture in the Fairhaven/New Bedford harbor for many years. The port also offers ferry service to Martha's Vineyard and Cuttyhunk Island, and serves as a seasonal stop for the expanding Canadian cruise ship market, bringing visitors to explore the Whaling Museum, Ocean Explorium and New Bedford's historic past.

Most recently, New Bedford has become a staging/assembly site for the wind turbines built for Cape Wind.

- **Port of Fall River / Mt. Hope Bay** - Fall River has a rich history and once was one of the most important textile milling towns in the world. Battleship Cove has the largest collection of US Navy vessels in the country and is a popular tourist destination.

Fall River also has a large DPA area, which includes a 35 foot deep navigational channel and two 500 foot long docks. According to World Port Source, Fall River is the 2nd busiest cargo port in Massachusetts, behind Boston, and its cargos, which come from South America, West Africa, Cape Verde, Europe and the Caribbean, include paper, latex, chemicals, frozen fish, coal / lignite and vehicles.³⁶ It has easy access to I-195 and an active CSX rail.

Port Comparison Summary

Port	Salem (Dominion)	Gloucester	Boston	Fore River (Ship Yard)	Fall River (Mount Hope Bay)	New Bedford
Protected Harbor	Yes	Yes	Yes	Yes	Yes	Yes
Channel Depth	32'	16-19'	40-45'	32'	40'	30'
Horizontal Clearance	280'	200'	430'	175'	400'	150'
Overhead Clearance	No vertical obstruction	No vertical obstruction	No vertical obstruction			No vertical obstruction
24 / 7	Yes	No	Yes	Yes	Yes	Yes
Exclusive Use?	Yes	No	Yes	Yes	No	Yes
Berth Length	580'	1400'	1800'	800'	620'	1600'
Upland Area	Up to 45 acres	7.8 acres	14-17 acres	111 acres	7 acres	10+ acres
Rail / Hwy Access	Rail: no Hwy: no	Rail: yes Hwy: yes	Rail: limited Hwy: yes	Rail: yes Hwy: no	Rail: yes Hwy: yes	Rail: limited Hwy: yes

Modifying DPA Requirements

In order to initiate modifications to the DPA requirements, municipalities typically work through the Municipal Harbor Plan (MHP) process. Future changes to the DPA typically will be formulated through the Salem MHP, currently approved through 2018, and must be approved by the Secretary of the Executive Office of Environmental Affairs (EEA) with review and guidance from the Massachusetts Office of Coastal Zone Management (CZM) and the Department of Environmental Protection, Waterways Regulation Program (WRP). As stated earlier in this section, the current Salem Municipal Harbor Plan has an amplification which excludes Supporting Uses on the Dominion portion of the site and will require an amendment to the Harbor Plan if other uses are contemplated.

There are current examples of modifications to DPA requirements that have been utilized by other ports. However, they are uncommon and they are extremely limited in nature, and may not be applicable to Salem. The mechanisms used for modifications, described below, have included Boundary Review, Substitution Provisions and localized trade-offs within the context of overall compliance.

- **Boundary Review** - At the written request of the municipal official, planning board or other governing body, Coastal Zone Management may undertake a Boundary Review of the DPA. Boundary reviews are further defined in 301 CMR (Code of Massachusetts Regulations), and could be used to alter the size or configuration of the DPA to allow for broader future development potential. While reconfiguration is possible, reducing the overall area of a DPA is likely to get less support from Coastal Zone Management.

A recent 2006 case, *Gypsum v. Executive Office of Environmental Affairs (EEA)*, which applied to the Mystic River DPA, is a relevant case study which challenged the designation of a portion of the DPA. *"In Gypsum, the properties in question undisputedly met the designation standards to remain in the DPA, but the (CMZ) director argues that the properties could be excluded based upon his discretion that he argues was set forth in 301 CMR."*³⁷ *The Massachusetts Appeals Court found that the director has no discretion to remove a parcel from a DPA if the parcel under review keeps the designation standards."*³⁸ Furthermore, *"The Court emphasized that the director's discretion*

*did not extend to the exclusion of qualifying property from a DPA: To transform the discretion...to do precisely the reverse, i.e. to exclude other includable property, entirely and forever, from the regulatory framework intended to further the fundamental goal of protection of scarce coastal zone resources, with a result that tends to minimize, not maximize, the shrinking industrialized coast and undermines, not serves, the explicit purpose of the DPA regulations."*³⁹

The case ruling does not appear to support the notion that Boundary Review is a viable method in the Court's mind to reduce a DPA area.

East Boston has also gone through a process to amend its DPA through the Boundary Review process, according to the Manual for Lawyers publication, *"The only areas removed by CZM in the East Boston Boundary Review were those portions of properties which were only partially within the DPA. Where the DPA boundary lines intersected the building located on the parcel or otherwise were not in conformance with property lines, CZM determined that the entire property should be removed from the DPA."*⁴⁰ East Boston's efforts are not relevant to Salem, whose DPA basically consists of one large parcel.

- **Localized Trade-Offs/Overall Compliance** - Marine industries anticipated by the DPA designation have not occupied available land areas as expected and many cities with DPAs have been left with economically depressed waterfronts. Stakeholders must assess the uses that are most beneficial to cities in today's economy. Some flexibility within portions of the DPA may also be possible if the overall requirements are maintained.

The City of Gloucester has gone through a process of amending their DPA and continues to pursue additional modifications. In December of 2009, the Gloucester Municipal Harbor Plan was approved by the Secretary of the EEA which initiated a change to Gloucester's DPA. The approved 2009 Gloucester Harbor Plan (and DPA Master Plan) provided *"...greater flexibility for supporting commercial uses on waterfront property so that waterfront properties have more mixed-use investment options..."*.⁴¹ The plan allowed for *"up to 50% of the ground area for commercial uses on all parcels within the DPA"* while also decreasing commercial use in specific sub-areas.⁴² The

Gloucester DPA was large enough to allow for trade-offs locally, while still achieving overall goals. As the Secretary of the EEA stated: *“A municipality may propose alternative use limitations or numerical standards that are less restrictive than the Waterways requirements as applied in individual cases, provided that the plan includes other requirements – considering the balance of effects on an area-wide basis will mitigate, compensate for, or otherwise offset adverse effects on water-related public interests.”*⁴³

The Gloucester DPA is a much larger area than Salem, and unlike Salem’s DPA, is comprised of numerous parcels. Trade-offs allow for some parcels and/or sub areas to have a higher percentage of Accessory Uses, as long as the aggregate area complies with the 25% Accessory Use limitation imposed by the DPA regulations. In Salem, the entire DPA is essentially recognized as one parcel. As a result, trade-offs are not viable because the 25% Accessory Use limitation only applies to aggregate developments.

- **Substitute Provisions** - The Gloucester Harbor Plan also pursued the use of “Substitute Provisions” established under 310 CMR 23.05 (2) (c). The substitute provision states that *“the regulations set forth a two-part analysis that must be applied individually to each proposed substitution in order to ensure that the intent of the Waterways requirements with respect to public rights in tidelands is preserved.”*⁴⁴ The Gloucester Harbor Plan argued that *“the configuration of the WDUZ (Water Dependent Use Zone) as directed by the Waterways standards may be less effective in providing use of the water’s edge for water-dependent industrial use than another configuration allowed with flexibility to the existing standards.”*⁴⁵ As a result, relief from dimensional restrictions providing public access for limited properties was granted in exchange for *“greater effectiveness in the use of the water’s edge for water-dependent industrial use”*⁴⁶ Fundamentally, this represents minor adjustments for a particular situation where oddly configured parcels posed challenges probably not applicable to Salem.

- **Public Sentiment** - In 2010, the City of Gloucester expressed interest in constructing an aquarium, a use that is not permitted within the DPA. Local sentiment is summarized in an editorial in the Gloucester Times on September 7, 2010:

*“Yet the state is still insisting that property be used to service an industry that is no longer big enough to use it, and probably never will be again...The DPA designation has already been amended to allow up to half of a property to be used for ‘supporting uses’ of marine industrial. But according to a spokesman for the Department of Environmental Protection, an aquarium is not considered supportive of marine industrial uses...Gloucester needs economic growth. And its options in pursuing that growth should not be limited by outdated state mandates that still provide too narrow a window for the city’s future.”*⁴⁷

There has also been interest in modifying a portion of the Chelsea Creek DPA. The Chelsea Community Development Plan (CDP) was completed in 2004 and has focused on the need for residential and overall economic growth. The CDP stated that the status of Chelsea’s waterfront needed to be changed to *“capitalize on any opportunities to advocate for changes to the current regulations to allow for ‘higher and better’ uses at the waterfront”*.⁴⁸ Chelsea is in the process of creating a MHP, which is intended to be a vehicle to bring about change to its DPA. As indicated in *Designated Port Areas, A Manual for Lawyers*, *“Until Chelsea is able to find a means to modify its DPA (perhaps through a MHP) the waterfront will more than likely remain as it is”*.⁴⁹

The process for amending the DPA seems difficult, but not worth dismissing. There are a few precedents. By utilizing the MHP, and seeking change through Boundary Review, the Substitute Provision, and trade-offs within the DPA itself, more flexibility may be provided for potential developments. More importantly, if DPA’s in the Commonwealth of Massachusetts remain vacant or struggle, (and are supported by municipal and public sentiment against the DPA constraints), the governing authorities may ultimately be forced to ease restrictions leading to more flexibility within DPAs. This would be particularly relevant for specific DPA’s like those located in Beverly and Salem, whose landside infrastructure may not be as conducive to a majority of marine industrial uses as Boston, Fall River and New Bedford.

OTHER CONSTRAINTS

Cost Of Clean Up

One of the most significant factors in determining the viability of future development on the Salem Harbor Power Station site will be the cost of clean-up, including demolition of the existing power station structures and clean-up of the 62 acre site.

The estimated range of clean-up costs determined as part of this study is preliminary and is based upon the limited information currently available. In estimating the total cost of site clean-up, the consultant team relied on the following information and criteria:

- **Salem Harbor Power Station Site Access** - The consultant team was provided access to the Salem Harbor Power Station site on August 25th, 2011 with representatives of Dominion Energy. The two-hour walk through allowed the consultant team to confirm assumptions regarding the systems and conditions within the power plant proper, as well as the surrounding power plant site. Specific measurements, quantity take-offs, photographs, and subsurface investigations or testing were prohibited.
- **Industry Experience** - The consultant team includes the Jacobs Energy & Power Group. Their experience, global expertise and familiarity with power plant construction, demolition and remediation has provided valuable insight. Jacobs also utilized an on-staff Licensed Site Professional (LSP) to better understand environmental issues and the potential complexities of site remediation. A LSP is a Hazardous Waste Site Cleanup Professional and a scientist or engineer authorized by a state to oversee the assessment and cleanup of contaminated sites.⁵⁰
- **Public Information** - With the exception of the visual observations made at the walk through, information regarding the Salem Harbor Power Station structures and site is based on publicly available information.

- **Relevant Documentation on the DEP Website** - The history of known violations and site remediation are documented on the Commonwealth of Massachusetts Department of Environmental Protection website. Dominion purchased the power station in 2005 and it is unlikely, given their due diligence at the time, that they would have assumed liability for excessive contamination as part of the transfer of ownership. Site remediation could still be a significant cost relative to redevelopment, however. According to the DEP website, there have been 16 Reportable Releases since 1987. The level of severity of these occurrences appears to be relatively minor and all were properly addressed by ownership. Records for all of the occurrences indicate a Response Action Outcome (RAO) Compliant Status, and there appear to be no outstanding issues. Additional remediation in these areas may be required depending upon the land uses included in the eventual redevelopment. During the recent walk through, Dominion indicated that in addition to reported incidents, the area of the original ash settling pond has some environmental restrictions. They have, however, assumed that varying degrees of reuse would still be allowable.
- **Other Precedents** - The U. S. is entering a new era in the development of its energy infrastructure. According to the American Clean Skies Foundation, 10 to 15 percent of the country's coal-fired power plants are likely to be retired between 2012 and 2020.

Many of these power plants, like Salem Harbor Power Station, are not architecturally significant structures, and are unlikely to be renovated for other uses. As a result, many will be demolished. At the present time, however, there are a limited number of precedents and very little relevant data is publicly available. Many plants have been decommissioned, but are yet to be demolished.

The most relevant precedents are listed below:

Source for the following Project: "Laughlin Coal-fired Power Plant Going Away" by John G. Edwards, Las Vegas Review Journal.

- Mohave Generating Station, Nevada
 - Rural desert setting
 - 1580 MW capacity
 - Demolition began in 2009
 - Estimated cost \$30 million

Source for the following Projects: "Guidelines for Coal Plant Decommissioning" by Electric Power Research Institute.

- Port Washington Power Plant, Wisconsin
 - Adjacent to Lake Michigan and residential area
 - 6 coal-fired units built in 1930s and 1940s
 - 341 MW capacity
 - Partially decommissioned and demolished in 2005-2006
 - Cost of \$30-35 million
- Plant Arkwright, Georgia
 - Located in a rural area
 - 14 coal-fired units built in 1940s
 - 160 MW capacity
 - Demolition and site cleanup
 - Cost of \$19 million
- Watts Bar Fossil Plant, Tennessee
 - Located in rural area
 - 4 coal fired units
 - 240 MW capacity
 - Retired 2000, partially demolished
 - Cost of \$17-25 million
- **Published Data** - Although there is relatively little public data available regarding the cost of demolishing coal fired power plants, the following published information is useful:
 - The American Clean Skies Foundation in August, 2011 in their publication "*Repurposing Legacy Power Plants*" stated that: "*Decommissioning and retirement costs ...can vary considerably from plant to plant, but may be between \$30 million and \$50 million for a plant of about 500 MW.*" ⁵¹
 - "The Potomac River Green" publication also prepared by the American Clean Skies Foundation in August, 2011, states that: "*Industry estimates for the cost of demolition and site remediation of coal-fired power plants like the PRGS are in the range of \$75,000 to \$100,000 per megawatt of capacity installed... Cost estimates include labor, equipment and materials expenditures to make the PRGS safe for demolition, abatement of asbestos and other site contaminants, contingency costs, credits for sale of scrap metals*

and other recovered materials, site restoration and post-retirement monitoring of environmental quality." ⁵²

The data outlined above suggests that the total estimated demolition and site remediation cost for the Salem Harbor Power Station, (a 745 MW facility), would be in the range of \$55 to \$75 million. However, there are many other site specific variables to consider, some of which are outlined below.

- **Dismantling Versus Implosion** - The site is adjacent to a residential neighborhood, an electrical substation and a switchyard (that will remain active when the plant ceases operation), an operating regional sewage treatment plant, a historic neighborhood and Salem Harbor, all of which will have an impact on and potentially complicate the building demolition process. Given the adjacencies described, the existing buildings will likely have to be dismantled incrementally, after hazardous materials such as asbestos, lead paint, PCBs and mercury are abated and removed. Unlike power plants in more remote or rural locations, implosion is not an option here. The Salem Harbor Power Plant has already dismantled two of their existing stacks.
- **Union Labor** - Unlike many of the plants that have been demolished in southern states, or "right to work" states, Massachusetts is highly unionized and demolition of the power station structures will likely involve union labor. The cost for union labor (and wage rates generally) will be higher than other parts of the country where non-union labor could be utilized.
- **Location of Hazardous Materials Landfills** - While demolition of Salem Harbor is, at a minimum, several years away, the availability of landfills accepting hazardous materials will be an important consideration. Currently, there are two landfills relatively close to the Salem Harbor site that would likely be considered for disposal of the hazardous materials. One facility is in Chicopee, Massachusetts and the other is in Rochester, New Hampshire. The Chicopee facility is currently accepting only material generated by Hurricane Irene. It is unknown when they might resume taking waste material from facilities such as Salem Harbor. The Rochester facility is receiving industrial hazardous materials, but on a very deliberate, permitted basis and only in limited amounts. There are other hazardous waste disposal sites around the country, but the transportation costs would be prohibitive.

- **Hazardous Material Abatement** - Given that the power station was constructed in the early 1950s, the building, boilers, and turbines will likely contain significant amounts of lead paint and asbestos. Prior to any demolition, all material will need to be tested, and a comprehensive plan developed for proper removal of all hazardous materials identified. Abatement will be a time consuming process, and will represent a significant portion of the overall clean-up cost and schedule. Without actual inspection and testing, all costs associated with abatement are rough order of magnitude (ROM) estimates only.
- **Salvage Value of Materials** - Given the amount of steel, aluminum and copper in the existing structures, there is a potential to realize significant cost savings from salvage to offset a portion of the clean-up costs. The amount of salvageable materials can be estimated based upon what is known about power plants of this era and size, however, salvage value of metal is highly dependent on construction demand, and locating a buyer. Current costs have been assumed for salvage materials, but given the uncertainty of the market, costs may have changed significantly when the facility is actually demolished.
- **Varying Levels of Clean Up** - Guidelines for site cleanup allow for different levels or degrees of cleanup for different types of project development. For example, remediating the site for a residential use will require more stringent cleanup than for an industrial use. Site cleanup costs will be significantly impacted by the program and uses anticipated as part of the redevelopment.

Estimated Cost of Clean Up and Demolition

Based upon the consultant team's experience, available public information, data, and visual observations, a range of demolition and cleanup costs have been established.

This estimate assumes demolition of all existing on site structures and site clean-up, enabling redevelopment of the site. Given the disposition of uses and structures on the site, demolition and site cleanup, subsequent development could occur in phases – potentially a more realistic scenario given economic and market related constraints.

- **Estimated Site Cleanup Costs** - Given the public information available on the Massachusetts DEP web-site, and the fact that remediation costs will be directly dependent upon the anticipated re-use, a reasonable assumption of costs could range from \$5 million to \$20 million.

Specific areas for remediation will include:

- The original ash settling area where there is currently a monitoring system in place. Depending on the nature of future uses, a range of remediation measures could be required including soil excavation and pumping/purifying ground water. It is also possible that very little beyond current monitoring would be required.
- The ash settling area now in use could be remediated in a similar manner.
- The area under the coal pile and the storm water collection area around the coal pile could also be remediated in a similar manner.
- The area around tanks that have been used for oil storage will have to be monitored and, if found contaminated, remediated.

In all cases extensive exploration testing and monitoring will be required to establish existing levels of contamination. Known as a Phase 1 Environmental Study, the levels of contamination would be cross checked against anticipated future uses as part of establishing a final plan and budget for site cleanup.

- **Estimated Demolition Costs** - Based upon experience with similar facilities, our site observations, and our knowledge of the existing market, a reasonable estimated range for building demolition and hazardous material abatement is \$80 million to \$85 million. The range includes demolition of the oil tanks, buildings and equipment. Should the plant be closed for more than one year, Dominion will be obligated at their own expense to demolish the four large fuel oil tanks on the western portion of the site, two of which are presently active, and two of which are presently empty and abandoned. The estimated range of cost also includes \$10 million for hazardous materials abatement, based on our knowledge of the facility, its age, and information gathered from other owners who are in the process of demolishing power plants. The overall schedule for the hazardous materials abatement is somewhat indeterminate, because of scarcity of licensed hazardous waste landfills in the area and the rate at which those facilities can receive the materials. The time required could be as much as a few years. The schedule for demolition of existing buildings after abatement will likely be in the range of one year.

A Phase 1 Environmental Study would need to be done in order to provide an estimate with a higher level of certainty.

- **Salvage Value** - A few years ago, before the economic downturn, salvage values were very high for steel and other metals, sometimes over \$1,000 per ton, however, values are much lower today. Recently, the salvage values seem to have stabilized, and for an ongoing power plant demolition project in Florida, salvage values are around \$400 per ton. The Salem Harbor plant has some 20,000 tons of structural steel and a similar amount of piping, boiler drums and waterwall tubes, equipment such as turbines and generators, pulverizers and burners, ductwork and precipitators. There is also a large amount of copper in the facility in the form of electrical cable, the generator rotors and stators. The tubes in the feedwater heaters and turbine condensers most likely contain some form of copper compounds, such as copper nickel, making them relatively valuable as well. Based roughly on the current market, the salvage value of material could provide a credit in the range of \$20 to \$25 million.

- **Range of Estimated Total Cost for Demolition and Site Clean Up** Combining the cost of site clean-up with the cost of the building demolition and hazardous materials abatement, we believe that a reasonable overall cost range would be \$85 to \$105 million. When a credit of \$20 million to \$25 million for salvage value is applied the final cost could be in the range of \$60 to \$85 million, consistent with the American Clean Skies estimate of \$75,000 to \$100,000 per megawatt of capacity. Costs are summarized below:

	Lower Range	Higher Range
Site Remediation	\$5 Million	\$20 Million
Abatement	\$10 Million	\$10 Million
Demolition	\$70 Million	\$75 Million
Salvage Value Credit	(\$25 Million)	(\$20 Million)
Total Cost For Demolition And Remediation	\$60 Million	\$85 Million

Regional Access Limitations

Salem is located 15 miles from downtown Boston, and has a population of approximately 42,000. According to the 2010 U.S. Census, the Greater Boston metropolitan statistical area is home to nearly 4.6 million people making it the 10th largest Metropolitan Statistical Area in the country.

Salem, can be accessed by seasonal ferry (48 minutes), MBTA Newburyport/Rockport commuter rail (35 minutes; one mile from station) and by automobile via Route 1A or 93 & 95/128. Air travel would typically utilize Boston's Logan Airport (15 miles to the south) or the Manchester Boston Regional Airport (50 miles to the northwest).

Despite the many options for access to Salem, the primary vehicular access via Route 1A from Boston, is circuitous, congested and time consuming. The commute from Boston to Salem, although only 18 miles, can often approach an hour. Alternatively, the access via Route 93 to 95/128 and Exit 25 through Peabody to Route 114 is about 25 miles and can be difficult as well. Despite its proximity to Boston, Salem can be difficult to access for both commercial vehicles and individuals.

Local Landside Access / Traffic Issues

Local access to the site is also challenging, either via historic Derby Street (one-way eastbound) or Webb Street to Fort Avenue. Both Derby Street, Webb Street, and the residential neighborhood to the north are better suited for light residential traffic as opposed to frequent commercial or industrial truck traffic. Although the access and capacity of Fort Avenue is reasonable, there are choke points further from the site where intersections are already at or beyond traffic capacity. It is these intersections that will ultimately impact traffic generating uses on the power plant site in the future. The DPA mandated industrial development typically generates truck traffic, a significant challenge considering the residential and historic character of the adjacent neighborhoods.

While, there is a shortage of parking in the immediate area, especially along Derby Street to the west, the site is large enough to incorporate the necessary capacity. The power plant site is ideally suited for arrival and departure by water, as well as providing access and services for marina development.

Substation Easement

The 62 acre Salem Harbor Power Station parcel has a 10 acre easement for the National Grid substation and its overhead power lines on the northeast portion of the site. National Grid has indicated that they have no intention of removing this substation as it is a valuable location. The location of the substation easement is adjacent to the Sewage Treatment plant, away from the water and located on the more industrial eastern portion of the site, and should not be a significant impediment to future development. Should the site be used in the future for power generation, the location of the substation is a significant asset.

Adjacency to SESD and Future Expansion

Future development of the site will also be impacted by the immediate adjacency of the South Essex Sewerage District (SESD) to the east of the site. Created by state legislation, SESD is a wastewater treatment plant functioning as a regional quasi-municipal agency. SESD is responsible for a six city area which includes the communities of Danvers, Peabody, Marblehead, Salem and Beverly.

Currently, SESD is believed to be near its liquid capacity (although this can fluctuate on an annual basis), and to a lesser degree with regards to its capacity to process additional organic solid matter. Although SESD has not publicly indicated a desire for expansion (either for increased capacity, tertiary treatment or cogeneration), from a master planning standpoint, it may be prudent to allow for some future expansion. SESD would need an act of the state legislature to serve a larger area, and could acquire additional property at fair market value by eminent domain if necessary.

The current Salem Harbor Power Station is not a significant provider of wastewater. When the power station ceases to operate in 2014, the impact of future development on the overall capacity SESD will need to be studied.

AMENITIES AND ADVANTAGES

In addition to the numerous constraints impacting redevelopment of the Salem Harbor Power Station site, one must also consider the many amenities and advantages the site offers.

- **Historic Context** - The Salem Harbor site, is adjacent to the Salem historic district. Salem's colonial and seaport heritage, will continue to appeal to both tourists and historians. Salem enjoys many visitors during the summer and fall, and new development could benefit from this established visitor traffic.
- **Federal Navigational Channel, Turning Basin and Port** - The DPA was created to help protect and maintain existing port infrastructure, built over time at great public expense. The Salem Harbor site has an active dock that is accessed by the federal channel and turning basin. The access channel is 32 feet deep, (only Boston and Fall River having deeper channels in the Massachusetts area) and can accommodate most commercial ships without additional dredging. The site can accommodate ships of 800' in length and has a dock length of approximately 580 feet.
- **Substation** - For any potential developments considering power generation, the location of the existing substation is a significant advantage.
- **Access to Natural Gas Network** - The site is also located within two miles of the existing natural gas network. Should a power generator wish to develop a natural gas power plant, extending the existing natural gas network to the site can be reasonably accommodated in a development proforma.

There is a 30 inch diameter natural gas pipeline, the "HubLine" completed in 2004, which extends from the Fore River plant in Weymouth 29 miles through the Massachusetts Bay and Salem Sound into Beverly. Also, the Northeast Gateway Deepwater Port has a 16 mile Lateral Pipeline that ties into the existing HubLine and is owned by Algonquin Natural Gas. There is also a 30 inch diameter Maritimes & Northeast pipeline opened to the New England market in 2000 that extends from Nova Scotia south to Massachusetts where it also connects with the Algonquin

Gas Transmission near Beverly at the Beverly/Salem Interconnect. The Maritimes Pipeline also ties into the North American pipeline grid in nearby Dracut MA at the Dracut Interconnect with Tennessee Gas.

The potential to extend the gas pipeline to the site is very feasible; with a cost estimated to be approximately \$1 million.

- **Infrastructure for Power Generation** - The site, which has functioned as a power station for nearly sixty years has inherent amenities, based on its current use. As noted above the combination of access to natural gas and an electrical grid distribution network, coupled with access to water and shipping, make this site very suitable for power generation.

Already zoned and operating as a power station, the potential to utilize new technologies and existing infrastructure make this site potentially appealing to those interested in generating energy. Additionally, the low traffic volumes associated with energy production (with the exception of biomass) make this a viable alternative.



This section is focused on a more detailed market analysis, the goal of which is to generate an achievable land use program...

6

MARKET ANALYSIS

UNDERSTANDING SCALE

When looking at a map of the Salem Harbor Power Station site, it is easy to imagine a variety of potential reuse scenarios that take advantage of its tremendous waterside access. However, as the number of constraints outlined in this report indicate, realizing the full potential of the site will require consideration of a creative, phased approach. Aside from the physical and regulatory constraints, market demand for different land uses must also be considered a factor in creating a viable redevelopment scenario. With this in mind, understanding the scale of the site and its potential development capacity is important to paint an accurate picture of a potential redevelopment timeline.



Comparing the site with the two Salem neighborhoods



Site developed as a new mixed-use "downtown" would require 54 years for the market to absorb

- **Comparable Neighborhoods** - The consultant team identified two areas within the adjacent urban fabric of the City of Salem that are similar in size to the Salem Harbor Power Station site: 1) the downtown or Central Business District (CBD), and 2) the historic Derby Street neighborhood. Assuming both the existing substation and power line easements remain as part of the long-term future of the site, the effective "usable" area for redevelopment is reduced from 62 to 53 acres. By comparison, both the Central Business District and the Derby Street neighborhood are nearly identical in size (52 acres).

- **Comparable Development Density** - Using GIS data from the City of Salem, the consultant team was able to determine that there is approximately 1.9 million square feet of mixed-use commercial development within the Central Business District. Given the potential costs of site cleanup, one could argue that a similar level of development density might be required on the power station site to generate enough revenue to overcome these costs. Aside from the physical hurdles in the way of achieving this, current market conditions indicate that it would take between 50 and 60 years for the market to absorb a new mixed-use center on the Power Station site. Further, development of this type could put the vitality of the existing CBD at risk by pulling economic activity away from the downtown.



A new neighborhood the size of Derby Street neighborhood would take 34 years for the market to absorb

- **Comparable Residential Density** - Similarly, the consultant team looked at the Derby Street neighborhood to illustrate market conditions for future residential development along the waterfront. Using GIS data from the City, there are about 900 homes within the Derby Street neighborhood. If this residential fabric were to extend over time to the northeast to include the Power Station site, it would take between 30 and 40 years for market demand to justify this many additional homes. This assumes no other new homes are added to this market, so the actual timeline for such a scenario is likely much longer.

The point of this exercise is to introduce the market challenges related to redevelopment of the site—there is no obvious “higher and better use” for the land given the combination of physical and market constraints, and any redevelopment scenarios will likely take decades to implement. Despite this reality, all hope is not lost: the consultant team has outlined a variety of viable land uses and a flexible framework within which redevelopment can occur over time.

The balance of this section is focused on a more detailed market analysis, the goal of which was to generate an achievable land use program, used by the consultant team to generate the land use options presented in [Section 7: Development](#). The detailed market analysis includes examination of precedents for various redevelopment scenarios related to former power station sites, an examination of the viability of a broad range of commercial, institutional and industrial uses; an examination of marine industrial uses; an examination of the potential for alternative / renewable energy uses on the site, and finally; a detailed proforma analysis focused on the viability of building a new natural gas fired power generating unit on a portion of the site.

REDEVELOPMENT OF POWER STATION SITES

Because the redevelopment of an aging power plant on a large scale is particularly challenging, we have looked at a number of project precedents to determine what could be learned from previous redevelopment efforts in other parts of the country. While the consultant team was able to identify a variety of small power plants that have been repurposed, and in a few instances demolished for redevelopment, the team did not locate any examples of large scale plants (500 megawatts or more) that have been demolished and replaced with large scale mixed-use development.

Precedents

The following precedents are select examples of redevelopment projects that the consultant team determined to be the most analogous to Salem. Projects include existing power plants to be replaced by new more efficient generating facilities and power plant sites redeveloped for other purposes. Tracking these initial projects as they near completion will be an important indicator of a broader future trend, as according to the American Clean Skies Foundation, *“industry analysts predict that environmental and economic factors will lead to the retirement of dozens of aging coal-fired power plants in the coming decade.”*



Existing Port Everglades Power Plant with existing cruise port.

- **Port Everglades Power Plant, Hollywood (near Fort Lauderdale), Florida** - The Port Everglades is a four unit 1,200 megawatt natural gas and fuel oil power plant constructed between 1960 and 1965. Florida Power & Light (FPL) intends to demolish the existing plant in 2013 and replace it with a \$1 billion (including demolition) 1,277 megawatt combined cycle natural gas energy center slated for opening in 2016. ¹

The power plant site is adjacent to Port Everglades, one of the busiest cruise ship ports in the world, and sits less than half a mile away from Terminals 18 and 19, and Berths 18-22. ²

The power plant and its adjacency to a passenger cruise terminal is a useful precedent to be considered relative to Salem Harbor's future development.



Existing Riviera Beach Power Plant with adjacent residential neighborhood.

- **Riviera Beach Power Plant, Riviera Beach (near Palm Beach), Florida** - The Riviera Beach Power Plant is a natural gas and oil fired power plant constructed in the 1960's. Florida Power & Light demolished the plant in June of 2011 and intends to replace it with a \$1.3 billion 1,250 megawatt combined cycle natural gas energy center slated for opening in 2014. ³

The power plant site is adjacent to the Port of Palm Beach, and is immediately adjacent to residential neighborhoods to the south and west - a useful precedent to be considered relative to Salem Harbor's future development.



Proposed Cape Canaveral Power Plant

- **Cape Canaveral Power Plant, near Titusville, Florida** - The Cape Canaveral Power Plant is a natural gas and oil fired power plant constructed in the 1960's on a 42 acre site. Florida Power & Light demolished the plant in August of 2011 and intends to replace it with a \$1 billion 1,250 megawatt combined cycle natural gas energy center slated for opening in 2013.^{4,5}

The power plant site is near a residential neighborhood located to the northwest, less than a mile away. As with the Riviera Beach project, the adjacency of a residential neighborhood to the power plant provides a useful precedent that supports the potential for building a natural gas power generating facility at the Salem Harbor site.



Source: Potomac River Green - American Clean Skies Foundation

- **The Potomac River Generating Station (PRGS), Alexandria, Virginia**
A 482 MW coal-fired power plant constructed on the Alexandria waterfront in 1949. The plant is still operating, but decommissioning appears imminent. The current operator has indicated that it will not make the necessary upgrades to comply with recent EPA environmental regulations, and regional energy officials have determined that the plant is no longer required to ensure energy 'reliability' for the area. The redevelopment plan was completed in August 2011 by the American Clean Skies Foundation and assumes a 10-year schedule. With an estimated cost of \$450 million, the mixed use plan includes:
 - 204,100 square feet of retail, restaurants, and office
 - 467 multi-family and 96 townhouse units, 125-room boutique hotel
 - A working Energy Museum, demonstrating energy technologies
 - Enhanced access to water taxis and mass transit
 - Recreation and open space
 - Required \$450 million project funding from developer funding, municipal bonds, tax credits/other public funds
 - The current operator paid \$2.48 million in taxes in 2010



Source: Seaholm Power Plant - Renovation & Change of Use



Aerial View of the Bartow Power Plant

- **The Seaholm Power Plant, Austin, Texas** - A 100 MW gas/oil power plant on the edge of downtown Austin, which operated between 1950 and 1989. The main building is an architecturally significant Art Deco structure consisting of 110,000 square feet of usable floor area. In 1996 the City of Austin decided to preserve the facility for a major public use. Details include the following:

- The 8-acre site will include: 160 hotel rooms; 80 for-sale condominiums; 275,000 square feet of rental residential; 62,000 square feet of office space; 136,000 square foot public event space; and 3-acres of open space.
- The site took nine years to remediate at a cost of \$13 million.
- The redevelopment is expected to create more than 200 jobs and produce \$2 million a year in tax revenue.

The City began redevelopment efforts in 1996, and 15 years later none of the planned buildings have reached completion. By the time the Seaholm master plan was complete and the development partners were identified, the real estate market hit a downturn which has delayed construction.

- **The Bartow Power Plant, St. Petersburg, Florida** - Progress Energy's Bartow Power Plant was rededicated in 2009 (the plant was originally opened in 1958), following the successful completion of a two-year, \$800 million investment that changed the 50-year-old facility's primary fuel source from oil to more efficient, cleaner burning natural gas. The conversion of the plant included the following features:

- The plant's generating capacity has been more than doubled, adding 800 megawatts (1,200 megawatts total generation)
- Emissions have been reduced by more than 80 percent — including a 98 percent reduction of sulfur dioxide emissions
- Reduced dependence on foreign oil and improved fuel security
- Increased electricity reliability due to transmission upgrades related to plant improvements
- The redesigned power plant takes up substantially less land than the original fuel-oil plant, opening major portions of the property to the possibility of redevelopment in the future
- Low profile gas turbine units lend themselves to 'screening' by architectural features

ALTERNATIVE LAND USES

In order to describe the market opportunity for a variety of land uses including retail, office, hotel and residential, it is necessary to look at the subject site in its overall market context and evaluate its unique strengths and challenges based upon various characteristics pertaining to its location and physical attributes. Gaining a comprehensive understanding of the market dynamics in the area provides for a more informed analysis of likely future market demand and provides the basis for the creation of a successful land use and development plan.

Market Driven Land Uses

The following section provides a summary of the strengths and challenges of each of the candidate land uses and an evaluation of the potential opportunity to incorporate those individual land uses into the master plan. This analysis was performed at a 'high level' and a more intensive analysis should be performed as a preferred master plan emerges from the planning process.

- **Parks / Open Spaces / Recreation** - Parks, open spaces, and recreation are logical uses for providing public access to, and enjoyment of, the waterfront. Moreover, these uses help to support other commercial activity by attracting additional visitors to the site. A waterfront park that provides a view to the harbor and allows for passive enjoyment of the waterfront would likely be heavily utilized by Salem residents and tourists and would upgrade significantly the visual quality of this portion of the waterfront. Additionally, parks, open space and recreational uses could allow for an extension of the harbor walk through the subject site connecting to Winter Island. Such a connection would allow for active enjoyment of the waterfront and further enhance the waterfront district.
- **Strengths:**
 - Strong market support – parks, open spaces and trails are some of the most utilized and fervently supported land uses in any community
 - No zoning changes – a limited amount of open space is allowable by right under the DPA regulations

- **Challenges:**
 - Tax Revenue Generation – Parks, open spaced and trails do not generate tax revenue and are some of the most costly land uses to maintain

Several industrial waterfronts have been able to transform their appearance by developing parks and open space that simultaneously acknowledge and celebrate their industrial origins. Examples include Gantry State Park in Queens, New York and the Charleston Maritime Center Park in Charleston, South Carolina, both of which are illustrated in [Section 8 - Redevelopment](#). The parks in these examples are small but have had significant influence on the public perception of the waterfront district and have brought more pedestrian activity to the area. It is not difficult to imagine how Salem could 'reclaim' its waterfront for public use in a similar manner, increasing both visitation and support for abutting land uses.

- **Public Buildings** - One possible use for the subject site would be the inclusion of a public building that could act as a 'civic anchor' for the redevelopment and help to animate the area and support other commercial uses by attracting additional visitors to the site. There are numerous examples across the country of public buildings such as libraries, city halls, and event centers, used as anchors for large scale redevelopment projects. While it is unlikely (based on feedback through this study) that the City would relocate any of its major administrative functions or existing libraries to the subject site, it is possible that the redevelopment could include an event space operated by the City.
- **Strengths:**
 - Strong Market Support – Public uses generally receive strong support from the general public provided they fill a perceived need in the community
 - No Zoning Changes – An event center use could be considered a 'supporting use' under DPA and should be allowable by right
- **Challenges:**
 - Tax Revenue Generation – Public uses would not generate tax revenue but would likely generate user revenues to offset the cost of operation

An event space at the redeveloped Blaney Street Wharf could work very well and would provide a flexible public space for a variety of city related as well as private events. The event space would help to draw more attention and activity to the redesigned waterfront, which will be critical for the success of the redevelopment, especially in the early phases. Much like the maritime center that was the anchor for the redevelopment at the Charleston, South Carolina waterfront, Salem's event center could share a building with other uses (retail, office, etc) and could make a bold architectural statement that would draw attention to the redevelopment site and the Blaney Street Wharf district.

- **For Sale Residential** - During the last market cycle, the City of Salem has experienced limited construction of new for sale housing product due to land constraints and the maturity of development in the area. Salem is a residential market and is characterized by tight regulatory controls and a lack of greenfield development sites. Under these conditions it is difficult to assemble large land parcels which are suited for residential development. Most of the redevelopment activity consists of small infill projects. The maturity of the market is reflected in the small quantity of annual building permits, totaling only fifty during peak years. The Salem market consists of a variety of single, two and three family unit typologies but does not offer a significant amount of for sale units in multifamily developments larger than five units. The average for sale home price in Salem is \$270,000.

- Strengths:
 - Tax Revenue Generation – Owner occupied residential uses pay a lower tax rate than commercial users, but would still generate positive tax revenues that exceed other land uses such as open space or institutional
- Challenges:
 - Clean up Costs – Residential uses require a very high level of site clean up and therefore would increase the overall cost of site preparation
 - Zoning Changes – Residential uses are not permitted under DPA. The DPA regulations would need to be amended in order to allow residential uses

Based on demographics and slow growth of the Salem market, the demand for residential product at the subject site is likely to be moderate. If the DPA is amended it is likely that the site could support a small offering of cluster style single family homes based on the pent up demand for new residential product within the local market. Demand is likely to be driven primarily by empty nesters and pre-retirees seeking housing that will allow them to move down from large single family homes in the immediate area and to age in place. An additional market audience is likely to consist of young professionals but the ability to attract this market segment will be highly dependent on the format and the price point of the product offered.

- **For Rent Residential** - Overall the apartment market has been strengthening across Metro Boston and the nation. This asset class has been the beneficiary of several macro trends including a flight from home ownership (due to foreclosure or fear of dropping prices), a generational wave of Echo Boomers moving into their prime renting years and a lack of new supply as credit markets tightened during the recession and made it very difficult to finance new apartment development.

The apartment market in Salem is fairly robust with renter households roughly equal in number to owner households. Though the majority of rental units are located in structures with fewer than five units, there are several examples of large apartment communities in the area, with the most prominent being the Jefferson at Salem Station, consisting of 266 units ranging from \$1,500 to \$2,100 per month. Like for sale residential, tight restrictions and lack of developable land has limited the supply of new apartment communities. Because of this, the existing high quality communities are performing strongly and the market is exhibiting evidence of pent up demand for newly constructed product.

- Strengths:
 - Strong Market Support – The multifamily rental sector is strengthening across the Boston region and the Salem market is under supplied with quality product
 - Tax Revenue Generation – Apartment communities are taxed at a lower rate than commercial users, but would still generate positive tax revenues that exceed other land uses such as open space or institutional

- Challenges:
 - Clean up Costs – Residential uses require a high level of site clean up that would increase the overall cost of site preparation
 - Zoning Changes – Residential uses are not permitted under DPA. The DPA regulations would need to be amended in order to allow multifamily residential uses
 - Limited Infrastructure – The distance of the subject site from Route 128 and low capacity road networks surrounding the subject site make the power plant site less than ideal for large scale multifamily development

Demand for apartment product in Salem should be robust over the next five to ten years. The subject site is not ideal for multifamily development due to its distance from Route 128 and infrastructure limitations, but apartment uses would likely perform well at the site due to market fundamentals and the lack of high quality rental product in the market.

- **Hotel** - The City of Salem hosts between 700,000 and 1 million tourist visits annually. The tourist draw to the City, based on its rich history and picturesque setting, is the main driver of the downtown hotel market. The hotel product in the area consists mainly of small inns and bed and breakfast operations but lacks a substantial offering of large, branded properties. A typical example of a hotel operator in Salem is the Hawthorne Hotel which is a historic property offering 93 rooms at rates between \$115 - \$315 per night and caters primarily to tourists. The best example of a waterfront hotel is the Salem Waterfront Hotel, which has 86 guest rooms at Pickering Wharf and offers marina services to visitors arriving by boat. Most of the inns in the Salem market can be considered limited service. Some have restaurants on the ground floor but the market currently lacks a resort style hotel which would offer a wider range of amenities including business services, meeting space, and services for relaxation/wellness including a spa component.

- Strengths:
 - Strong Market Support – The hotel market in Salem is likely to support additional hotel product especially considering the new demand that would be created if the Blaney Street cruise terminal becomes a reality

- Tax Revenue Generation – Hotel properties are taxed at the same rate as commercial uses and also pay an additional local rooms excise tax. They generate very high tax revenue
- Job Creation – New Hotel operators would bring jobs to the waterfront, further supporting other commercial users in the area

- Challenges:
 - Zoning Changes – Hotel uses are not permitted under DPA. The DPA regulations would need to be amended in order to allow this use
 - Limited Infrastructure – Hotel uses typically generate a high rate of vehicle trips which would further tax an already strained road network. This impact could be limited or reduced by a reliance on waterborne visitation and public transit links to downtown areas to reduce automobile use

A hotel is a natural fit for a waterfront district and would offer an appropriate complement to the planned cruise terminal at Blaney Street. Hotel uses would also help to create an eighteen hour environment which would improve the vibrancy and the perception of safety at the waterfront. A hotel use could blend with a variety of other uses at the site enhancing viability from a developer's perspective; however, DPA regulations would need to be amended.

- **Office** - The City of Salem consists of a variety of low and mid rise professional office buildings and owner occupied single tenant structures. The offices housed within these buildings are primarily service oriented businesses that cater to the needs of the local population base. Some of the predominant tenant types are medical and dental offices, small professional services and law offices, and various civic and nonprofit enterprises. The office structures tend to be buildings of older vintage, many of which lack amenities and layouts required by Class A tenants. Demographic data (from Esri) indicates that there are a total of 34,527 employees and 1,901 businesses in the city of Salem, including retail operations.

- Strengths:
 - Tax Revenue Generation – Commercial uses pay a higher tax rate than residential uses, generating a very high tax rates per square foot

- Job Creation – New office tenants would bring jobs to the waterfront area, further supporting the retail uses in this area
- Cleanup Costs – Commercial uses do not require the same level of site cleanup as residential uses and therefore could reduce the overall cost of site preparation
- No Zoning Changes – Commercial uses are considered a supporting use under DPA and a limited quantity of office would be allowable by right
- Challenges:
 - Limited Market Support – The Salem office market consists primarily of small service oriented businesses. Because the market lacks strong population growth, much of the demand is based on turnover of existing users looking for better space
 - Limited Infrastructure – The distance of the subject site from Route 128 and low capacity road networks surrounding the subject site make the power plant site less attractive to traditional office users

Given the market and location characteristics of the subject site, most demand will likely emanate from the local serving office market. Modest household growth and turnover of existing tenants will likely drive the demand in this segment. Tenants fitting into this category will likely be smaller space users with the majority requiring less than 2,000 square feet. The development of a new cruise ship terminal at Blaney Street should create incremental demand for office space and will make the subject site a more attractive location for office users that value an active waterfront setting.

- **Retail / Restaurant** - Retail in the City of Salem is comprised of a variety of neighborhood and regional serving shops arrayed primarily in a downtown style format. In total, Salem has approximately 350 retail establishments occupying over 800,000 square feet of ground floor space. The retail market has four major market audiences including tourists, residents living within the local retail trade area, downtown workers, and Salem State students. The majority of retail is clustered around Essex Street and Pickering Wharf. Salem offers a wide variety of restaurants and gift/souvenir shops that cater to the large tourist market. The majority of downtown retailers inhabit small inline spaces, as the larger format and mall retailers are typically located closer to Route 128 or in the North Shore Mall.

- Strengths:
 - Tax Revenue Generation – Commercial uses pay a higher tax rate than residential uses generating a very high tax rate per square foot
 - Job Creation – New retail tenants would bring jobs to the waterfront area, further supporting other uses in this area
 - Cleanup Costs – Commercial uses do not require the same level of site cleanup as residential uses and therefore could reduce the overall cost of site preparation
 - No Zoning Changes – Commercial uses are considered a ‘supporting use’ under DPA and a limited quantity of retail and/or restaurant space would be allowable by right
- Challenges:
 - Limited Market Support – The Salem retail market consists primarily of small service oriented businesses. Because the market lacks strong population growth, much of the demand is based on turnover of existing users looking for better space
 - Limited Infrastructure – The low capacity road networks surrounding the subject site create challenges for retail uses
 - Competition with Existing Retail Uses – New retail uses will have to be differentiated from current downtown retail tenants in order to avoid siphoning off traffic from existing retailers

Support for retail will emanate from the same four market audiences (households, tourists, workers, and students) that currently support downtown retailers. While it is unlikely that the subject site will support a large influx of new retail based on the lack of growth in these market audiences, and the lack of infrastructure to support it, it is likely that the Blaney Street cruiseship and ferry terminal will create incremental new demand. As such, it makes sense to include a limited quantity of restaurant, and other tourism based shops to capture this new incremental demand and to create additional vibrancy along the waterfront area.

- **Education and Research** - Another potentially appropriate use for the subject site would be the inclusion of an educational or research facility that could bring visitors to the site while simultaneously fulfilling its operational mission. There are a variety of examples of nonprofit innovation and education centers serving as catalysts for large scale redevelopment. While it is unclear at this time what the precise function of such an anchor use would be, it has been suggested during this study that partnerships with major universities such as Salem State University should be explored further, especially in the area of marine research. Other recommendations include a clean energy demonstration and research facility.

- **Strengths:**
 - Strong Market Support – Generally institutional users receive reasonably strong support from the public provided their mission is perceived as important to the community
 - No Zoning Changes – It appears that an institutional use, especially one that focuses on marine and industrial activities, would be allowable by right
- **Challenges:**
 - Tax Revenue Generation – Institutional users typically do not generate a significant amount of tax revenue but some larger institutions do participate in PILOT (payment in lieu of taxes) programs that can be independently negotiated

The inclusion of an institutional use should be explored in greater depth. While it is difficult to pinpoint the exact type of user, given the wide variety of options, it is assumed that such a use would drive activity and interest in the redevelopment, much like a civic anchor would. The advantage of an institutional anchor over a civic use is that it is more likely to fund its own construction and to potentially contribute to the tax base in the form of a PILOT program.

Marine Industrial Uses

The Power Station site is subject to DPA regulations, which promote, protect, and mandate Marine Industrial Uses. Marine Industrial Uses are defined as, and limited to marine terminals, commercial fishing facilities, marine repair and construction facilities, manufacturing facilities that rely primarily on bulk receipts, facilities accommodating the shipment of goods by water, and industrial uses or infrastructure facilities which cannot be located at an inland site.

Unlike the more traditional land uses previously mentioned, it is more difficult to evaluate the marine industrial market due to a lack of available data. However, based on the current state of many of the DPA's in the Commonwealth, one could assume that market demand may be lacking. The 1978 DPA designation was intended to save these port areas from more appealing and potentially profitable development, but in many cases, allowable uses have not materialized.



Typical Marine Industrial Waterfront

In general, although the Marine Industrial designation encompasses a variety of uses, the strengths and challenges relative to the Salem Harbor site are indicated below:

■ Overall Designation

- Strengths:
 - No Regulatory Changes: Marine Industrial Uses are consistent with DPA designation; no changes required
 - Port/Waterside Infrastructure – the combination of water, port infrastructure and an existing substation make this an appealing choice for a power generating use, considered a Marine Industrial Use as it uses water for cooling
 - Adjacency: Compatible with the adjacent industrial SESD property to the east
 - Clean-Up Costs: Costs for site clean-up would be minimized
- Challenges:
 - Limited Market Support - The 11 DPA's in the Commonwealth are competing for a limited pool of potential uses. Many of those markets have been hit hard (i.e. the fishing industry) over the last few decades
 - Limited Landside Infrastructure – The limited landside infrastructure would negatively impact the majority of uses, with the exceptions of power generation and cruise ships
 - Adjacency: Certain uses can be incompatible with the adjacent residential neighborhood to the north

Tax generation and job creation are dependent on specific uses, some of which are examined in more detail below.

- **Cargo and Shipping** - Ports for cargo and shipping are very active in the northeast. As the United States continues to import large amounts of goods, the need for container and bulk storage will continue to be strong, despite the sluggish economy. Leading items include automobiles, various types of fuel and gasoline, road salt, food and perishables.

Presently, Boston, New Bedford, and Quonset Point in Rhode Island are the regional leaders in bulk and containerized cargo. Successful

ports must have an ample turning basin and channel depth, sufficient dock length, multiple berths, a foreign trade zone designation, and access to landside infrastructure (rail and highway system).

The American's Marine Highway (AMH) program has increased reliance on short sea shipping. The AMH is a program promoted by the Department of Transportation to shift a portion of the nation's cargo and passenger traffic from roadways to waterways, particularly in areas with traffic congestion. Due to the road congestion, companies are looking to ship freight along coastlines and through waterways to move cargo onto barges and smaller vessels to get them closer to their destination.

Despite meeting much of the necessary port criterion, Salem does not have convenient access to either a rail or the interstate highway system, and would require travel through the adjacent residential area. Also at less than sixty acres, Salem would not appear to have the necessary footprint in order to be a major cargo port. As a result, Salem does not appear to be a good candidate for cargo and shipping. However, it should be mentioned that the Salem Harbor site, up until the mid 90's, was active as a port for home heating oil, operated by Northeast Petroleum.

- **Commercial Fishing** - Commercial fishing as an industry has been hit hard by both depleted fish stock from years of overfishing and by government regulations. Nonetheless, fishing is still a major industry in Massachusetts, including fish processing, cold storage and wholesale distribution.

Gloucester, New Bedford, and the Fish Pier in Boston are the major regional commercial fishing hubs.

Commercial fishing, while consistent with Salem's maritime heritage and a viable marine industrial use, would be challenging at any significant commercial scale. As with cargo and shipping uses, land side traffic generation from a commercial fishing use would need to be studied, given the potential to overburden adjacent streets. The overall mix of potential uses on the Salem Harbor site must also be considered. A commercial fishing operation, for example, might not be a compatible neighbor with a first class cruise ship terminal.

- **Ship Building and Repair** - Shipbuilding in the northeast has also fallen upon hard times. While Weymouth Fore River has closed, several companies still exist in the numerous DPA's, including East Boston Shipyard in East Boston, D.N.Keeley & Sons Shipyard in Fairhaven and on a smaller scale in Salem.

Shipbuilding in Salem would be better suited for smaller vessels and could be part of an overall development solution.

- **Manufacturing and Assembly** - Manufacturing is another potential alternative land use at the site. In accordance with DPA, if the manufacturing utilizes shipping and/or supports the marine industry, it would be considered an allowable use.

The manufacturing base in New England has been on the decline, as jobs and factories have moved regionally south and then overseas. Coupled with the poor economy, this does not appear to be a strong market segment.

The idea of value added manufacturing, where parts come in by sea, are assembled or upgraded, and then shipped out would be well suited to this site. This would avoid the landside access issues that exist. However, given the cost of labor and heavy unionization, Massachusetts is not a likely candidate for value added manufacturing.

Manufacturing associated with alternative energy is a market that is growing. China has entered this market, and is fast becoming a major manufacturer of green energy components. However, a number of communities are exploring the possibility of wind turbine manufacturing and/or assembly. Given the projected expansion of wind power along the east coast, and the availability of federal funds to support such endeavors, this appears to be a strong market.

Charlestown has already built a \$60 million wind turbine blade testing facility, the largest in the nation. In terms of the offshore wind industry, New Bedford will soon gain a competitive advantage. New Bedford has been chosen for the staging area for the Cape Wind turbines, and will construct the New Bedford Marine Commerce Terminal, which will serve as both a staging area and marine cargo facility. The \$35 million facility will be financed with a combination of state, federal,

and municipal resources as well as project revenues. In neighboring Rhode Island, Deepwater Wind, is poised to utilize Quonset Point for the staging area for a new wind farm off the coast of Rhode Island.

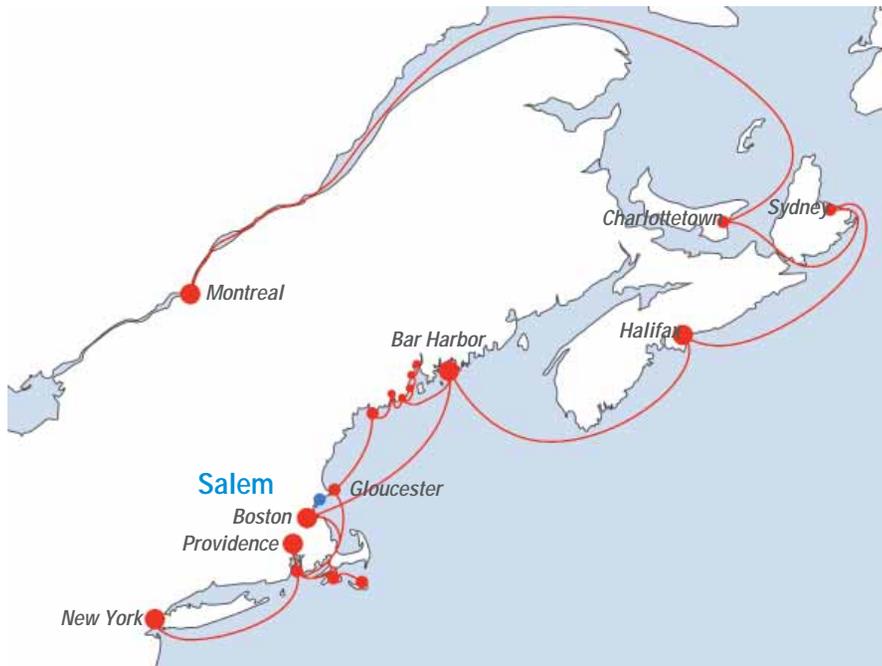
- **Cruise Ships** - In 2005, the City of Salem initiated a lease (for \$1/year) of the Blaney Street property from Dominion to build a temporary pier and parking lot so that it could initiate round trip ferry service from Salem to Boston as of 2006. The success of the ferry spurred interest in expanding service to include the cruise ship industry. In 2008, a Rhode Island based cruise line brought several 180 foot ships to Salem Harbor as part of a five night New England cruise that included stops in historic ports between Rhode Island and Portland, Maine. Passengers have returned in subsequent years on similar cruises and, utilizing the existing trolley service, visited different downtown destinations, and spending along the way.

Salem can be an integral part of this growing niche market in the cruise industry. Work is underway on expanding the Blaney Street docks to accommodate larger vessels in the future, and the potential exists to expand on this concept utilizing additional land for parking and supporting retail/commercial activity after the Salem Harbor site is closed. In 2010, the City purchased the Blaney Street property, which is approximately 2 acres in size, from Dominion for \$1.7 million using a Massachusetts Seaport Advisory grant. We recommend that the City consider working with Dominion to expand the site in the future, utilizing a portion of the Power Station property.

The viability of an expanded cruise port is further supported by the recent "Salem Economic Impact Analysis" published by Salem State University's Center for Economic Development and Sustainability in November 2008. The report indicated that cruise tourism has expanded at an annual rate of over 7% since 1990, with port of call passenger visits more than doubling in a four year period in Boston. As the report states, "Salem is well positioned to capitalize on the future growth of this market segment." The current Blaney Street Wharf expansion, combined with a larger adjacent terminal on the Dominion property, would help to solidify Salem's share of the expanding cruise ship tourism market.

While some members of the community have expressed concern over potential noise and traffic that could accompany an expanded cruise ship operation in Salem Harbor, there are several positive factors that should also be considered:

- There is strong interest in promoting Salem as a cruise ship destination from the City as well as cruise ship operators
- The scale of ships is much smaller than those that would come to larger ports (such as Black Falcon Pier in Boston), typically carrying between 100-200 passengers
- For passengers aboard these smaller ships, the focus is on “authentic experiences” which Salem certainly offers.
- Walkability and shuttle service to downtown would not generate any additional traffic, thereby taking advantage of waterside access without impacting landside resources.
- A typical passenger is expected to spend roughly \$135 a day, which would equate to an average of \$20,000 spent in Salem businesses for each day a ship is docked there.



The above map shows the itineraries of existing cruise lines operating along the coast of the northeastern US and Canada. The expansion of Blaney Wharf and supporting facilities would make Salem a more viable destination along these routes.

ENERGY FOCUSED REDEVELOPMENT

Renewable Energy Potential

Significant interest in using the Salem Harbor site for alternative energy sources has been expressed at the workshops and public meetings by stakeholders, the general public and advocacy groups. Following is a summary of the potential alternative energy types mentioned and the viability of each for this particular site. For a frame of reference, it should be noted that the current capacity for energy generation of Dominion's four units is 745 MW.

- **On-Site Wind** - Wind power has become a recognized alternative to fossil fuels. It is renewable, clean, and produces no greenhouse gas emissions. Individual wind turbines harness the wind's energy and connect to the electric power transmission network. The wind turbines are large and concerns have been raised in more populated areas about noise and shadow effects; and generally about effects on bird migration patterns.

Regarding the Salem Harbor site, the adjacency to the existing electrical substation and transmission system is ideal. A wind analysis would need to be done and assuming wind conditions are suitable, multiple wind turbines could be placed on the site. Given the size and configuration of the available area, and the size of a typical 2 MW turbine (200-400 height; 300 foot spacing), only about five turbines could be sited. With five turbines, a total of 10 MW could be generated, less than 2% of the existing energy generating capacity at the site today.

Given the initial costs of the land, and the low generating capacity, on-site wind generation does not appear feasible to achieve significant volumes of power generation. Furthermore, wind energy is not a water-dependent use, and would not qualify as a compliant use under existing DPA regulations.



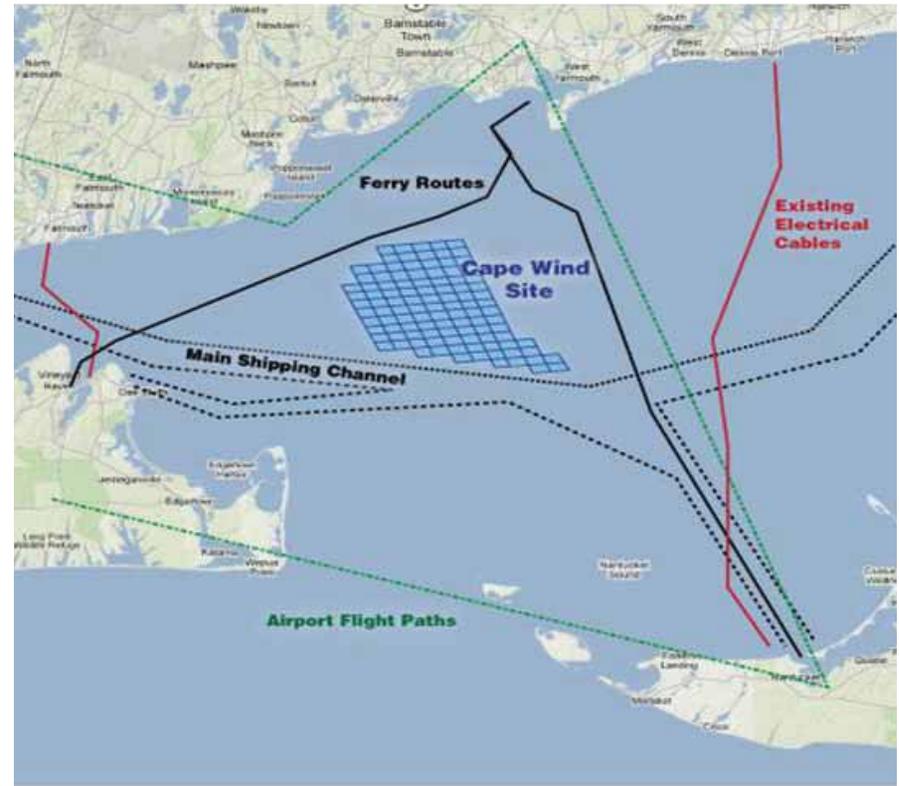
On-Site Wind



Each circle on the diagram indicates the potential location of a 2MW wind turbine and required spacing. Given these spatial requirements, only five towers could be accommodated, generating a total of 10MW.

- **Off Shore Wind** - Relative to a landside transmission station for an offshore wind farm, (like Yarmouth is to the Cape Wind project) certainly the electrical substation at the Salem Harbor site is an ideal connecting point. Studies have indicated that there is a more suitable wind speed profile offshore as well. Only a small right-of-way would be needed for underground transmission and connection to the electrical substation. As a result, nearly the entire site would still be available for development, as the off shore wind farm is not linked to land surface area. While an offshore wind farm could be part of a future redevelopment plan, it does not address strategy for developing the site. In other words, with virtually any future development scenario, the connection to an off shore wind farm could still occur.

The economics of off shore wind farms are still unproven. The Cape Wind project has not yet been able to sell all of its power. National Grid has agreed to buy half of the power that Cape Wind will generate the first year at 19 cents per kilowatt, then increasing annually after. ⁶ This purchase price will result in a ratepayer increase of approximately \$1.50 per residential customer. ⁷ As of this date, NStar has still declined to buy power, but circumstances may change, as they seek approval of a merger with Northeast Utilities. It is believed that NStar has been able to purchase land based wind power at rates cheaper than the Cape Wind rate.



Cape Wind Site - Nantucket Sound



Off Shore Wind



Landside Requirement For Off Shore Wind

- **Solar** - Solar energy is also a viable renewable energy alternative, using photovoltaics and concentrated solar power, to generate electricity. However, if the entire 53 acres of available land (the site less the electrical substation and transmission easement) were to be developed as a photovoltaic field, the energy generation would only be about 11 MW, less than 2% of the current Salem Harbor generating capacity.

A photovoltaic field is not economically viable on a site of this size, in this geographical location. Furthermore, solar energy is not a water-dependent use, and would not qualify as a compliant use under existing DPA regulations. Solar power and photovoltaics could be incorporated at a smaller scale as part of future development on the site, however.



Development Site - 53 Acres



Photovoltaic Field

- **Biomass** - Biomass is derived from biological material from living or recently living organisms. There are a variety of methods of biomass conversion, but it is primarily generated from wood, waste, landfill gases and alcohol fuels. The two primary sources of biomass are wood (pulp by-products) and municipal solid waste.

To produce significant energy, large quantities of wood or other biomass would need to be trucked or shipped to the site. The trucking option would not be compatible with the character of the residential neighborhood, and would raise concern regarding increased traffic (especially industrial) on the local streets. Given this constraint, biomass fuel would need to be transported by ship. Most biomass fuel sources, however, are inland, and getting it to an adequate shipping point would most likely be cost prohibitive. Studies have indicated that for biomass to be economically feasible, the plant needs to be relatively near the fuel source, usually within a 100 miles.

With SESD immediately adjacent, the idea of using methane gas produced by the treatment process is logical; however, the amount of energy that could be harvested and created from the SESD plant would probably be in the range of 2 MW, less than 1% of the current Salem Harbor generating capacity. In the future, methane could be a fuel source to help power SESD or portions of the future development, but it has no viability in the quantities referenced to be used for regional power generation.

- **Other Alternative Energies** - Both tidal power (conversion of the embodied energy of tidal action into electricity) and wave power (the transfer of embodied energy of ocean surface waves into electricity) are in development. At the current time they generate relatively small amounts of energy and are generally located offshore.

Geothermal energy, is thermal energy derived from the heat of the Earth's core. Recent advances in technology are creating more widespread use.

The newer technologies for power generation consist of binary cycle units, which take large quantities of hot water from deep wells, typically, 5,000 to 10,000 foot deep wells with water flows upward of 5,000 gpm. Water is passed through heat exchangers where the heat vaporizes a secondary fluid. However, even if the entire site were used, a small amount of energy would be produced, likely 3-5 MW.

NATURAL GAS

Natural gas is commonly used for replacement of coal and oil as fuel. The increased supply of natural gas in the last ten years has reduced the cost of energy generation and established a cleaner and more economical alternative to coal. As natural gas production has expanded, however, environmentalists have expressed concern over the "fracking" methods used to obtain natural gas, and the potential environmental impact on the water supply.

The amount of space needed for a natural gas-fired combined cycle facility would be roughly 15 acres, which would leave nearly forty acres for other development. The facility could be located adjacent to the substation, leaving the more desirable western portion of the site for other development. The amount of energy produced would be comparable to the existing facility, and much more than wind, solar, and biomass. The existing infrastructure is in place and a natural gas pipeline is less than two miles away and could be extended to the site for approximately one million dollars. A natural gas combined cycle facility, would utilize water for cooling, and would be allowable relative to the DPA regulations.

The consultant team summarizes the financial viability of both a natural gas-fired combined cycle and a "peaker" natural gas-fired combustion turbine facility in more detail in the following section.

Economic Viability of Natural Gas Power Generation

Following, is a preliminary analysis of the economic viability of two natural gas fired power generation options for Salem Harbor Power Station. The analysis includes an exploration of the cost of building a new baseload power plant fueled by natural gas (Combined Cycle Natural Gas Plant) and alternatively, a peaking power plant also fueled by natural gas (Conventional Combustion Turbine Peaker). Baseload plants typically run continuously throughout the year except in the case of scheduled repairs, maintenance, or unplanned outages. A peaking power plant runs very infrequently, such as when there is a spike in demand or when power prices are extremely high. The analysis was performed assuming traditional financing of a new power plant project and is based upon the existing structure and rules within New England's power markets. In many of the scenarios that were analyzed, the economics do not appear to justify the development of a new power plant at the site. However, these results should not be assumed to rule out construction of a new power

plant at the site in the future. The environment for new development could change if financial incentives or grants were to be offered by the Commonwealth or other entities facilitating a reduced or non-traditional financing structure. New market rules within the ISO-NE could also be implemented in the future that would provide added incentive to construct new power generating plants.

Market Price Assumptions

In both the baseload power plant and the peaking power plant scenarios, Energy, Capacity and Ancillary Market revenues were modeled. In each of the scenarios a base case, high case and low case was assumed for all revenue sources and expenses. Hence, 27 combinations of revenue and expenses for each power plant configuration were modeled. Energy Market prices began at \$50/MWH and were adjusted for sensitivity testing using a Northeast Market model to project energy revenues over a 20 year future period assuming base, high and low market conditions. Capacity Market prices were also forecast over the same time frame assuming base, high and low price conditions. Ancillary Market products such as reserves were also projected using a base, high and low case. All prices are expressed in current (2010) dollars.

Baseload Power Plant (Combined Cycle Natural Gas)

The existing site can accommodate a maximum 745 MW natural gas fueled plant configuration (existing power station capacity) with minimal costs required to upgrade the existing substation and transmission lines that serve the existing power plant. However, since combined cycle natural gas plants are typically built in 400 MW units, a single unit has been assumed (400 MW) so as not to exceed the current plant size. For modeling purposes, two ownership structures were assumed. A merchant ownership structure in which a plant is built to provide energy wholesale to the spot market and a Municipal Utility development structure in which a municipal electricity utility or consortium of municipal utilities builds a power plant to serve their customer's needs.

Municipal electric utilities and businesses are special purpose entities that provide electricity to residents of the district. They usually are set up through government agencies, hold votes by residents of the district and are not-for-profit. Examples of a few Massachusetts towns that provide municipal electric service include Danvers, Boylston, Braintree, and Hull. There are currently 40 municipal electric utilities in the state of Massachusetts today.

NGCC Cost Data Assumptions

The table below summarizes the cost and data sources used to model the cost of building a new 400 MW combined cycle natural gas power station. We also assumed clean up costs ranged from zero to \$75 million as part of the analysis. The cost to bring natural gas to the site was estimated to cost \$1 million. The power plant costs data was obtained from publicly available sources through the United States Energy Information Agency and are summarized below.

Cost / Configuration	Advanced NGCC	Note
MA Overnight Costs S/kW (S2010)	\$1,396	1
MW	400	1
Single Unit Overnight Dollars	\$558,400,000	1
Heat Rate (btu/kWh)	6,430	1
Fixed O&M (S2010 S/kW)	\$14.62	1
Variable O&M (S2010 \$/MWH)	\$3.11	1
Site Decommissioning and Clean Up	\$0 to \$75,000,000	2
Gas Pipeline	\$1,000,000	3
Number of Units	1	
Total MW	400	
Grand Total: Total Overnight Dollars	\$559M - \$634M	

Note 1 EIA AEO 2011 Update Power Plant Cost Assumptions, November 2010

Note 2 From Jacobs Engineering Larry Dalton

Note 3 From Jacobs Engineering in consultation with Gas supplier

- Merchant Development** - In the merchant case, the consultant team assumed 80% debt and a 20% equity position, 6% financing and a debt term of 15 years. With these financing parameters and assuming a zero value for demolition and site clean up (which is the most favorable economic case) 27 combinations of base, high, and low market revenue and expense scenarios were run. 15 of the best case scenarios have been included on the accompanying table. In the base case for revenues and expenses, the payback was almost 19 years with a positive Net Present Value and Internal Rate of Return near 7%. The numbers indicate that under a merchant development scenario the economics would be challenging to justify building a 400 MW combined cycle natural gas plant at the site. Adding significant clean up costs to the analysis makes this scenario even more challenging.

There are however, some scenarios that are more positive for a merchant ownership structure. In cases with high energy revenues and base to low natural gas prices (see lines 2 through 7), financial outcomes appear to be more favorable relative to building a power plant. This is, however, a low probability scenario over a long term planning period as the price of energy and natural gas are highly correlated. As the price of natural gas increases, energy prices typically follow the same pattern and trends. Therefore, it is highly unlikely that over the long term the New England markets would experience high energy prices while natural gas prices are low.

Some modeling combinations had results that may be considered by some power plant developers as favorable outcomes with a payback close to 10 years an Internal Rate of Return in the range of 15% to 16%. While these results may be positive, these cases have lower probability of occurring over a 20 year future period.

In lines 10 through 15, a cluster of base to low case assumptions are included which are more indicative of the expected future value of revenues and expense. The results in these cases do not appear to be desirable from a developer's standpoint. All the other combinations of revenue and expenses shown, yielded longer paybacks and lower internal rates of return.

NGCC Merchant Owner, No Clean-up Costs

NGCC, Merchant Owner, Discount Rate = 7.58% Site Cleanup Cost = \$0						
Row #	Energy	FCM	Natural Gas	IPR Projected ROE	NPV (2010 \$M)	Payback Years
1	Base	Base	Base	6.91%	\$98.27	18.76
2	High	High	Low	24.14%	\$457.43	4.87
3	High	Base	Low	23.72%	\$445.98	4.90
4	High	Low	Low	23.06%	\$428.17	4.93
5	High	High	Base	20.84%	\$387.27	5.69
6	High	Base	Base	20.39%	\$375.82	5.79
7	High	Low	Base	19.68%	\$358.01	5.96
8	High	High	High	16.10%	\$292.06	8.65
9	High	Base	High	15.60%	\$280.61	9.22
10	High	Low	High	14.83%	\$262.80	10.28
11	Base	High	Low	10.89%	\$179.88	15.74
12	Base	Base	Low	10.34%	\$168.43	16.11
13	Base	Low	Low	9.49%	\$150.62	16.73
14	Base	High	Base	7.47%	\$109.72	18.20
15	Base	Base	Base	6.04%	\$80.46	19.74

The merchant development ownership structure was also modeled using a cleanup and demolition cost of approximately \$75 million. This is the high median of the estimated cost range for demolition and site remediation based on visual observations, limited public information and experience with similar facilities. The added expenses of clean up and demolition make it increasingly difficult to justify the economics to build a 400 MW combined cycle natural gas plant.

The analysis was performed assuming traditional or full financing of the project and assumed existing market rules within New England's power markets. In many of the scenarios that were analyzed, the economics did not appear to justify the development of a new power plant. Construction of a new power plant at the site in the future could be possible if financial incentives or grants could be offered by the Commonwealth or other entities to facilitate a reduced or nontraditional financing structure. New market rules within the ISO-NE could also be implemented in the future that provide added incentives to construct new power generation plants.

NGCC Merchant Owner, \$75M Clean Up Costs

NGCC, Merchant Owner, Discount Rate = 7.58% Site Cleanup Cost = \$75M						
Row #	Energy	FCM	Natural Gas	IPR Projected ROE	NPV (2010 \$M)	Payback Years
1	Base	Base	Base	4.94%	\$62.95	20.11
2	High	High	Low	19.70%	\$422.11	6.43
3	High	Base	Low	19.30%	\$410.65	6.61
4	High	Low	Low	18.68%	\$392.85	6.93
5	High	High	Base	16.85%	\$351.95	8.08
6	High	Base	Base	16.43%	\$340.50	8.45
7	High	Low	Base	15.77%	\$322.69	9.16
8	High	High	High	12.83%	\$256.74	13.03
9	High	Base	High	12.39%	\$245.28	13.95
10	High	Low	High	11.70%	\$227.47	15.14
11	Base	High	Low	8.31%	\$144.56	17.34
12	Base	Base	Low	7.84%	\$133.10	17.74
13	Base	Low	Low	7.10%	\$115.30	18.43
14	Base	High	Base	5.42%	\$74.40	20.03
15	Base	Low	Base	4.19%	\$45.14	20.25

- Municipal Utility Development** - In the municipal ownership structure, a 100% debt position was assumed along with a lower financing rate than the merchant structure due to a municipal entity's ability to fund the project using low cost financing mechanisms. The debt term was also adjusted to 30 years given that municipal entities tend to extend debt positions longer than merchant developers. Using these financing parameters and assuming a zero value for demolition and site clean up costs, expense scenarios were run for 27 combinations of base, high, and low market revenue.

In the base case for revenues and expenses with no demolition and site clean up costs, the payback was approximately 7 years with a positive Net Present Value and Internal Rate of Return near 14%. These results seem to indicate that the economics could support development of a 400 MW combined cycle natural gas plant at the site, assuming no demolition or site clean up costs.

Some of the 27 municipal ownership market runs that assume no demolition or site clean up costs did indicate financial feasibility.

In cases with high energy revenues and low natural gas prices the modeling yields reasonably favorable financial outcomes. However, these cases are low probability events over a long term planning period as the price of energy and natural gas are highly correlated. As the price of natural gas increases energy prices tend to follow. It is highly unlikely that over the long term the New England markets would experience high energy prices while natural gas prices are low.

Lines 8 through 10 represent combinations and results that may be considered by some power plant developers as favorable outcomes. In these cases, the payback is closer to 4 years.

NGCC, Municipal Owner, No Clean-up Costs

NGCC, Municipal Owner, Discount Rate = 5.00% Site Cleanup Cost = \$0						
Row #	Energy	FCM	Natural Gas	IPR Projected ROE	NPV (2010 \$M)	Payback Years
1	Base	Base	Base	14.23%	\$293.03	6.73
2	High	High	Low	35.10%	\$935.63	3.31
3	High	Base	Low	34.74%	\$915.46	3.31
4	High	Low	Low	34.19%	\$883.70	3.31
5	High	High	Base	31.48%	\$806.01	3.60
6	High	Base	Base	31.07%	\$785.83	3.60
7	High	Low	Base	30.46%	\$754.07	3.60
8	High	High	High	25.99%	\$645.20	4.18
9	High	Base	High	25.51%	\$625.02	4.19
10	High	Low	High	24.75%	\$593.26	4.19
11	Base	High	Low	20.01%	\$442.83	5.01
12	Base	Base	Low	19.36%	\$422.65	5.07
13	Base	Low	Low	18.31%	\$390.90	5.15
14	Base	High	Base	15.06%	\$313.20	6.39
15	Base	Low	Base	12.88%	\$261.27	7.42
16	Low	High	Low	6.80%	\$143.55	14.08
17	Base	High	High	7.10%	\$152.39	17.24

When site clean up costs of approximately \$75 million are included in the analysis, the base case resulted in a longer payback period of roughly 10 years. The Net Present Value calculations were positive and the Internal Rate of Return was approximately 11%, leading to a conclusion that the municipal financing structure could potentially

be economically viable. However, the economic feasibility diminishes should demolition and clean-up costs exceed the estimated amounts.

The analysis was performed assuming traditional or full financing of the project and assumed existing market rules within New England's power markets. In many of the scenarios that were analyzed, the economics did not appear to justify the development of a new power plant. Construction of a new power plant at the site in the future could be positive if financial incentives or grants could be offered by the Commonwealth or other entities to facilitate a reduced or nontraditional financing structure. New market rules within the ISO-NE could also be implemented in the future that provide added incentives to generation plants.

NGCC, Municipal Owner, \$75M Clean up Cost

NGCC, Municipal Owner, Discount Rate = 5.00% Site Cleanup Cost = \$75M						
Row #	Energy	FCM	Natural Gas	IPR Projected ROE	NPV (2010 \$M)	Payback Years
1	Base	Base	Base	10.64%	\$256.04	10.29
2	High	High	Low	29.98%	\$898.65	3.79
3	High	Base	Low	29.62%	\$878.48	3.79
4	High	Low	Low	29.06%	\$846.72	3.79
5	High	High	Base	26.72%	\$749.02	4.14
6	High	Base	Base	26.31%	\$748.85	4.14
7	High	Low	Base	25.68%	\$717.09	4.15
8	High	High	High	21.76%	\$608.21	4.92
9	High	Base	High	21.28%	\$588.04	4.95
10	High	Low	High	20.52%	\$556.28	4.98
11	Base	High	Low	16.03%	\$405.85	6.57
12	Base	Base	Low	15.39%	\$385.67	6.85
13	Base	Low	Low	14.35%	\$353.91	7.37
14	Base	High	Base	11.42%	\$276.22	9.36
15	Base	Low	Base	9.35%	\$224.29	12.39
16	Base	High	High	4.51%	\$115.41	30.26
17	Low	High	Low	4.05%	\$106.56	30.39
18	Base	Base	High	3.63	\$95.24	30.40
19	Low	Base	Low	3.10	\$86.39	30.53
20	Base	Low	High	2.25	\$63.48	30.63
21	Low	Low	Low	1.60	\$54.63	30.76

Conventional Combustion Turbine Peaker

Construction of a peaking power plant, also referred to as a conventional combustion turbine peaker, was also considered. A peaking unit runs very infrequently, such as when power prices are extremely high or when required for reliability purposes. Typically peaking facilities run for a small fraction of the year while baseloaded power plants run more continuously.

The existing site can accommodate a maximum 745 MW natural gas fueled plant (the existing power station capacity) with minimal costs required to upgrade the existing substation and transmission lines that serve the current facility. Given typical peaking power plant configurations, a new facility with a generating capacity of 510 MW was assumed.

Peaker Cost Data Assumptions

The table below summarizes the cost and data sources used to model the cost of building a new 510 MW combustion turbine peaker power station. Assumed clean up costs ranged from zero to \$75 million as part of the analysis. The cost to bring natural gas to the site was estimated to be \$1 million. The power plant costs data was obtained from publicly available sources through the United States Energy Information Agency and are summarized below.

Cost / Configuration	Advanced NGCC	Note
MA Overnight Costs S/kW (S2010)	\$1,341	1
MW	85	1
Single Unit Overnight Dollars	\$113,985,000	1
Heat Rate (btu/kWh)	10,850	1
Fixed O&M (2010 S/kW)	\$6.98	1
Variable O&M (2010 \$/MWH)	\$14.70	1
Site Decommissioning and Clean Up	\$0 to \$75,000,000	2
Gas Pipeline	\$1,000,000	3
Number of Units	6	
Total MW	510	
Grand Total Total Overnight Dollars	\$685M - \$759M	

Note 1 EIA AEO 2011 Update Power Plant Cost Assumptions, November 2010

Note 2 From Jacobs Engineering Larry Dalton

Note 3 From Jacobs Engineering in consultation with Gas supplier

- **Merchant and Municipal Ownership Development** - For modeling purposes, two ownership structures have been assumed. A merchant ownership structure in which a plant is built to provide energy and market products in the wholesale markets and a municipal utility development structure in which a municipal electricity utility or consortium of municipal utilities builds a power plant to serve their consumer's needs.

The merchant case, assumed 80% debt and a 20% equity position and also assumed 6% financing and a debt term of 15 years. The municipal case assumes a 100% debt position, a lower financing rate than the merchant case, 5%, due to the municipal entities' ability to fund the project using low cost financing mechanisms. The debt term was also adjusted to 30 years given municipal tendency to extend debt positions longer than a merchant developer would.

Neither the merchant nor municipal ownership model, proved feasible in any of the 27 combinations analyzed even without consideration of demolition and site cleanup costs or the cost of constructing a new gas pipeline from the site to existing pipelines in Salem Sound.

A peaking facility generally runs infrequently, and therefore revenues from the Energy Market are normally low to negligible. The bulk of revenues for a peaking facility generally come from the Forward Capacity and Ancillary Markets. The primary reason the peaking facility proved infeasible in both the merchant and municipal ownership structures is the low revenue stream from the Capacity Market. As long as the projections of capacity revenues remain relatively low, it does not appear that building a new peaking facility at the site makes economic sense.

The analysis assumes traditional or full financing of the project and existing market rules within New England's power markets. As pointed out above, in many of the scenarios that were analyzed, the economics do not appear to justify the development of a new peaking power plant. Construction of a new power plant at the site in the future might be feasible if financial incentives or grants could be offered by the Commonwealth or other entities to facilitate a reduced or nontraditional financing structure. New market rules within the ISO-NE could be implemented in the future that provide added incentives to power generation plants.

SUMMARY

As a site for energy generation, the Salem Harbor site has the electric and waterside infrastructure in place. It would appear that to continue as a power generating location, the only viable alternative energy source would be natural gas. While a "peaker" facility would not be viable, as it would not run frequently enough to generate sufficient revenue, a natural gas-fired combined cycle facility, under the right circumstances, could be a viable alternative. Under the right financing circumstances, a combined cycle facility could produce enough revenue to overcome the initial cost of demolition and site remediation, the cost of construction and the operating costs. Viability would be highly dependent on the future market price for energy generation, and the cost of natural gas.



Feedback from the community has been very beneficial, providing insight for the consultant team, the City and potentially for future developers...

7

PUBLIC RECOMMENDATIONS & COMMENTS

PUBLIC COMMENTS

During the course of this study, three public presentations were made. An initial presentation was made to the Historic Derby Street Neighborhood Association on June 13, 2011. Two additional presentations were given to the general public, one at the midpoint of the study on June 30, 2011, and one at the conclusion of the study on October 4, 2011. The intent of each presentation was to inform the public of the study progress and to solicit their opinions and vision for redevelopment of the site. The sessions were well attended and the two public presentations were also broadcast on local access cable television.

At the conclusion of all of the public presentations, public comment and questions were solicited. At the public meeting on June 30th, the consultant team distributed a brief questionnaire intended to gauge the community's point of view regarding future development. Following is a summary of the results of the questionnaire, as well as a summary of general comments made during that presentation. Note, attendees represented Salem, Marblehead, and other organizations and special interest groups.

Question No. 1 – June 30, 2011

Rank each item in order of priority with #1 representing the highest priority.

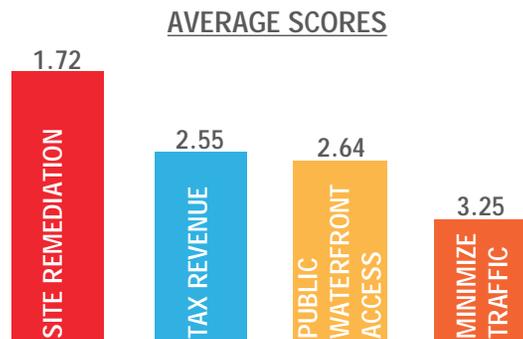
“What are your priorities for redevelopment of the Salem Harbor Power Station site?”

- Generating significant tax revenue to the city
- Clearing the site and remediating any soil contamination.
- Minimizing impacts from traffic or noise on the nearby residential neighborhoods.
- Providing waterfront access for the public.
- Other

There were more than 60 responses to Question No. 1. As the graphic indicates, the results of the responses were as follows:

- **High Priority**
 - Clearing the site and remediating any soil contamination. (Average Score 1.72)
- **Medium Priority**
 - Generating significant tax revenue to the city (Average Score 2.55)
 - Providing waterfront access for the public (Average Score 2.64).
- **Low Priority**
 - Minimizing impacts from traffic or noise on the nearby residential neighborhoods. (Average Score 3.25)

COMMUNITY RESPONSE TO QUESTION #1



Question No. 2 – June 30, 2011

Rank each item in order of priority with #1 representing the highest priority.

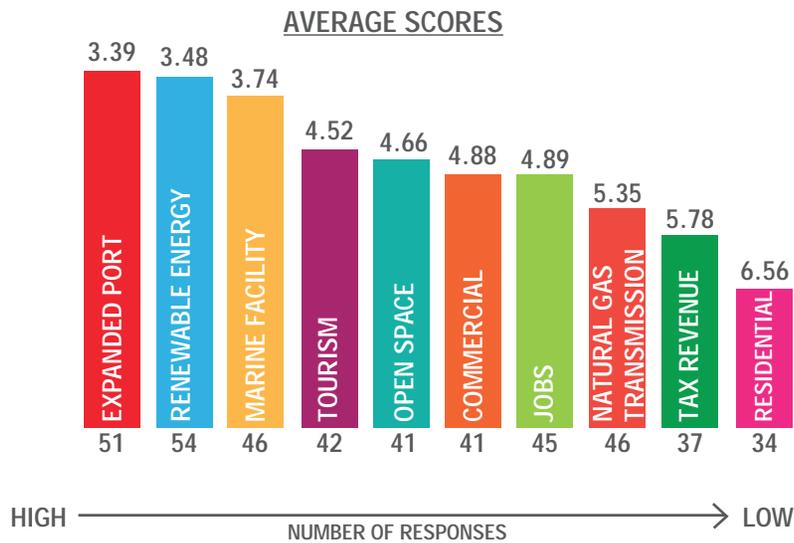
“What use would you like to see?”

- Highest market value
- Tourism related activity
- Natural gas power generation facility
- Renewable energy related
- An expanded port
- Marine facility
- An activity that will generate many jobs
- Residential
- Commercial
- Open space
- Other

There were also more than 60 responses to the question, As the graphic indicates the results of the responses were as follows:

- **High Priority**
 - An expanded port (Average Score 3.39)
 - Renewable energy related (Average Score 3.48)
 - Marine Facility (Average Score 3.74)
- **Medium Priority**
 - Tourism related activity (Average Score 4.52)
 - Open space (Average Score 4.66)
 - Commercial (Average Score 4.88)
 - An activity that will generate many jobs (Average Score 4.89)
- **Low Priority**
 - Natural gas power generation facility (Average Score 5.35)
 - Highest market value (Average Score 5.78)
 - Residential (Average Score 6.56)

COMMUNITY RESPONSE TO QUESTION #2



QUALITATIVE COMMENTS

At the question and answer sessions following the public meetings, there were a wide range of comments and concerns. The following points were made consistently at the various meetings:

- Dominion should be obligated to clean-up the site
- Fear that Dominion would close the plant and leave the buildings standing
- Concern about private ownership of the land and the ability of the City and community to impact the development
- Interest in cultivating Salem's port and marine history
- Interest in tourism and the cruise ship industry
- Interest in alternative energy/off shore wind
- Mixed opinions about natural gas power plant
- A need to be both visionary and realistic

The feedback from the community has been very beneficial, providing insight for the consultant team, the City and potentially for future developers.



Given the complexities of site clean up, access, ownership, and market conditions, a logical phased approach to redevelopment is required...

8

REDEVELOPMENT

POTENTIAL SITE USES

In 2008, The Brattle Group authored a study which examined the potential economic impacts of redeveloping the Salem Harbor Power Station site. This study primarily examined the potential revenue generated by alternate uses without estimating costs of acquisition or site cleanup. This study was also done at a point in time when it was unclear what Dominion's intentions were for maintaining the site for the purpose of generating power.

As we now know, Dominion will cease operation of the power plant and its supporting facilities in 2014. Based on further evaluation of potential cleanup costs of the site and, more significantly, for demolishing the main power plant building, it is now understood that these costs are major impediments to any redevelopment scenario. While The Brattle Group study optimistically reported that a mixed use development scenario on the Dominion property could yield \$5.6 million in taxes and revenues for the City within five years, the proposed uses upon which this was based are not allowed under current regulations. Specifically, the Massachusetts Public Waterfront Act (Chapter

91) and the Coastal Zone Management Designated Port Area (DPA), do not allow the single family homes, an apartment complex, large hotel, and retail/office space that The Brattle Group report based its findings upon. In addition to failing to acknowledge the regulatory constraints that govern use of the property, factors such as market demand/saturation and inadequate landside infrastructure were not considered. Also, other issues such as the cost of demolition and the development's cost impact on City services, although generally acknowledged, do not appear to be factored into The Brattle Group's cost model. As a result, the proposed uses, timeline and revenue generation suggested were impractical and unrealistic.

The City of Salem and the group of assembled stakeholders have asked that any future redevelopment of the Dominion site be consistent with both Chapter 91 and the DPA regulations. Additionally, members of the community were polled at the first public meeting in June 2011 and they indicated a clear preference for expanded port operations, renewable energy facilities, marine industrial uses, and tourism based activity. Given this direction, the consultant team considered the following potential land uses for all redevelopment scenarios going forward:

- **Marine Industrial**
 - Cruise ships / terminal facilities
 - Manufacturing (perhaps "green" technologies or renewable energy)
 - Ship building / maintenance / dry storage
 - Commercial fishing (processing, frozen storage)
- **Alternative Energy**
 - Demonstration-scale wind or solar power generation
 - Natural gas power generation
 - Cogeneration / methane capture associated with an SESD expansion
- **Higher Education / Research**
 - Marine-dependent research facilities (similar to Cat Cove in Salem or, at a larger scale, Wood's Hole in Buzzard's Bay, MA)
- **Commercial / Recreational Marina**
 - Supporting Office / Retail Facilities (up to 25% of the total development program is allowed under DPA regulations)

DEVELOPMENT GOALS

To guide the creation of different development scenarios, the consultant team established the following planning principles:

- **Comply with the regulatory environment** - There are a multitude of reasons why compliance with current regulations is important to the successful redevelopment of the Power Station site. First, maintaining public access to the waterfront is a high priority for the City and is the primary goal of Chapter 91. Second, significant public investment has been made over time to maintain and improve deep water access to the site. Deep water ports are precious public amenities and uses that can take advantage of the site's waterside access should therefore be prioritized, which is consistent with DPA regulations. Finally, without owning the site the City of Salem has very little leverage over what kinds of future redevelopment may eventually occur here. However, the City is in the position to assist potential developers to seek relief from current regulations if the proposed development options are of mutual benefit to the City. Therefore, the City should not seek to alter current regulations in advance of any viable development options and thereby forfeit the only real leverage it has to influence development absent using public funds to acquire, remediate, and improve the site itself.
- **Replace as much tax revenue as possible** - There have been many discussions about the pending loss of \$4.75 million of tax revenue generated by the power station today. Dominion is the single largest taxpayer in the City of Salem, paying five times more than the City's next largest taxpayer. However, Dominion paid \$8.7 million in taxes to the City in 2001, so this is not the first time the City will see a decrease in payment. In addition, the State Legislature adopted legislation in July, 2011 to assist the City of Salem and protect it from losing any of the \$4.75 million in tax revenue that Dominion pays before 2016, and there have been proposals to extend this agreement to 2021.

Part of the challenge with the tax revenue agreements with Dominion is that they are negotiated rates based on the amount of power generated on site. The only other viable, single land use that could generate as much tax revenue on the site is a natural gas power

generation facility. If the mandate were to recover all of the \$4.75 million in annual tax revenue as quickly as possible, a natural gas facility would be the clear winner in terms of future land use options for the site. However, given the lack of consensus in the community about having natural gas facilities on the site, letting tax revenue alone drive future land use decisions does not seem wise.

With this in mind, redevelopment of the Power Station site should have a goal of replacing as much tax revenue as possible, within the context of promoting public access to a more active waterfront.

- **Provide public waterfront access** - There have been a number of improvements to Salem’s waterfront over the years, including the creation of the Harborwalk. The opportunity exists to significantly expand the existing Harborwalk, and provide better pedestrian access to and along the Blaney Street pier. By providing more public open space along the waterfront, it will become a more attractive destination for both residents and visitors, which is critical to support future retail and commercial development. Improved pedestrian, bicycle and transit access are also critical to limiting additional vehicular traffic to the area as redevelopment occurs.

- **Propose uses for which there is market demand** - Any redevelopment scenario must be viable from a market perspective. Initially, development options will be subjected to existing market conditions. If implemented strategically, however, certain types of development can act as catalysts for future development on the site. A goal for the successful redevelopment of the Salem Harbor Power Plant site, then, is to create a nucleus of activity that builds on the existing activities along Salem’s waterfront rather than disperse uses across the site. Once a certain amount of development “momentum” is initiated, the site can more fully transform from a former power station site into something new.



With constrained access to the site from the existing road network, uses that take advantage of sea-based inflows and outflows of goods & people are preferred.



The designated port area limits land uses on the site to those that are water-dependent & take advantage of the site’s deep water access.



The site is envisioned to include a variety of uses to create a vibrant waterfront.



Dominion will be required to remove four large oil tanks within one year of closing in 2014.

- **Provide a mix of uses** - Provide uses that contribute to a healthy marine industrial economy without straining land based infrastructure. The goal for this site is to create an array of different uses that complement one another to create a greater whole. One way to do this is to promote a certain character, or “brand,” of development that will attract a vibrant mix of uses that can coexist here in a way that cannot occur elsewhere. For example, this site could become part of the network of Massachusetts Clean Energy Incubators, which is overseen by the Massachusetts Clean Energy Center (MassCEC). As noted on MassCEC’s website (www.masscec.com), business incubators “have the potential to create jobs, revitalize neighborhoods, commercialize new technologies, and strengthen local and national economies.”

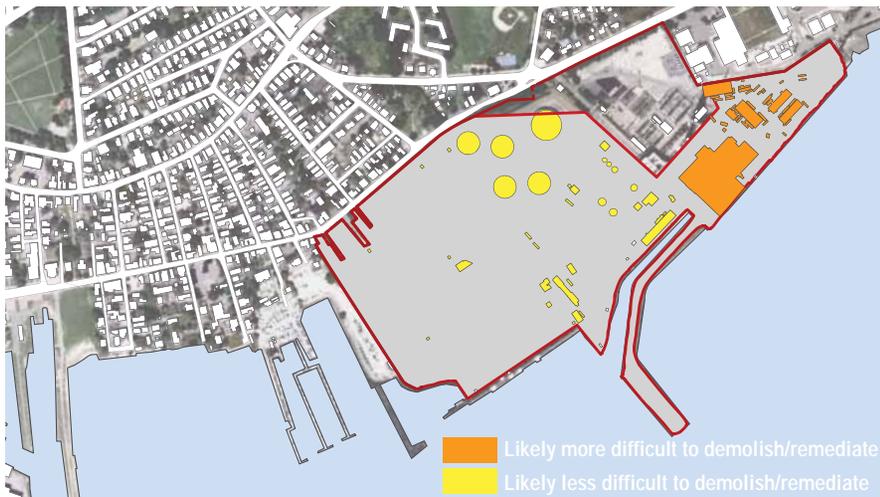
Under this model, one could imagine a scenario similar to that which has recently played out in Charlestown, MA, with the opening of the nation’s first large-scale wind blade testing facility. The large blades, up to 90 meters in length, are difficult to transport via road, and will be primarily delivered to the site in Charlestown via water for testing. This type of use is ideal for Salem Harbor, where waterside access is straightforward in many ways but landside access is problematic. A similar facility in Salem could include incubator space for designing wind energy components, light industrial space for developing and testing materials, and large scale manufacturing facilities for constructing the components, with all materials coming to and leaving the site by water.

- **Streamline phasing and implementation** - Given the complexities of site cleanup, access, ownership, and market conditions, a logical, phased approach to redevelopment of the Salem Harbor Power Station is required. Fortunately, there are a few factors that play favorably into a phased development approach for the site. Although the timeline for most of the site cleanup and remediation required to support future development is uncertain, Dominion will be required to remove the four large tanks on the southwestern portion of the site within one year of the plant’s closing. This provides a near-term opportunity for the City to consider acquiring additional lands adjacent to the existing Blaney Street pier, which would provide space for additional parking and support facilities for the ferry service and growing cruiseship industry. This project could be the “catalyst” upon which future phases of development are built, moving northeast towards portions of the site which are more challenged in terms of both access and site cleanup costs.

PROPOSED DEVELOPMENT SCENARIO

Taking into consideration the variety of opportunities and constraints presented by the Salem Harbor Power Station site, the proposed development scenario provides a flexible framework for future development. This flexibility provides the City with the tools it needs to have productive discussions about how, when and where future development should occur on the site. The proposed plan also reflects the goals established by the City and its stakeholders, as well as input from the broader community gathered during public meetings.

- Site Organization and Phasing** - The proposed redevelopment is organized into three basic phases, based upon the level of constraints and potential development program. The initial phase of development is adjacent to the existing Blaney Street Wharf, where there are the fewest constraints and the development program is the most straightforward. In this location, it is envisioned that a terminal building, supporting retail/commercial uses, and additional parking could all be implemented in the near-term to support a growing cruise ship industry in Salem.



This diagram illustrates the location of additional structures on the site that would be costly to remove—the orange buildings represent the old power plant, which may cost as much as \$50M to remove.

Webb Street represents an important boundary between the second and third phases of development: there will be fewer constraints west of this line when the tanks are removed by Dominion, but the oil tanks east of this line will be costlier to remove and may prevent near-term redevelopment. The final phase of development includes the area surrounding the main power plant building, which represents the most significant cleanup cost on this site



The proposed phasing strategy moves generally from west to east, taking advantage of existing activity at Blaney Wharf and lower site remediation cost.



The proposed land use for the site concentrates commercial development to the west to provide critical mass and to establish an “anchor” for public activity along the water’s edge.



Public Realm

The driving force behind the development plan for Salem Harbor Power Station is a series of improvements to the public realm, supported by development, which can be phased over time to improve access to and use of the waterfront. The proposed plan creates a series of different “events” along the waterfront, each with its own character and use that will provide a true waterfront destination for the City of Salem. The events include:

- The Blaney Street Promenade
- The Waterfront Lawn
- The Industrial Edge
- The Jetty Park
- Vehicular and Bicycle Circulation

- **The Blaney Street Promenade** - The first step in the process of creating a vibrant waterfront is the extension of the existing Harbor Walk to better engage the ferry service and, in the future, to connect to an extended pier that could also accommodate small cruise ships. Today, pedestrian access to Blaney Wharf is compromised due to the need for surface parking in this location. Going forward, it is proposed that the Blaney Wharf extend eastward, so that surface parking can be relocated onto what is currently Dominion property. Once the large tanks are removed, surface parking may be implemented in this location with little or no site remediation requirements. With parking relocated, the waterfront adjacent to the pier can become more pedestrian oriented, and eventually made more functional with the addition of a new terminal building and supporting retail/commercial use.

The vision for this space in the future is to create a strong anchor for the existing Harbor Walk that connects all of Salem’s waterfront destinations. Event space, restaurants, and community uses would attract both residents and visitors to the site, which could become a signature civic space for the city and the region.



The Blaney Street Promenade



View of Blaney Wharf today.



View of Blaney Wharf after the site is redeveloped.

- **The Waterfront Lawn** - As people move out along the edge of the water to an extended Blaney Street pier, a new active open space is proposed at the intersection between the industrial activity to the east and the commercial waterfront to the west. Views back to the City of Salem are also captured at this location – a place where private industrial activity has occurred for decades is transformed into a public park.

This space could be used for large outdoor gatherings such as concerts or festivals, or on a more daily basis, as a place for people to exercise or for children to play. The new park would be a destination in and of itself, further enhancing the vitality of Salem’s new waterfront. Similar models exist in cities throughout the US, though one excellent example is the Charleston Waterfront Park in Charleston, SC. Built on the site of the city’s old port, the park transformed the character of the waterfront and continues to have tremendous influence on development in the City. In 1980, the site was overgrown and full of old pilings and gravel parking lots. The new park was completed in 1990, and is now a significant landmark for Charleston and a great success story for Mayor Joe Riley. While the development did not happen overnight, it is clear that this project was transformative and worth the investment – the same could be true in Salem ten years from now.



The Waterfront Lawn



Examples of other waterfront parks that could serve as models for Salem: (1) and (2) Gantry State Park, Queens, NY; (3) Charleston Maritime Center

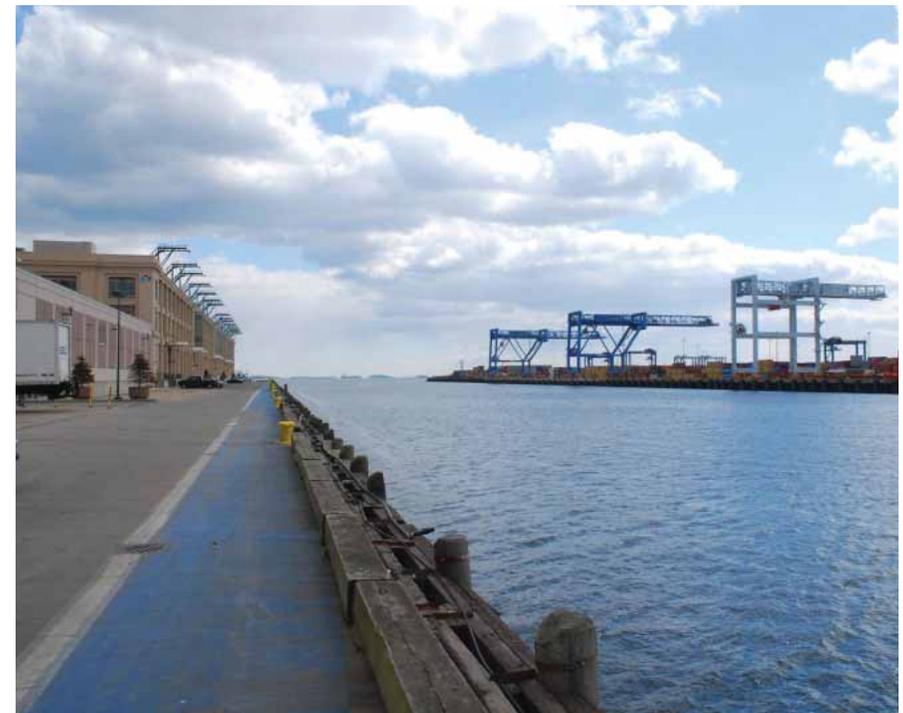


Different types of small scale wind turbines could be used on the site to demonstrate the City’s interest in renewable energy and a reflection of the site use for energy production.

- **The Industrial Edge** - The proposed plan does not attempt to ignore or hide the site's industrial past. Rather, this important part of its historic and future use is integrated within the overall open space strategy for the site. The character of the industrial edge is meant to be just that – industrial. Whereas the landscape treatment of the Blaney Street Promenade and Waterfront Park require higher quality materials, the key features of the Industrial Edge are identifying a pedestrian zone and creating enhanced wayfinding and signage to connect people to various destinations. There is also an opportunity within this zone to provide interpretive signage that describes the history of the site, and also of various locations in Salem visible from this waterfront vista.



The Industrial Edge



Commercial Waterfront Boston, MA

- **The Jetty Park** - Few people in the general public have had access to the existing jetty that has been utilized by the power plant for the past 60 years. In fact, this manmade landform is an integral part of the site's history, and is clearly visible on historic maps of Salem Harbor. At one point in time, rail extended through the site and out onto the jetty. Going forward, it is proposed that the Harbor Walk extend all the way out to and along the Jetty, creating a loop system for joggers and bicyclists. Limited improvements are proposed beyond the creation of a new path system and an extension of the interpretive signage and wayfinding system introduced along the Industrial Edge.



The Jetty Park



Gantry State Park, Queens, NY



Liberty State Park, NJ

- Vehicular and Bicycle Circulation** - The entrance to the Blaney Street Wharf is currently located at the intersection of Derby Street and Becket Street. This entrance, and some of the existing parking that exists there, are maintained in the proposed development plan. Parking that currently exists closer to the water, however, will be relocated to an expanded parking area to the east. The new parking will support expanded ferry and cruise ship activity, as well as supporting retail and commerce.

Webb Street will serve as the primary entrance to the industrial portion of the site. The existing entrance to the Dominion plant will be maintained for access to the substation. These entry points establish a loose grid of development parcels that can accommodate a variety of uses. The larger parcels in the industrial zone could be subdivided if necessary. The parcels to the west are smaller and more typical of an urban grid, supporting smaller buildings within a walkable environment.

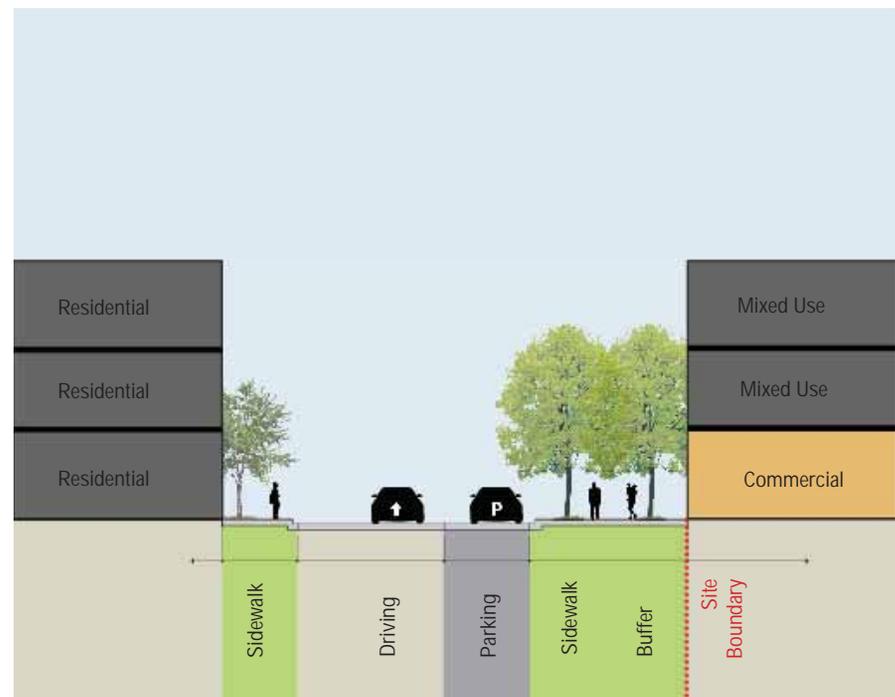
Derby Street was also considered in the planning process, particularly in terms of how the character of this street can be strengthened along the edge of the Dominion property. Closer to downtown, Derby Street has an intimate quality that inherently slows vehicular traffic. The closeness of buildings to the street edge reflects a more historic condition where streets did not occupy as much space as they do today. Many buildings have ground floor retail uses with residential use above them, suggesting a more complete community where people who live in the neighborhood can walk, rather than drive, to a store or to visit neighbors.

The proposed plan will extend the historic fabric of Derby Street further to the east, while maintaining the “green buffer” that exists there today. Future development along Derby Street will consist of two and three story buildings sited closely together with active ground floor uses.

Finally, bicycle access will be encouraged as an alternative means of access to the site. All future development should provide safe bicycle parking and signage identifying where bike traffic should go. Enhanced trolley service and free parking in other locations (such as existing downtown garages) could reduce vehicle trips to the site and further incent alternative means of transportation.



Proposed street network



Section at Site

DEVELOPMENT PROGRAM

The proposed plan currently provides approximately 500,000 gross square feet (gsf) of development. An additional 100,000 gsf could be accommodated where potential sites for a natural gas power generation facility and an expansion of the Southern Essex Sewerage District facilities have been identified. Additionally, if residential (which is not permitted under current regulations) becomes a viable use in the future, a portion of the space currently dedicated to office or R&D space could be reallocated to provide up to 120 units of multifamily housing (apartments or condominiums). The development program represented by the plan is broken down by land use in the following table.

Land Use & Area

● Retail:	90,000 SF
● Office	25,000 SF
● Terminal Building	25,000 SF
● R&D/Incubator Space	120,000 SF
● Light Industrial	90,000 SF
● Manufacturing	150,000 SF
TOTAL	500,000 SF



The Proposed Master Plan Diagram



Illustrative Master Plan

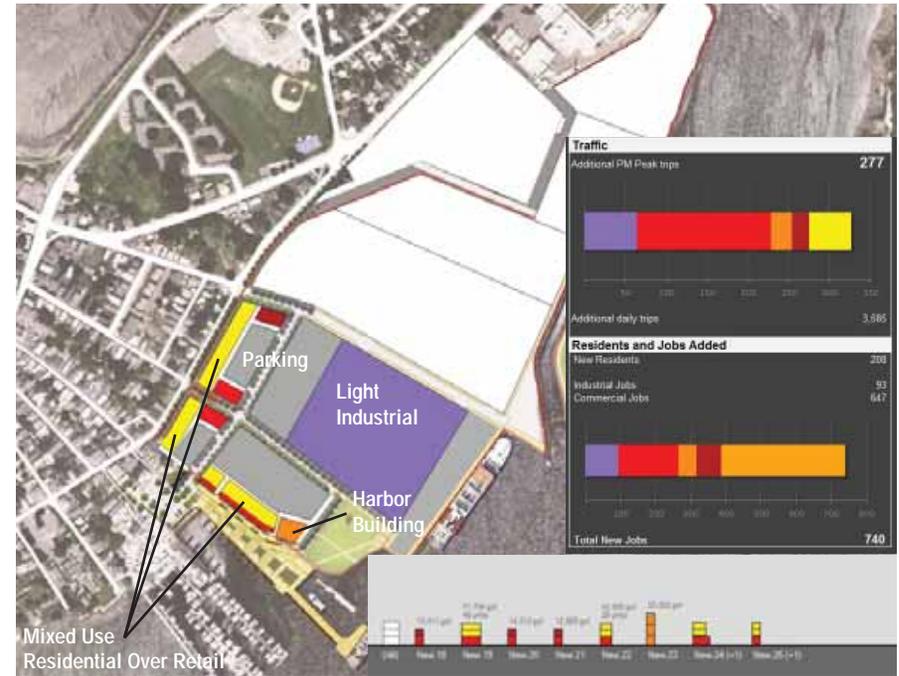
COMMUNITY IMPACTS

A key aspect to the implementation of any development plan is a comprehensive understanding of the potential impacts different types of development have on its host community. For this site, the most important consideration is how much tax revenue different land use scenarios will generate and how much traffic will be added to an already overstrained roadway network in Salem. We can create a snapshot of this for what we think the redevelopment of the Salem Harbor Power Station will look like at full build-out. Realizing that the redevelopment process will likely occur over several decades, a more iterative approach is required.

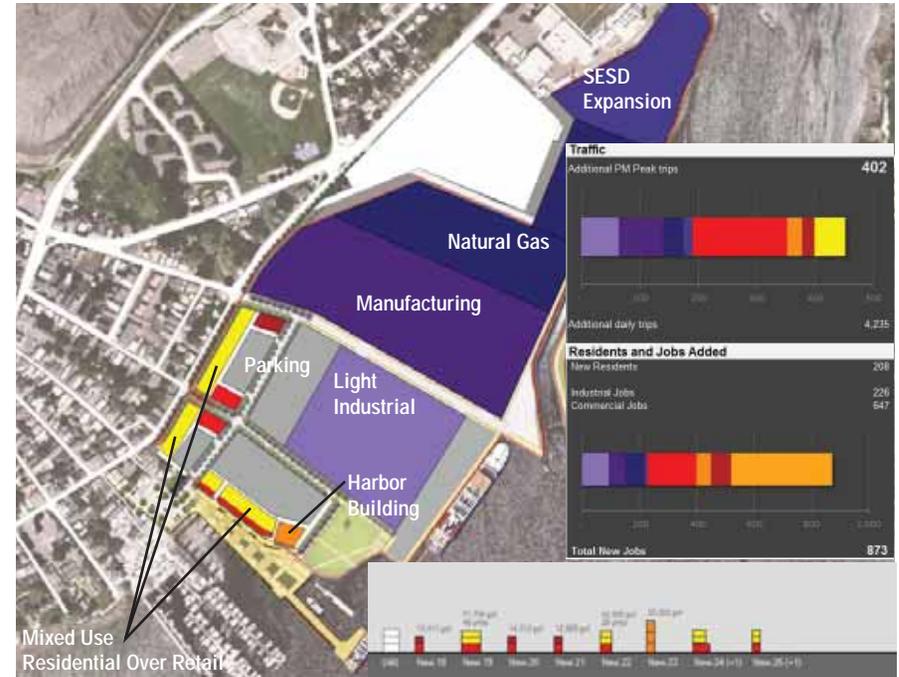
To this end, Sasaki has created propriety software application called SmartPlan™ to measure the impacts of design decisions in real time. SmartPlan™ is a computer application designed to bridge the gap between design and the practicalities of planning, including financing, regulatory constraints, environmental solutions, sustainability metrics and other implications of different development scenarios. The power of SmartPlan™ lies in its ability to provide information on the impact of design decisions in real time.

For this project, the consultant team has created a SmartPlan™ model that ties these metrics to the proposed plan. As some of the complex issues of site ownership, remediation, and development interest become more definitive, the intent is to be able to update the proposed development plan so that key factors can be determined in the City's decision making process. For example, if someone buys the site from Dominion and creates a modified or new development plan, it can be quickly modeled to assist the City in understanding the potential impacts.

The Smart Plan model will illustrate the potential tax revenue generation of particular types and mixes of development, as well as the associated cost burden to the City of Salem.



SmartPlan Model - Potential Partial Site Development



SmartPlan Model - Potential Full Site Development

- **Tax Generation** - Although Dominion's tax contribution has declined, in fiscal year 2010 taxes totaled approximately \$4.75 million, making the power station the largest contributor of tax revenue in the City of Salem. The \$4.75 million includes a negotiated usage fee of \$1.75 million, and property taxes of \$3 million which included \$800,000 attributable to the land.

When the plant ceases to operate in 2014, tax revenue contributions will be dramatically less. Dominion will still be obligated to pay property taxes, but the usage fees will cease or drastically diminish. The extension of the Regional Green Gas Initiative legislation through 2016 will help the City temporarily fill the revenue gap.

The overall additional tax burden on Salem residents and property owners would appear to approach \$4 million. Given the varying commercial and residential tax rates, along with the complexities of various other factors, it is difficult to calculate the additional tax burden on a per property basis. It should be noted, that the absence of the power plant could increase values of adjacent residential properties, which in turn, would provide a limited amount of offsetting property tax revenue.

The ability of the new development to generate significant tax revenue will be an important issue for the City of Salem. In an ideal scenario, the future development would generate the same or additional tax revenues. However, this is not to say that there aren't other considerations. Different types of developments can provide other non-tangible benefits (parks and open space, improved air quality, etc.), as well as other financial benefits to the city (jobs, tourism, sales tax revenue).

Different types of development can also bring increased cost which will need to be considered. Increased traffic, infrastructure, government services and public education costs can also offset the tax revenue generated.

RESPONSIBILITY AND FUNDING

Challenges

One of the most important factors for future development will be overcoming the cost of clean up, which would include both demolition of the existing structures and the clean up of the 62 acre site. The cost for site clean up is estimated to be in the range of \$5-20 million, while building demolition is estimated to be in the range of \$80-\$85. Including a credit for the salvage value of materials of \$20-25 million (based on today's market prices), the building demolition cost would be reduced to a net \$55-\$60 million. The total cost of the site clean up and demolition would likely be in the range of \$60 – \$80 million.

- **The following parameters will likely effect development:**

- Dominion or the potential buyer is legally obligated to clean-up the site.
- Dominion could choose to postpone potential clean-up costs after they close the plant in 2014, by leaving the plant dormant.
- The majority of the projected costs are for building demolition, not site clean-up.
- To avoid the potentially significant building demolition costs, a developer could leave the existing building intact, and develop the western portion of the site.
- Should the owner of the property be unable to clean-up the site and demolish the structures, government funding could become available.
- Dominion earned \$2.8 billion in net earnings in 2010 and potentially has the financial resources for remediation and demolition. ¹
- Funding sources for brownfield and Superfund sites are typically for site clean-up costs, rather than building demolition.
- The City or potential developers may have to seek specific project funding initiated through the Commonwealth or the Federal Government.

Responsibility

In order for partial or full redevelopment to begin, either by the current property owner, Dominion (Dominion Resources, Inc.), or a new buyer, the cost of clean-up would need to be addressed. Depending on the extent and type of development, the cost of clean-up and demolition would vary.

- **Responsibility for Clean Up** - Under the Comprehensive Environmental Response, Compensation and Liability Act of 1980 (CERCLA), a potentially responsible party (PRP) for contamination of sites is one of the following:
 - the current owner
 - owner or operator at the time of contamination
 - person who arranged for the disposal
 - transporter who selected site for disposal²

According to prevailing opinion, the United States Court system has interpreted (CERCLA) to mean that “a buyer, lessor, or lender may be held responsible for remediation of hazardous substance residues, even if a prior owner caused the contamination; performance of a Phase I Environmental Site Assessment, according to the court’s reasoning, creates a safe harbor, known as the ‘Innocents Landowner Defense’ for such a new purchaser or his lenders.”³

A Phase I Environmental Site Assessment (ESA) is a report identifying potential existing environmental contamination of a property, including both the land and any built structures. An environmental consultant will perform the investigation and prepare the report. A Phase I ESA is often required by a purchaser’s lender when a property is suspected of being contaminated. It should be distinguished from a Phase II ESA, when the actual testing of the soil, groundwater and building materials occurs.

Dominion is currently responsible for clean-up of the site. However, presently, there are no recorded environmental violations at the site that are required to be addressed. If the Salem Harbor site becomes dormant but is still owned by Dominion, more extensive clean up would not be required. Dominion, as the property owner, also has the legal right, after they cease operation in 2014, to leave the site

dormant, as long as it does not pose an immediate danger and there are no known outstanding environmental violations. They could simply choose to continue paying property taxes and avoid the cost of site clean-up and building demolition indefinitely.

Dominion, (Dominion Resources, Inc.) is a Fortune 500 company with \$2.8 billion of net income in fiscal year 2010.⁴ Revenues for 2010 were listed at \$15.2 billion, with total assets listed at \$42.8 billion.⁵ They certainly have the resources for remediation and demolition, but must consider the burden of this cost on shareholders. Dominion must also consider the public relations impact of a very visible shuttered plant and the significant negative publicity it would generate.

- **Demolition Prior to Sale** - Dominion could also choose to sell or transfer the property to a new owner. According to the City of Salem’s Assessor’s Online Property Data, the property was purchased by Dominion from USGEN New England Inc., for \$46.44 million on January 3, 2005. If a new owner were to purchase the site, they would likely request a Phase I Environmental Site Assessment, and pending the outcome, potentially a Phase II and Phase III Environmental Assessment. The transaction would involve a complex negotiation between Dominion, the buyer and the buyer’s lender that would focus on the results of the Environmental Assessments, the cost of clean up and its impact on the value of the land – all based upon the intended future use of the site. Industrial and power generating uses potentially require the lowest level of clean up and residential requires the highest level of clean up.
- **Partial Demolition and Development** - Given the fact the potential cost of demolition and site remediation (estimated at \$60-\$85 million) exceeds the market value of the remediated and cleared land, it is also unlikely that a new owner would take the land at no cost. This would likely only occur if the new owner intended to utilize a portion of the land (western portion), and avoid the demolition cost by leaving the majority of the remaining power plant structures in place. It should be noted however, as mentioned previously, a new natural gas power plant would only, require 10-15 acres of land. Locating such a plant to the west of the substation, would potentially avoid the need to demolish the existing plant, and concurrently allow for other development to occur on the western 30 acres of the site. However,

it is unlikely that a new owner would willingly expose themselves to the pressures of a community and City that wants to see the buildings demolished.

- **Funding** - Brownfield sites are a “relatively low-risk site” defined under CERCLA as “real property, the expansion, redevelopment or reuse of which may be complicated by the presence of a hazardous substance, pollutant, or contaminant”.⁶ There is funding available through the EPA’s Brownfield Initiative or through the State program. In Massachusetts, funding of up to \$2 million is available for “Priority Projects”, and loans and grants of \$1 million or less are available through the EPA.⁷ These numbers are a small amount compared to the anticipated cost for demolition of the project.
- **Superfund Site Funding** - This site is not a Superfund site, but the law created under the CERCLA in 1980 grants federal authority for the clean-up of “releases or threatened releases of hazardous substances that may endanger public health or the environment”.⁸ The Environmental Protection Agency (EPA) potentially would identify the responsible party for the contamination of the site and act to prompt the responsible parties to clean up the sites. In cases where responsible parties cannot be determined, when the responsible parties no longer exist or are financially unable to undertake the clean-up, the EPA has the authority to clean-up the site itself utilizing the special trust fund.”⁹ Historically, about 70% of Superfund cleanup activities have been paid for by the responsible parties.”¹⁰
- **Federal and State Funding** - The recently extended RGGI legislation will help to bridge the (lost tax) revenue gap between 2014 (when the plant closes) and 2016. Should Dominion choose not to demolish the plant in a timely fashion, the City of Salem may ultimately need to pursue additional funding from the state and federal government to help stimulate redevelopment. Even if the plant is demolished by Dominion, additional state and federal funds may be required to stimulate development that is consistent with the developmental constraints levied by the DPA designation. The City of New Bedford has successfully taken this route in securing \$35 million of municipal and state funding to construct the new 20 acre New Bedford Marine Commerce Terminal in their DPA. The terminal will act as a staging area for the Cape Wind project and position New Bedford at the forefront of the offshore renewable industry.



Charleston Maritime Center





9

CONCLUSIONS

Over the course of this study the consultant team met with the City's stakeholder group five times and with the broader community at two public meetings and one neighborhood meeting. The input received at those meetings from a broad cross section of the community has provided a wealth of information and a sense of the pulse of the community relative to the existing power station and a vision for eventual redevelopment of the site.

A few key conclusions have emerged from those discussions and should form the foundation for the next steps initiated by the City in the coming months. Those conclusions outlined below.

COST OF CLEANUP AND DEMOLITION / PUBLIC FUNDING

As part of this report, a preliminary cost estimate was developed for both site clean up and demolition of the existing power station structures. The estimate is based upon public records, a brief walk through of the facility and past experience of the consultant team with design, construction and modifications to utility scale power generating facilities. The overall range of costs presented - \$60 Million to \$85 Million - is also consistent with rule of thumb numbers developed by the American Clean Skies Foundation.

Site preparation costs of this magnitude will seriously burden any proforma for redevelopment – no matter what the planned use is. While it is technically the responsibility of Dominion to clean up the site, they are not obligated to do so if use of the site does not change. Dominion could also pass along the responsibility for cleanup to a new owner as part of a transfer of ownership. While not out of the question, it is unlikely in either case that an owner would be able to fund clean up of the site independently. As a result, future redevelopment will need to be considered on a phased basis and /or financial assistance must be provided from the state or federal level to reduce or alleviate this significant burden on redevelopment. Broader public participation in the financing solution would logically follow the broader benefit to the region that the power station has provided for 60 years.

DESIGNATED PORT AREA

The Massachusetts Office of Coastal Zone Management has identified Salem Harbor as one of 11 Designated Port Areas in the Commonwealth. Emphasizing the limited amount of deep water access – the Designated Ports are protected as an irreplaceable resource. While it is hard to disagree with the fundamental need to preserve deep water ports for marine related use, one must also consider whether there are sufficient allowable uses to generate viable economic activity in all of the ports identified. One must also consider that Salem Harbor does not have the landside access to highway and rail transportation that other ports such as Fall River and New Bedford have which support significant port operations.

Perhaps the small scale and physical limitations of ports such as Salem and Beverly will drive some reconsideration, at the state level, of development

proposals that combine appropriately scaled port related functions with other uses that are currently disallowed.

LANDSIDE INFRASTRUCTURE

Redevelopment of the power station site will be influenced by the existing limitations of land side infrastructure. While the utility infrastructure currently in place to serve the power station may be adequate to serve new development, traffic generation will be a significant concern. The network of streets immediately adjacent to the power station site are characterized by the Derby Street Historic District. While perhaps minimally adequate relative to capacity, the streets typically are narrow and one way. Other major intersections in Salem through which traffic to and from the site will pass, are currently beyond capacity and will create choke points should measurable increases in traffic volume occur. The eventual density of development on the site will, in part, be determined by analysis of the resulting vehicle trip generation.

MARKET ANALYSIS

The current residential and commercial real estate market in New England generally, and Salem in particular, is characterized by absorption rates that do not suggest that a substantial single phase development is feasible.

A phased development, focused on an initial use, such as the Charleston, SC waterfront, would support the Blaney Street Wharf ferry and cruise ship activity and would create an appropriately scaled catalyst that would anchor the east end of Derby Street and act as a complement to the downtown commercial district. Future development could occur on the balance of the site as determined by the market, generally.

NATURAL GAS

As this study is concluding we are aware that there may be dialogue between Dominion and parties who may be interested in developing a gas fired power generating facility on the Salem Harbor property. The advantages the site offers – proximity to the existing substation and the offshore natural gas network – are significant. The City should also consider that the footprint required for a

gas fired facility of similar generating capacity to the current power station is approximately 15 acres – leaving a significant portion of the site, particularly the Blaney Street Wharf area - available for other development. Specific questions have been raised regarding separation of gas fired facilities from other uses. Other than dimensional requirements expressed in the building code relative to industrial uses, we are not aware of regulations requiring separation of a gas fired power generating facility from other uses that may be contemplated, or the existing residential neighborhood.

Given Dominion's delisting of the existing facility and its decommissioning as of June 2014, owners / operators of a new gas fired power generating facility will face a lengthy approvals process with ISO-NE prior to construction and actual energy production.

RENEWABLE ENERGY

While there is much community sentiment in favor of developing a green energy solution on the site, it does not appear to be a formula that will provide a regional benefit. Since neither wind or solar / photovoltaics will generate more than 10 – 15 MW utilizing the entire site area, neither appear to be economically viable relative to regional scale power generation. However, both have potential to provide a portion of the on-site power required by new development.

Studies have indicated that the wind profiles off shore are sufficient to justify development of an off shore facility at a scale similar to the Cape Wind project. Given Cape Wind's current struggles to find a market for its capacity, it may take a few years for the market to mature sufficiently that a new off shore project can be justified economically. The landside footprint for off shore wind would be minimal – requiring only a connection to the existing substation – that could easily be accommodated at some future date. The balance of the site would remain available for significant additional development.

In any case, renewable energy at a demonstration or site specific scale should be part of any future development proposal.

CITY REVIEW

One of the City's fundamental goals relative to this study has been to “have the ability to accurately plan its finances and understand what potential economic development options exist”. Since the City does not own the Salem Harbor Power Station site, in order to influence development direction, all available means must be utilized along with support from the current owner. Community involvement, securing public funding sources for site clean up and demolition, review of development proposals relative to the City's Zoning Ordinance, Municipal Harbor Plan, Chapter 91 and Designated Port Area regulations, all offer the City a basis for involvement in the review and approvals process and leverage over what will ultimately be constructed on the site.

FOOTNOTES

SECTION 3

1. Marblehead Patch May 11, 2011
2. Boston.com January 2, 2011
3. Boston.com October 3, 2011

SECTION 5

1. City of Salem Zoning Ordinance, September 12, 2009, p. 47
2. Id.
3. Fort Point Associates, Inc., "Salem Harbor Plan" January, 2008, pp. 23-28
4. Bowles, Ian, "Decision on the City of Salem's Request for Approval of the Salem Municipal Harbor Plan Renewal Pursuant to 301 CMR 23.00" June 24, 2008 p. 13.
5. Bowles, Ian, "Decision on the City of Salem's Request for Approval of the Salem Municipal Harbor Plan Renewal Pursuant to 301 CMR 23.00" June 24, 2008 p.12
6. Massachusetts Department of Environmental Protection, "Chapter 91, The Massachusetts Public Waterfront Act" available September, 2011 at <http://www.mass.gov/dep/water/resources/about01.htm>
7. Id.
8. Fort Point Associates, Inc., "Salem Harbor Plan", January, 2008, p. 100.
9. Massachusetts Department of Environmental Protection, "Chapter 91, The Massachusetts Public Waterfront Act" available September, 2011 at <http://www.mass.gov/dep/water/resources/about01.htm>
10. Id.
11. Id.
12. Id.
13. Id.
14. Coastal Zone Management, Anne Donovan, "Designated Port Areas: Flexible Protection for a Finite Resource" available September, 2011 at <http://www.mass.gov/czm/coastlines/2003/c27.htm>
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16. New England School of Law, "Designated Port Areas A Manual for Lawyers", 2009, p. 11.
17. Id. p. 11
18. Id., pp. 11-12.
19. Id., p. 12
20. Id.

21. Id. p. 11
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31. World Port Source, "Gloucester Harbor" available September, 2011 at http://www.worldportsource.com/ports/USA_MA_Gloucester_harbor_1800.php
32. Norris & Norris Associates, "Gloucester Harbor Innovation Center: Concept Proposal for the I4C2 Site", undated (after December, 2010).
33. Steven Rosenberg, The Boston Globe, "Reworking the port", October 2, 2011
34. World Port Source, "Port of New Bedford" available September, 2011 at http://www.worldportsource.com/ports/USA_MA_Port_of_New_Bedford_1806.php
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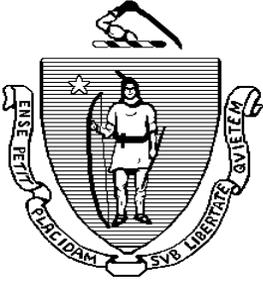
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APPENDIX C: DPU 12-77 Order



The Commonwealth of Massachusetts

DEPARTMENT OF PUBLIC UTILITIES

D.P.U. 12-77

March 15, 2013

Investigation by the Department of Public Utilities on its own motion into the need for additional capacity in NEMA/Boston within the next ten years, pursuant to Chapter 209, Section 40 of the Acts of 2012 "An Act Relative to Competitively Priced Electricity in the Commonwealth" and pursuant to G.L.c. 164 § 76.

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I. INTRODUCTION

On August 3, 2012, Governor Patrick signed into law Chapter 209 of the Acts of 2012, “An Act Relative to Competitively Priced Electricity in the Commonwealth” (“Act”). Section 40 of the Act requires the Department of Public Utilities (“Department”) to “open a docket to investigate the need for additional capacity in the [Northeastern Massachusetts and Greater Boston (“NEMA/Boston”)] region within the next 10 years.” Section 40 provides the following guidance to the Department in conducting its investigation:

If there is a demonstration that the ISO-New England forward capacity auction immediately preceding March 15, 2013 concluded with total capacity, including excess generating capacity, in such load zone in an amount less than the capacity expected to be needed to reliably serve the load to such load zone during the next subsequent auction after taking into account any delist or retirement bids that were rejected for reliability reasons, the department shall determine whether there is a need for additional electric generating capacity in the NEMA region. Such a demonstration shall be conclusive proof of the need for additional electric generating capacity in the NEMA load zone.

St. 2012, c. 209, § 40. In making its determination, the Department must include consideration of “ISO-New England [Inc. (“ISO-NE”)]¹ findings and of the anticipated function of the capacity market in New England.” Id.

The Act further provides that “if the Department determines that there is a need for additional electric generating capacity in [NEMA/Boston] within the next 10 years,” the Department may order distribution companies² serving NEMA/Boston to solicit competitive

¹ ISO-NE is a not-for-profit, private corporation that serves as the regional transmission organization (“RTO”) for New England. ISO-NE operates the New England bulk power system and administers New England’s wholesale electricity market.

² Distribution Companies are defined in Section 1 of Chapter 164 of the General Laws. NSTAR Electric Company and Massachusetts Electric Company d/b/a National Grid serve NEMA/Boston.

proposals from developers of electricity generation and, provided that reasonable proposals have been received, to enter into cost-effective long-term contracts to deliver such resources to NEMA/Boston. Id.

Thus, Section 40 directs the Department to investigate and answer two questions:

1. Is there a need for additional capacity resources³ in NEMA/Boston over the next ten years?
2. If yes, should the Department order the distribution companies serving NEMA/Boston to solicit proposals and enter into long-term contracts for generation resources delivered to the area?

Section 40 directs the Department to complete its investigation by March 15, 2013. Id.

II. PROCEDURAL HISTORY

The Department issued an order opening this investigation on October 1, 2012. The investigation was initiated pursuant to Section 40 of the Act and the Department's general supervisory authority over electric companies under G.L. c. 164, § 76.

As part of its investigation, the Department requested that ISO-NE provide: (a) information on the existing capacity resources in NEMA/Boston; (b) the ISO-NE load forecast for the next ten years; and (c) ISO-NE's assessment of the likelihood of retirements of capacity resources and of the implementation of transmission upgrades over the next ten years (September

³ As quoted above, Section 40 initially directs the Department to investigate the need for "additional capacity" in NEMA/Boston. Thereafter, Section 40 requires the Department to determine whether "additional *electric generating* capacity" is needed (emphasis added). In reconciling these two provisions, the Department notes that Section 40 requires the Department to review the results from the ISO-NE forward capacity auction, which procures not just generating capacity, but also capacity from demand resources. Assessing need without considering both demand and generation resources would be illogical and inconsistent with current planning and market operations. Accordingly, we read Section 40 to require the Department to investigate whether capacity resources of all types will be adequate to serve the need in NEMA/Boston over the forecasted period.

7, 2012 letter to Gordon Van Welie, President of ISO-NE). On October 26, 2012, ISO-NE responded to the Department's request ("ISO-NE Summary of Information").

On November 8, 2012, the Department conducted a technical conference at which Stephen J. Rourke, Vice President of System Planning for ISO-NE, presented the material ISO-NE submitted in October. Mr. Rourke also discussed ISO-NE's November 6, 2012 filing with the Federal Energy Regulatory Commission ("FERC"), entitled "FCA #7 Resource Qualification Determinations and Requirements" ("November 6 Informational Filing").⁴ In that FERC filing, ISO-NE describes the current inventory of available resources in NEMA/Boston, including generation, transmission, energy efficiency and demand response, as well as ISO-NE's forecasted peak loads for NEMA/Boston through capacity year⁵ 2021/2022. November 6 Informational Filing, Att. C. Mr. Rourke also responded to questions posed by Department staff and others who participated in the technical conference.⁶

The Department invited the submission of Initial Comments on the issues raised by this investigation on or before November 25, 2012, and Reply Comments on or before December 5, 2012. Representative John D. Keenan of the Massachusetts House of Representatives and Chairman of the Committee on Telecommunications, Utilities and Energy ("Chairman

⁴ FERC docketed the November 6 Informational Filing as ISO New England, Inc., Docket No. ER13-335-000.

⁵ The ISO-NE Transmission, Markets and Services Tariff, FERC Electric Tariff No. 3 ("ISO-NE Tariff") defines "Capability Year" as a year beginning on June 1 and ending on the following May 31. ISO-NE Tariff, Section I.2.2. We use "capacity year" as identical to the ISO-NE term "Capability Year."

⁶ The Technical Conference was transcribed and the transcript is included in the Department's file for this docket.

Keenan”);⁷ Footprint Power LLC (“Footprint”); the Massachusetts Department of Energy Resources (“DOER”); New England Power Generators Association, Inc. (“NEPGA”); Exelon Corporation (“Exelon”); NSTAR Electric Company (“NSTAR”); Massachusetts Electric Company d/b/a National Grid (“National Grid”); Conservation Law Foundation (“CLF”); and New Hampshire Transmission LLC (“NHT”) filed Initial Comments. Chairman Keenan,⁸ Footprint; NEPGA; Exelon; NSTAR; National Grid; and Energy Management, Inc. (“EMI”) filed Reply Comments. Subsequently, Chairman Keenan, Exelon, and NEPGA filed follow-up letters.⁹ Senator Joan B. Lovely (“Senator Lovely”); Kimberly Driscoll, Mayor of Salem, Massachusetts (“Mayor Driscoll”); Linda Hurley, Chair of the Historic Derby Street Neighborhood Association and representative of The Point Neighborhood Association; Clean Water Action (“CWA”); and the Salem Alliance for the Environment (“SAFE”) also filed letters.¹⁰

III. BACKGROUND ON FORWARD CAPACITY MARKET

The Forward Capacity Market (“FCM”) is a market in which ISO-NE projects the needs of the power system three years in advance and then holds an annual auction to purchase power resources to satisfy the region’s future needs. The aim of the FCM is to send appropriate price signals to attract new investment and maintain existing resources where and when they are

⁷ See November 2, 2012 letter from Chairman Keenan.

⁸ See December 21, 2012 letter from Chairman Keenan.

⁹ See February 28, 2012 letter from Chairman Keenan; March 6, 2013 letter from Exelon; March 8, 2013 letter from NEPGA; and March 11, 2012 letter from Chairman Keenan.

¹⁰ See March 6, 2013 letter from Senator Lovely; March 13, 2013 letter from Mayor Driscoll; March 5, 2013 letter from Linda Hurley; March 8, 2013 letter from CWA; and March 12, 2013 letter from SAFE.

needed, thus ensuring cost-effective reliability of the New England electricity grid. The annual auction to procure capacity is called the Forward Capacity Auction (“FCA” or “Auction”). During the FCA, ISO-NE procures sufficient capacity to meet the Installed Capacity Requirement (“ICR”) for New England. ISO-NE Tariff, Section III.13. The ICR is a measure of the installed capacity resources that are projected to meet projected demand (i.e., the capacity necessary to meet reliability standards in light of total forecasted electric load requirements for New England and to maintain sufficient reserve capacity to meet reliability standards). ISO-NE Tariff, Section III.12.

Pursuant to the FCM Market Rules, New England is divided into four capacity zones. ISO-NE Tariff, Sections III.12.4 and III.13.2.3.4(b). The Northeastern Massachusetts load zone, generally referred to as NEMA/Boston, is one of the four zones. The other three zones are Connecticut, Maine, and “Rest of Pool.” ISO-NE Tariff, Section III.12.4. For import-constrained capacity zones,¹¹ in addition to calculating the ICR, ISO-NE calculates Local Sourcing Requirements (“LSR”). ISO-NE Tariff, Section III.12.2. LSR is “the minimum amount of capacity that must be electrically located within an import-constrained Load Zone” to maintain reliability. ISO-NE Tariff, Section I.

Section 40 of the Act requires the Department to review the results of the FCA “immediately preceding March 15, 2013.” This Auction was held on February 4-5, 2013 and is known as FCA #7. Resources that cleared FCA #7 will be obligated to supply capacity to New

¹¹ An import-constrained capacity zone is an area that may not have adequate local resources and transmission import capability to reliably serve local demand (ISO-NE Summary of Information at 6).

England from June 1, 2016 to May 31, 2017. Retail and wholesale suppliers serving electricity customers will pay for the capacity that ISO-NE procured in FCA #7.

If, after ISO-NE conducts its annual FCA, a capacity deficit exists or arises, the ISO-NE Market Rules provide a number of additional measures that ISO-NE can take to satisfy a capacity need. ISO-NE has the ability to procure additional capacity in subsequent annual or monthly reconfiguration auctions. ISO-NE Tariff, Section III.13.4. The ISO-NE Tariff allows reconfiguration auctions for a number of reasons, including but not limited to: (1) changes in the load forecast; (2) delayed or canceled new resources; and (3) shortfalls attributable to the underperformance of new capacity. ISO-NE Tariff, Section III.

Finally, if a capacity deficit exists after a FCA and subsequent reconfiguration auctions, ISO-NE may avail itself of a request for proposals to close the gap (“Gap RFP”). ISO-NE may use a Gap RFP if it determines that an area may have critical near-term power supply reliability problems for which no FCM participant has proposed or committed to implement a viable solution (from a timeliness or financial standpoint). ISO-NE Tariff, Section III.11.1. The Gap RFP will solicit load response and supplemental generating resources to maintain near-term reliability in the identified area, and ISO-NE may enter into contracts awarded pursuant to the Gap RFP. Id.

IV. NEMA/BOSTON CAPACITY AND TRANSMISSION RESOURCES

A. NEMA/Boston Capacity Requirements

Prior to FCA #7, ISO-NE classified NEMA/Boston as an import-constrained capacity zone and calculated NEMA/Boston’s LSR (ISO-NE Summary of Information at 6). For FCA #7,

NEMA/Boston's LSR was 3,209 MW. The NEMA/Boston LSR increases incrementally to 3,638 MW by FCA #12, capacity year 2021-2022 (*id.* at 7, Table 2).¹²

B. Transfer Capability into NEMA/Boston

1. Transmission Planning

As the RTO for New England, ISO-NE conducts long-term system planning for the regional power system. To satisfy this responsibility, ISO-NE annually prepares a comprehensive Regional System Plan that includes forecasts of future load and the ways in which the transmission system can meet the forecasted demand by the combination of generation resources, energy efficiency and other demand resources, and transmission improvements. The FCM is intended to supply the necessary capacity resources. To the extent the FCM does not provide all the capacity resources to meet reliability needs, ISO-NE is obligated to plan regulated transmission resources as a backstop (Tr. at 48). To fulfill this obligation, ISO-NE determines which areas have the potential for future reliability problems and warrant further study, studies potential solutions and chooses the transmission resources that best solve the reliability problems. ISO-NE Tariff, Section II, Attachment K.

2. NEMA/Boston Transmission Improvements

To assure reliability in NEMA/Boston, since 2008 ISO-NE has been studying the reliability needs of the region. These efforts have produced an initial Greater Boston Area Transmission Needs Assessment, a solutions study, and a number of updates to both. ISO-NE

¹² ISO-NE states that the LSR calculation is very sensitive to many assumptions, such as the amount of qualified capacity, transmission transfer capability, and projected loads (ISO-NE Summary of Information at 6). ISO-NE explains that, therefore, the projected LSR values for NEMA/Boston “are indicative of possible future capacity requirements but should not be considered absolute” (*id.*).

Presentation to February 12, 2013 Planning Advisory Committee Meeting, “Greater Boston Solutions Study Status Update.” The studies show a number of future transmission system problems that need to be resolved in order to meet reliability requirements. Id. The studies demonstrate that future transmission needs can be satisfied with a number of transmission upgrades and additions. Id. The complete set of upgrades and additions is called the Greater Boston Transmission Project (“GBTP”).

ISO-NE also is studying another transmission solution to the Greater Boston Area Transmission Needs Assessment, proposed by NHT, known as the SeaLink proposal. SeaLink consists of a subset of the GBTP upgrades and a high-voltage direct current (“HVDC”) submarine cable connecting a substation in Seabrook, New Hampshire, and a substation in the Boston area. The HVDC portion of the SeaLink project would displace the new 345 kV transmission lines north of Boston that would otherwise be part of the GBTP. February 12, 2013 Planning Advisory Committee meeting material. ISO-NE states that it expects to choose in the third quarter of 2013 between the SeaLink proposal and the GBTP as its preferred transmission solution.

3. Transfer Capability

Transmission transfer capability is the amount of electric power that can be transferred over a transmission network in a reliable manner. Transfer capacity affects a zone’s LSR calculation because increasing the amount of electric power that can be reliably transferred into a load zone via transmission can reduce the need for generation and demand response resources within the zone. Increases in transfer capability reduce a LSR value essentially by a one-to-one MW ratio (Tr. at 36).

According to ISO-NE, the current transmission transfer capability into NEMA/Boston, assuming a conservative scenario,¹³ is 3,700 MW, increasing to 4,175 MW in 2014 (ISO-NE Summary of Information at 14, Table 7). These amounts do not include any increase in transfer capability that would result from the GBTP. However, ISO-NE stated that preliminary assessments¹⁴ demonstrate that GBTP would increase NEMA/Boston's transfer limit by 800 to 1,200 MW. February 8, 2013 letter from ISO-NE.

C. FCA #7 Results

As noted above, Section 40 of the Act requires the Department to review the results of FCA #7 in making the Department's determination regarding need for additional capacity in NEMA/Boston. ISO-NE conducted FCA #7 on February 4 and 5, 2013. On February 26, 2013, ISO-NE provided FERC with the results of FCA #7 ("FCA Results Filing").¹⁵ ISO-NE reported that prior to the Auction, 3,754 MW of new and existing capacity in the NEMA/Boston Capacity Zone qualified to meet the zone's LSR of 3,209 MW (FCA Results Filing, Attachment B, hereinafter "prefiled testimony of Mr. Rourke" at 8). The 3,754 MW of qualified capacity included Footprint, which qualified as a New Capacity Generating Resource with a capacity value of 674 MW (id.).

¹³ These estimates are based on an N-1-1 scenario, the scenario ISO-NE uses in calculating LSR. An N-1-1 scenario is one in which two non-simultaneous events (such as a power plant going out of service and a transmission line failure) happen within a short period of time, typically 30 minutes.

¹⁴ ISO-NE notes that the new transfer levels cannot be finalized because the precise set of upgrades has yet to be determined.

¹⁵ FERC docketed the FCA Results Filing as ISO New England, Inc., Docket No. ER13-992-000.

During the Auction, Footprint indicated that it would withdraw from the Auction if the price fell below \$14.999/kW-month (id.). Because Footprint's capacity was needed for the zone to meet the LSR, the Auction closed with Footprint setting the clearing price for new resources in NEMA/Boston at \$14.999/kW-month (id.). Capacity resources totaling 3,716 MW, including Footprint's 674 MW¹⁶, cleared the Auction (id. at 13).¹⁷ Footprint elected to maintain its Capacity Supply Obligation and Capacity Clearing Price (indexed for inflation) for the next four Capacity Commitment Periods after the 2016/2017 Capacity Commitment Period, or until the 2020/2021 Capacity Commitment Period (id. at 10). ISO-NE Tariff, Section III.13.1.1.2.2.4.

V. NEED FOR ADDITIONAL CAPACITY

A. Positions of the Parties¹⁸

1. Chairman Keenan¹⁹

Chairman Keenan notes that many parties agree that NEMA/Boston will likely be deficient in terms of generating resources, at least by reference to the FCM Auction process

¹⁶ Footprint elected not to be rationed in the Auction (i.e., either all 674 MW would clear the Auction or none of it would). Pursuant to Section III.13.1.1.2.2.3(b) of the ISO-NE Tariff, capacity from a New Capacity Generating Resource that elects not to be rationed must be accepted or rejected in whole.

¹⁷ Even though 3,754 MW of capacity resources qualified for FCA #7, only 3,716 MW cleared the Auction because 38 MW of resources submitted de-list bids that ISO-NE accepted (FCA Results Filing, Attachment A).

¹⁸ Because the parties submitted Initial Comments and Reply Comments prior to the February 4-5, 2013 FCA #7, most of the comments outlined below are based only on information that was available prior to that Auction.

¹⁹ Chairman Keenan filed four letters to the Department in the course of this proceeding, dated November 2, 2012, December 21, 2012, February 28, 2012 and March 11, 2012. The Department appreciates the timely and thoughtful comments provided by Chairman Keenan and accorded them significant consideration.

(December 21, 2012 letter from Chairman Keenan at 2). In addition, Chairman Keenan observes that any market reforms to address resource needs will not be in place before reliability questions and capacity constraints become problematic in 2016 (id. at 3).

In his letters submitted after FCA #7, Chairman Keenan states that the results of the Auction incontrovertibly demonstrate a need for generating capacity in NEMA/Boston and that there will be a shortfall of generating capacity in NEMA/Boston if Footprint does not move forward (February 28, 2013 letter from Chairman Keenan at 1-2; March 11, 2013 letter from Chairman Keenan at 1-2). Chairman Keenan notes that Footprint sought to withdraw from the Auction if the clearing price fell below \$14.999/kw-month, but that ISO-NE rejected the withdrawal because Footprint's capacity was necessary to meet the zone's LSR (March 11, 2013 letter from Chairman Keenan at 2).

Chairman Keenan also rebuts National Grid's and NEPGA's argument that in determining whether there is a need for additional capacity in NEMA/Boston in 2016 the Department should include the capacity Footprint bid in FCA #7 because Chairman Keenan argues that significant questions remain as to whether the generating facility will be built (id.).

2. Senator Lovely and Mayor Driscoll

Senator Joan Lovely, representing the Second Essex District and the City of Salem, and Kimberly Driscoll, Mayor of Salem, state that ISO-NE has concluded that absent Footprint NEMA/Boston will not have sufficient capacity to meet its LSR and, therefore, that a need for new capacity has been established. In addition, they state that Footprint's proposed power plant will lead to marked environmental improvements, encourage commercial and industrial redevelopment along the waterfront and provide critical financial security for the City of Salem

through its annual tax contribution (March 6, 2013 letter from Senator Lovely; March 11, 2013 letter from Mayor Driscoll).

3. Footprint

Footprint states that the ISO-NE Summary of Information and Mr. Rourke's presentation both demonstrate that there is a need for additional electric generating capacity in NEMA/Boston within the next ten years (Footprint Initial Comments at 3). Footprint states that the ISO-NE analyses done prior to FCA #7 demonstrate a deficiency of at least 166 MW,²⁰ and that by the terms of Section 40 are conclusive proof of the need for additional generation capacity to serve NEMA/Boston (*id.* at 4). Footprint argues that none of the Initial Comments of other parties considers even the possibility that any of the existing NEMA/Boston generation units will retire over the next ten years or that necessary LNG might not be available for certain of these units, both of which would exacerbate the need for additional resources (Footprint Reply Comments at 3). Footprint also argues that currently planned transmission projects cannot solve the need by June 1, 2016, which is the beginning of the FCA # 7 capacity year, and in particular that the GBTP will not be completed until late 2018 (at the earliest), well after the reliability need identified for FCA #7 (Footprint Initial Comments at 6-7; Footprint Reply Comments at 14).

²⁰ Initial Comments were filed by November 25, 2012, and Reply Comments by December 5, 2012. Until the actual FCA #7 results were disclosed on February 26, 2013, ISO-NE estimated the capacity deficiency to be about 166 MW, after accounting for retirement requests. Accordingly, all commenters described the deficiency amount using the pre-Auction estimate of 166 MW rather than the actual Auction result, which was about 129 MW before de-list bids were accepted and about 167 MW afterwards.

4. Massachusetts Department of Energy Resources

DOER states that the Summary of Information provided by ISO-NE “demonstrates that both the FCM and the non-market transmission solution have procured adequate capacity in the NEMA/Boston area to date” (DOER Initial Comments at 4). Further, DOER states that the structural changes to be implemented in FCA #7, the transmission upgrades scheduled, and the amount of capacity resources in the interconnection queue could increase the capacity of resources available and/or decrease the LSR in the NEMA/Boston area (id.).

5. New England Power Generators Association

NEPGA states that the record in this proceeding clearly shows that to the extent that new supply is needed in NEMA/Boston in the next ten years, that need is very small, approximately 166 MW, and of short duration, from 2016 through 2018 (NEPGA Initial Comments at 3, 6). In addition, NEPGA states that ISO-NE can address resource deficiencies through market mechanisms such as annual reconfiguration auctions or a Gap RFP, and by operational solutions (id.). In addition, NEPGA states that if the GBTP increases import capability into NEMA/Boston by 800 to 1000 MW, that increase would not only fully address anticipated load growth of a few hundred MW, but would also accommodate the unexpected retirement of a large generator (id. at 6).

NEPGA also argues that when determining whether there is a need for additional capacity in NEMA/Boston the Department should include the capacity Footprint bid in FCA #7 (March 8, 2013 letter from NEPGA at 1).

6. Exelon Corporation

Exelon states that there is no capacity deficiency in NEMA/Boston going into FCA #7, any potential capacity deficiency that might occur in 2016 to 2018 would be small and short in duration, the ISO-NE has market and operational tools to address any such deficiency and the Regional System Planning process provides a reliability backstop to fully address any capacity deficiency that is not otherwise addressed by the markets (Exelon Initial Comments at 1, 8-9, 13).

7. NSTAR

NSTAR states that depending on the interaction of key factors such as load growth, weather, the penetration and success of energy efficiency and demand response, the retention of resources that have submitted requests to retire, and the availability and cost of new resources, one could anticipate either no capacity need or a limited, short-term need in NEMA/Boston (NSTAR Initial Comments at 8-9). In the longer term, NSTAR cites to the National Grid response to an information request from the Department to show that the GBTP could increase the import capability into NEMA/Boston by 800 to 1,000 MW, which would more than eliminate any short-term deficiency (id. at 7). NSTAR also states that if a short-term need should materialize prior to completion of the GBTP, there are many measures that ISO-NE could take to ensure system reliability, including a Gap RFP (id. at 9).

8. National Grid

National Grid states that any shortfall of capacity in NEMA/Boston will be present for no more than two years, from 2016 to 2018, because the GBTP is estimated to increase the import capacity into NEMA/Boston by more than 800 MW by 2018 (National Grid Initial Comments at

3). National Grid states that if a capacity deficit exists after FCA #7, the ISO-NE market rules provide for a number of measures that ISO-NE can take to satisfy the capacity need, including subsequent annual or monthly reconfiguration auctions and a Gap RFP (id. at 6-7).

9. Conservation Law Foundation

CLF states that to the extent there is a shortfall in the 2016 to 2018 time period, ISO-NE has multiple tools to address it, including reconfiguration auctions, operating procedures, rejection of de-list bids, and the issuance of a Gap RFP (CLF Initial Comments at 4-5).

10. New Hampshire Transmission, LLC

NHT states that the Department should consider the increases in transmission capacity into NEMA/Boston from NHT's proposed submarine HVDC transmission line, SeaLink, as well as the preliminary solution presented by ISO-NE on March 12, 2012 (NHT Initial Comments at 4-6).

11. Clean Water Action

CWA states that the potential deficit or shortfall in the NEMA region is both minimal and ephemeral and that transmission upgrades, such as those identified in the Greater Boston Area Needs Assessment can meet the majority, perhaps all, of the projected need (March 8, 2013 letter from CWA at 1). CWA states that the Footprint facility "is an immense and disproportionate generation source to patch a miniscule, temporary shortfall" (id. at 2).

B. Analysis and Findings

In determining whether there is a need for additional capacity in NEMA/Boston, Section 40 of the Act directs the Department to review the results of FCA #7. St. 2012, c. 209, § 40. Specifically, the Department must determine whether FCA #7 "concluded with total capacity,

including excess generating capacity, in such load zone in an amount less than the capacity expected to be needed to reliably serve the load to such load zone during the next subsequent auction,” i.e., FCA #8 or the 2017/2018 capacity year. Id. In making this determination the Department is required to “tak[e] into account any delist or retirement bids that were rejected for reliability reasons.” Id.

Chairman Keenan asserts that in calculating whether FCA #7 concluded with total capacity less than the capacity expected to be needed to reliably serve NEMA/Boston the Department must exclude the 674 MW that Footprint bid into the Auction (March 11, 2013 letter from Chairman Keenan at 2). We agree. It is antithetical to the legislative purpose of Section 40 to count the capacity Footprint bid in FCA #7 in deciding whether a capacity need exists. The February 4-5, 2013 Auction does not resolve the legislative concern that such a power plant may in fact not be built by 2016 absent a long-term contract. Thus, in determining whether there is a need for additional capacity in NEMA/Boston, and specifically, in calculating whether FCA #7 concluded with total capacity less than the capacity expected to be needed to reliably serve NEMA/Boston, we exclude the 674 MW that Footprint bid into FCA #7.

Going into FCA #7, NEMA/Boston needed 3,209 MW of capacity resources, the LSR amount calculated by ISO-NE. The amount of resources going into the Auction was 3,754 MW, which included Footprint’s 674 MW. Thus, excluding Footprint’s 674 MW, going into the Auction there was 3,080 MW of qualified capacity, a gap of 129 MW between qualified capacity and the LSR of 3,209 (prefiled testimony of Mr. Rourke at 8). The amount of capacity that actually cleared the Auction was 3,716 MW, which includes Footprint. Thus, absent Footprint’s

674 MW, the gap between the LSR and the capacity that cleared the auction is 167 MW (3,716 MW – 674 MW = 3,042 MW; 3,209 MW – 3,042 MW = 167 MW).

The results of FCA #7 show that, absent Footprint, there is a need in NEMA/Boston for additional capacity resources beginning in the 2016/17 capacity year. Thus, based on the FCA #7 results and the latest market information, we find there is a need for additional capacity resources in NEMA/Boston by the 2016/2017 capacity year and therefore we need not make any explicit findings regarding the capacity needs over the remainder of the ten-year period.²¹

VI. LONG-TERM CONTRACTS

A. Positions of the Parties

1. Chairman Keenan

Chairman Keenan states that Section 40 of the Act reflects the General Court's awareness of concerns expressed by numerous parties that the FCM does not provide predictable revenues necessary to secure financing for new generation resources and, therefore, that the General Court clarified the Department's authority to direct local electric companies to procure long-term contracts with new generation resources when necessary or appropriate in NEMA/Boston (December 21, 2012 letter from Chairman Keenan at 1-2). Chairman Keenan states that expert opinions referenced in the Department proceeding have made it clear that, if there is a need to

²¹ Section 40 actually calls for an additional calculation beyond whether FCA #7 produced sufficient capacity. The statute directs the Department to determine whether FCA #7 concluded with sufficient capacity resources to meet the FCA #8 requirements "after taking into account any delist or retirement bids that [ISO-NE] rejected" in the FCA #7 process. We read this language to mean that the total capacity cleared in FCA #7, or 3,716 MW, is to be reduced by the rejected delist and retirements (none in FCA #7), and then compared to the LSR amount forecasted for FCA #8, or 3,314 MW. Because next year's forecasted LSR is higher than the amount bid in FCA #7, the finding of need in FCA #7 also results in a forecasted deficit for FCA #8 absent Footprint.

secure new generation resources in the region, the developer of this sort of capital-intensive project will almost certainly need to rely upon a long-term power purchase agreement to secure necessary financing (id. at 2).

Chairman Keenan states that if the Department determines that there is a capacity need in NEMA/Boston, he encourages the Department to proceed with the RFP process as quickly as possible, given the consensus that a capacity need may emerge as soon as 2016 (id. at 3).

Chairman Keenan states that such a solicitation poses no risk and would allow distribution companies and the Department to review the types of projects that may be available to address a capacity gap, the types of benefits such projects may provide the Commonwealth and its ratepayers, and whether any developer can meet the stringent criteria for approval of a long-term contract as outlined in Section 40 (December 21, 2012 letter from Chairman Keenan at 3; February 28, 2013 letter from Chairman Keenan at 2). Chairman Keenan also asks the Department to consider whether generation options or other non-transmission alternatives may potentially be cheaper, cleaner and more reliable options than transmission solutions (December 21, 2012 letter from Chairman Keenan at 2-3).

2. Footprint

Footprint states that the Department should be concerned about an electric system that relies too heavily on transmission imports (even if such capacity is expanded by the GBTP) (Footprint Initial Comments at 9). Footprint notes that NEMA/Boston has dramatically less internal generation capacity than other regional load pockets (41 percent of its peak capacity requirement compared to 100 percent for Connecticut, 83.9 percent for New York City and 99.2 percent for Long Island) (id. at 10). Footprint states that the Department also should

consider a number of risk factors associated with NEMA/Boston, including: (1) the limited nature and operating characteristics of existing generation resources (one site, Mystic Station, provides approximately 76 percent of the internal generating capacity for NEMA/Boston); (2) older generating units, including Mystic 7, will be subject to significant operational impacts and potential retirement as the result of emerging U.S. Environmental Protection Agency standards for older generators and new market rules being advanced by ISO-NE; (3) the availability of LNG supply for Mystic 8 and 9; (4) concern about whether there will be continuing growth of demand resources; and (5) “wishful thinking” that the existing wholesale market will resolve NEMA/Boston’s reliability concerns (id. at 10-13).

Footprint states that the FCM process is flawed and “will not support the investment necessary to address reliability requirements for NEMA/Boston” (id. at 19). Footprint argues that the FCM has consistently failed to provide sufficient incentives to promote the development of necessary, new generation resources (id.). Under the current Auction rules, the clearing price cannot exceed \$15/kW-month, and that price can be locked in for only five years (id.). Footprint states that it has engaged in comprehensive discussions with bankers and other financial institutions and states that “to secure necessary financing for any new generation resource under current economic conditions, a long-term contract for a substantial portion of the project’s output is likely necessary” (id. at 20-21). Footprint states that the Department should immediately and expeditiously move forward with the preparation and consideration of the competitive solicitation for generating resources contemplated within the Act (Footprint Initial Comments at 14; Footprint Reply Comments at 6).

Footprint states that, contrary to assertions made by other commenters, it has neither the ability nor the desire to offer into the FCM at below market rates, that it will offer into the Auction at a market rate above the out-of-market threshold defined in the ISO-NE Tariff, and therefore, that its FCA bid will not suppress the clearing price below competitive levels (Footprint Reply Comments at 23-24). Footprint concludes that “if the energy and capacity markets were fully functioning, the Project would be commercially viable at market prices . . . however the ISO-NE capacity market is not functional and not able to support new entry of capital-intensive resources” (id. at 24-25, emphasis in original).

3. Massachusetts Department of Energy Resources

DOER states that it believes that the FCM will send the appropriate price signals to incentivize the necessary generating capacity or demand resources in NEMA/Boston and that the Department should not set a precedent and order distribution companies to enter into long-term contracts for non-renewable generation (DOER Initial Comments at 2-4).

4. New England Power Generators Association

NEPGA states that all generation resources are best developed in response to, and in reliance upon, price signals from an open, competitive marketplace and that such a marketplace will result in the lowest possible costs and will best protect consumers from the construction, operational and price risks associated with these projects (NEPGA Initial Comments at 7). NEPGA states that generation resources that receive a ten- to 20-year out-of-market agreement distort these competitive market price signals, cause higher costs and expose consumers to risk (id.). NEPGA concludes that the potentially adverse market consequences of introducing a new

generation resource on an out-of-market basis into NEMA/Boston argue against doing so, under even the most compelling of circumstances, which it states are absent here (id.).

NEPGA states that in Footprint's response at FERC to ISO-NE's November 6 Informational Filing, Footprint's statements that financing depends on the full capacity of the project qualifying for FCA #7 and that it is not seeking out-of-market treatment strongly suggest to FERC that Footprint's project will be economic should its 674 MW of capacity clear in FCA #7 (which it now has) without a long-term contract (NEPGA Initial Comments at 10; NEPGA Reply Comments at 8-11). NEPGA states that this is contrary to Footprint's position at the Department that the project will not move forward absent a long-term contract (NEPGA Initial Comments at 10; NEPGA Reply Comments at 8-11).

5. Exelon Corporation

Exelon states that the Department should not order long-term contracts because to do so would be adverse to the public interest by saddling consumers with excessive and unnecessary costs and would result in a disruption of the normal functioning of the capacity market in NEMA/Boston (Exelon Initial Comments at 17). Exelon states that even if a long-term contract could be justified, it should be for a small MW amount that could commence by the date of need, and certainly not for the much larger amount Footprint would seek (id. at 19). Exelon cites to the language in Section 40: "[the] RFP shall seek a quantity of electric generating capacity sufficient to meet the shortfall identified by the department in the docket initiated under the preceding paragraph" (id.).

Exelon states that it is reasonable to conclude from Footprint's statements to FERC in its response to ISO-NE's November 6 Informational Filing that either Footprint does not need an

out-of-market contract, despite what it says at the Department, or that it seeks both a long-term out-of-market contract from the Department and revenues from the FCM, despite what it says at FERC (Exelon Reply Comments at 10). Exelon also argues that Section 40 does not allow the Department to approve a contract that is designed to benefit a single entity, such as Footprint, noting that the statute says: “if the department determines that the solicitation process was not competitive, then it shall not approve the contracts” (id.). Exelon argues that any long-term out-of-market contract solicitation process under Section 40 that has as its focus the signing of a contract with Footprint would not be competitive and, therefore, that any contract resulting from such a process could not be approved (id.).

6. NSTAR

NSTAR states that imposing a requirement for long-term generation contracts would distort regional energy markets, could needlessly raise electricity costs for NEMA/Boston customers and would require the resolution of complex questions regarding cost recovery, cost allocation and distribution company remuneration that would necessitate further inquiry and determination by the Department (NSTAR Initial Comments at 10-11; NSTAR Reply Comments at 3, 12-13). NSTAR states that Footprint’s contention that existing wholesale markets do not send proper signals to incent generation in NEMA ignores the refinements to the FCM that are underway and the fact that prices in NEMA/Boston would be expected to rise in FCA #7 (NSTAR Initial Comments at 10-11).

NSTAR states that Footprint’s position at the Department that the FCM is not functioning properly is fundamentally at odds with its contemporaneous position before FERC, where Footprint stated it “will either clear in the market because the NEMA/Boston load zone requires

new generating capacity – thus fulfilling the very purpose of the ISO-NE forward capacity market – or it will fail to clear because additional capacity will not be required in the NEMA/Boston load zone” (NSTAR Reply Comments at 11). NSTAR also states that long-term contracts could require customers to pay hundreds of millions of dollars over a long period for generation that is not needed and that may be more expensive than alternatives (NSTAR Initial Comments at 8; NSTAR Reply Comments at 12). NSTAR states that the incremental cost for NEMA/Boston capacity could be over \$300 million per year, assuming a new combined-cycle unit sets the capacity auction clearing price in NEMA/Boston, and that price is paid by the entire local sourcing capacity requirement of 3,209 MW (NSTAR Initial Comments at 8; NSTAR Reply Comments at 12).

7. National Grid

National Grid states that requiring long-term contracts would cause a material long-term disruption in the wholesale and retail electric markets, with potentially significant impacts on customers, and that the Department should entertain such action only if ISO-NE were to declare a market failure and find that it is unable to implement a process to address the problem on a timely basis (National Grid Initial Comments at 1-2). National Grid states that a long-term contract for natural gas-fired generation would saddle generations of future customers with the risks inherent in such a long-term arrangement and that it would “be the poorest of public policy decisions to require a long-term contract to address a potential two-year shortfall” (*id.* at 3).

National Grid states that there are additional policy reasons why long-term contracting with natural gas generation should be rejected as a means for solving capacity needs, including: (1) contrary to the principles established by the deregulation of electric distribution companies in

1998, a long-term contract would bring the commodity price risk back to customers; and (2) because retail choice has resulted in half of National Grid's distribution load shifting to third-party suppliers, costs for long-term contracts would have to be recovered in distribution rates, raising fairness and cost allocation issues (id. at 9-12). Cost causation principles would dictate that only NEMA/Boston customers pay for the long-term contract costs, but the load zone may be too small to bear the commodity price risk inherent in such contracts (id.).

National Grid states that it supports the proposal for new quick-start natural gas-fired generation to be built on the Salem Harbor site, but that Footprint should move forward under the market rules and not as a result of an artificial intervention that places long-term financial risk on distribution customers in the Commonwealth and disrupts the wholesale and retail markets (National Grid Reply Comments at 2). National Grid states that if the market is unable to finance new generation, the right answer is for stakeholders to ask FERC to address the problem in an expeditious manner (id. at 4).

National Grid states that Footprint's response to ISO-NE's November 6 Informational Filing leaves the impression that Footprint would be able to finance its project if it were permitted to qualify for FCA #7 at its full value of 674 MW and cleared the market (id.). National Grid notes that Footprint stated in its FERC pleading, "[i]n order to secure necessary financing and to be a commercially viable project, it is critical that the Facility qualify to participate in the capacity market" (id. at 4-5, citing FERC Docket ER13-468-000, Request for Waiver of Footprint LLC at 8).

National Grid argues that any bidding process ordered by the Department would fail to meet the competitive bid requirement of Section 40 as Footprint would be the only generating

unit capable of bidding (id. at 5-6). National Grid also states that the only explanation for Footprint's regulatory strategy seems to be that Footprint intends to combine its FCM award with a request for more capacity revenues through a long-term contract (id. at 5). National Grid states that if Footprint is allowed to employ this revenue strategy there will be no practical way to assure just and reasonable rates (id. at 6). National Grid states that a principal reason why the FCM rules cap the FCM award at \$15/kW-month (an amount that FERC stated was higher than the actual cost of an efficient resource to enter the market) is to assure that a new entrant does not generate unreasonable profits, while allowing the pricing to remain high enough to provide an incentive to ensure entry (id.).

8. Conservation Law Foundation

CLF states that ordering distribution companies to enter into a long-term contract for a ten- to 20-year period to alleviate the potential that there may be a one- to two-year need for additional resources that may be met through other means would saddle ratepayers with unnecessary and unreasonable costs (CLF Initial Comments at 1-2, 5).

9. New Hampshire Transmission, LLC

NHT stresses the importance of adherence to competitive principles established under New England's organized electric markets (NHT Initial Comments at 3). NHT states that departure from the established market principles will create uncertainty for market participants and chill necessary future investments in such infrastructure (id.).

10. Energy Management, Inc.

EMI states that the Department should reject the suggestion by some commenters that long-term power contracts are incompatible with post-restructuring power markets or economic

theory, or that properly functioning power markets must reflect only short-term pricing, with no reflection of long-term pricing (EMI Reply Comments at 2). EMI states that the Department should expect that investment in new generation capacity will require long-term contracts (id.).

11. Historic Derby Street Neighborhood Association and The Point Neighborhood Association

Linda Hurley, Chair of the Historic Derby Street Neighborhood Association and representative of The Point Neighborhood Association, states that residents of these two neighborhoods, which abut the Salem Harbor site where the Footprint power plant will be built, do not believe that “there is strong support for the construction of a gas-fired facility and a long-term rate contract to insure operation of said plant” (March 5, 2013 letter from Linda Hurley at 1). They question whether limiting market competition for the benefit of the Footprint plant, by changing the existing structure and rules, is warranted (id. at 2). Linda Hurley states that “a long-term contract will increase the cost of electricity for ratepayers for decades to come” and “will also continue to produce the type of air pollution that exacerbates our city’s high incidence of asthma” (id.).

12. Clean Water Action

CWA urges the Department to “rule firmly against the unwarranted provision of long-term, out-of-market contracts” (March 8, 2013 letter from CWA at 4). In particular, CWA urges the Department “to rule against the provision of such contracts for the financing of new, fossil fuel generation facilities that may operate in defiance of state mandates on climate and environmental justice” (id.).

13. Salem Alliance for the Environment

SAFE states that while it supports the proposed Footprint project it opposes the approval of any long-term power purchase agreement (March 12, 2013 letter from SAFE at 1). SAFE states that any power purchase agreement would provide an unfair advantage to Footprint and that no special accommodations should be made, especially when there is a set of projects already underway that address load pocket issues in NEMA/Boston (id. at 1, 3). SAFE states that the executives of Footprint told it early last year that while a long-term power agreement “would be helpful, it was not essential for the success of their business plan” (id. at 2).

B. Analysis and Findings

1. Introduction

Section 40 of the Act states that if the Department determines that additional electric generating capacity is needed in NEMA/Boston within the next ten years:

under this section, the department may order distribution companies as defined in section 1 of chapter 164 of the General Laws serving such load zone to solicit competitive proposals from developers of electricity generation and provided reasonable proposals have been received, enter into cost-effective long-term contracts to deliver such resources to [NEMA/Boston].

St. 2012, c. 209, § 40.

As indicated above, we have determined that, absent Footprint, there is a need for additional capacity in NEMA/Boston within the next ten years. Therefore, Section 40 authorizes the Department to proceed to the next step and to consider the need for long-term contracts in order to provide the financing necessary to construct generating resources in NEMA/Boston. Id.

The use of the word “may” in the statute makes it clear that the Department has the discretion under Section 40 whether to order distribution companies to solicit competitive

proposals from developers of electricity generation. We must decide whether the current circumstances cause us to exercise that authority. For the reasons explained below, we decline to do so.

2. It Would Be Premature to Resort to Long-Term Contracts

The Massachusetts Electric Restructuring Act (“Restructuring Act”), St. 1997, c. 164, § 1 et. seq., has been in effect for 15 years. The legislation restructured the electric industry in the state by providing incentives to investor-owned electric distribution companies to divest their generating assets and by adopting a competitive market structure for the generation and purchase of electricity. This restructuring shifted the risks of generation development from consumers to generators, who are better positioned to manage those risks. Restructuring represents a clear policy choice that electric generation resources are best developed in response to price signals from a competitive marketplace. The theory is that consumers thereby see the lowest possible prices for electricity and remain insulated from construction, operational and price risks that were inherent in commodity rate regulation.

For years, ISO-NE, the Commonwealth and other stakeholders in New England have worked to design and implement an effective capacity market as part of the wholesale electricity market administered by ISO-NE. Since 2007, the market mechanism has been the FCM. Over the years, there have been many adjustments proposed, debated and sometimes implemented to make the FCM more effective, because the Commonwealth and most stakeholders agree that, in general, generation services, including installed capacity, are best developed in response to price signals from the region-wide wholesale electricity market administered by ISO-NE.

However, there are concerns as to whether the FCM price signals are adequate to actually result in new major electric generation investment needed for reliability. For various reasons, the region has been in a state of excess generation supply since the FCM was first implemented.

As described above, viewed in the Section 40 perspective, the results of FCA #7 have caused us to conclude that there is now a need for additional capacity in NEMA/Boston. Notwithstanding this conclusion, the FCA #7 results are significant for a number of reasons with regard to the “anticipated function of the capacity market in New England.” St. 2012, c. 209, §40. First, until shortly before the Auction it was not clear that Footprint would be able to qualify at its full capacity. Second, FCA #7 was the first opportunity for the FCM mechanism to send a significant price signal to an import-constrained capacity zone, and the market signal in fact did attract a significant new resource, which cleared in the Auction. Third, not only do the FCA #7 results show that Footprint cleared at essentially the FCM price cap of \$15/kW-month for new resources, but ISO-NE also reports that Footprint elected to maintain its Capacity Supply Obligation and Capacity Clearing Price for a total of five years. This five-year price provision was implemented by FERC with the expectation that the five-year commitment is sufficient to enable projects to be financed. ISO New England, Inc. et al., 131 FERC ¶ 61,065 at P 140 (2010).

In light of these factors, the Department agrees with the vast majority of the commenters that it is premature to order distribution companies to solicit long-term contracts for electric generating capacity for generating resources in NEMA/Boston under Section 40. Installed capacity is a product bought and sold in the regional wholesale electricity market. The Restructuring Act contemplated that electricity-related products would typically be purchased

from the competitive market. Requiring distribution companies to enter into long-term contracts with generators under Section 40 would be proper only if there were convincing evidence that the competitive market had failed and that there were imminent reliability concerns. The evidence indicates that the FCA #7 process has worked as designed, notwithstanding that Footprint is correct that the FCM has suffered problems that ISO-NE and stakeholders continue to address.

We are now only six weeks past the auction. Although we assume for the purposes of finding need under Section 40 that Footprint will not be built, it would be premature for the Department to conclude that Footprint will in fact not be built absent a long-term contract. Indeed, a decision under Section 40 to order local distribution companies to seek long-term contracts with generators now would seem to ensure that the FCM market process will not be sufficient because, among other reasons, the financial community would likely wait for the Department's long-term contract proceeding to conclude before making its investment decisions.

Furthermore, the current FCM market mechanism is part of ISO-NE's FERC-regulated wholesale market tariff. If the Auction results prove insufficient to attract financing for a generating resource that has cleared in a FCA, then ISO-NE and stakeholders should seek changes to the FCM at FERC to remedy any market failure. FERC has the authority to change the existing FCM rules and can act on an expedited basis. Given the clear Commonwealth policy to favor market solutions, we find it premature to decide today that ISO-NE is not capable of obtaining FERC approval and implementing any necessary market rule changes in a timely enough manner to address a possible shortfall in capacity in NEMA/Boston.

The Department believes that the wholesale market should be given the opportunity to work before taking the extraordinary step of ordering local distribution companies to enter into long-term contracts under Section 40.

3. ISO-NE Will Ensure that NEMA/Boston Receives Reliable Electric Service

Even if the FCA process does not satisfy the need in NEMA/Boston, ISO-NE has other tools to assure the reliable operation of the electric grid in the area.

Although it is premature to assume that the GBTP will be completed by 2018, transmission solutions will likely be available within the next ten years if the wholesale market does not provide sufficient generation or other capacity resources in that period. We believe that ISO-NE is appropriately seeking both capacity and transmission solutions in a balanced way.

Further, we agree with many commenters that there are measures that ISO-NE can take to ensure the reliable operation of the grid, especially given the small size of the potential near-term deficiency. First, if sufficient capacity is not procured in the FCA, there are annual and monthly reconfiguration auctions, with the prices able to clear at up to two times the cost of new entry (ISO-NE Tariff, Section III.13.4 and 13.4.2). Second, ISO-NE can reject de-list bids and pay resources under Reliability Must Run contracts. Third, ISO-NE can employ the Locational Forward Reserve market to attract quick-start resources when and where needed. Fourth, ISO-NE can issue a Gap RFP for any shortfall, as it did in Connecticut in 2003. Finally, ISO-NE can employ operational tools to assure reliability such as load transfers, line switching, use of daily or monthly transmission ratings, and access to additional generation MW above Capacity Supply Obligations. ISO-NE clearly has the ability to maintain the reliable operation of the electricity grid in NEMA/Boston in 2016 and beyond.

VII. CONCLUSION

The Department finds that, absent Footprint, there is a need for additional capacity resources in NEMA/Boston in the next ten years. However, the Department is concerned that ordering local distribution companies to enter into long-term contracts under Section 40 would unnecessarily and unduly disrupt the wholesale marketplace and shift the risks associated with generation development from developers, who are best positioned to manage such risks, back to consumers. The Department should only take the extraordinary step of ordering such contracts with definitive proof of a market failure and imminent reliability concerns, which does not exist at this time.

VIII. ORDER

Accordingly, the Department finds that within the meaning of Section 40 there is a need for new capacity in the NEMA/Boston capacity zone, but will not require distribution companies to enter into long-term contracts to obtain capacity resources for the reasons set forth above.

By Order of the Department,

/s/
Ann G. Berwick, Chair

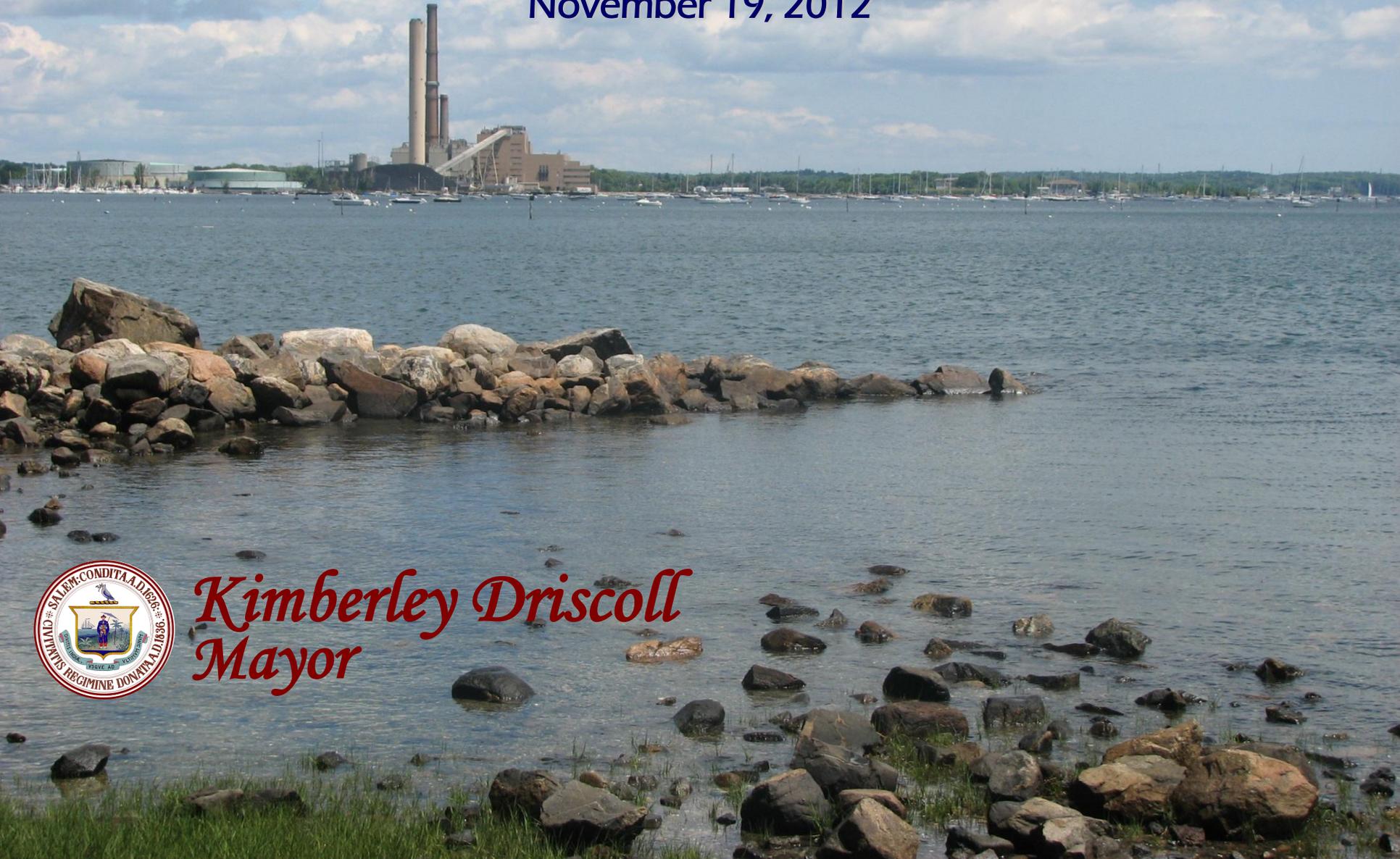
/s/
Jollette A. Westbrook, Commissioner

/s/
David W. Cash, Commissioner

APPENDIX D: TASK FORCE PRESENTATIONS

Salem Power Plant Revitalization Task Force - plans for redevelopment -

November 19, 2012



Kimberley Driscoll
Mayor

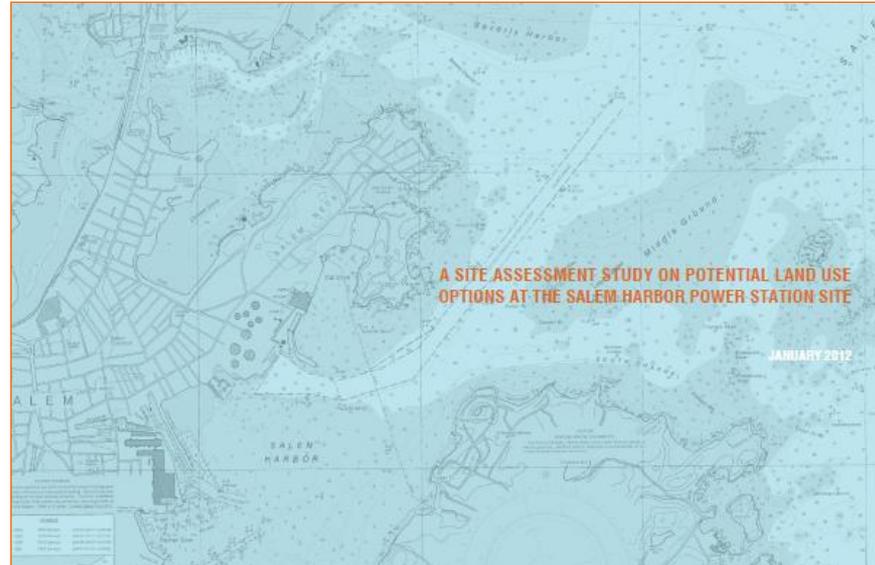
Plans for Redevelopment - aerial photo of existing site -



Plans for Redevelopment – site description –



Plans for Redevelopment – overview of power plant study -

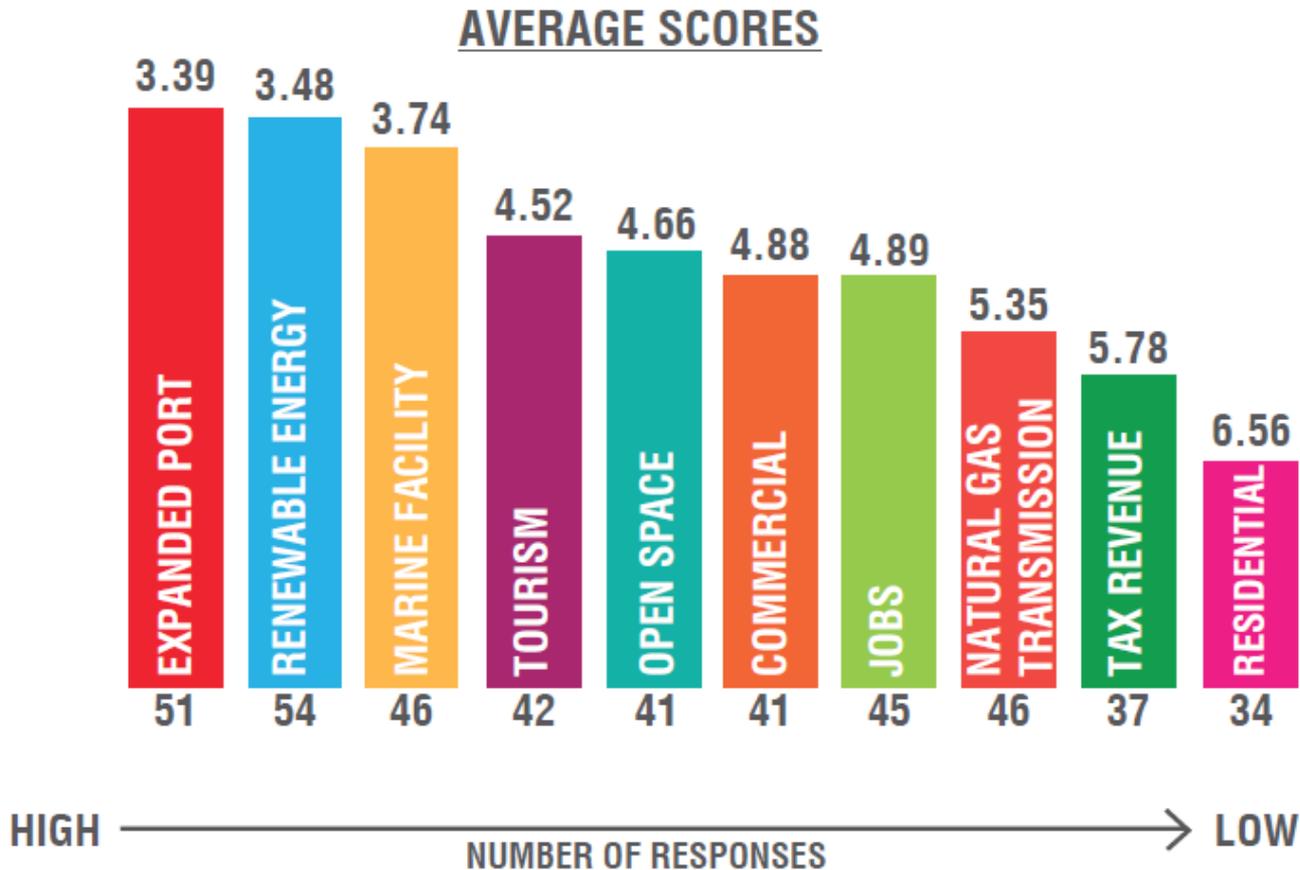


- Consultants:** Jacobs Engineering, Sasaki Assoc., LaCapra Assoc., and RCLCo
- Funding:** Massachusetts Clean Energy Center
- Title of Study:** "A Site Assessment Study on Potential Land Use Options at the Salem Harbor Power Station Site"
- Purpose:** To understand what potential economic development options exist and to have the ability to accurately plan our finances
- Completed:** January 2012

Plans for Redevelopment – community input –

COMMUNITY RESPONSE TO QUESTION #2

“Rank the different uses you’d like to see on site”



Plans for Redevelopment – development goals -

- 1. Comply with regulatory environment (Ch. 91 and DPA)**
- 2. Replace as much tax revenue as possible**
- 3. Promote public waterfront access**
- 4. Propose uses for which there is market demand**
- 5. Streamline phasing and implementation**

Plans for Redevelopment – master plan diagram –



The Proposed Master Plan Diagram

Plans for Redevelopment – illustrative plan –



Plans for Redevelopment – public access –



The Waterfront Lawn



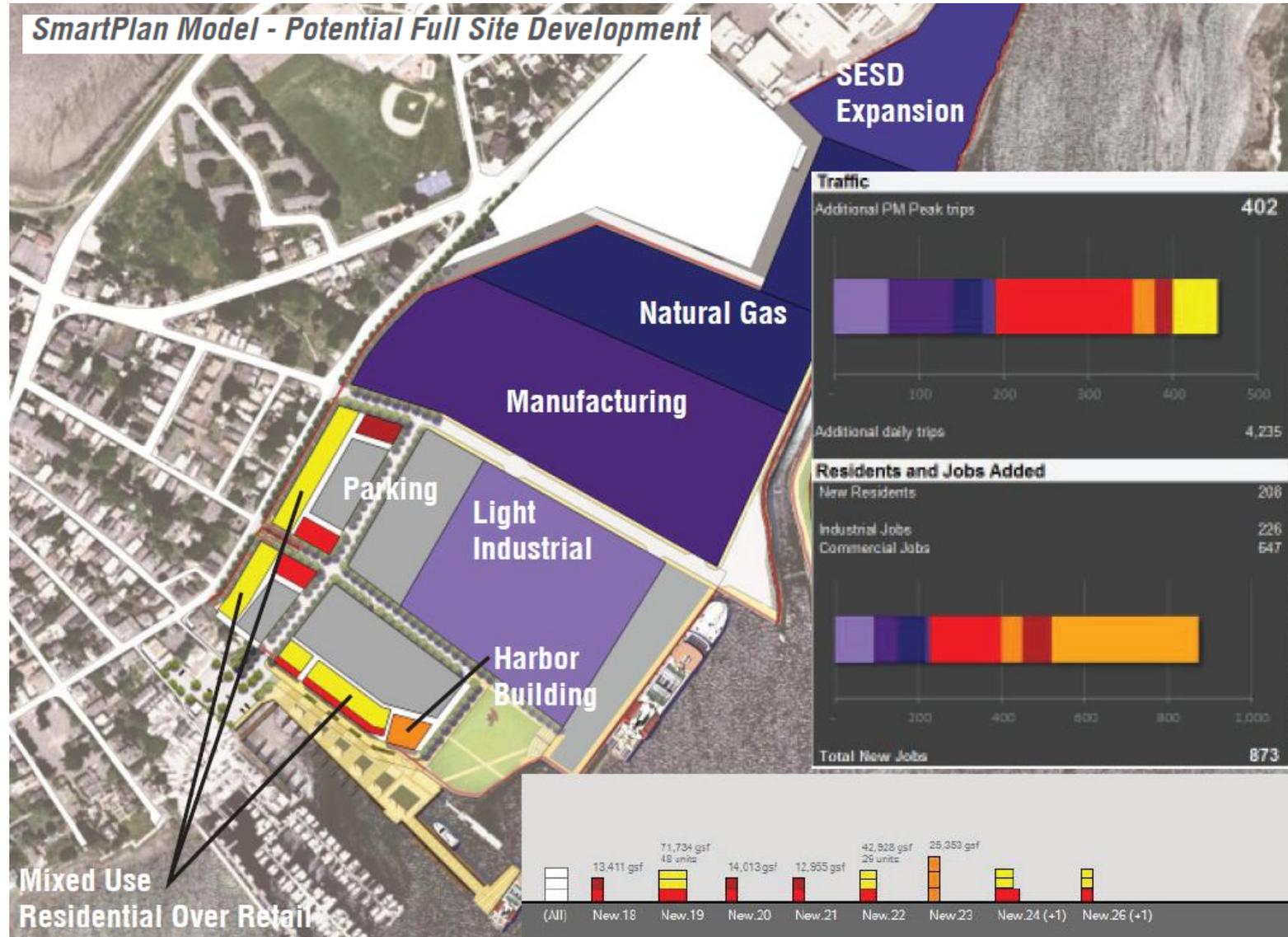
Gantry State Park, Queens, NY;



Charleston Maritime Center

Plans for Redevelopment

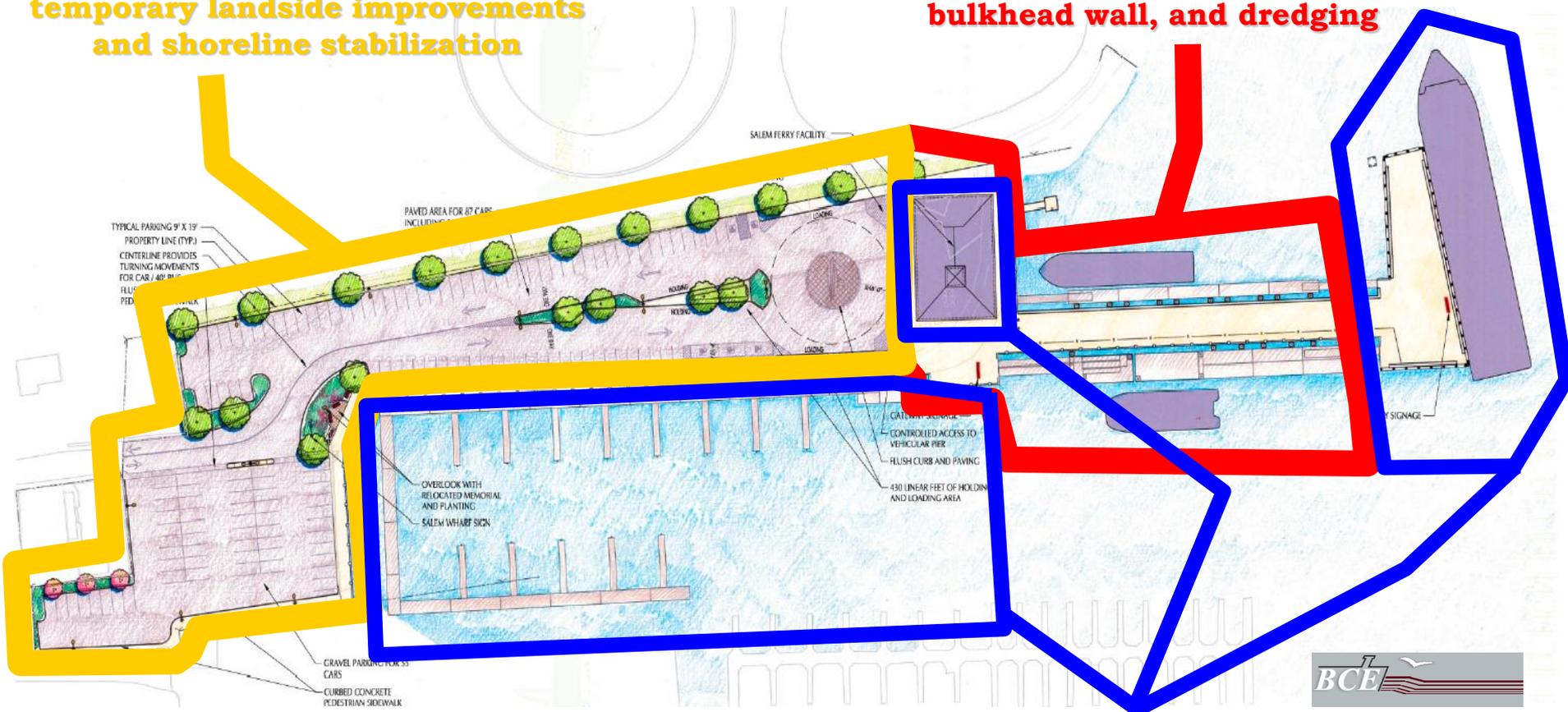
– examples of mixed use development –



Plans for Redevelopment – proposed salem wharf -

Phase I
temporary landside improvements
and shoreline stabilization

Phase II
first 250ft of wharf construction
bulkhead wall, and dredging



Future Phases
embayment dredging, construction of
terminal building, and T at the end of wharf

Plans for Redevelopment

– phase II wharf construction underway –



Plans for Redevelopment – Footprint's deep water berth –

Secure accessway to deep water berth
\$155,000

Dock and fender pile renovations
\$428,000

**Salem
Wharf
Site**

**Deep Water Berth
Turning Basin**
-32ft MLW

**can accommodate a cruise
ship up to 800ft in length**



Plans for Redevelopment – an exciting vision –



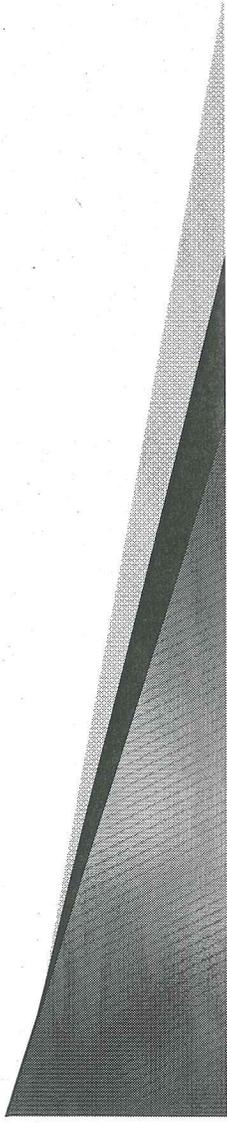
View of Blaney Wharf today.



View of Blaney Wharf after the site is redeveloped.

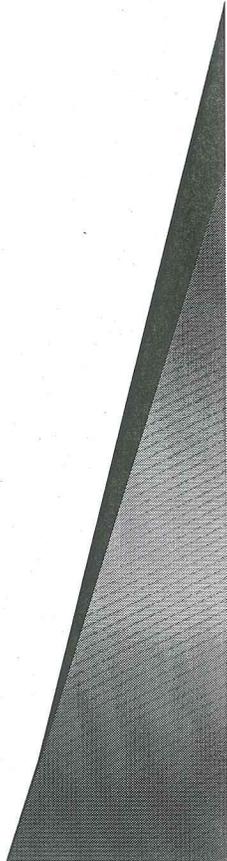
**MassDEP Regulatory
Programs Impacting Salem
Power Plant Remediation
and Redevelopment**

November 19, 2012



Chapter 91

- ▶ Protects and Promotes Public Use of Tidelands and Waterways
- ▶ Serves to Protect Traditional Maritime Industries
- ▶ Ensure that activities within tidelands be water-dependent.
- ▶ About 2/3 (40 acres) of the Salem Power Plant site consists of filled tidelands.
- ▶ Chapter 91 requirements will have significant impact on future redevelopment, in conjunction with:
 - Designated Port Area status
 - Salem Municipal Harbor Plan/ DPA Master Plan





Chapter 91 Line

South Essex
Sewage District
Treatment Plant

Blaney Street
Ferry Docks

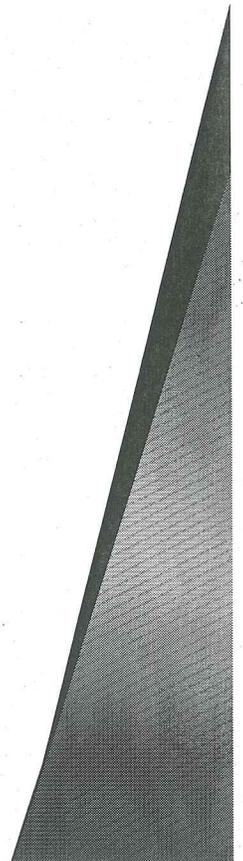
Howthorne
Cove Marina

Derby Wharf



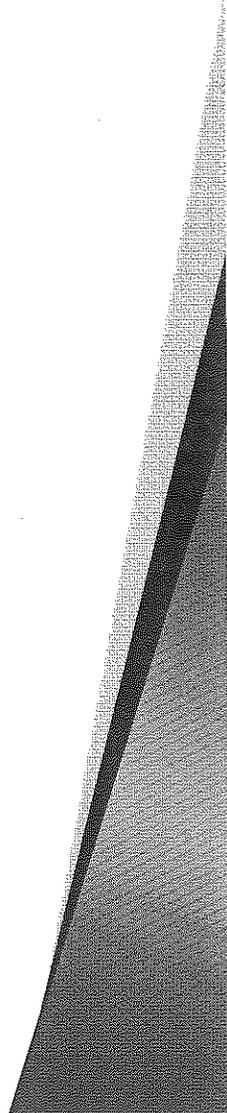
Designated Port Area

- ▶ Site is located within the Salem Harbor Designated Port Area
- ▶ DPAs—port areas prioritized for water dependent industrial.
- ▶ Under Chapter 91, only the following uses allowed:
 - water dependent industrial uses
 - Marine industrial parks
 - Supporting DPA uses
 - Accessory Uses
 - Temporary uses
 - Residential, hotels, new office building, recreational marinas prohibited in DPAs.



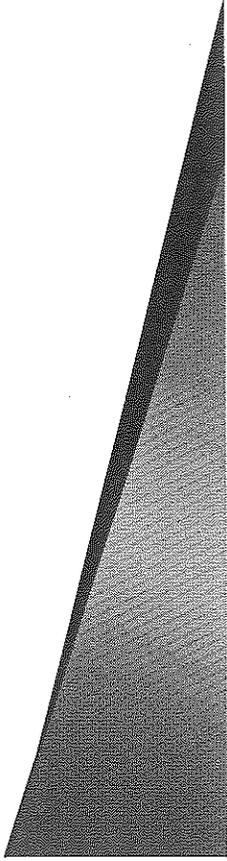
Municipal Harbor Plan/DPA Master Plan

- ▶ Plans, approved by EEA Secretary, can provide flexibility or greater requirements than standards 91 regulations
- ▶ Salem Harbor Plan approved in 2008 for 10 year period
- ▶ DPA Master Plan states restricts uses to “water-dependent industry, marine industrial parks, and temporary uses.”
- ▶ Supporting uses, which can normally take up to 25% of DPA, are excluded.



Remediation of the Salem Power Plant Site

- ▶ MassDEP's 21E Program/MCP regulates release to the environment of oil or hazardous wastes.
- ▶ At Salem, over 22 notifications triggering MCP
- ▶ All matters addressed and "closed out."
- ▶ One cleanup involved "Activity and Use Limitation"
 - Covers 7 acres, former wastewater treatment basins
 - Allows normal industrial operations, excavation above 15 feet.
 - Restricts use as residence, school, nursery, daycare, non industrial use.



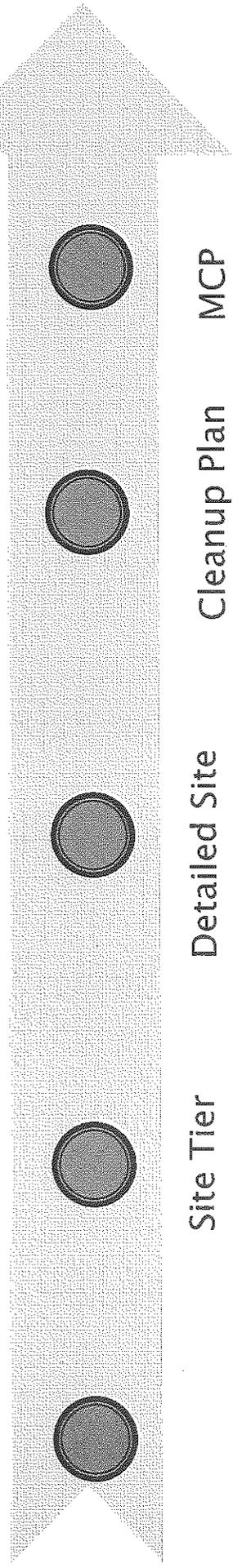
Responsibility/Liability under 21E

- ▶ Past owners and operators potentially liable for costs of cleanup of hazardous waste sites
 - Prior owner/operators of oil sites are exempt
- ▶ Exemption/Endpoint for “Eligible Persons”
 - Includes Owner/Operator who did not own site at time of contamination and did not cause or contribute to release.
 - Must achieve permanent clean-up or remedy operation status.
 - Liability protection extends to all subsequent property owners (as long as they maintain remedy).
 - Salem, over 22 notifications triggering MCP

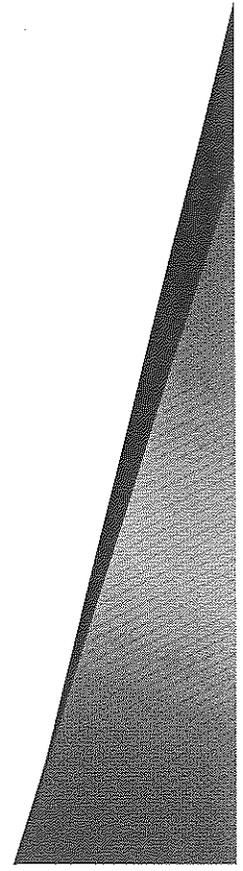
MCP Cleanup Timeline

Jan. 2013 Jan. 2015 Jan. 2016 Jan 2018

Year 1 Year 3 Year 4 Year 6

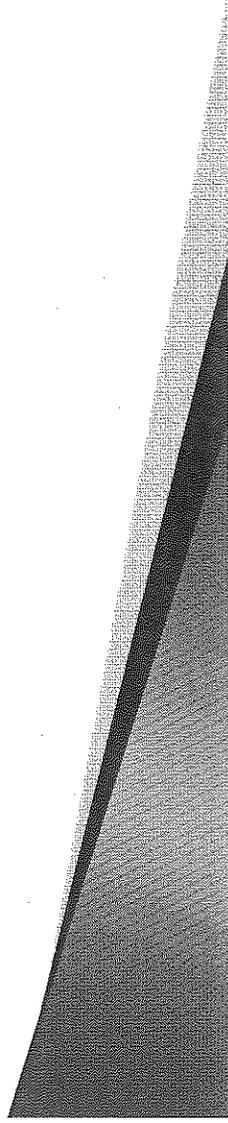


Spill/Site Reported	Site Tier Classified	Detailed Site Assessment	Cleanup Plan implemented	MCP Requirements Met
Phase I Assessment	Cleanup Options Evaluated Selected			



Cleanup Levels & Process Endpoints

- ▶ Cleanup level based on site use
 - Current / Foreseeable
 - Residential / Industrial
- ▶ Protective of human health & environment
- ▶ Allows for land use/institutional controls
 - Activity & Use Limitations
 - Deed restrictions



Energy Facilities Siting Board

Plant Revitalization Task Force
November 19, 2012

Energy Facilities Siting Board: Purpose and Structure

- Statutory purpose: Review proposed energy facilities so as to provide a reliable energy supply with minimum impact on environment at the lowest possible cost. G.L. c. 164, §69H
- EFSB has siting jurisdiction over power plants, transmission lines, intrastate gas pipelines, and large natural gas & oil storage facilities
- EFSB is a nine-member board chaired by the Secretary of EEA; also includes DPU (2), EOHED, DEP, DOER, and three public members (with labor, environmental, and energy expertise)
 - Statutory authority specified in G.L. c. 164 §§69G - 69S
 - Regulations specified in 980 CMR 1.00-12.00
 - EFSB is administratively part of the Dept. of Public Utilities (DPU)
- DPU Siting Division is staff to the Siting Board and the DPU Commission. Adjudicates cases; prepares decisions for review

Energy Facilities Siting Board: Generation Facility Reviews

- A “**Generation facility**” is defined as “ ... any generating unit designed for or capable of operating at a gross capacity of 100 megawatts or more, including associated buildings, ancillary structures, transmission and pipeline interconnections that are not otherwise facilities, and fuel storage facilities.”
- Prior to electric restructuring, Board reviewed the need for, cost of, alternative sites and environmental impacts of electric generating facilities. Board review is now focused on environmental impacts
- To approve a proposal, the Board must find that that environmental impacts and mitigation costs are minimized. G.L. c. 164, §69J ¼
- One year timeline is specified in statute for EFSB cases, but there are no penalties or “constructive approval” if not met.
- Possible outcomes: approval (with conditions); denial, or withdrawn request

Energy Facilities Siting Board: Standards of Review

- Decisions based on record evidence, statutory requirements, and case precedents
- Decisions incorporate existing regulatory requirements and guidelines of federal, state, and local authorities; the Board can also impose more stringent requirements to achieve necessary impact mitigation
- Siting decisions also apply “policies of the Commonwealth” specifically enacted to guide the EFSB:
 - Environmental justice policy of EEA
 - Cumulative health impact considerations
 - Climate change policies

Footprint Power Salem Harbor: Overview of Petition to EFSB

- Petition filed with EFSB on August 3, 2012; seeking approval to construct a 692 MW natural gas-fired, quick-start combined-cycle generating facility pursuant to G.L. c. 164, §69J ¼
- Footprint acquired entire 65-acre site where existing Salem Harbor Units are located
- Beginning June 1, 2014, Footprint proposes to demolish and remove all above-ground features of existing units; Footprint states that it will remediate the entire 65-acre site
- New facility including all ancillary structures will occupy 16 acres of site; National Grid Substation on site

EFSB Footprint Proceeding: Current Status

- Pre-adjudicatory phase is complete (Public notice, public comment hearing in Salem, site visit, opportunity to become intervenor/party in the adjudicatory phase)
- EFSB process is now in the adjudicatory phase
- First discovery responses due later this week, then more written interrogatories from Staff and other Parties
- Evidentiary hearings later; EFSB decision must be based on record evidence
- Today's presentation is based on the Petition & site visit; issues based on discovery to date and prior experience with generation cases

EFSB Footprint Proceeding: Procedural Considerations

- Parties are free to raise new issues or argue whether information being sought is relevant, in need of confidential treatment, or within the scope of the proceeding
- Board must be open-minded and impartial throughout the proceeding; it decides issues as they are raised and in the written decision
- At this time, Staff (and Board) cannot opine on merits of Petition or state their views about the record

EFSB Footprint Proceeding: Intervenors

- City of Salem
- Salem State University
- Historic Derby Street Neighborhood Assn./Point Neighborhood Assn.
- North Shore Community Development Coalition
- IBEW Local 326
- Salem Alliance for the Environment (SAFE)
- Conservation Law Foundation (CLF)
- National Grid

EFSB Footprint Proceeding: Description of Site Use/Remediation

- Footprint states that remaining 49-acres are available for development and it is in discussions with City of Salem about potential future uses; suggests that final development decisions may not be made until after EFSB decision
- Site characterization process has begun; expected to be complete within 2 months
- Until that process is complete, the extent of site contamination and potential clean-up approach and costs is unclear

EFSB Footprint Proceeding: Remediation Considerations

- Likely that remediation of the entire site will be addressed in the EFSB proceeding, although final development plans still evolving
- As part of conditions, the Siting Board may define the degree or extent of any necessary cleanup, consistent with -- or perhaps even exceeding -- established DEP requirements.
- Future use of the site and remediation standards are closely linked
- Possible that other 49 acres could offer opportunities for additional impact mitigation beyond remediation. For example, moving the location of certain buildings or pieces of equipment, or providing additional screening within the 65-acre site, could potentially reduce noise or visual impacts to the surrounding community.

EFSB Footprint Proceeding: Major Areas of Review (so far)

- Noise
- Visual impacts
- Air emissions
- Water use, wetlands and Chapter 91
- Solid and hazardous waste; demolition & site remediation
- Environmental justice
- Cumulative health impacts
- Zoning and local approvals
- Electric and magnetic field (EMF) impacts
- Construction and traffic impacts
- Safety
- Community impact mitigation
- Other

EFSB Footprint Proceeding: Next Steps

- Continuing discovery by the EFSB staff and intervenors
- Procedural schedule calls for evidentiary hearings last week of February
- EFSB will be attending Plant Revitalization Task Force meetings to update participants
- Findings of the Task Force expected to precede issuance of EFSB decision in late Summer 2013

Questions?

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Footprint Salem Harbor
Development LP
EFSB 12-2
Information Request CLF Set 2
Attachment CLF-FP-31-6

Salem Harbor Task Force Presentation January 2013



Footprint Progress Since May 2012 Meeting

Item	Date
Signed Transaction with Dominion	June 26, 2012
FERC Approval of Footprint Transaction	July 27, 2012
Closed on Acquisition of Salem Harbor from Dominion	August 3, 2012
MEPA Environmental Notification Filing	August 3, 2012
EFSB Permit Filing	August 3, 2012
Site Characterization Begins	August 8, 2012
MEPA Scoping Meeting/Site Visit	August 21, 2012
EFSB Public Hearing	September 19, 2012
Draft Environmental Impact Report Filed	December 17, 2012
Comprehensive Air Plan Approval Filed	December 21, 2012
Site Characterization Complete	January 2013



State Action Since May 2012 Meeting

Item	Date
General Court Passes Energy Legislation	July 30, 2012
Governor Patrick Signs Energy Legislation	August 3, 2012
Task Force Plant Tour and First Meeting	September 27, 2012
DPU Notice of Investigation	October 12, 2012
DPU Technical Conference	November 8, 2012
Initial Comments Filed in DPU Proceeding	November 27, 2012
Reply Comments Filed in DPU Proceeding	December 5, 2012



Massachusetts Contingency Plan Activities

- Site characterization completed with 78 borings, 40 test pits, and 25 monitoring wells across the site
- No reportable concentrations detected in groundwater
- No asbestos or PCBs identified at reportable levels
- Discrete contamination issues were detected, particularly under a portion of the coal pile at location of former oil ash pit
- Footprint committed to resolving issues in conformance with MCP and consistent with reuse expectations



Demolition Activities

- Footprint is committed to demolish and abate all aboveground structures that are not intended for reuse
- Bid process is underway for demolition, which will take place in phases:
 - Primary activities focused on site preparation for the new facility – including removal of many of the oil tanks
 - Remainder of demolition after shut down of the existing facility
- Two structures currently under consideration for reuse in light of mid-century architectural interest:
 - Renovated Community Relations Building at entrance of site
 - Structural steel of existing turbine hall as skeleton of a new commercial/industrial building



Site Reuse

- Wharf
 - Footprint is working with City of Salem to facilitate use of Footprint's wharf to bring cruise ships to City as early as this summer
 - Footprint supports Mayor Driscoll's vision of a port authority with jurisdiction over the wharf to encourage long-term investment for facilities that support cruise ships and other maritime traffic
 - Exploring possibility of using dredged material from the City's Blaney Street improvement project as fill at Plant site
- Other Site Re-use
 - Immediate plans to use non-power plant portion of the site as lay-down space for the power plant project
 - Footprint will continue to work on reuse of remainder of site in accordance with Salem's re-use study as space on the site becomes available



Other Task Force Issues

- Both the new Power Generating Facility and the other Reuse Options may require variances from or modifications to the DPA and Chapter 91 requirements
- Many of the best and highest reuse options identified in the Salem Reuse Study – particularly for the southern portion of the site – involve commercial and industrial uses that may not fit under either or both of Chapter 91 and the DPA
- Footprint seeks Task Force support of modifications/variances necessary to optimize reuse of site.

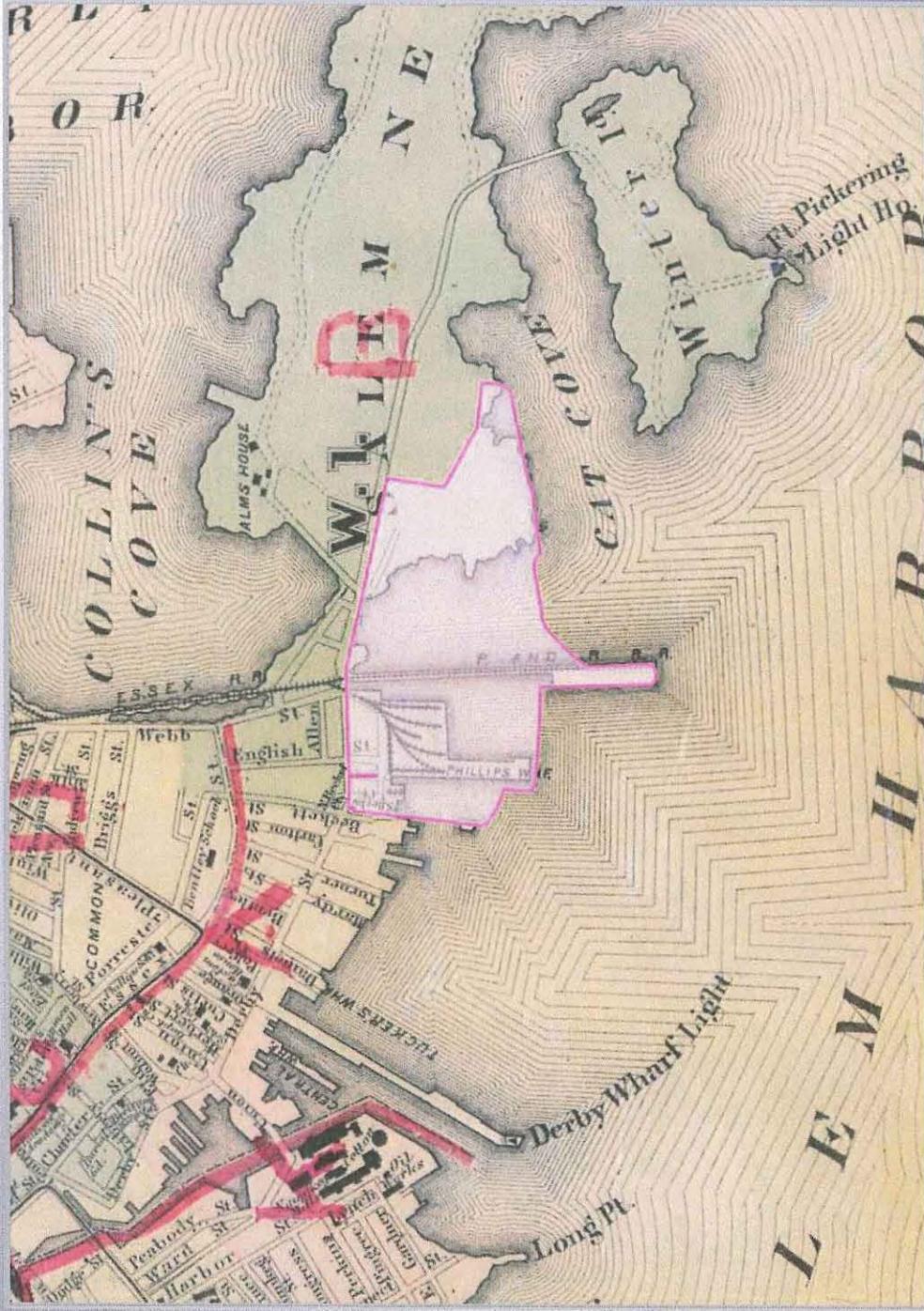


Funding for Demolition & MCP Activities

Footprint does not require – and is not seeking – assistance from the Task Force in funding site demolition and MCP activities



1873 Historic Map

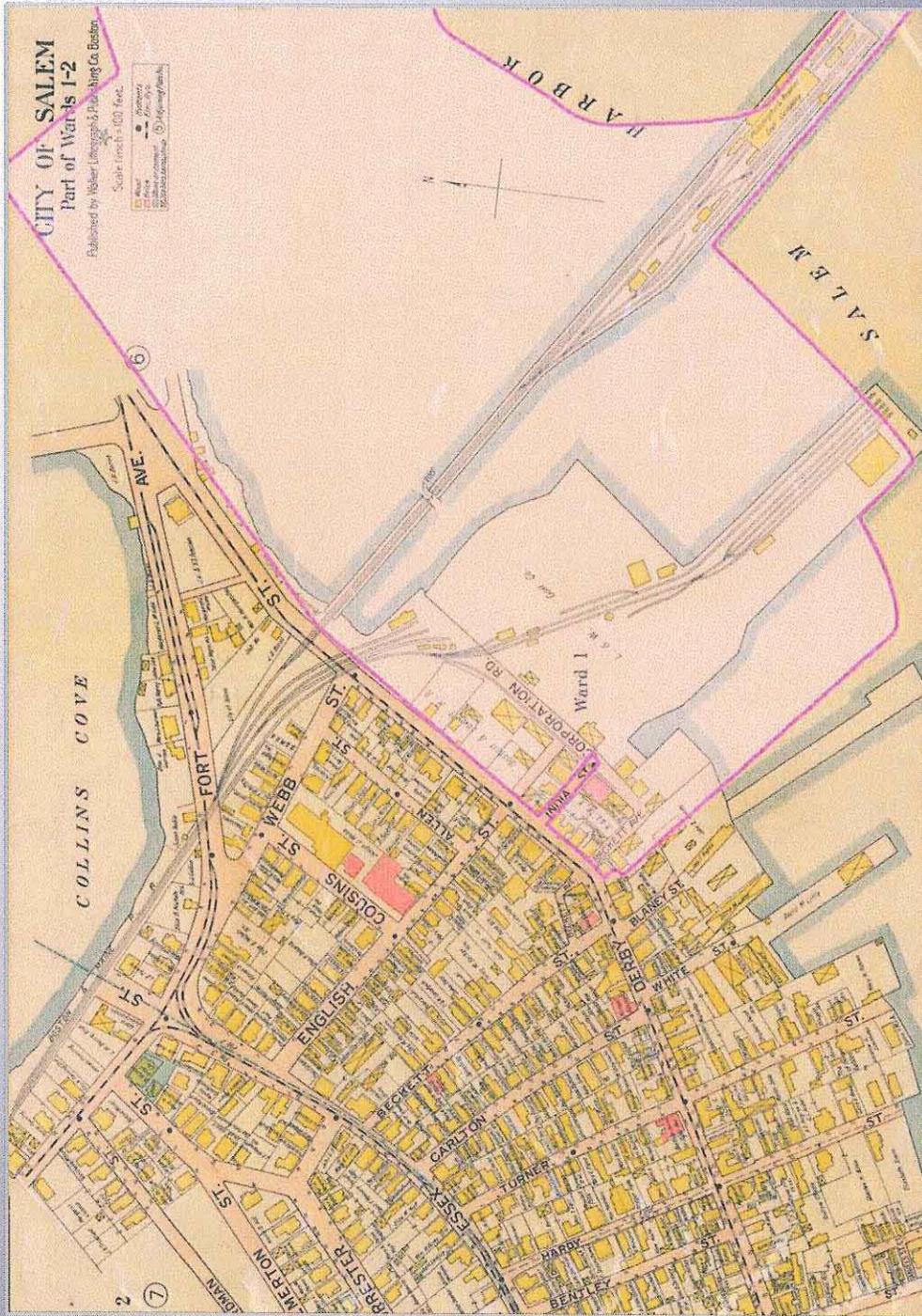


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1911 Historic Map



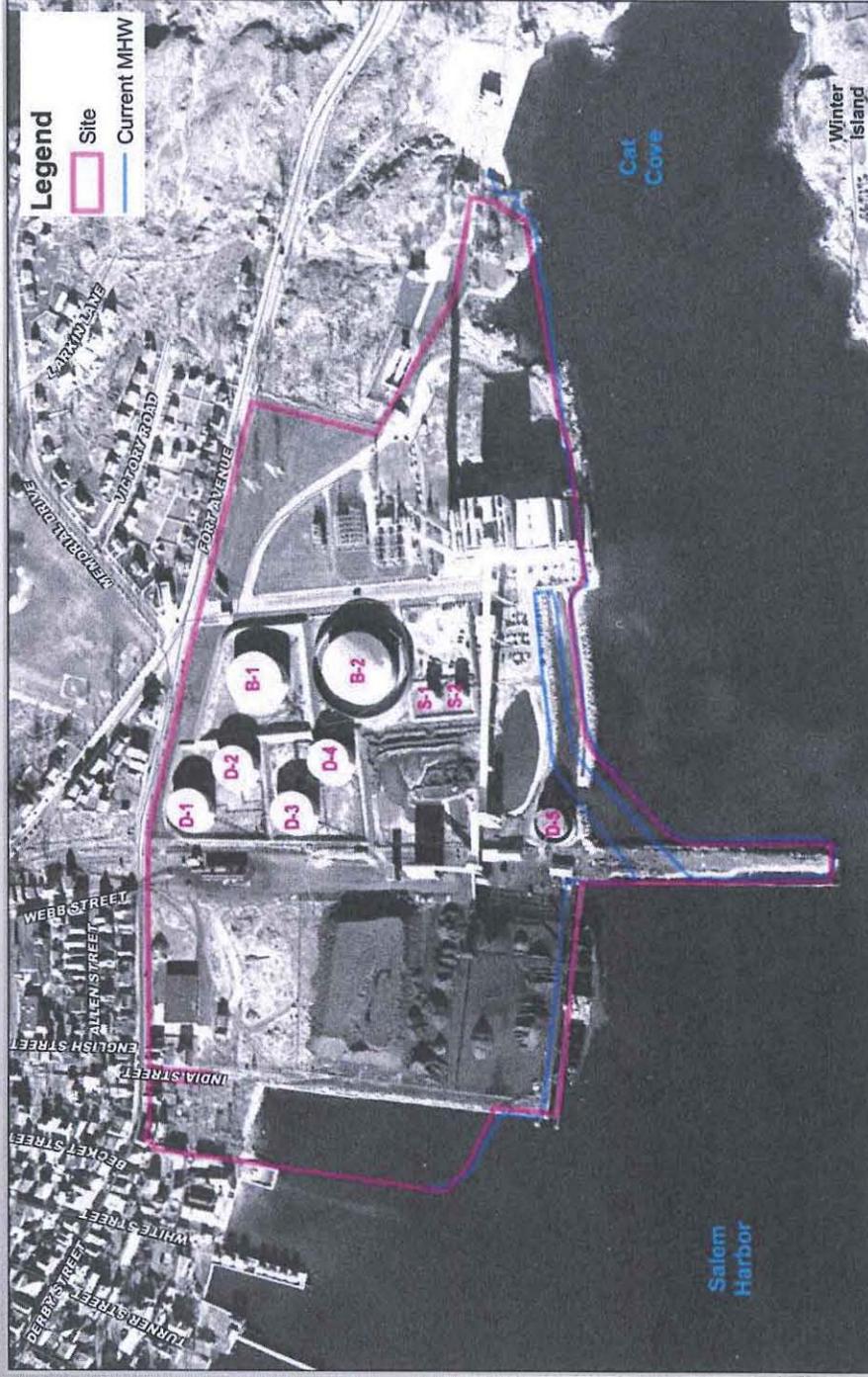
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1939 Aerial



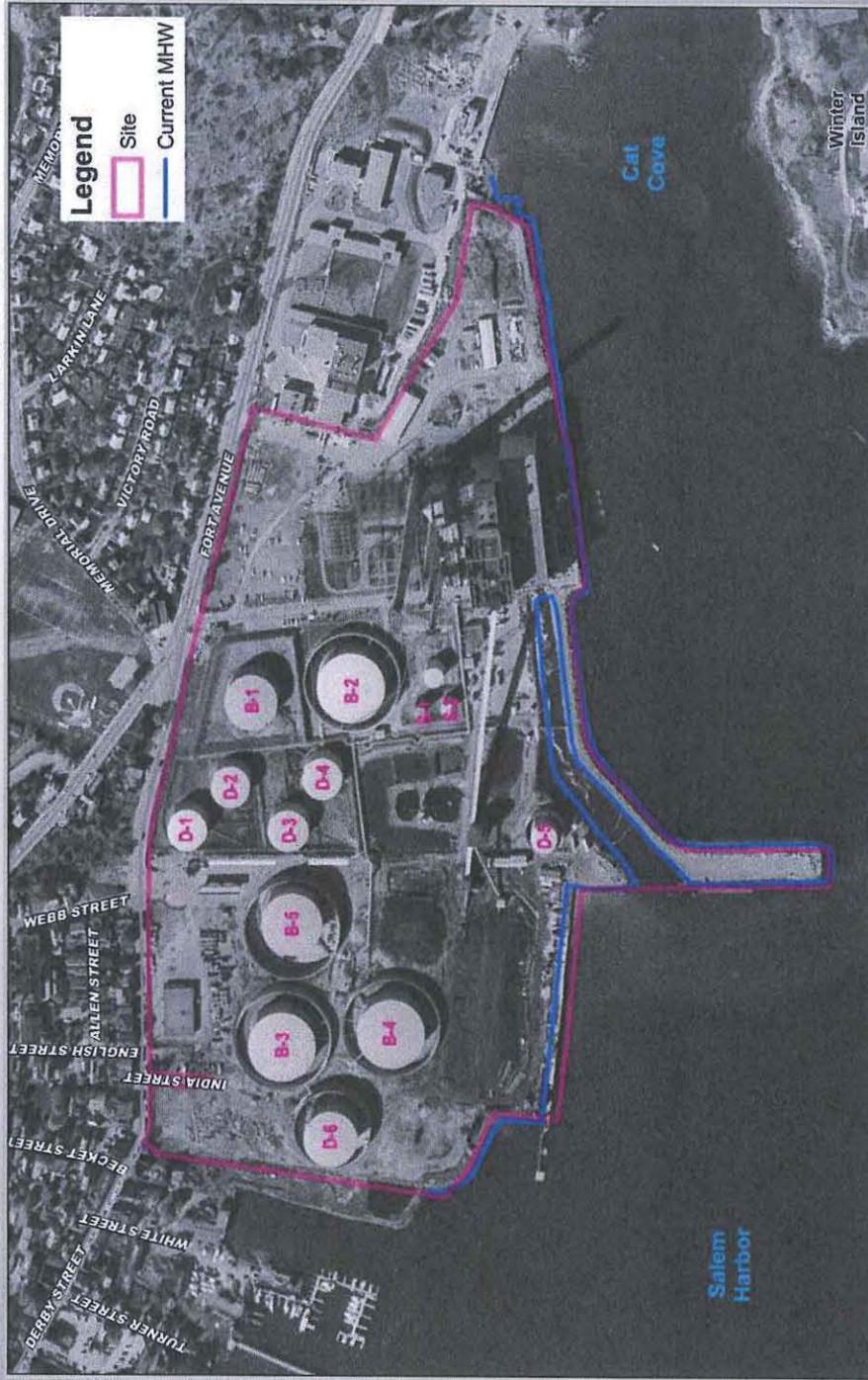
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1955 Aerial



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1978 Aerial



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Project Site

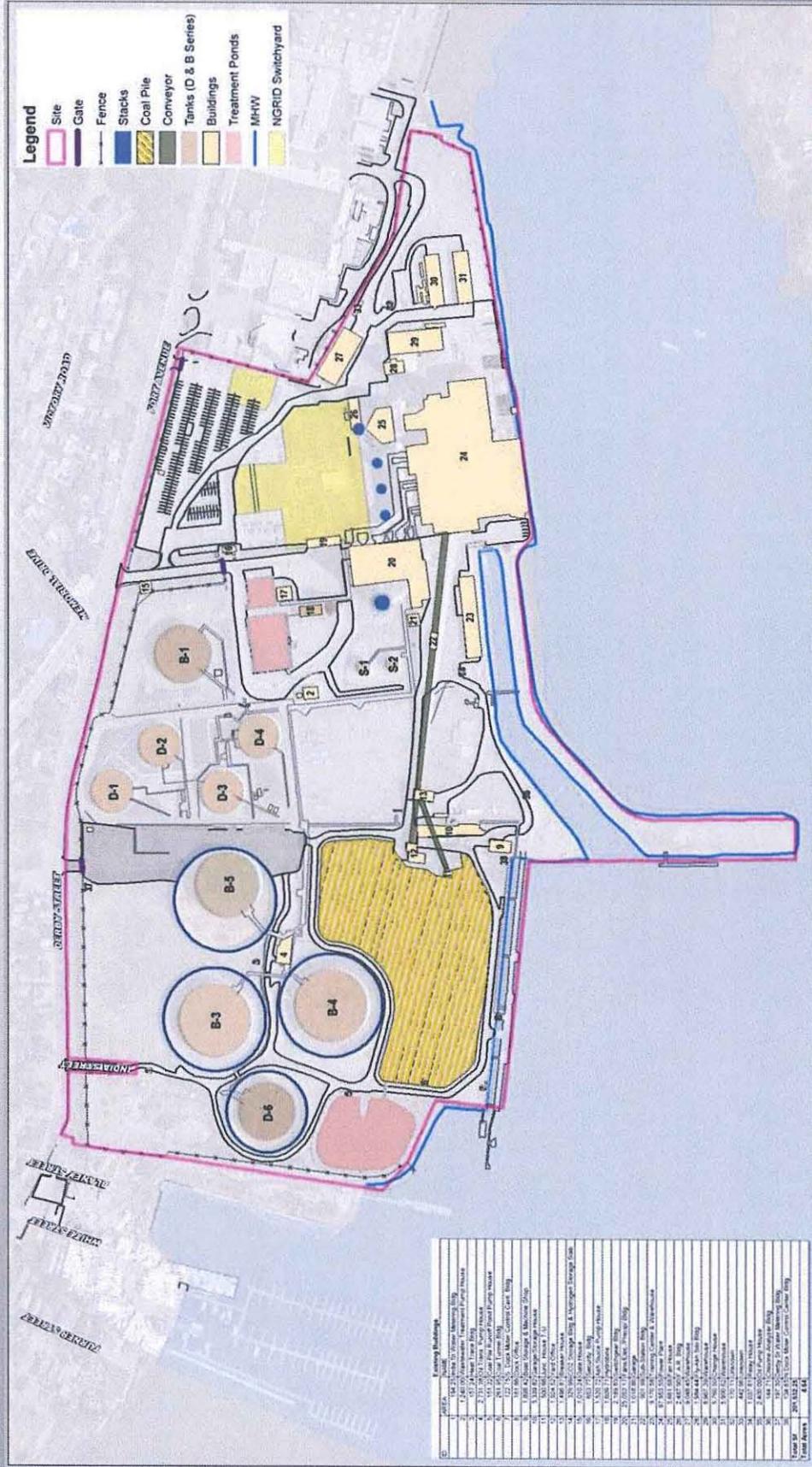


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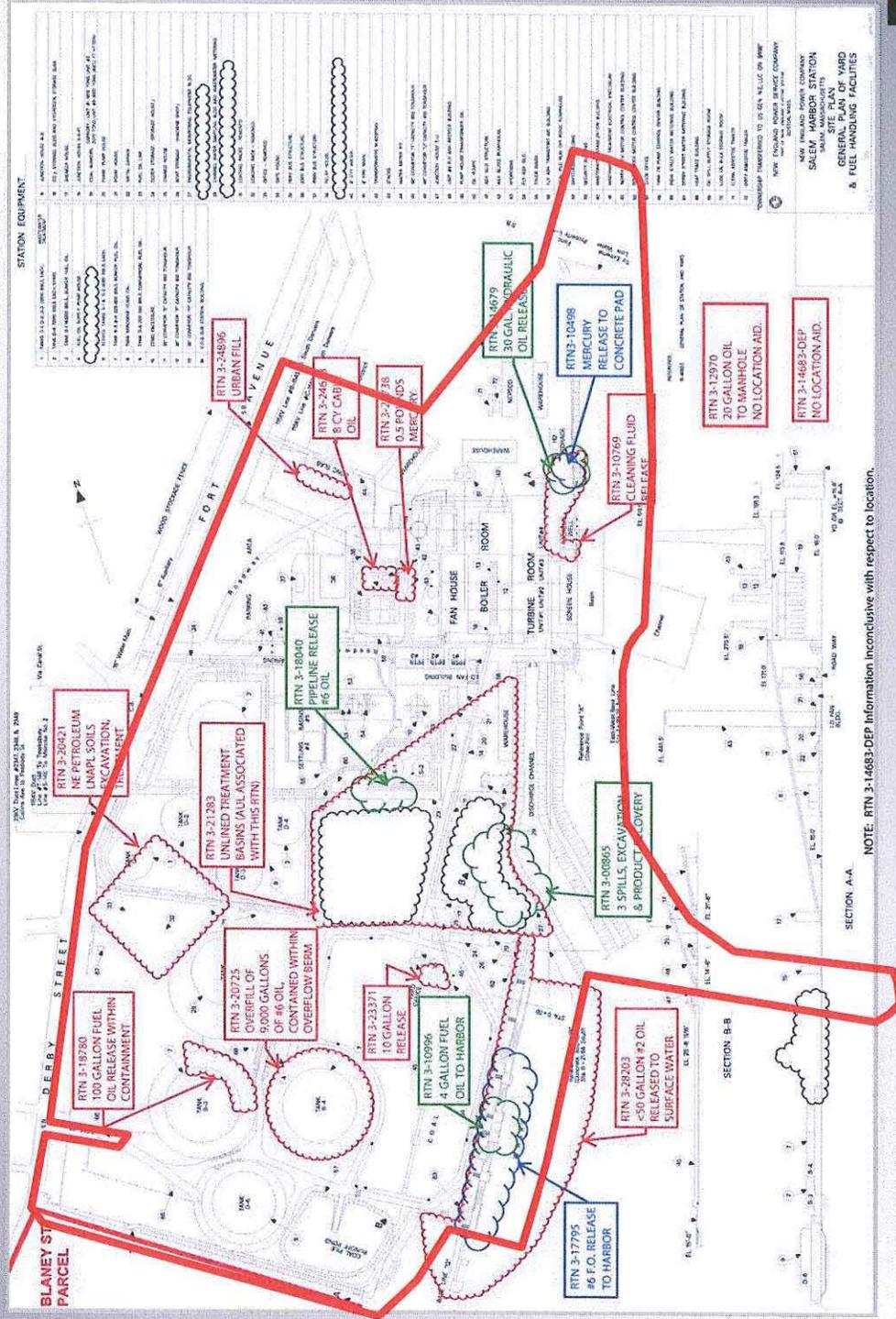
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Existing Conditions



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RTN Locations



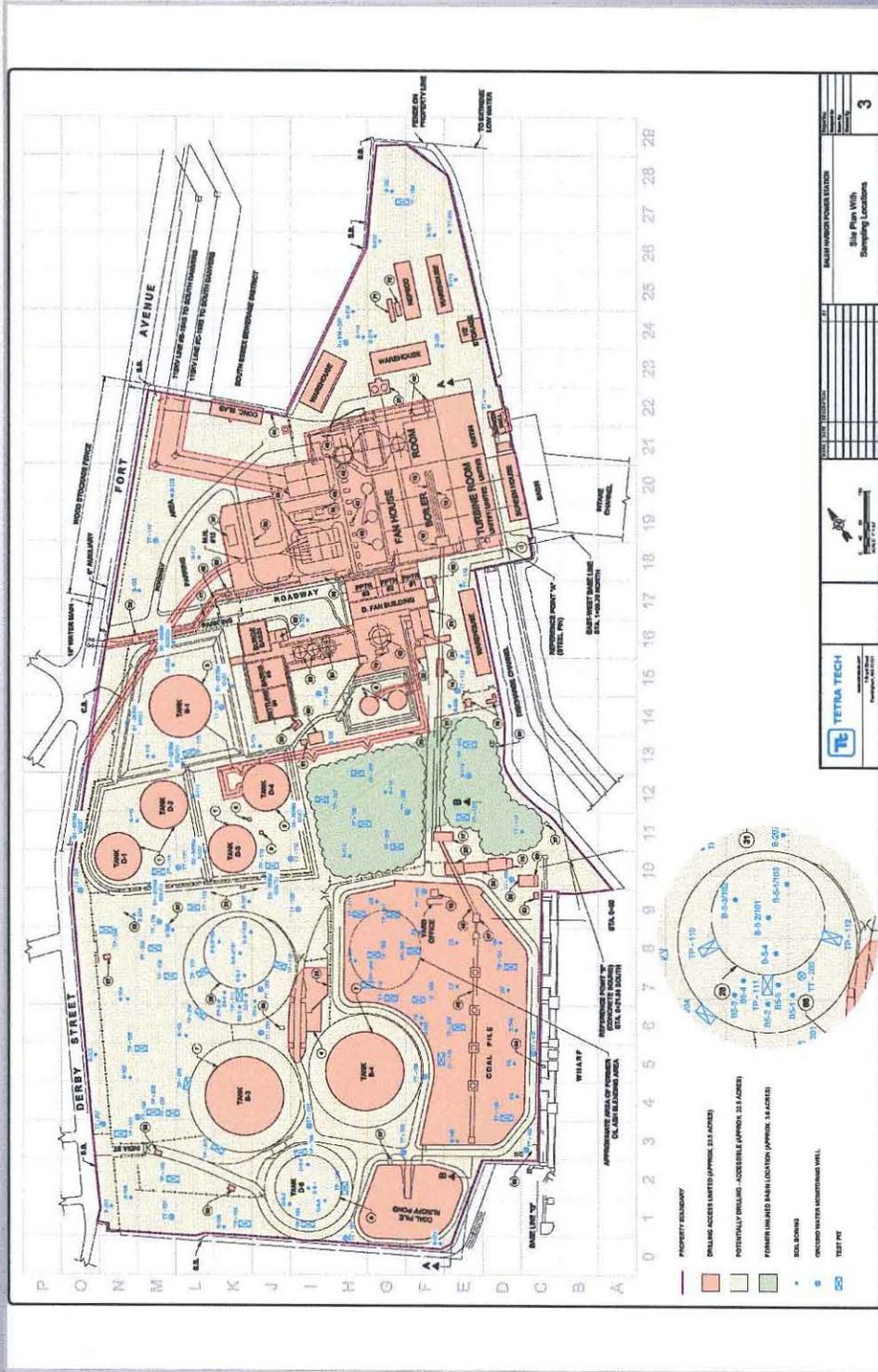
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RTN Summary

RTN ID	Release Summary	Achieved Regulatory Closure?
3-00865	3 spills, excavation and product recovery	Yes - Class A-2 RAO (1997)
3-10498	Mercury release to concrete pad	Yes - Class A-1 RAO (1994)
3-10769	Cleaning fluid release	Yes - Class A-1 RAO (1994)
3-10996	4 gallon fuel oil release to harbor	Yes - Class A-1 RAO (1994)
3-12970	20 gallons of oil released to manhole (no location aid)	Yes - Class A-1 RAO (1995)
3-14679	30 gallon hydraulic oil release	Yes - Class A-1 RAO (1997)
3-17795	#6 fuel oil release to harbor	Yes - Class A-1 RAO (1999)
3-18040	Pipeline release of #6 fuel oil	Yes - Class A-1 RAO (1999)
3-18780	100 gallon fuel oil release within AST containment	Yes - Class A-1 RAO (2000)
3-20421	NE Petroleum LNAPL soils excavation and treatment	Yes - Class A-2 RAO (2009)
3-20725	Overflow of 9,000 gallons of #6 fuel oil, contained within overflow berm	Yes - Class A-2 RAO (2002)
3-21283	Unlined treatment basins	Yes - Class A-3 RAO (2007) with AUL
3-23371	10 gallon release within AST containment	
3-24896	Urban fill	Yes - Class B-1 RAO (2005)
3-27738	0.5 pounds of mercury	Yes - Class A-2 RAO (2008)
3-28203	Less than 50 gallons of #2 fuel oil released to surface water	Yes - Class A-1 RAO (2009)
3-14683	No information	Yes - Class A-1 RAO (1997)
3-24678	Cable Oil Reservoirs	Yes - Class A-2 RAO (2008)



Sampling Locations



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Summary of Significant Findings

- No Exceedences of Applicable Groundwater Reportable Concentrations (RCs)
- No Evidence of new Non-Aqueous Phase Liquid (NAPL) Observed
- No Exceedences of Reportable Concentrations for PCBs
- No Positive Detections of Asbestos in Site Soils
- No evidence of Releases from Processes Not Related to Coal and Oil Consumption and Management Processes
- Results from Samples Collected near Previous Known Closed Disposal Sites Consistent with Past Results
- Site-wide Concentrations of Metals and Organics in Soils Very Encouraging



Summary of MCP Soil Issues

Summary of MCP Reportable Concentration Exceedence Issues for Soil			
Class	Issue	Comment	
Metals	1. Arsenic, Low to Moderate Levels, Site Wide	Ubiquitous, But Low And No Distinct Source; Likely To Be Evaluated Site Wide.	
	2. Lead, low to Moderate Levels	2A. Low Site Wide Levels	Ubiquitous, But Low and No Distinct Source; Likely to be Evaluated Site Wide.
		2B. Moderate Levels Near Blaney St.	Appears Isolated (only two RC exceedences), But Not Considered Hot Spot by MCP Definition. May be Evaluated Separately or Site Wide.
	3. Nickel, Low to Moderate Levels Site Wide	No Distinct Source, Possibly Related to Dredged Clay Fill; Likely to Be Evaluated Site Wide	
	4. Nickel-Vanadium Pairing, Moderate to High Levels	4A. Former WWT Basins	Levels Consistent With Closed RTN; Not Considered New Reportable Release, to be Managed In Accordance With Design and Construction Needs
		4B. Former Oil Ash Blending Area Within Coal Pile Footprint	May Require Distinct MCP Evaluation and Closure
4C. Two isolated moderate level spots		Appears Isolated, But Not Considered Hot Spot by MCP Definition. May be Evaluated Separately or Site Wide.	
Organics	5. Extractable Petroleum Hydrocarbons/Volatile Petroleum Hydrocarbons, Low to Moderate Levels	5A. Former Northeast Petroleum Area	Levels Consistent With Closed RTN; Not Considered New Reportable Release, Managed In Accordance With Design and Construction Needs
		5B. Tank B-1 Area	Minor Exceedence of One EPH Fraction, Appears Isolated; May be Evaluated Separately or Site-Wide; Managed in Accordance with Design and construction Needs
	6. Volatile Organic Compounds, Low Levels Near Tank B-5	Low Levels of Bromomethane and 1,3,5 Trimethylbenzene (a Single Exceedence of Each), Appears Isolated; May be Evaluated Separately or Site-Wide	
	7. Polycyclic Aromatic Hydrocarbons, Low to Moderate Levels	7A. Site-Wide	Heterogeneously Distributed Across Site, But Site-Wide Levels may be Acceptable for Intended Use; Likely to be Evaluated Site-Wide
7B. Beneath Coal Pile		May Require Distinct MCP Evaluation and Closure	

Notes:

No exceedences of applicable reportable concentrations for groundwater from on-site wells
 No exceedences of applicable soil reportable concentrations for PCBs.
 No positive detections of asbestos in soil.



Project Site



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Moving Forward

- Release Notification Form (RNF) filed 01/10/2013, Starting our Massachusetts Contingency Plan (MCP) Timeline
- Continue Investigation and Evaluation in Conformance with MCP Phased Approach, Assessment Protocols, and Timelines
- Continue Close Communication with DEP Northeast Regional Office (NERO) With Respect to Site Evaluation and Management
- Dovetail Mitigation Measure Planning with Demolition and Construction Sequencing





ISO New England and Regional Energy Update

*Meeting with Massachusetts Plant
Revitalization Task Force*

Stephen J. Rourke

VICE PRESIDENT, SYSTEM PLANNING

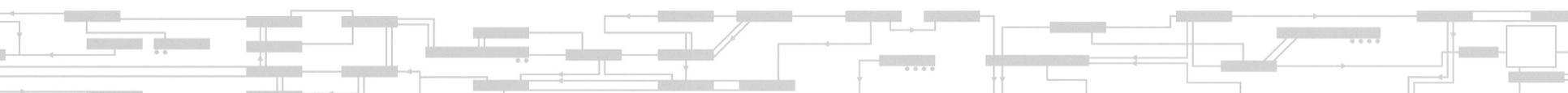
Hayley M. Dunn

EXTERNAL AFFAIRS REPRESENTATIVE



Agenda

- 9:30 a.m. **Welcome Remarks**
Senator Michael Knapik, Member, Plant Revitalization Task Force
- 9:35 a.m. **ISO New England Overview**
Hayley M. Dunn, External Affairs Representative, ISO New England
- 9:45 a.m. **Overview of Planning Process and Strategic Planning Initiative**
Stephen J. Rourke, Vice President, System Planning, ISO New England
- 10:30 a.m. **Questions and Discussion**
- 11:15 a.m. **ISO New England Control Room Tour**
- 11:45 a.m. **Conclude**



OVERVIEW OF ISO NEW ENGLAND

Hayley M. Dunn, External Affairs Representative

About ISO New England

- The Independent System Operator for New England (ISO-NE) was created in 1997 to oversee the region's restructured electric power system:
 - Private, not-for-profit corporation
 - Regulated by the Federal Energy Regulatory Commission (FERC)
- ISO-NE is also a Regional Transmission Organization (RTO):
 - Independent of companies doing business in the market
 - No financial interest in companies participating in the market



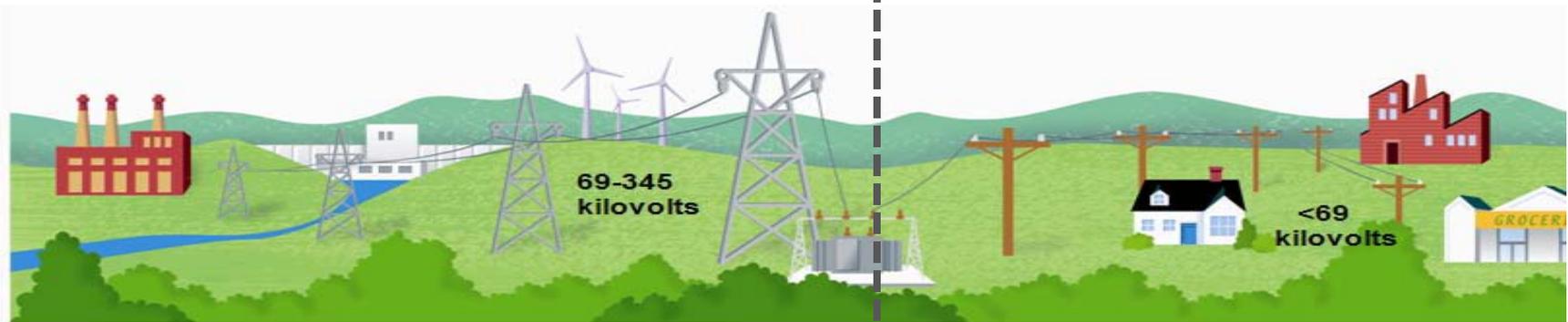
New England's Electric Power Grid at a Glance

- 14 million residents; 6.5 million meters
- 350+ generators
- 8,000+ miles of high-voltage transmission lines (115 kV and above)
- 13 interconnections to electricity systems in New York and Canada
- 37,000 MW resources with capacity supply obligations
 - 32,000 MW generation
 - 2,900 MW demand resources
 - 1,900 imports
- 28,130 MW all-time peak demand set on August 2, 2006



Transmission System

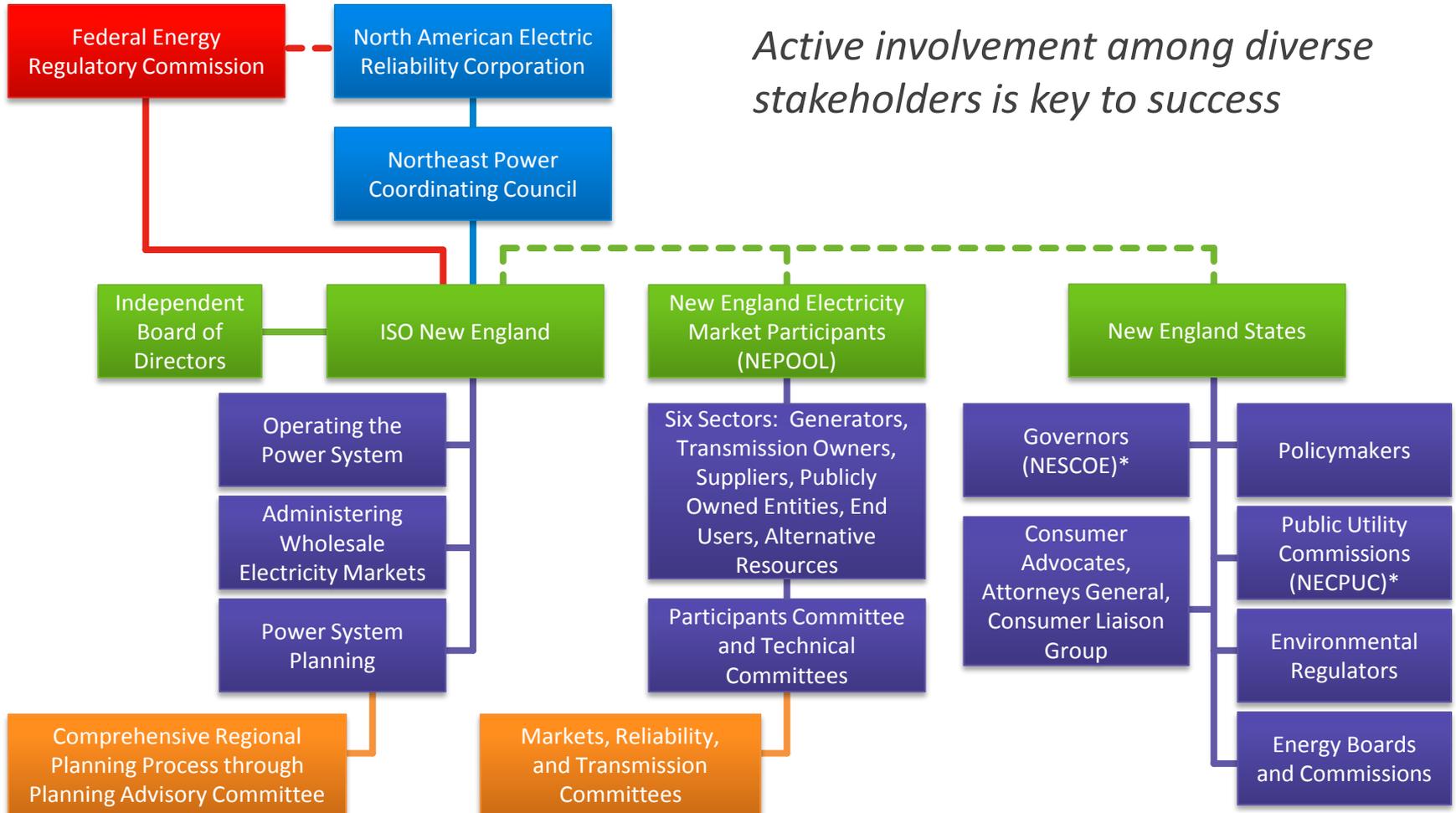
Distribution System



- Electricity produced based on demand
- Region's 8,000 + miles of high-voltage transmission lines move electricity to substations where it is stepped down in voltage to feed into distribution lines
- Federal regulation (FERC)

- Region's 6.5 million homes and businesses create demand
- Utilities distribute electricity to businesses and homes
- State regulation (public utilities commissions)

Industry Structure in New England



Active involvement among diverse stakeholders is key to success

NESCOE: New England States Committee on Electricity
NECPUC: New England Conference of Public Utilities Commissioners

ISO New England's Core Responsibilities

Operating the Power System

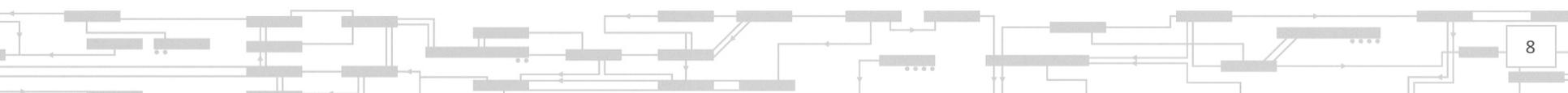
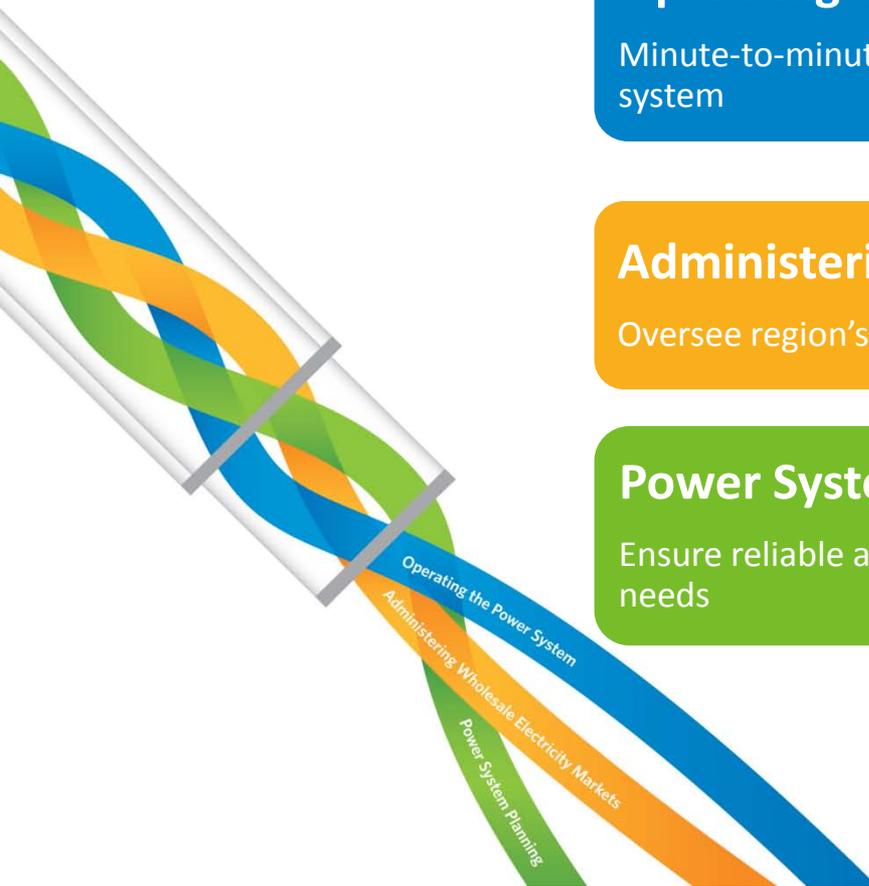
Minute-to-minute reliable operation of region's generation and transmission system

Administering Wholesale Electric Markets

Oversee region's wholesale marketplace for energy, capacity and reserve supplies

Power System Planning

Ensure reliable and efficient power system to meet current and future power needs

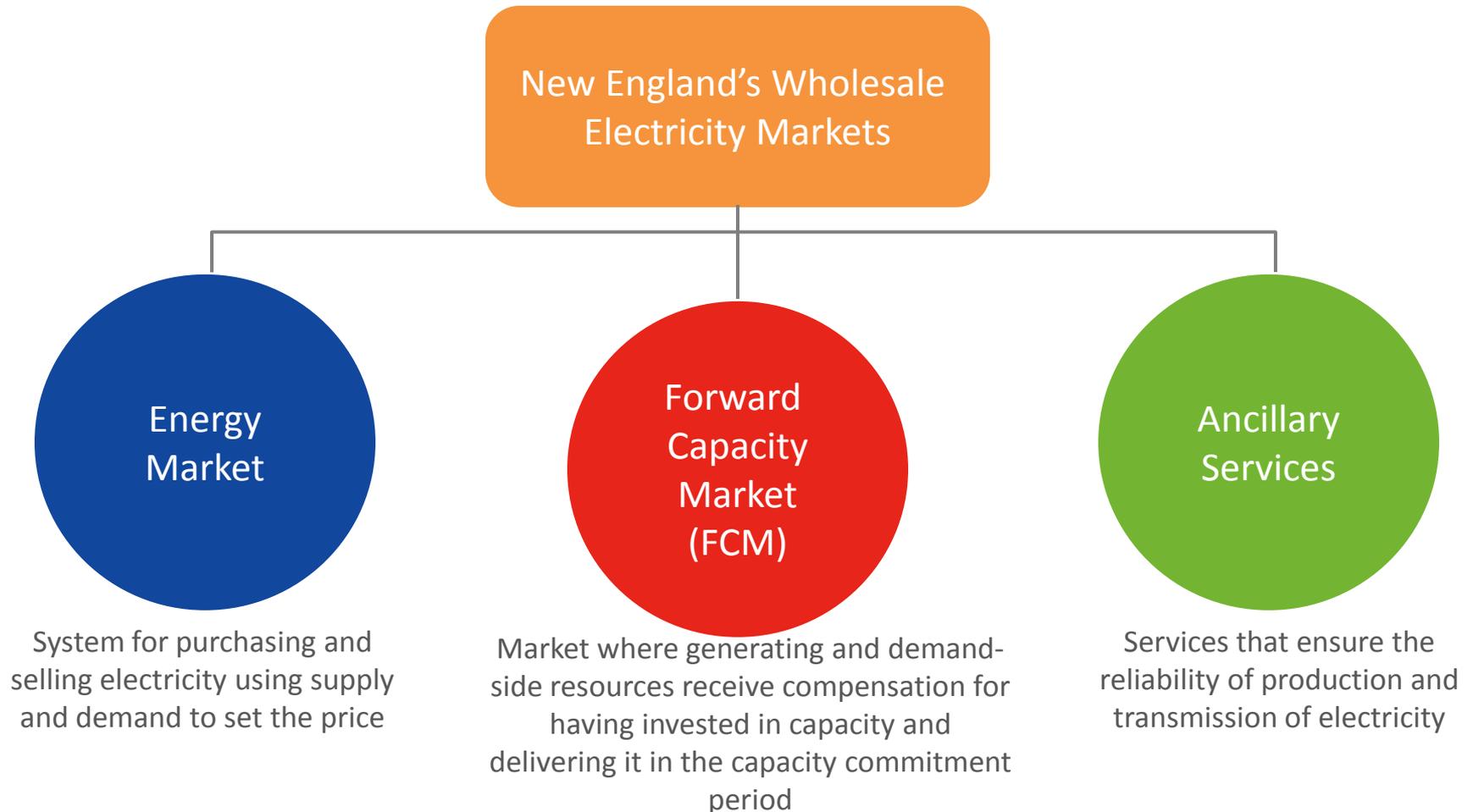


Operate the Regional Power System

- Maintain minute-to-minute reliable operation of region's power grid
- Perform centralized dispatch of the lowest-priced resources
- Coordinate and schedule maintenance outages
- Coordinate operations with neighboring power systems

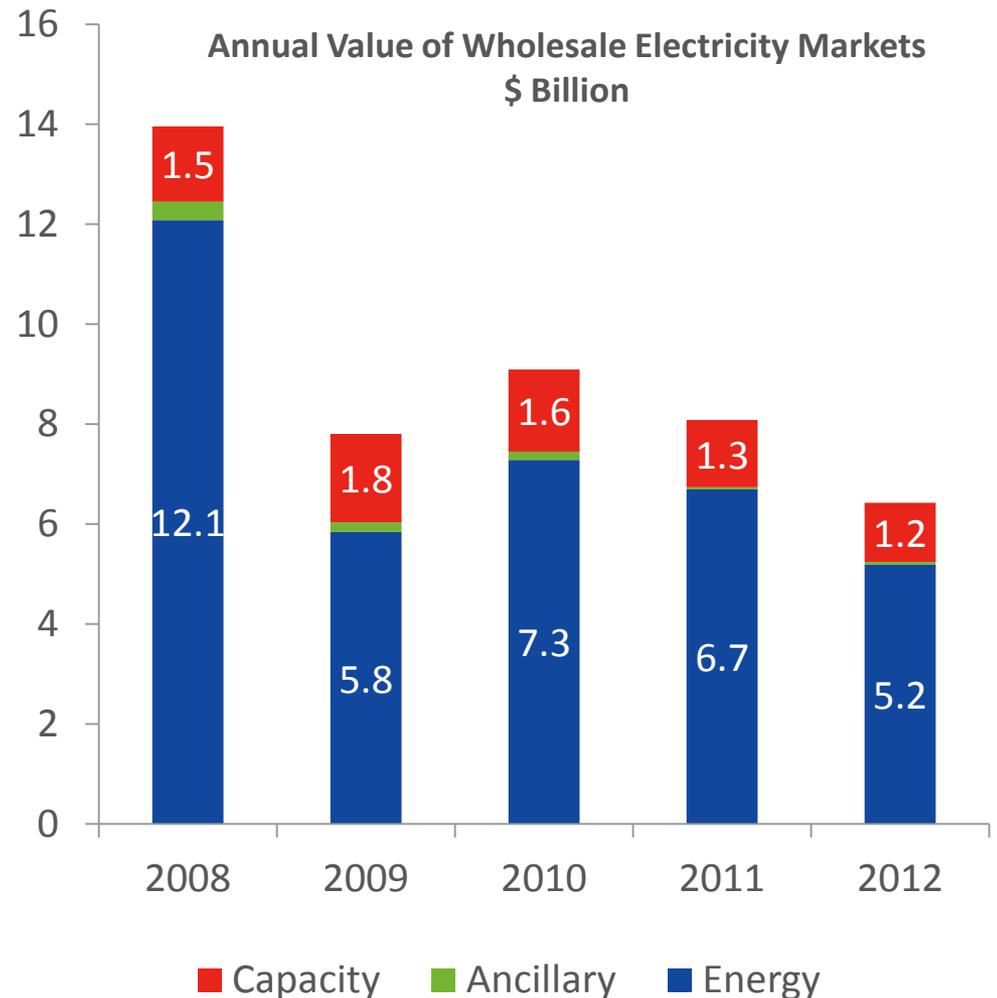


Administer Wholesale Electricity Markets



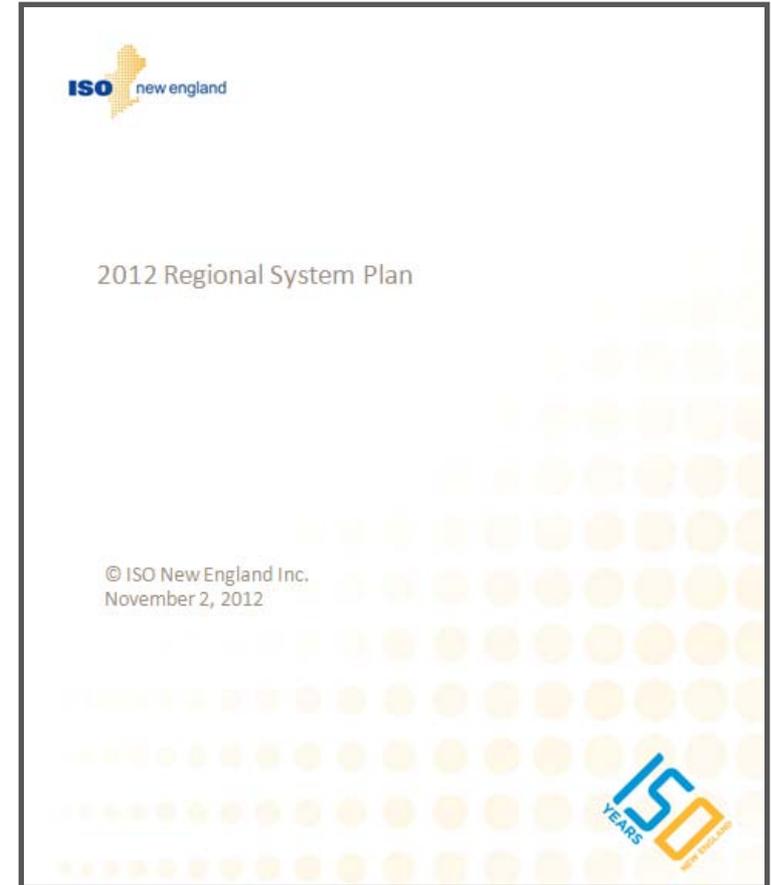
Value of Wholesale Electricity Markets

- Energy market is largest portion of wholesale electricity market
 - 2008-2011: Between \$5 -12 billion annually
 - 2012: \$5.2 billion
- Capacity market
 - 2008-2011: Between \$1 billion and \$2 billion annually
 - 2012: \$1.2 billion



Power System Planning

- Administer requests for interconnection of generation, and regional transmission system access
- Conduct transmission system needs assessments
- Plan regional transmission system to provide regional network service
- Develop annual Regional System Plan (RSP)
 - 2012 RSP available at
 - www.iso-ne.com/trans/rsp/index.html



OVERVIEW OF PLANNING PROCESS AND STRATEGIC PLANNING INITIATIVE

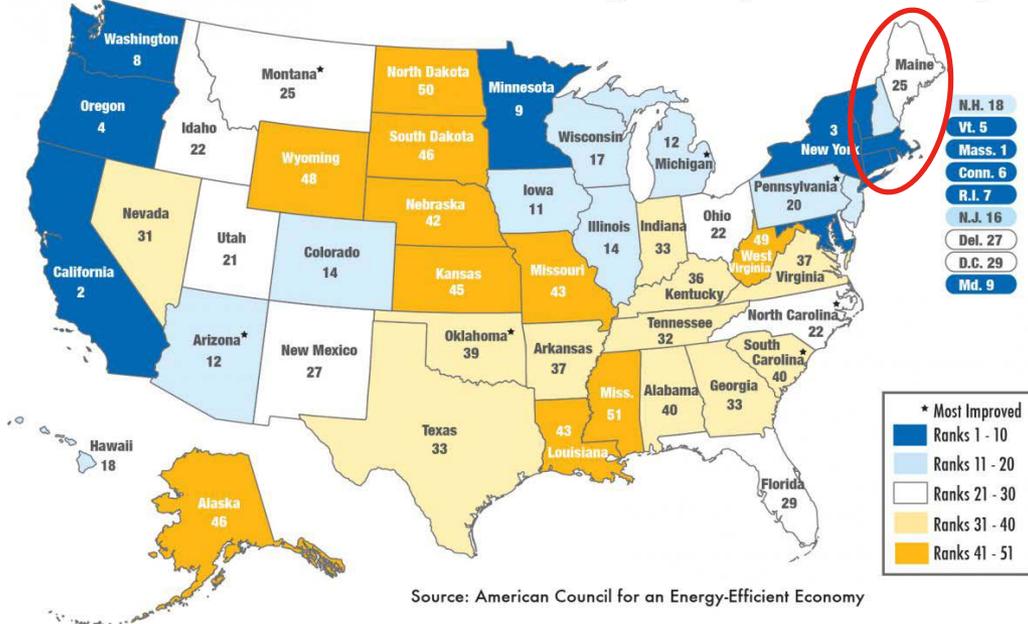
Stephen J. Rourke, Vice President, System Planning

ISO New England System Planning Process



Energy Efficiency is a Priority for New England

2012 State Energy Efficiency Scorecard Rankings



- Ranking of state EE efforts by the *American Council for an Energy-Efficient Economy*:

- Massachusetts 1
- Vermont 5
- Connecticut 6
- Rhode Island 7
- New Hampshire 18
- Maine 25

- Billions spent over the past few years; more on the horizon
 - Approximately \$1 billion invested from 2008 to 2010
 - ISO estimates \$5.7 billion to be invested in EE from 2015 to 2021

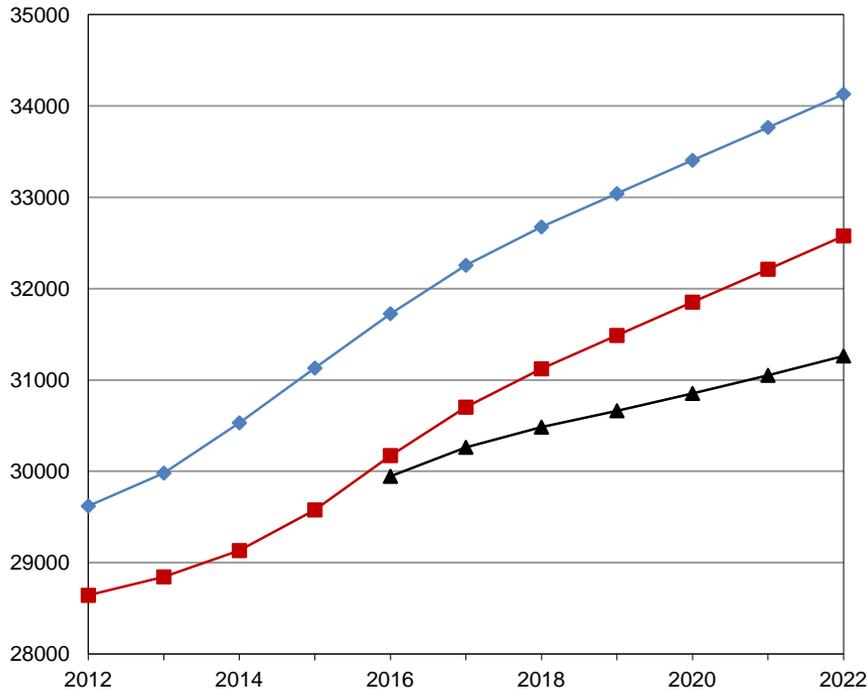
Incorporating Impact of Energy Efficiency

- Given the expectation of large future investment in EE in New England, the ISO has worked with the region's stakeholders to identify characteristics of utility-based EE programs in the region that may be useful for forecasting future EE impacts
- The ISO developed a forecast of EE savings across a 10-year planning horizon
 - The forecast projects long-term reductions in peak demand and energy as a function of projected EE spending and historical costs
 - 2012 forecast was the first in the nation, multistate energy-efficiency forecast
 - 2013 forecast released last month

2013 New England EE Forecast (2016-2022) Results:

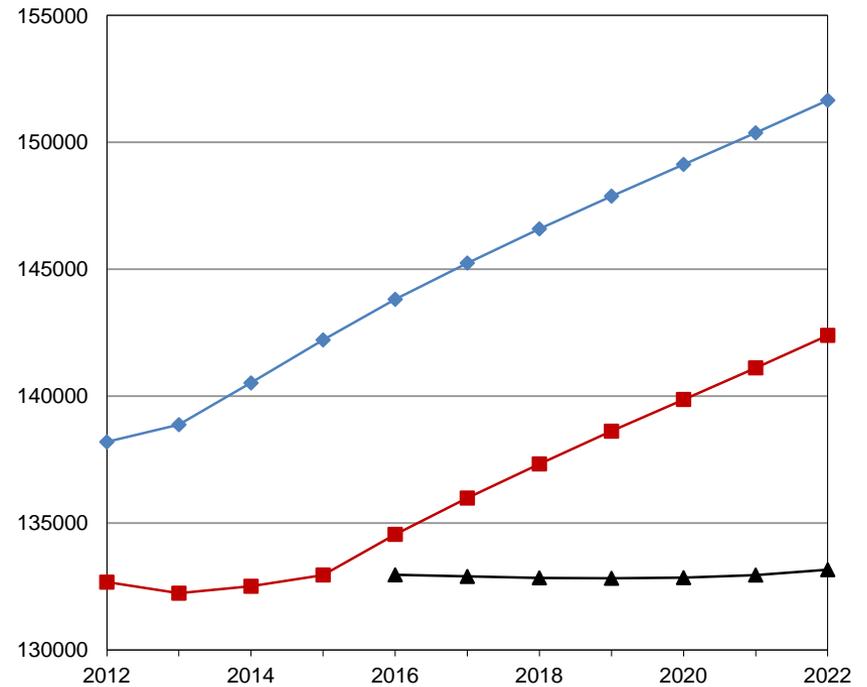
Lower Peak Demand Growth, Level Energy Demand

New England: Summer 90/10 Peak (MW)



◆ RSP12 ■ RSP12-FCM ▲ RSP12-FCM-EEF

New England: Annual Energy (GWh)

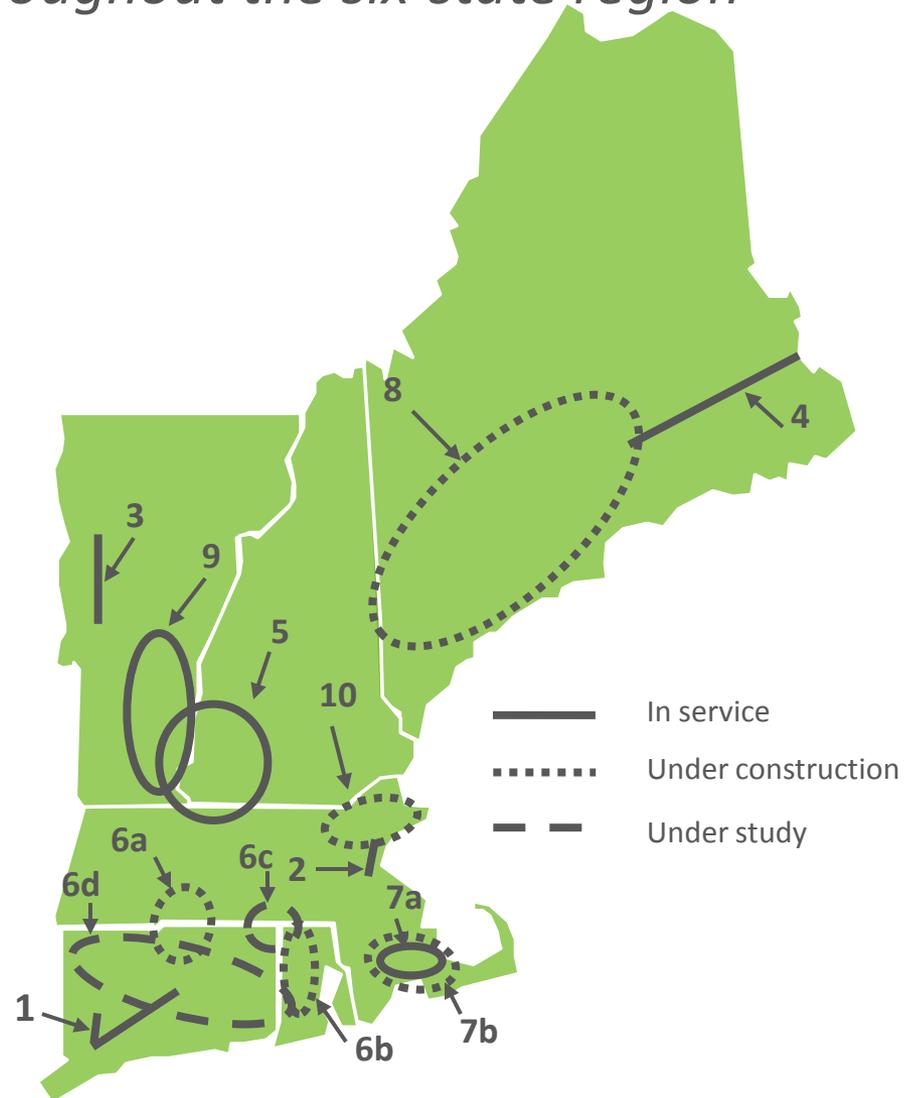


◆ RSP12 ■ RSP12-FCM ▲ RSP12-FCM-EEF

Projects to Maintain Reliability are Progressing

Transmission projects planned throughout the six-state region

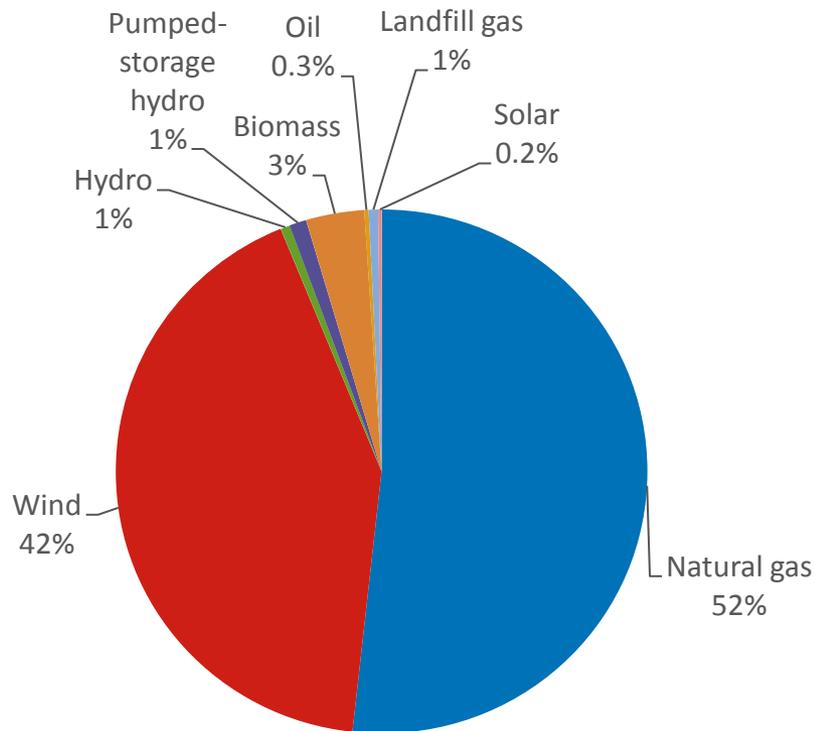
1. Southwest CT Phases I & II
2. NSTAR 345 kV Project, Phases I & II
3. Northwest Vermont
4. Northeast Reliability Interconnect
5. Monadnock Area
6. New England East-West Solution
 - a. Greater Springfield Reliability Project
 - b. Greater Rhode Island Reliability Project
 - c. Interstate Reliability Project
 - d. Greater Hartford/Central Connecticut
7. Southeast Massachusetts
 - a. Short-term upgrades
 - b. Long-term Lower SEMA Project
8. Maine Power Reliability Program
9. Vermont Southern Loop
10. Merrimack Valley/North Shore Reliability



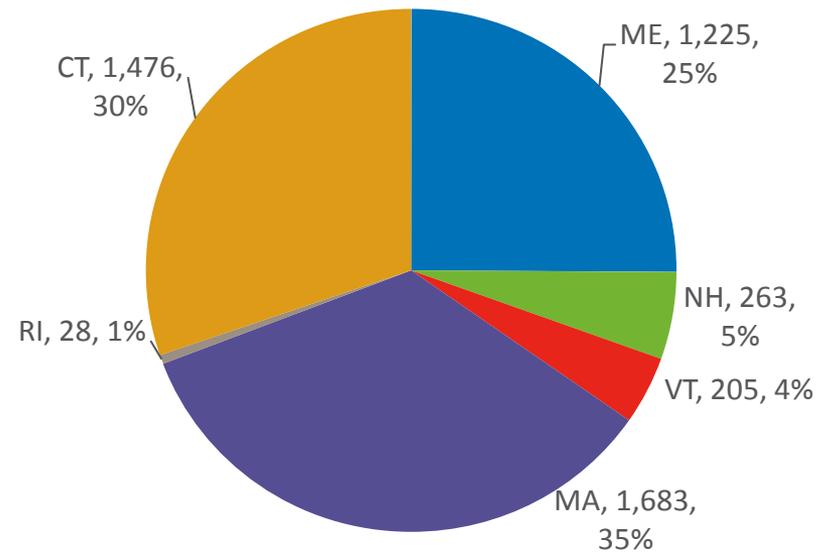
Generator Proposals in the ISO Queue

Approximately 5,000 MW

By Type



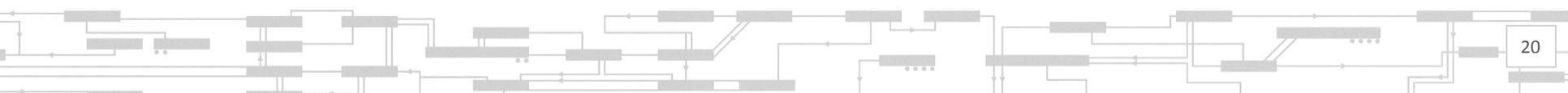
By State



January 2013

Changing Energy Landscape

- New England's energy landscape is rapidly changing, even after investments in transmission, generation and demand resources
 - Regulatory and policy goals to reduce emissions are promoting investment in renewables
 - Economic forces are impacting some older fossil fuel-fired resources



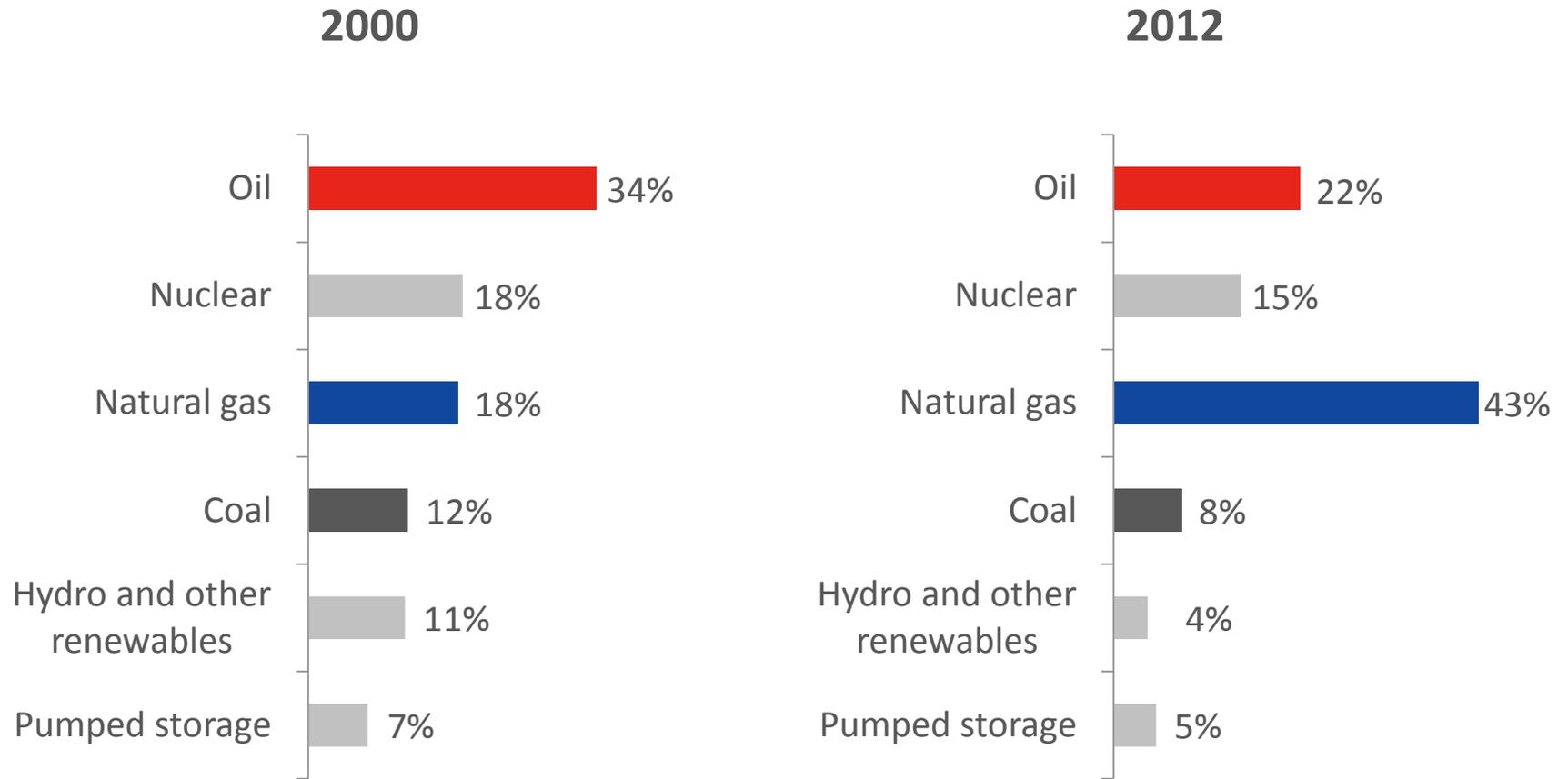
New England's Strategic Planning Initiative is Focused on Developing Solutions to the Top Five Challenges Confronting the Region



1. Resource Performance and Flexibility
2. Increased Reliance on Natural Gas-Fired Capacity
3. Retirement of Generators
4. Integration of a Greater Level of Variable Resources
5. Alignment of Markets with Planning

Regional *Capacity* has Shifted from Oil to Natural Gas

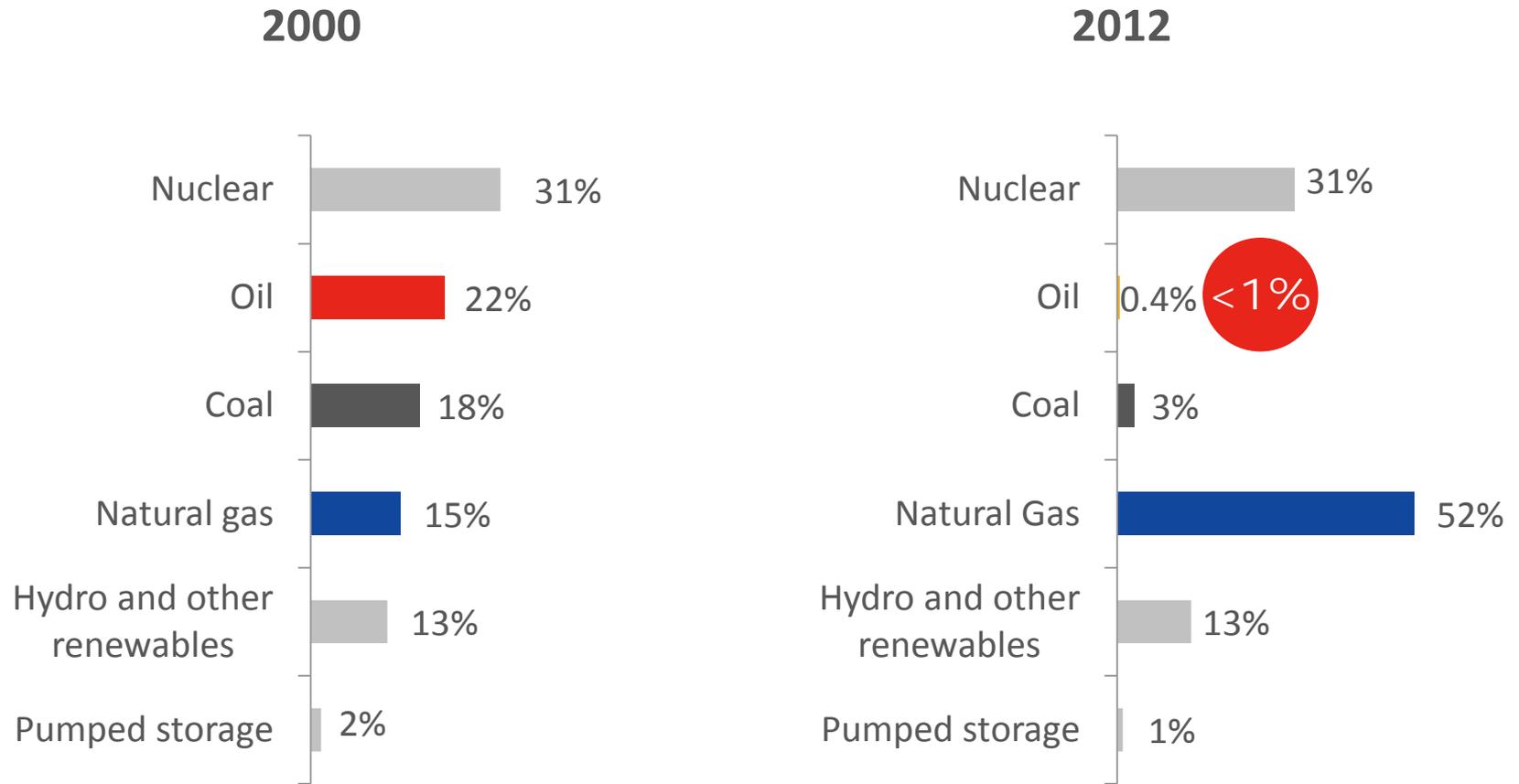
Percent of Total System Capacity



Other renewables include landfill gas, biomass, other biomass gas, wind, solar, municipal solid waste, and misc. fuels.

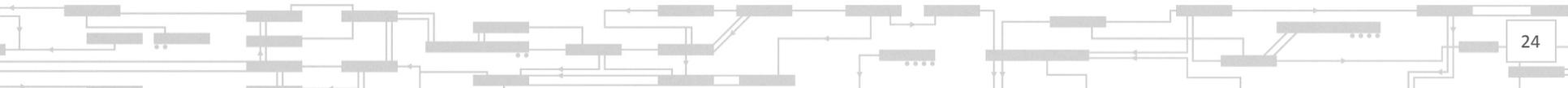
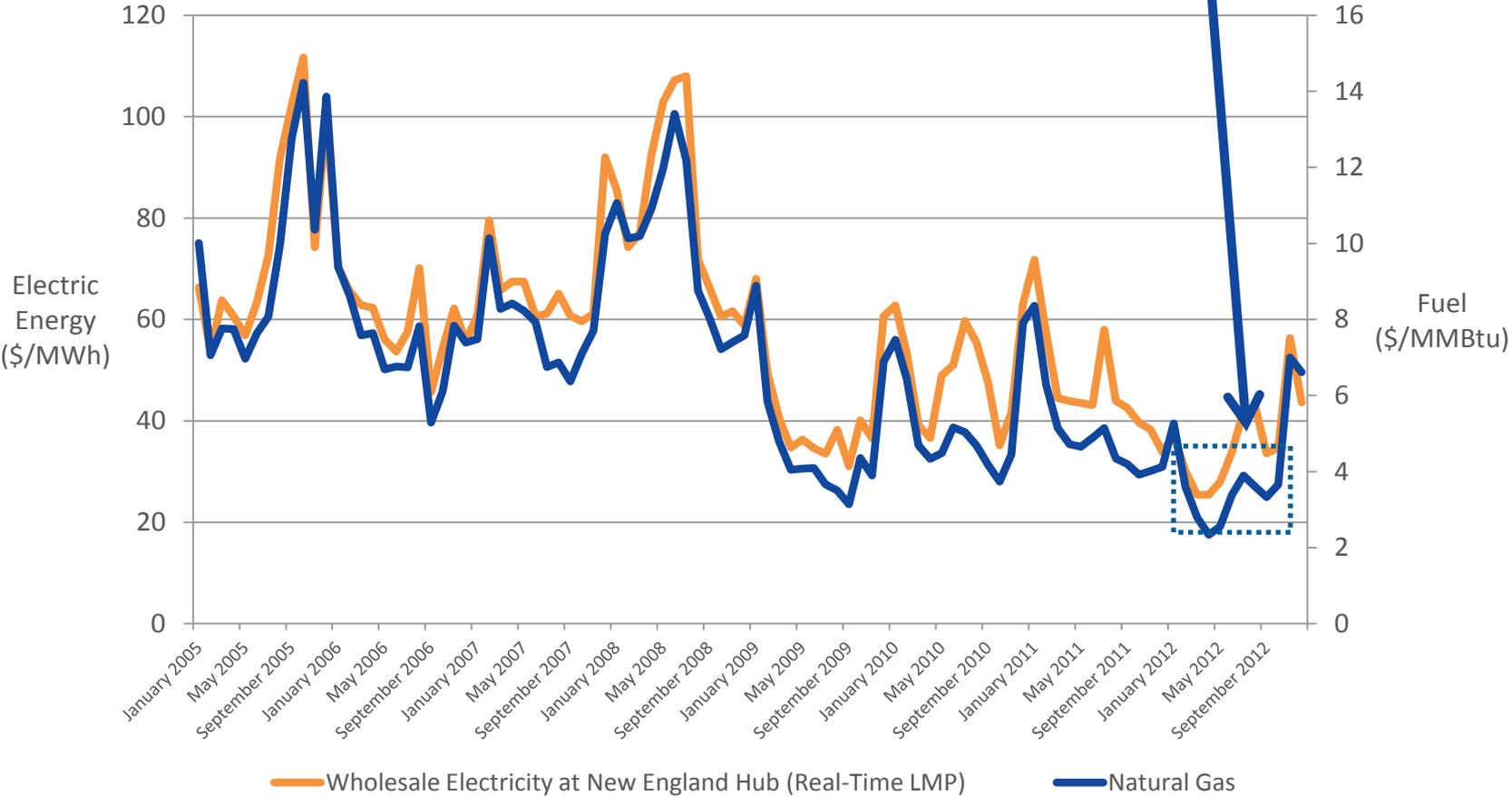
Regional *Energy* has Shifted from Oil to Natural Gas

Percent of Total Electric Energy Production



Other renewables include landfill gas, biomass, other biomass gas, wind, solar, municipal solid waste, and misc. fuels.

Gas Reliance Resulted in Low Energy Prices in 2012



Emission Rates in New England have Decreased

Mainly due to decline in oil- and coal-fired generation and increase in natural gas generation

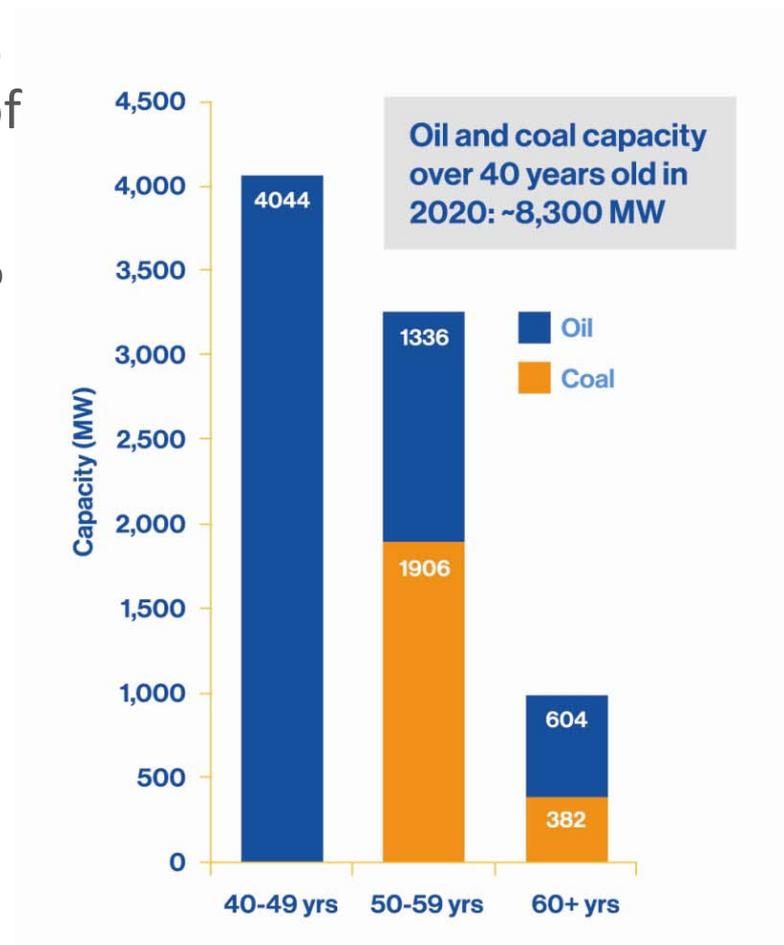
2001-2011* ISO New England Generation System Annual Aggregate Emissions (kTons)

Year	NO _x	SO ₂	CO ₂
2001	59.73	200.01	52,991
2002	56.40	161.10	54,497
2003	54.23	159.41	56,278
2004	50.64	149.75	56,723
2005	58.01	150.00	60,580
2006	42.86	101.78	51,649
2007	35.00	108.80	59,169
2008	32.57	94.18	55,427
2009	27.55	76.85	49,380
2010	28.79	80.88	52,321
2011	25.30	57.01	46,959
Percent Reduction, 2001-2011	58	71	11

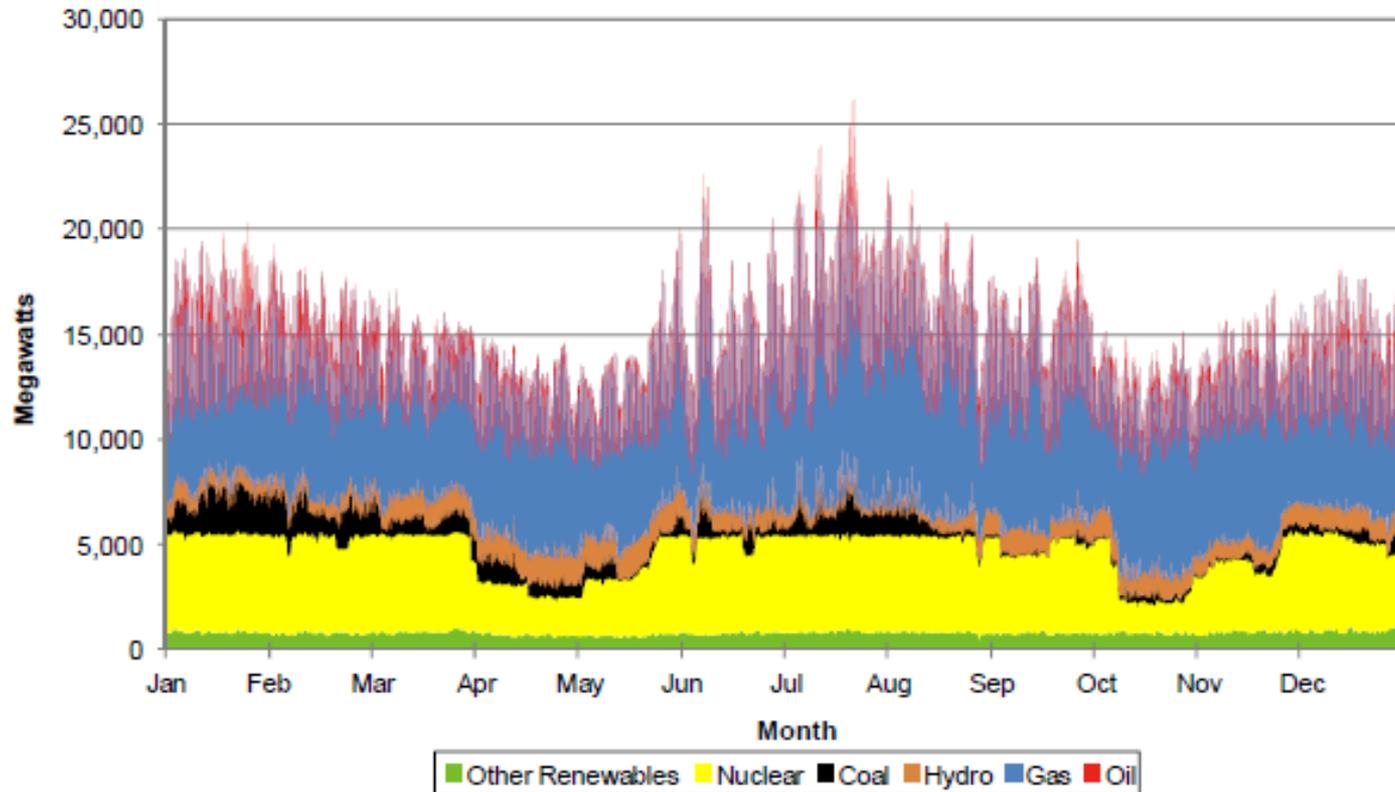
*2001-2007 data are from prior reports titled Marginal Emission Rate Analysis

Oil- and Coal-fired Generators Face Challenges

- Oil-fired generators provide >20% of the region's capacity but <1% of total generation
- Coal-fired generators provides 8% of regional capacity but 3% of energy
 - Provide needed diversity on peak
- Challenges
 - Aging fleet
 - Operate infrequently
 - Strict environmental regulations
 - Long start-up times/less flexibility
 - Potential for reduced capacity payments



Oil Resources are Infrequently Dispatched; Generally only at Peak Times

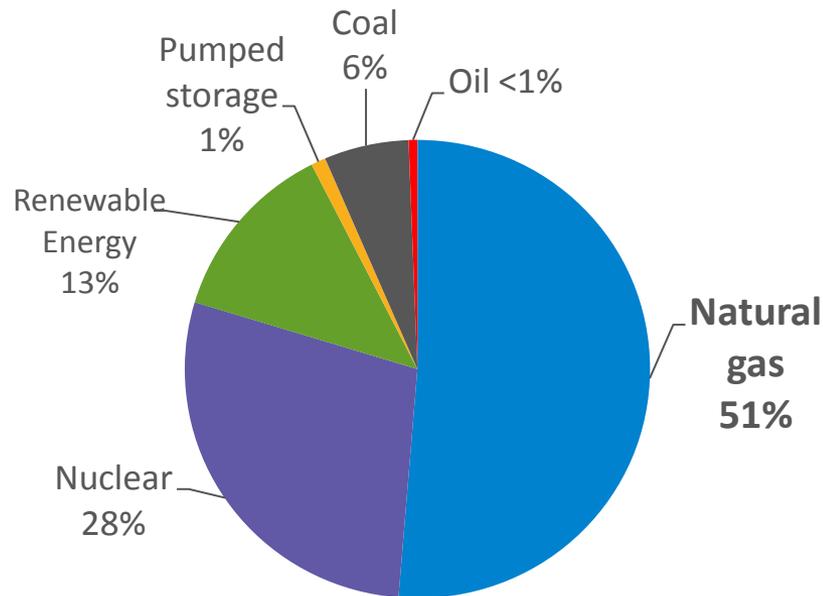


Source: 2011 New England Electric Generator Air Emissions Report, ISO New England, February 2013.

Natural Gas has Become the Dominant Fuel for Power Generation in New England

Existing Generation

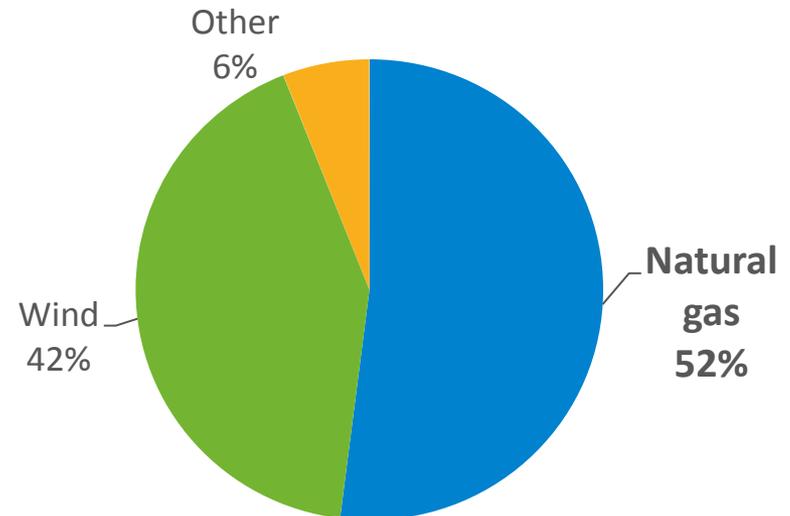
Natural gas has largely displaced oil- and coal-fired generation



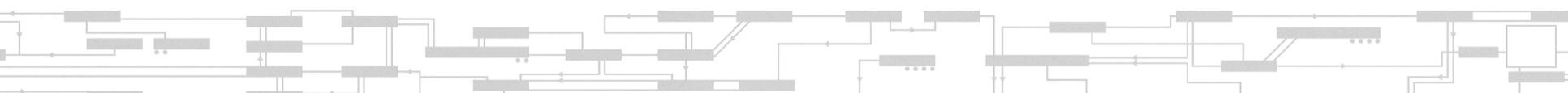
Energy by Fuel Type, 2011 (GWh)

Proposed Capacity

Natural gas is the fuel of choice for new capacity and gas-fired generators will be needed to balance variable energy resources

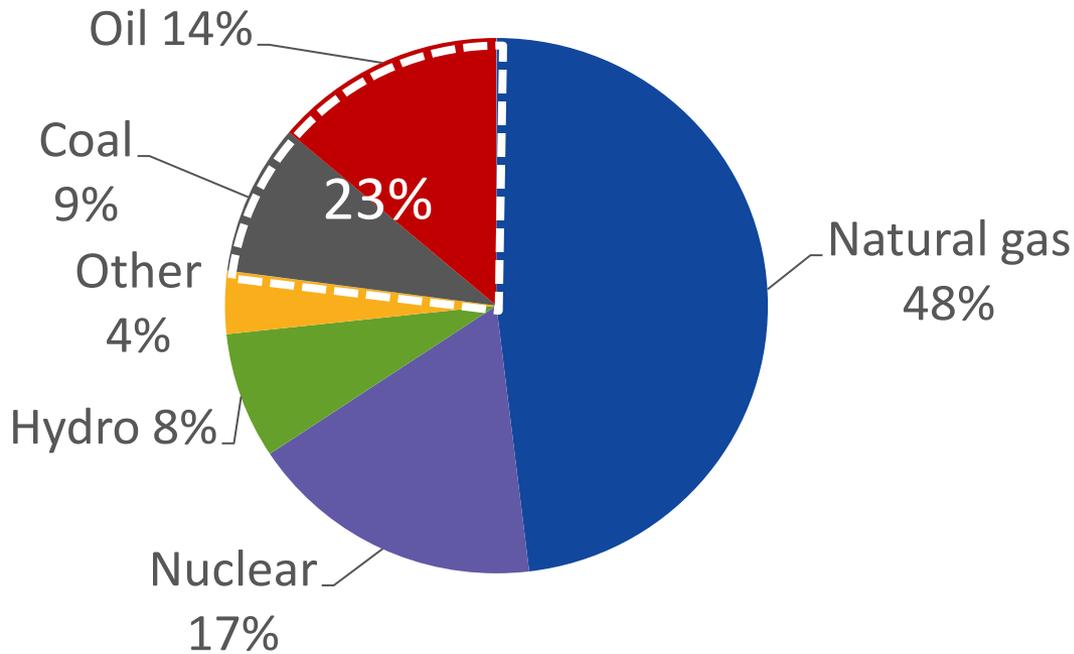


ISO Generator Interconnection Queue
January 2013
Nameplate capacity (MW)



Oil and Coal Resources are Still Needed

Peak Day
July 22, 2011



- Aging, infrequently dispatched coal- and oil-fired resources provide the region with diversity during times of peak demand
 - These resources supplied nearly 25% of energy during the 2011 system peak

Reliability Concerns for the Electric System

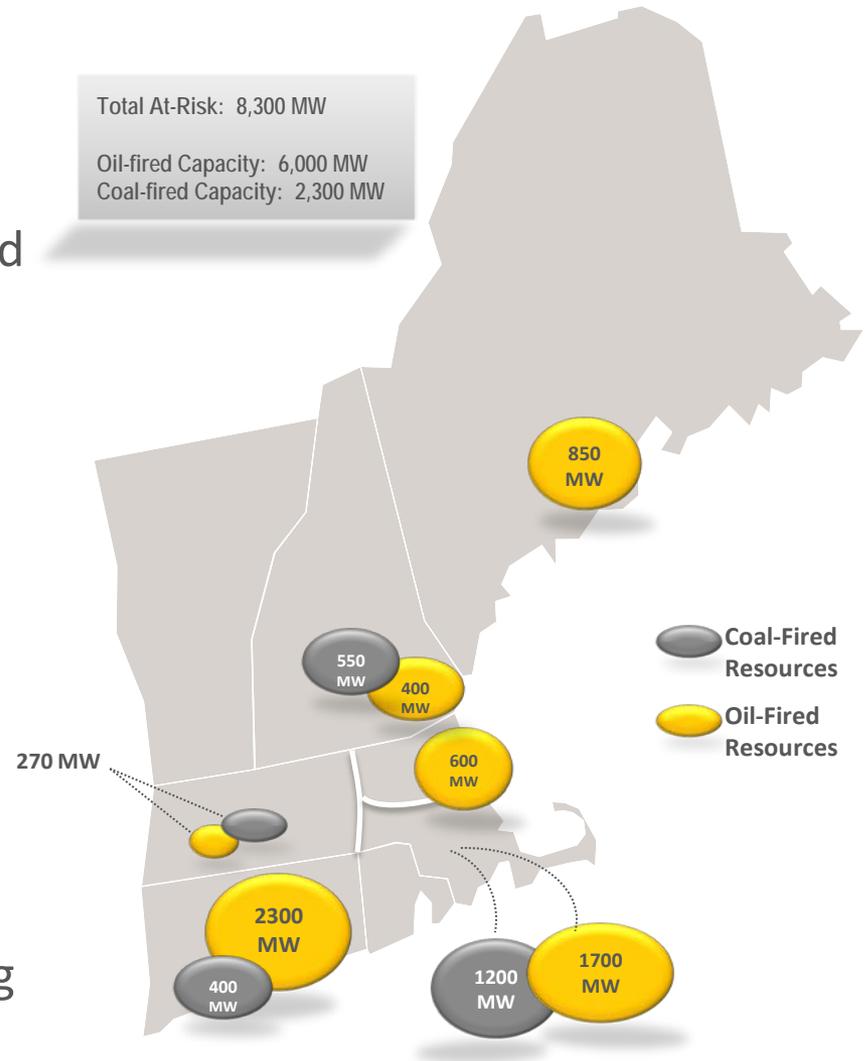
- Types of natural gas-related operating conditions that cause reliability concerns for the electric system
 - Availability of gas-fired generators without secure fuel arrangements
 - Natural gas-supply disruptions
 - Availability of gas-fired generators during pipeline maintenance
 - Generation dispatch following power-system equipment outages, limited by the ability of pipelines to support deviations from nomination schedules
 - Pipeline constraints due to shift in natural-gas flows

These natural gas-related dependency issues exist year-round, not just in cold weather

Strategic Transmission Analysis – Generation Retirements Study

- Objective
 - Evaluate reliability impact associated with the assumed retirement of 28 coal- and oil-fired resources with 8,300 MW of capacity by 2020
- Primary Concerns
 - Resource Adequacy
 - Load-Resource Energy Balance
 - Area Transmission Security
- Another Issue
 - Consequence of constraints impacting deliverability of existing capacity resources to load

At-Risk Capacity Resources in New England



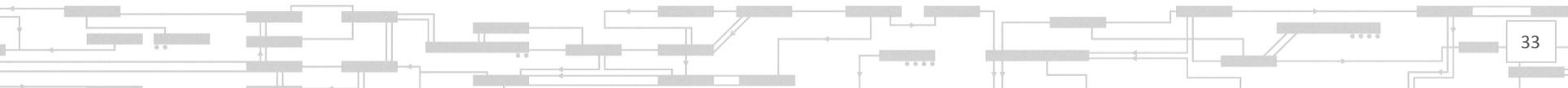
Capacity Resources Assumed to be at Risk of Retirement (from 2010 Economic Study)

Unit	Unit Type	MW Maximum Assumed	In-service Date	Age in 2020	Unit	Unit Type	MW Maximum Assumed	In-service Date	Age in 2020
BRAYTON POINT 1	Coal	261	01-Aug-63	57	MONTVILLE G6	Oil	418	01-Jul-71	49
BRAYTON POINT 2	Coal	258	01-Jul-64	56	MOUNT TOM G1	Coal	159	01-Jun-60	60
BRAYTON POINT 3	Coal	643	01-Jul-69	51	MYSTIC 7 GT	Oil	615	01-Jun-75	45
BRAYTON POINT 4	Oil	458	01-Dec-74	46	NEW HAVEN HBR	Oil	483	01-Aug-75	45
BRIDGEPORT HBR 2	Oil	190	01-Aug-61	59	NEWINGTON G1	Oil	424	01-Jun-74	46
BRIDGEPORT HBR 3	Coal	401	01-Aug-68	52	NORWALK HBR 1	Oil	173	01-Jan-60	60
CANAL G1	Oil	597	01-Jul-68	52	NORWALK HBR 2	Oil	179	01-Jan-63	57
CANAL G2	Oil	599	01-Feb-76	44	SCHILLER G4	Coal	51	01-Apr-52	68
MERRIMACK G1	Coal	121	01-Dec-60	60	SCHILLER G6	Coal	51	01-Jul-57	63
MERRIMACK G2	Coal	343	30-Apr-68	52	W. SPRINGFIELD 3	Oil	111	01-Jan-57	63
MIDDLETOWN G2	Oil	123	01-Jan-58	62	YARMOUTH 1	Oil	56	01-Jan-57	63
MIDDLETOWN G3	Oil	248	01-Jan-64	56	YARMOUTH 2	Oil	56	01-Jan-58	62
MIDDLETOWN G4	Oil	415	01-Jun-73	47	YARMOUTH 3	Oil	122	01-Jul-65	55
MONTVILLE G5	Oil	85	01-Jan-54	66	YARMOUTH 4	Oil	632	01-Dec-78	42
TOTAL 8,281 MW									

Note: AES Thames, Somerset, & Salem Harbor plants were also assumed retired

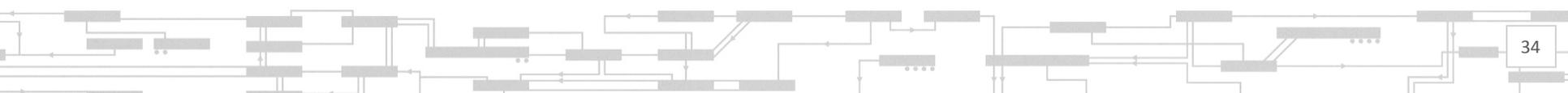
Observations: Generation Retirements Study

- If 8,300 MW retire by 2020, resource adequacy needs dictate replacement capacity of at least 6,246 MW in addition to more than 1,000 MW of new energy efficiency reflected in EE forecast
- At least 900 MW of the 6,246 MW replacement capacity must be in specific locations due to transmission constraints
 - 500 MW must be in Southeast MA, and 405 MW must be in Connecticut
- Approximately 5,100 MW, may need to be integrated into the Hub (all 5,100 MW can be delivered ***to the load from the hub***)
- Note that more transmission may be needed to make resources deliverable ***to the hub***



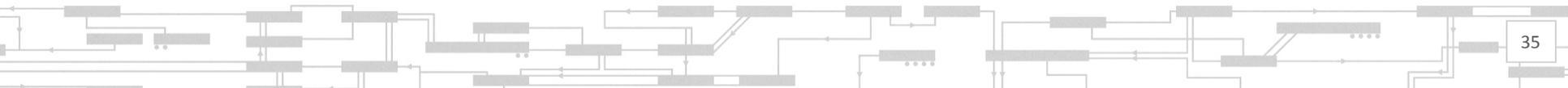
Observations: Generation Retirements Study, *cont.*

- If substitute resources are not available, only 950 MW of the existing 8,300 MW of older oil and coal resources will be able to retire without causing reliability problems
- Major transmission projects significantly improve deliverability of most existing resources, and greatly facilitate retirement of assumed at risk resources
- Repowering all existing sites would likely result in congested capacity, thereby increasing the amount of capacity that needs to be replaced, compared to a scenario where the replacement capacity is deliverable to the Hub



Observations: Generation Retirements Study, *cont.*

- New zonal definitions may have to be considered, and new zones may not resemble current definitions (state boundaries)
- Actual retirement requests will be evaluated as they are submitted based on prevailing system conditions.
 - This study focused on the year 2020, assuming all major transmission projects were already in service
 - Individual retirements may trigger local transmission reliability issues that were not captured in this study



Closing Thoughts

- Region has benefited from regional system planning and competitive markets
 - Expanded transmission development
 - New generation and demand resources
 - Environmental benefits
 - Reliability has been significantly improved, congestion reduced
- Market forces and environmental regulations may accelerate the retirement of older fossil-fired generation
- Growing dependence on natural gas for power generation is the highest-priority strategic risk for New England
- ISO is actively working with stakeholders to address challenges and identify solutions in Strategic Planning Initiative

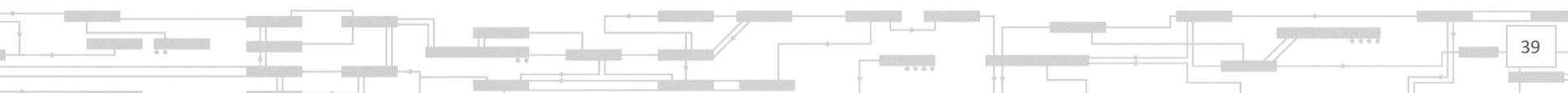
BACKGROUND INFORMATION

Forward Capacity Auction #7 Highlights

- Auction was held February 4-5 to procure resources needed for June 1, 2016 – May 31, 2017 timeframe
 - First time four zones were modeled: NEMA/Boston, CT, ME, Rest-of-Pool
- Total capacity required: 32,968 MW
 - Amount needed in NEMA/Boston: 3,209 MW
 - Amount needed in CT: 7,603 MW
- NEMA/Boston zone cleared at \$14.999/kW-month for new resources (721 MW) and \$6.661/kW-month for existing resources (2,537 MW) due to insufficient competition
- Remaining capacity zones cleared at floor price of \$3.15/kW-month
 - Effective payment rate will vary by capacity zone due to excess capacity

Forward Capacity Auction #7 Highlights, *cont.*

- Total of 268 delist bids (or requests to withdraw from the market) were submitted to withdraw 1,560 MW. All bids were accepted
 - 916 MW of demand resources
 - 644 MW of generating capacity resources
 - Including Norwalk Harbor 1 &2 and Mt. Tom



Salem Harbor

- 1952 – Units 1 and 2 go into service; Unit 3 in 1958 and Unit 4 in 1972
- November 2007 – Boiler tubes exploded at plant killing three workers
- 2009/2010 – Dominion submits delist bids for entire plant for FCA -3 and FCA-4. ISO accepts bids for Units 1-2, but denies bids for Units 3-4 for reliability reasons.
- February 2011 – Dominion submits Non-Price Retirement request for entire plant, effective June 1, 2014 (FCA-4). ISO informs Dominion that Units 3 & 4 are needed for reliability in 2014-2015.
- November 2011 – Dominion formally informs ISO it plans to retire effective June 1, 2014
- August 2012 – Footprint Power purchases Salem Harbor from Dominion. Plans to demolish the plant and build 674 MW natural-gas fired plant that expects to be operational by June 2016.



Salem Harbor

Unit 1* – 80 MW (coal)

Unit 2* – 78 MW (coal)

Unit 3 – 150 MW (coal)

Unit 4 – 437 MW (oil)

Total Capacity: 745 MW

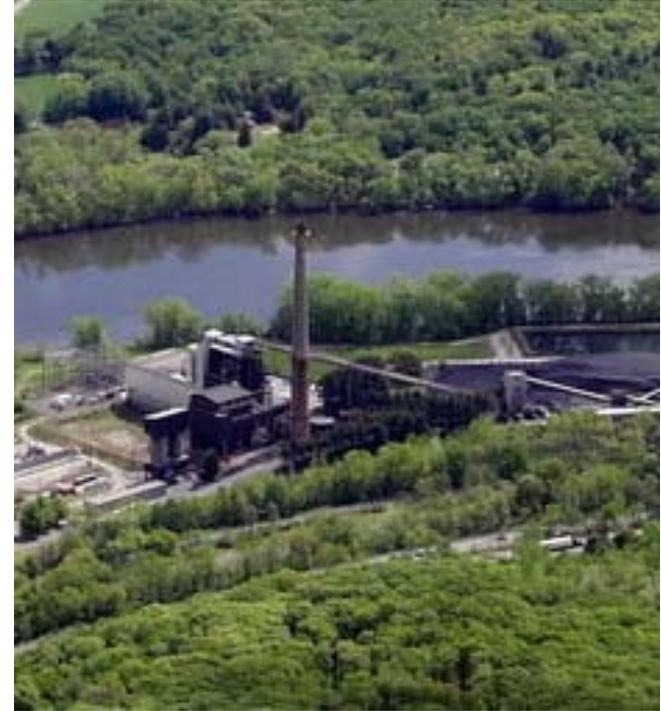
Location: Salem, MA on Salem Harbor

Owner: Footprint Power

*Units 1 and 2 were removed from service in December 2011.

Mt. Tom Coal Plant

- 1960 - Mt. Tom is put in-service as coal-fired plant
- 1970 - Due to air quality regulations and economics, plant was converted to burn oil
- 1981 – Mt. Tom converted back to coal due to uncertainty of oil and the rise in oil prices
- 2007-2009 - Mt. Tom invests \$55 million in environmental upgrades
- Committed to provide capacity through May 2016 (FCA-6)
 - Dynamic (one-year) delist bid was accepted for FCA-7



Mt. Tom

Capacity: 143 MW

Primary fuel: Coal

Location: Holyoke, MA on the Connecticut River

Owner: GDF Suez

Brayton Point

- 1963 – Unit 1 began commercial operation; Unit 2 in 1964; Unit 3 in 1969; Unit 4 in 1974
- January 2005 – Dominion purchased Brayton Point
- Since 2005, \$1.28 billion has been invested in environmental upgrades
- Committed to provide capacity through May 2017 (FCA-7)



Brayton Point

Unit 1 – 243 MW (coal)

Unit 2 – 244 MW (coal)

Unit 3 – 612 MW (coal)

Unit 4 – 435 MW (oil/gas)

Diesel generators – 9 MW

Total Capacity: 1,534 MW

Location: Somerset, MA on Narragansett Bay

Owner: Dominion

RESOURCES

For More Information...



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Save-the-Date



ISO New England
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ENERGY CONFERENCE:
NAVIGATING CHANGE

THE WESTIN WATERFRONT | MAY 9-10, 2013
BOSTON, MASSACHUSETTS

ISO new england **ISO**

The banner features a dark background with a vibrant, multi-colored light streak (orange, yellow, red, blue) curving across the bottom. Six circular inset images are arranged horizontally, showing various scenes: a statue on a pedestal, a domed building, a modern bridge, a park at night, a city skyline, and a city street at night. The ISO logo and 'new england' text are positioned in the bottom right corner.

- Visit www.isoenergyconference.com for more details

APPENDIX E: EFSB PUBLIC HANDBOOK

The Energy Facilities Siting Handbook:

An Overview of the Energy Facilities Siting Board Review Process

The Massachusetts Energy Facilities Siting Board

One South Station

Boston, MA 02110

(617) 305-3525

Revised: July, 2011

PURPOSE

There are many federal, state and local agencies that regulate the construction and operation of power plants, electric transmission lines, natural gas pipelines and natural gas storage facilities in Massachusetts. This handbook provides information about one such agency -- the Massachusetts Energy Facilities Siting Board. It includes an introduction to the Siting Board, a detailed description of the Siting Board's review process, and an explanation of the various ways to participate in that process. We hope that this handbook will provide interested citizens, municipalities, and organizations with an initial understanding of the Siting Board's review process. Further information is available at the Siting Board's offices in Boston and on the Siting Board's website at www.state.ma.us/dpu/siting_board.htm.

IMPORTANT NOTE:

This handbook is not intended as a legal guide. Instead, it provides a general overview of the Siting Board's process for reviewing requests to construct energy facilities. This review process takes the form of an adjudication conducted pursuant to G.L. c. 30A and 980 CMR 1.00. It is each person's responsibility to understand and adhere to applicable statutes and regulations in all proceedings before the Siting Board, and to seek legal counsel if necessary.

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I. INTRODUCTION

The Massachusetts Energy Facilities Siting Board ("Siting Board") is an independent state review board located administratively within the Massachusetts Department of Public Utilities ("DPU"). By reviewing specific requests for approval to construct certain types of jurisdictional energy facilities, the Siting Board is charged, by state statute, with ensuring that the proposed facility will provide a "reliable energy supply for the Commonwealth with a minimum impact on the environment at the lowest possible cost." [G.L. c. 164, § 69H](#). The nine-member Siting Board is made up of the Secretary of Energy and Environmental Affairs, who serves as the Chair, the Secretary of Housing and Economic Development, the Commissioner of the Department of Environmental Protection, the Commissioner of the Division of Energy Resources, two Commissioners from the DPU, and three public members who are appointed by the Governor. The Massachusetts statute governing Siting Board activities is Massachusetts General Laws chapter ("M.G.L. c.") 164, § 69G through § 69S. The Siting Board's regulations can be found at 980 CMR 1.00 *et. seq.*

The Siting Board's jurisdiction is discussed in more detail below, but the categories of facilities reviewed by the Siting Board include: large electric generating plants, electric transmission lines, intrastate natural gas pipelines, facilities for the manufacture or storage of natural gas, and various oil facilities in Massachusetts.

The scope of the Siting Board's review of a proposed facility varies depending on the type of facility. The Siting Board's review of electric generating plants focuses on environmental impacts and mitigation, while its review of other types of facilities considers the need for and cost of the proposed facility, as well as the impacts of the proposed facility on the environment and mitigation of those impacts. Alternatives to a proposed facility, including one or more designated alternate routes for transmission line and gas pipeline projects are also considered.

II. SITING BOARD JURISDICTION

[M.G.L. c. 164, § 69G](#) gives the Siting Board jurisdiction over "energy facilities," by requiring the Siting Board to authorize the construction of the following types of energy facilities:

- Large electric generating facilities, defined as any generating unit designed for or capable of operating at a gross capacity of 100 megawatts or more, including associated buildings, ancillary facilities, transmission and pipeline interconnection that are not otherwise subject to the Siting Board's jurisdiction.
Example: a 300 megawatt natural gas-fired power plant
- A new electric transmission line having a design rating of 69 kilovolts ("kV") or more and which is one mile or more in length on a new transmission corridor.
Example: a new, 115 kV, 2-mile, transmission line running between a new power plant and an existing substation, for which a new right-of-way must be acquired
- A new electric transmission line having a design rating of 115 kV or more which is 10 miles or more in length on an existing transmission corridor except reconductoring at the same voltage (replacing the cables that carry or "conduct" the electric current) and/or rebuilding transmission structures.
Example: A new, 345 kV, 14-mile transmission line running parallel to an existing 115 kV transmission line along an existing right-of-way
- An ancillary structure which is an integral part of the operation of any transmission line which is a facility.
Example: a substation needs upgrades in connection with a new, 12-mile, 115 kV transmission line
- A unit, including associated buildings and structures, designed for or capable of the manufacture or storage of gas, except: (1) a unit with a total gas storage capacity of less than 25,000 gallons and also with a manufacturing capability of less than 2,000 MMBtu per day; (2) a unit whose primary purpose is research, development or demonstration of technology and whose sale of gas, if any, is incidental to that primary purpose; or (3) a landfill or sewage treatment plant.
- A new pipeline for the transmission of gas having a normal operating pressure in excess of 100 pounds per square inch gauge which is greater than one mile in length except restructuring, rebuilding, or relaying of existing gas pipelines of the same capacity.

Pursuant to the specific requirements outlined in M.G.L. c. 164, § 69K-69O½ inclusive, the Siting Board may also may issue a Certificate of Environmental Impact and Public Interest to any applicant that proposes to construct or operate a generation facility or to any electric, gas, or oil company that proposes to construct or operate jurisdictional facilities in Massachusetts. Such a Certificate, if granted, has the legal effect of granting the permit in question, and may grant additional project permits as well.

In addition to conducting facility reviews, the Siting Board may represent the Commonwealth in proceedings before the Federal Energy Regulatory Commission ("FERC") having to do with the construction of energy facilities in Massachusetts. For example, the Siting Board typically intervenes when interstate natural gas pipeline companies petition the FERC to construct major interstate gas pipelines in Massachusetts. The Siting Board also is responsible for coordinating the permitting and licensing of hydropower projects in Massachusetts.

III. SITING BOARD REVIEW PROCESS

The Siting Board reviews major energy facilities using an adjudicatory process which, broadly speaking, can be divided into three phases: procedural, evidentiary, and decision. Each of these phases is discussed in detail below.

A. The Procedural Phase

A project proponent begins the Siting Board process by filing a Petition with the Siting Board. Once the Siting Board receives the Petition, docket numbers are assigned to each jurisdictional component of the case. There are instances when a single project can consist of several cases with both the Siting Board and DPU jurisdictions. In most of these instances, the Chairman of the DPU issues a Consolidation Order, which directs the Siting Board to render a Decision in all related cases after conducting a single adjudicatory proceeding and developing a single evidentiary record. When cases are consolidated, Siting Board rules apply to the proceeding.

The Siting Board then lays the groundwork for its formal review of the proposed facility by providing for public notice of the proceeding, holding one or more public comment hearings, determining who may take part in the formal proceeding, and establishing the ground rules and schedule for the evidentiary phase. Typically, the schedule for the evidentiary, more formal phase of the case is established by the designated Presiding Officer after he or she identifies the parties to the case and holds a procedural conference.

1. Public Notice

Upon receiving a petition to construct an energy facility in Massachusetts, the Siting Board directs the applicant to:

- (1) publish, prior to the public comment hearing, notice of its proposal to construct the project in at least two newspapers having a reasonable level of circulation within the community or region,
- (2) mail notice to owners of all property within a certain distance of the boundaries of the proposed and alternate sites, if any, for the facility, and
- (3) post notice in the city or town halls of communities in which the proposed project would be located.

The Siting Board also customarily mails notice of the applicant's petition to local and state officials who represent the municipality or municipalities where the facility is proposed. The applicant's full petition must be available at the public library or clerk's office in each community where the facility is proposed, and at the Siting Board's Boston offices. Petitions can also be found at the DPU's website by going to <http://db.state.ma.us/dpu/qorders/frmDocketFind.asp> and then selecting "EFSB".

2. Public Comment Hearing and Site Visit

After notice has been published, the Siting Board holds one or more public comment hearings, generally in the city or town where the facility is proposed. The public comment hearing, held in the evening, provides those who attend with an opportunity to learn more about the proposed project and its potential impacts. It also allows the Siting Board to learn about the public's concerns. At the public comment hearing, the petitioner presents an overview of the proposed facility. Public officials and the general public then have an opportunity to ask questions and make comments about the proposal. The public comment hearing is recorded by a court reporter.

Siting Board members and/or staff also view the site or route where the petitioner proposes to construct its facility. If the petitioner has designated an alternate site or route, Siting Board members and/or staff visit that site or route as well.

3. Seeking the Right to Take Part in a Proceeding

Persons or groups who wish to be involved in a Siting Board proceeding beyond the public comment hearing stage may seek either to **intervene as a party**, or to **participate as a limited participant**, by filing a petition with the Presiding Officer assigned to the case. Participation as a party or limited participant is described in greater detail in Section IV, below.

4. The Procedural Conference and Procedural Schedule

After ruling on all petitions to intervene as a party and participate as a limited participant, the Presiding Officer typically convenes a procedural conference to establish a procedural schedule for issuing information requests and filing written testimony, and to set a date for the commencement of evidentiary hearings. Those involved in a Siting Board proceeding are expected to meet all deadlines in the procedural schedule unless the Presiding Officer grants a party's request for an extension in advance of the deadline.

B. The Evidentiary Phase

During the evidentiary phase of a proceeding, the Siting Board develops a factual record upon which to decide whether to authorize construction of the proposed energy facility. The Siting Board's decision must be based solely on information that has been properly admitted into the evidentiary record during the proceeding. Such evidence typically is provided by witnesses sponsored by the applicant and by intervenors. Each witness provides an initial written direct case and then responds to written and oral questions (*i.e.*, information requests and responses). This process is further described below.

1. Direct Case

a. The Applicant

The applicant's direct case consists of its initial petition, the testimony of each of its witnesses, and any other evidence (applications for permits from other state or local agencies, for example) that it properly submits to support its case. The applicant typically presents the bulk of its direct case in written form prior to the evidentiary hearings. Additional oral testimony and written documentation may be offered or requested during the evidentiary hearings.

b. Intervenors

If they wish, intervenors also may present a direct case by sponsoring a witness or witnesses who present written and oral testimony on specific issues pertaining to the applicant's proposal. The Presiding Officer will establish a schedule for the submission of testimony by intervenor witnesses. Limited participants may not sponsor witnesses.

2. Pre-Filed Testimony

The initial written testimony of any witness is called "pre-filed testimony." A witness' pre-filed testimony presents his or her qualifications or familiarity with the subject of his or her

testimony, and then sets forth relevant information through a series of questions to the witness, each followed by the witness' response. Pre-filed testimony may reference analyses performed by the witness, as well as relevant documentary evidence such as published reports, photographs of features in the project area, or noise measurements. Copies of any such materials must be provided if they have not already been entered into the record as part of the applicant's direct case, or as part of the applicant's responses to discovery. Any witness who submits pre-filed testimony must be available to respond to written discovery regarding that testimony, and, as explained in greater detail below, to be subject to cross-examination at an evidentiary hearing at the Siting Board's office in Boston.

3. Discovery

The purpose of discovery is to provide parties and the Siting Board with a way to gain access to information that is relevant to the issues in the case prior to the start of evidentiary hearings. Discovery consists of written questions (*i.e.*, information requests) and requests for pertinent documents. Typically, the Siting Board and intervenors may submit information requests to the petitioner. If an intervenor presents a direct case, the Siting Board and the petitioner may submit information requests to that intervenor.

Information requests and responses must be filed in accordance with the procedural schedule. Responses to discovery must be dated, must include the name of the witness who prepared the response, and must be presented in the format specified by the Presiding Officer. All witnesses responsible for responding to discovery must also be made available for cross-examination under oath at the evidentiary hearings if requested by the Siting Board or other parties.

4. Evidentiary Hearings

The purpose of the evidentiary hearing is to further develop the evidentiary record through the examination of witnesses under oath. Evidentiary hearings are recorded by a court reporter. Evidentiary hearings are generally open to the public; however, only parties may offer or question witnesses. Hearings are held at the Siting Board's office at One South Station in Boston. Siting Board evidentiary hearings are adjudicatory proceedings under M.G.L. c. 30A.

Evidentiary hearings are conducted by the Presiding Officer assigned to the case. In conducting hearings, the Presiding Officer is guided by, but need not observe the rules of

evidence observed by Massachusetts Courts. The Presiding Officer establishes the witness schedule after consulting with the parties to determine when their witnesses will be available. Generally, the petitioner's witnesses appear first, followed by the intervenor witnesses. The witness schedule is subject to change during the course of hearings.

At the evidentiary hearings, each witness is sworn in by the Presiding Officer. The witness then provides his or her direct oral testimony adopting, clarifying, and as necessary, amending his or her pre-filed testimony and responses to discovery. The witness is then subject to cross-examination by the Siting Board and other parties. Cross-examination provides the Siting Board and parties with an opportunity to clarify confusing areas in a witness' testimony or responses to discovery.

On occasion, a witness may be unable to respond to a specific question during cross-examination due to the complexity of the subject or the absence of documentation. In such cases, the questioner may ask to make a record request for the information. If the record request is allowed, the witness must provide a written response to the question at a time determined by the Presiding Officer.

Following cross-examination, witnesses may be subject to re-direct examination, typically restricted to issues raised during cross-examination, and to re-cross-examination, typically restricted to issues raised during re-direct examination

C. The Decision Phase

After the close of evidentiary hearings, the petitioner, intervenors and limited participants may submit briefs that evaluate the evidence in the record in light of the Siting Board's statute. The Siting Board staff then drafts an Issues Memorandum to the Siting Board for deliberation on contested issues in the case. The Siting Board deliberates on the items outlined in the Issues Memorandum and provides staff with direction to write the Tentative Decision. The Siting Board reviews the Tentative Decision and meets to vote on whether or not to adopt the Tentative Decision. Based on the Tentative Decision, the Siting Board issues a Final Decision.

1. The Brief

A brief is a document prepared by the parties that presents arguments in support of a particular result (e.g., that the petition should be approved, approved with conditions, or rejected)

based on information in the evidentiary record and on the Siting Board's statute and precedent. Briefs may not introduce additional evidence.

At the close of evidentiary hearings, the Presiding Officer establishes a briefing schedule, which typically allows for initial briefs, followed by reply briefs that respond to the arguments presented by the other parties in their initial briefs.

The applicant, intervenors, and limited participants may submit initial briefs in accordance with the briefing schedule set by the Presiding Officer. Initial briefs typically are due two to three weeks after the close of evidentiary hearings. The applicant's initial brief typically summarizes the record of the case and argues that the proposed facility meets all statutory requirements for approval. Initial briefs from intervenors and limited participants may address a broad range of issues or may focus on a few critical issues – for example, a specific proposal for mitigation of an environmental impact. Any argument or proposal raised in the brief must be based on evidence that is in the record. No party or limited participant is under any obligation to file an initial brief.

If a party or limited participant chooses, he/she may submit a reply brief. Reply briefs typically are due one to two weeks after the initial briefs were filed. A reply brief should address only those issues raised in other initial briefs; therefore, reply briefs generally are shorter than initial briefs. No party or limited participant is under any obligation to file a reply brief.

2. Issues Memorandum

Siting Board staff prepares an Issue Memorandum distributed to the Siting Board and parties. The Issues Memorandum identifies contested issues among the parties or potential conditions for the construction or operation of the facility. The parties receive the Issues Memorandum for review and comment prior to the scheduled Siting Board meeting. The Siting Board members deliberate and may afford public officials and parties an opportunity to present oral comments. The Siting Board then provides guidance to Siting Board staff as to how to address and resolve the issues in a Tentative Decision.

3. Tentative Decision

Following the Siting Board's deliberations on the Issues Memorandum, the Siting Board staff drafts and issues a Tentative Decision, which is distributed to all parties and limited participants. A Tentative Decision may: (1) approve the proposed project or noticed alternative;

(2) approve the proposed project or noticed alternative subject to conditions; or (3) deny the proposed project. The Tentative Decision contains sections addressing each of the major statutory issues in the case. A Decision section at the end of the document summarizes the staff's findings. These summary findings, however, are based on the more detailed findings made throughout the document. It is essential to read the entire text to fully understand the Tentative Decision.

4. Comment Period

A comment period of at least seven days commences immediately after the Tentative Decision is issued. During the comment period, the petitioner, intervenors, and limited participants may submit written comments on the Tentative Decision to the Siting Board. These comments should focus on the consistency of the Tentative Decision with evidence in the record; they may not introduce new evidence. The petitioner, intervenors and limited participants are not required to submit written comments on the Tentative Decision.

5. Siting Board Meeting

Approximately two weeks after the Tentative Decision is issued, the Siting Board meets to consider whether to approve, amend, or reject the Tentative Decision. At the Siting Board meeting, Siting Board staff members present a brief overview of the Tentative Decision, respond directly to specific written comments when appropriate, identify any amendments being proposed by staff, and respond to questions from Siting Board members. Following the staff presentation, the Siting Board may afford parties the opportunity to present oral arguments. The Siting Board members may question any speaker regarding his or her comments on the Tentative Decision.

The Siting Board then considers any proposed amendments to the Tentative Decision. After all amendments have been considered, the Siting Board votes on whether to accept the Tentative Decision as amended.

6. Final Decision of the Siting Board

The Final Decision that incorporates all approved amendments to the Tentative Decision, typically is issued on the business day immediately following the Siting Board vote. All parties and limited participants receive a copy of the Final Decision. An aggrieved party in interest may

appeal the Final Decision to the Supreme Judicial Court pursuant to [M. G.L. c. 25, § 5](#), as made applicable to the Siting Board by [G.L. c. 164, § 69P](#).

IV. BECOMING A PARTY OR LIMITED PARTICIPANT

As noted above, individual people, groups or other entities (such as a municipality) wishing to participate beyond the public comment phase of a proceeding may petition the Siting Board to intervene as a party or participate as a limited participant.

A. Petition

The petition should clearly describe the petitioner's interest in the proceeding. Persons seeking to intervene or participate as a limited participant should consult the regulations governing intervention and participation in Siting Board proceedings, which can be found at 980 CMR 1.05 (available online at <http://www.mass.gov/Eoca/docs/dte/siting/procrule.pdf>).

In order to **intervene as a party**, a petitioner must demonstrate that he or she *is, or may be, "substantially and specifically affected" by the proceeding*. The issues raised in the petition to intervene *must be specific to the potential intervenor and must fall within the scope of the Siting Board's review*. For example, to support a petition to intervene as a party, a town might claim that a transmission line project will improve the reliable delivery of electricity to its citizens; a conservation commission might cite the need to protect a river bank area which could be affected by a project's water use or discharges; or an individual whose property abuts a project site might express concerns about noise or views from his backyard. Individuals or groups that are permitted to intervene as a party are known as "intervenors."

Persons or groups seeking to participate as a **limited participant** need not demonstrate "substantial and specific" interest; however, a petition to participate as a limited participant should describe the manner in which the Petitioner is interested, state the petitioner's contention and the purpose for which participation is requested.

The Presiding Officer reviews all petitions to intervene as a party or participate as a limited participant and makes a ruling on each petition.

B. Rights of Intervenors and Limited Participants

The rights of a party in a Siting Board proceeding are more extensive than those of a limited participant. In deciding what type of petition to submit, consider the following:

An Intervenor may:

- * Issue information requests and receive responses,
- * Present written testimony and witnesses,
- * Cross-examine witnesses,
- * File a brief,
- * Review and comment on the Tentative Decision, and
- * Appeal a final decision.

A limited participant may:

- * Receive copies of information requests and testimony in a proceeding,
- * Receive copies of responses to information requests,
- * File a brief, and
- * Review and comment on the Tentative Decision.

C. Group Intervention

Under [Section 10A of M.G.L. c. 30A](#), a group of 10 or more people may petition the Siting Board to intervene as a group. There are several requirements that must be met for a Section 10A petition to intervene to be granted:

- There must be a group of 10 or more people;
- Damage to the environment, as defined in [Section 7A of chapter 214](#), is or may be at issue;
- The intervention petition must clearly and specifically state the facts and grounds for intervening and the relief sought;
- At least five of the group of 10 or more must reside in the municipality in which the license or permitted activity is sought; and
- Each intervening person must sign an affidavit stating his or her intention to be part of the intervention group and to be represented by the group's authorized representative.

D. Legal Counsel

Except for an individual appearing pro se or limited participants, all parties must be represented by an attorney. The Presiding Officer may grant a waiver for good cause shown. The request for a waiver must include: (1) an affidavit stating the good cause and naming a duly authorized representative; and (2) an affidavit by the duly authorized representative accepting the

appointment and certifying that he will abide by the procedural rules set forth in 980 CMR and the Presiding Officer's directives.

Individuals appearing *pro se* and limited participants are not required to be represented by an attorney. However, the Siting Board recommends that all persons involved in a Siting Board proceeding obtain legal representation. Generally, community groups or other entities (other than individuals) are required to be represented by counsel unless a waiver is obtained from the Presiding Officer that would allow a non-lawyer to represent the group or other organization. All participants, whether or not represented by an attorney, must abide by legal conventions and adhere to the laws and regulations governing the Siting Board. The Siting Board staff is not permitted to provide legal advice of any kind to parties or limited participants.

E. Accessing Information

Whether you choose to formally participate in a matter or not, you may access all the non-confidential evidence and testimony in a case. There are several ways to view materials. If you are a party to the proceeding you will receive all the documents in the case in the mail and possibly electronically. If you are not a party, you may access the case docket from the Department of Public Utilities' website (<http://db.state.ma.us/dpu/qorders/frmDocketFind.asp>). You may also go to the Siting Board's office at One South Station in Boston to review documents related to a case. Further, you can access prior cases via the [Siting Board Dockets webpage](#).

APPENDIX A - Other Reviewing Agencies

A number of state agencies other than the Siting Board may have responsibilities in connection with the regulation and development of energy facilities.

MEPA Unit of the Massachusetts Office of Environmental Affairs (617) 626-1020
<http://www.env.state.ma.us/mepa/>

Department of Environmental Protection (617) 292-5500 <http://www.mass.gov/dep/>

Department of Public Utilities (617) 305-3500 <http://www.mass.gov/dpu/>

Division of Energy Resources (617) 727-4732 <http://www.mass.gov/doer/>

Department of Conservation and Recreation (617) 727-3180 <http://www.mass.gov/dcr/>

Massachusetts Natural Heritage and Endangered Species program (508) 792-7270
www.mass.gov/dfwele/dfw/nhesp/nhesp.htm

Massachusetts Water Resources Authority (617) 242-6000 <http://www.mwra.state.ma.us/>

Office of Coastal Zone Management (617) 727-9530 <http://www.mass.gov/czm/>

Massachusetts Historical Commission (617) 727-8470 <http://www.sec.state.ma.us/MHC/>

Massachusetts Highway Department (617) 973-7500 <http://www.massdot.state.ma.us/Highway/>

Department of Public Health (617) 624-6000 <http://www.mass.gov/dph/>

Department of Public Safety (617) 727-3200 <http://www.mass.gov/dps/>

Local agencies and officials such as the building inspector, planning board, zoning board, conservation commission, water department, fire department, historical commission, board of health and department of public works also may be involved.

**APPENDIX F: PUBLIC BENEFITS DETERMINATION OF THE SECRETARY OF
ENERGY AND ENVIRONMENTAL AFFAIRS**



The Commonwealth of Massachusetts
Executive Office of Energy and Environmental Affairs
100 Cambridge Street, Suite 900
Boston, MA 02114

Deval L. Patrick
GOVERNOR

Timothy P. Murray
LIEUTENANT GOVERNOR

Richard K. Sullivan Jr.
SECRETARY

Tel: (617) 626-1000
Fax: (617) 626-1181
<http://www.mass.gov/envir>

June 17, 2013

PUBLIC BENEFITS DETERMINATION
OF THE SECRETARY OF ENERGY AND ENVIRONMENTAL AFFAIRS

PROJECT NAME : Salem Harbor Station Redevelopment
PROJECT MUNICIPALITY : Salem
PROJECT WATERSHED : North Coastal
EEA NUMBER : 14937
PROJECT PROPONENT : Footprint Power, LLC
DATE NOTICED IN MONITOR : April 10, 2013

Consistent with the provisions of *An Act Relative to Licensing Requirements for Certain Tidelands*, I hereby determine that the above-referenced project will have a public benefit. A Certificate on the Final Environmental Impact Report (FEIR) was issued on May 17, 2013.

Project Description

As described in the FEIR, the project consists of demolition of an existing coal-fired power plant, remediation of the site, and construction of a new 630 megawatt (MW) nominal electrical generating facility and associated infrastructure and equipment on a 65-acre site in Salem. The facility will be fired by natural gas and include "quick-start" capability (ability to generate 300 MW within 30 minutes of start-up and 630 MW within 60 minutes). Use of duct-firing under summer conditions, will increase capacity by 62 MW for a total of 692 MW. The project will have the capacity to generate 5.1 million megawatt hours (MWh) annually. The facility will be constructed on approximately 20 acres of the northwestern portion of site. The facility stacks will be contained in a common collar with a height of 230 feet.

The project includes construction of several buildings comprising approximately 115,000 square feet (sf) with heights ranging from 25 feet to 125 feet. The 8,188-sf Administration Building will be integrated into a landscaped berm along the western edge of the property. The 10,282-sf Operations Building will be incorporated into the Steam Turbine Generator (STG) Building and will include an

office, maintenance shop and locker rooms. The existing guard house, located adjacent to the access drive, will be retained as a guard house. In addition, an existing building located along the northern access drive will be repurposed as a visitor's center. A continuous landscaped berm is incorporated into the project design. On the western and southern sides of the facility it will rise to 25 feet and will provide a landscaped buffer and acoustic barrier between the street and the facility. On the eastern edge, the berm will have a height of 15 feet and will provide a visual buffer from the ocean side.

The Proponent will operate the existing power plant until its scheduled shut down on June 1, 2014. Construction is proposed to begin in June 2014 and will extend for approximately 23 months. Demolition will include removal of all above-ground features of the existing facility, including power plant buildings and equipment, stacks and precipitators, coal handling equipment, storage tanks and associated appurtenances such as spill prevention berms; and intake screen and pumphouse structures. The facility will include two quick-start natural Gas Turbine Generators (GTG); two STGs; two heat recovery steam generators (HRSG), including pollution control equipment; administrative/warehouse/shops space; a service bay; an auxiliary bay; a water treatment facility; step-up transformers; an ammonia storage tank; two water tanks; and, air cooled condensers (ACC). The facility is not dual-fueled and, therefore, does not have the potential to use significant amounts of diesel fuel. It will include a diesel-fueled back-up generator.

The design includes a 34,000 gallon above-ground ammonia (NH_3) storage tank to the east of the building structures and shielded from street view. The single-wall construction steel tank will contain 19 percent aqueous (NH_3) used for pollution control processes. The tank, ammonia transfer pumps, valves and piping, will be located within a concrete containment structure (dike). The diked area will be located within another enclosure.

The facility requires an interconnection with the NGRID switchyard located in the northeast corner of the site. The Proponent will construct a new facility switchyard, a 115 KV underground cable connection from each of the step-up transformers to the new facility switchyard, and overhead 115 kV transmission lines between the facility switchyard and the NGRID switchyard on three 95-foot high steel poles or, alternatively, subsurface feeder connections.

Natural gas will be delivered to the site from the HubLine pipeline in Salem Sound. The pipeline will be owned and operated by Spectra Energy. Spectra will conduct the federal, state and local approval and permitting process for the pipeline. A 16-inch pipeline will enter the site in the vicinity of Derby Street and Webb Street and extend to an on-site metering and regulator station in the southeastern corner of the facility, east of GTG #2. The Proponent will install a pipeline from the meter station to the GTGs, HRSG duct burners, and the auxiliary steam boiler.

Vehicular access to the site will be provided via Fort Avenue. The existing access road will be retained for primary access. Secondary access will be provided from the northwest corner of the site. New on-site access roads will be constructed to and around the new facility. This will include more than 2,500 linear feet (lf) of paved roads with widths of 20 feet to 30 feet. Turning radii will be designed to facilitate access by trucks, equipment and emergency vehicles.

The project does not include redevelopment of the remaining 45 acres of the site. Information provided in previous MEPA filings and the FEIR is limited to construction of the new facility and demolition and remediation necessary to support it. The Proponent indicates that redevelopment will be

guided through consultation with the City of Salem and stakeholders. Redevelopment of the site will be addressed in a subsequent Notice of Project Change (NPC).

Project Site

The 65-acre site is located at 24 Fort Avenue in northeast Salem. It is bordered by Fort Avenue and the South Essex Sewerage District (SESD) wastewater treatment plant to the north, Salem Harbor and Cat Cove to the east and northeast, the Blaney Street Ferry terminal and several mixed-use buildings to the southeast, and by Derby Street and Fort Avenue to the west. Residential neighborhoods and the Bentley Elementary School are located west of the site across Fort Avenue and Derby Street. The majority of the site is zoned Industrial and within the Salem Harbor Designated Port Area (DPA). A small area on the northeastern edge of the site is not included in the DPA. Another small area (less than two acres) on the northwest corner of the site is zoned Residential Two-Family.

The site has been used for power generation since 1951. Since 2005, the Salem Harbor power plant was owned and operated by a subsidiary of Dominion Resources, Inc. Units 1 and 2 were removed from service on December 31, 2011. Units 3 and 4 are scheduled to be shut down on June 1, 2014. Major facilities associated with power generation operations include a power house building (including Units 1 through 4, fan house, boiler room and turbine room), an aboveground fuel oil tank farm and associated piping transfer system, a coal storage pile and coal moving equipment, a marine terminal, and a wastewater treatment system. Three small warehouse buildings are located north of the power plant building. West of the power plant building, the site includes a 10-acre easement for a 115 kV switchyard, substation and power lines. The switchyard and power lines are owned by NGRID. Primary access to the site is provided via a driveway from Fort Avenue just north of the Fort Avenue/Memorial Drive intersection.

The facility uses once-through cooling and is permitted to withdraw approximately 119,000,000 gallons per day (gpd) of water from Salem Harbor. Treated effluent is discharged to Salem Harbor, as authorized by the existing National Pollutant Discharge Elimination System (NPDES) Discharge Permit. An additional 100,000 gpd of water is provided from the municipal system for process and potable water needs. Sanitary waste and laboratory drains discharge to the SESD wastewater treatment facility.

The site includes approximately 45 acres of filled tidelands. Wetland resources on-site (or directly adjacent to it) include: DPA, Land Subject to Coastal Storm Flowage (LSCSF), Coastal Bank, and Rocky Intertidal Shores. A portion of the site is located in the City of Salem Flood Hazard Overlay District. The perimeter of the site (primarily the jetty area) is designated as a high hazard area (V-zone) which is subject to wave action.

The site does not contain any historic resources but several Historic Districts and National Historic Landmarks are located within the vicinity, including the Derby Waterfront Historic District, the Salem Willows Historic District, the Winter Island Historic District, the Fort Pickering Historic Landmark, the Fort Lee Historic Landmark, and the House of Seven Gables Historic Landmark.

Permitting/Jurisdiction

The project is undergoing MEPA review and is subject to preparation of a Mandatory EIR pursuant to 301 CMR 11.03 (7)(a)(1) because it requires State Agency Actions and entails the

construction of a new electric generating facility with a Capacity of 100 or more MW. The project requires an Approval to Construct from the Energy Facilities Siting Board (EFSB). It requires a Major Comprehensive Air Plan Approval and Prevention of Significant Deterioration (PSD) Review, an Air Operating Permit, a Chapter 91 (c.91) License, an Underground Injection Control Permit and an Industrial Sewer Use Permit from the Massachusetts Department of Environmental Protection (MassDEP). In addition, it may require a Beneficial Use Determination (BUD) from MassDEP. It requires an Aboveground Storage Tank Permit from the Department of Public Safety. This project is subject to review under the May 2010 MEPA Greenhouse Gas Emission Policy and Protocol (GHG Policy). The project may require Federal Consistency Review by Coastal Zone Management (CZM).

The project will require multiple permits and reviews by the City of Salem, including a Special Permit (Essential Use) and Height Variance from the Salem Zoning Board of Appeals and Site Plan Review and a Special Permit (Wetlands and Flood Hazard Overlay District) from the Salem Planning Board. Also, it will require an Order of Conditions from the Salem Conservation Commission (or a Superseding Order of Conditions (SOC) from MassDEP in the event the Order is appealed).

The project requires a NPDES Construction General Permit and a NPDES Multi-Sector General Permit for Stormwater Discharges Associated with Industrial Activity from the U.S. Environmental Protection Agency (EPA). It requires a Notice of Proposed Construction or Alteration to the Federal Aviation Administration (FAA).

The project is not seeking Financial Assistance from the Commonwealth. Therefore, MEPA jurisdiction is limited to the subject matter of required State Agency permits. The numerous permits and approvals required, and the broad scope of the EFSB review, confers broad scope jurisdiction and extends to all aspects of the project that have the potential to cause Damage to the Environment, as defined in the MEPA regulations.

Landlocked Tidelands

Consistent with the provisions of *An Act Relative to Licensing Requirements for Certain Tidelands* (2007 Mass. Acts ch. 168, sec.8) (the Act), which was enacted on November 15, 2007, I *must* conduct a Public Benefits Review for projects in tidelands that are required to file an EIR.

The legislation states the following regarding the Public Benefits Determination:

“In making said public benefit determination, the secretary shall consider the purpose and effect of the development; the impact on abutters and the surrounding community; enhancement to the property; benefits to the public trust rights in tidelands or other associated rights, including, but not limited to, benefits provided through previously obtained municipal permits; community activities on the development site; environmental protection and preservation; public health and safety; and the general welfare; provided further, that the secretary shall also consider the differences between tidelands, landlocked tidelands and great pond lands when assessing the public benefit and shall consider the practical impact of the public benefit on the development.”

The following addresses each of the considerations identified in the legislation.

1. *purpose and effect of the development*

As noted above, the project consists of demolition of an existing coal-fired power plant, remediation of the site, and construction of a new 630 megawatt (MW) nominal electrical generating facility and associated infrastructure and equipment on 20 acres of the site. The facility will employ high-efficiency combustion turbines fueled with natural gas and will incorporate advanced pollution control and monitoring equipment. The remaining 45 acres will be available for redevelopment. Redevelopment will be guided through consultation with the City of Salem and stakeholders and will be subject to MEPA review through the filing of a subsequent Notice of Project Change (NPC).

The project will preserve local tax revenue associated with the site for the City of Salem. It will create approximately 320 construction jobs (on average) and 30 – 40 permanent jobs.

2. impact on abutters and the surrounding community

The project site is zoned for industrial uses and is located adjacent to other industrial and commercial facilities, including the SESD and the Blaney Street Ferry Terminal. The project will reduce impacts to abutting residential areas, compared to the previous use, and is designed to minimize noise, air pollution, and visual impacts of the new facility. Redevelopment will not be hindered by significant demolition and remediation costs associated with development of the site and the project design will support water-dependent industry, or other appropriate uses. Visual and physical access to the waterfront will be improved by creating walkways and providing a generous set back between the new facility and the Harbor to facilitate access along the entire waterfront edge of the site. Opportunities to expand port access and waterfront facilities have been identified as a priority by the City of Salem.

3. enhancement to the property

The project will enhance the project site through demolition of structures associated with the coal-fired power plant and remediation of the entire site. Furthermore, this significant site work will support redevelopment of the remaining 45 acres of the site because it will not be hindered by these significant demolition and remediation costs. In addition, the new facility is limited to 20 acres of the site and designed to provide generous setbacks from the Harbor. Redevelopment of the site has been identified as a priority by the City of Salem and the state legislature. The project is supported by local officials and state legislators.

4. benefits to the public trust rights in tidelands or other associated rights

Because the proposed facility is located within filled tidelands and a DPA, development of the site is guided by the Salem Municipal Harbor Plan (MHP) and the Waterways Regulations (310 CMR 9.00). Uses eligible for licensing in the Industrial Port District section of the DPA are water-dependent industry, marine industrial parks, and temporary uses as defined in the waterways regulations. The project requires a variance from Section 9.21 (2)(a)(2) of the Waterways Regulations which prohibits non-water dependent use of filled tidelands in a DPA. CZM and the City of Salem indicated, during review of the FEIR, that the project meets the intent and the substantive provisions of the Plan and the MHP approval.

The FEIR identified the project's consistency with the criteria for a variance, including a

demonstration that the project serves an overriding public interest and provision of adequate mitigation and compensation for impacts to public interests in tidelands. The facility will provide a reliable source of energy within the NEMA zone, it will remediate the site, provide additional opportunities for redevelopment and preserve a critical portion of the City's tax base. The project has been designed to avoid, minimize and mitigate all associated impacts. It is fueled by clean-burning natural gas and includes state-of-the-art control technologies.

The project will result in minimal, if any, detriments to the interests of the public in waterways associated with the Site. Public access is not typically encouraged within a DPA and the site does not currently provide access. To minimize any impacts to tidelands and preserve opportunities for DPA uses, the facility is limited to a 20-acre portion of the Site, is setback from the waterfront and provides opportunities for redevelopment of the wharf area. The project will provide paths within the landscaped berm along Derby Street and a path that extends from Derby Street towards the Harbor. The design will preserve a view corridor from Derby Street to the Harbor. Setbacks between the facility and the waterfront will support future provision of public access along the site's entire waterfront.

Comments from MassDEP on the FEIR indicated that the proposed benefits appear to be generally consistent for the purpose of the PBD (and will be evaluated during permitting for adequacy with variance criteria). The comments specifically highlight the benefits associated with remediation and preparation of the site to support water-dependent industrial uses.

5. community activities on the development site

As noted above, public access will include paths within the landscaped berm along Derby Street and a path that extends from Derby Street towards the Harbor. The design will also support a view corridor from Derby Street to the Harbor and future provision of access along the site's waterfront. Comments from the City of Salem on the FEIR identified provision of pedestrian and vehicular access to the remainder of the site as an important goal for redevelopment. A visitor's center will be provided on the site through re-purposing as a visitor's center.

6. environmental protection and preservation

The project consists of remediation and redevelopment of an industrial site. It has been designed to avoid, minimize and mitigate associated impacts including GHG emissions, air pollution, traffic generation, and impacts to wetland resource areas. Measures to avoid, minimize and mitigate potential impacts associated with remediation of the site, construction of the facility, and operation of the facility include: location and design of the facility to minimize potential impacts to residential neighborhoods; state-of-the-art combustion technology, emission controls and reporting equipment to minimize air emissions; noise mitigation including siting of equipment to maximize distance between receptors and noise-producing equipment, enclosing equipment where possible, and use of equipment silencers; elimination of once-through cooling and associated water withdrawal; design and construction of a stormwater management system that incorporates Low Impact Development (LID) techniques; demolition and remediation of site; provision of public access; and, measures to reduce construction period impacts. In addition, the project includes measures to avoid, minimize and mitigate GHG emissions, including fuel choice and technology, installation of a solar photovoltaic (PV) array, and incorporation of energy efficiency measures into the design of the

Administration and Operations buildings.

Air Pollution

- use of a high-efficiency advanced turbine combined cycle technology, emission controls and reporting equipment to minimize all pollutants;
- use of natural gas will limit emissions of PM, SO₂ and HAPs compared to other fossil fuels;
- use of DLN turbine combustors in combination with SCR will reduce NO_x emissions;
- 200 tpy of NO_x Emission Reduction Credits (ERC) will be obtained to meet NSR offset requirements;
- advanced combustor design, combustor practices, and use of a catalytic oxidation system in the HRSG will reduce emissions of CO and VOCs; and,
- quick start capability to minimize all pollutants associated with start-up.

GHG Emissions

- use of combined cycle natural gas turbines;
- \$4 million in CO₂ allowances for RGGI offsets;
- solar PV array with potential to offset 175 tpy GHG emissions;
- Administrative Building is designed for LEED Certification at the Platinum level and includes a green roof, geothermal heat pumps for heating and cooling, variable volume ventilation fans, increased insulation to minimize heat loss, lighting motion sensors, climate control and building energy management systems, a 10% reduction for LPD (and identifies the potential for larger reductions), and water conserving fixtures that exceed building code requirements; and
- Operations Building includes a high albedo roof, geothermal heat pumps for heating and cooling; increased insulation to minimize heat loss, daylighting, lighting motion sensors; climate control, building energy management systems, a 10% reduction for LPD (and identifies the potential for larger reductions), a high albedo roof, and water conserving fixtures;
- the Proponent will provide a certification to the MEPA Office indicating that all of the measures proposed to mitigate GHG emissions, or measures that will achieve equivalent reductions (e.g. 56.5 tpy reductions, or 29%, from Administrative Building and Operations Building), are included in the project; and,
- commitment to provide a GHG analysis, prepared consistent with the GHG Policy and Protocol, for the subsequent redevelopment of the site (regardless of whether the proposed redevelopment exceeds EIR thresholds) as part of the NPC.

Noise

- siting of facility equipment to maximize distance between receptors and noise-producing equipment;
- acoustical treatment of combustion and steam turbine buildings;
- locating equipment within enclosures or buildings that provide noise attenuation through layers of insulation and siding;
- use of equipment silencers including a gas turbine inlet silencing package; a stack silencing package to reduce sound pressure levels in each flue of the stack structure, silencers on steam system vents and, as permitted by relevant codes, on safety and relief valves that release high pressure steam;

- gas turbines and steam turbines will be fully enclosed;
- steam turbine insulation will be designed to provide thermal and acoustical insulation;
- large pumps in the HRSG enclosure (boiler feed pumps) will be enclosed in additional acoustical structures as necessary;
- location of piping, valving and control systems within enclosures or underground to limit fluid transfer noise;
- larger fans that operate at slower speeds and shielding of fans by cowlings or other acoustical treatments on the ACCs;
- intake filter houses, transformers, fuel gas compressors and boiler feed water pumps will be wrapped in acoustic barriers;
- acoustically designed barrier walls around transformers to shield sensitive receptors from transformer noise;
- gas compressors and gas metering enclosure will be designed with acoustic silencing; and
- construction of a retaining wall and planted berm will be constructed around the western, southern and eastern edges of the facility to deflect sound.

Construction Period

- a minimum reuse/recycling goal of 50 percent, including potential re-use of coated brick and concrete;
- dust suppression methods during demolition will include pre-cleaning of larger surfaces and structural members prior to demolition, water suppression sprays and misting to prevent airborne particulates, and enclosure of areas to prevent the migration of dust;
- dust suppression during earth moving will include use of water trucks to wet ground surface, stabilization of soils, and creation of wind breaks;
- temporary sediment basins and/or sediment traps;
- noise mitigation including construction hour limits, establishment and enforcement of construction site and access road speed limits, mufflers on noise-producing construction equipment and vehicles, siting of noisiest equipment as far as possible from sensitive receptors, and maintenance of engine housing panels in the closed position;
- stabilized construction and exit points;
- stormwater conveyance channels/diversion berms;
- sediment basins/traps;
- storm drain inlet control;
- perimeter stormwater controls consisting of silt fence, fiber roll and/or compost filter socks installed prior to commencing earth disturbing activities;
- concrete washout areas consist of prefabricated or site-built impermeable containment areas sized to hold concrete wastes and wash water;
- prohibition on discharging groundwater or accumulated stormwater;
- installation and maintenance specifications for stormwater controls;
- use of ultra-low sulfur diesel (ULSD) fuel (15 parts per million sulfur) in off-road vehicles;
- anti-idling measures including turning off diesel combustion engines on construction equipment not in active use and limiting idling of dump trucks to five minutes or less;
- vehicles greater than 50 brake horsepower will have engines that meet EPA PM emission standards or emission control technology certified by manufacturers to meet or exceed emissions standards and emission control devices, such as diesel oxidation catalysts

(DOCs) or diesel particulate filters (DPFs), will be installed on the exhaust system side of engine equipment;

- police detail to mitigate traffic impacts; and,
- delivery of large pieces of equipment or material will be by barge to minimize impacts on local roadways.

6. *public health and safety*

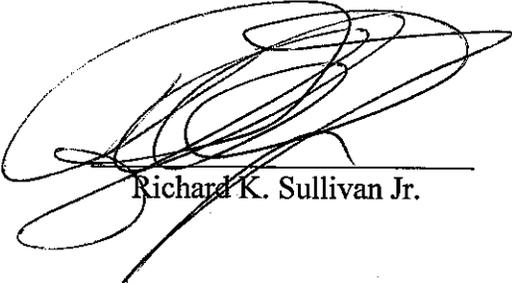
Remediation and demolition will promote public health and safety by addressing contamination issues and removing obsolete structures. The project includes provisions to ensure hazardous materials and equipment are managed and stored safely. In addition, the measures noted above to avoid, minimize and mitigate environmental impacts will also protect public health and safety.

Conclusion

Based on the foregoing, I hereby determine that the project will have a positive public benefit. To meet the public publication requirements of the legislation, this Determination will be published in the Environmental Monitor on June 26, 2013.

June 17, 2013

Date



Richard K. Sullivan Jr.

RKS/CDB/cdb