THE SALEM HARBOR POWER STATION SITE ASSESSMENT STUDY

HISTORIC DERBY STREET NEIGHBORHOOD ASSOCIATION MEETING
JUNE 13, 2011

CITY OF SALEM
JACOBS
SASAKI ASSOCIATES
LA CAPRA ASSOCIATES
ROBERT CHARLES LESSER & COMPANY

MEETING OVERVIEW

- STUDY OVERVIEW
- PRECEDENTS
- SITE CONTEXT
- REGIONAL ENERGY MARKET ANALYSIS
- POTENTIAL COST
- NEXT STEPS

PROJECT APPROACH

CITY SALEM — DOMINION ENERGY

JACOBS MANAGEMENT TEAM

TASK 1

CASE STUDIES

POTENTIAL COSTS FOR SITE REDEVELOPMENT

PROJECT DATA

JACOBS
SASAKI
RCLCO

TASK 2

ENERGY MARKET ANALYSIS

COST FOR COMPLIANCE

JACOBS
LACAPRA

TASK 3

ALETRNATIVE USES

DEVELOPMENT SCENARIOS

FISCAL IMPACT

SASAKI
RCLCO

TASK 4

REVIEW DRAFT REPORT

PREPARE FINAL REPORT

JACOBS
SASAKI
RCLCO
LACAPRA

TASK 5

PUBLIC MEETING

JACOBS
SASAKI
RCLCO
LACAPRA

SCHEDULE

GOAL SETTING
ANALYSIS
DEVELOPMENT OPTIONS
CONCLUSIONS
MONTH 1
MONTH 2
MONTH 3
MONTH 4
MONTH 5
MONTH 6
MONTH 7
MONTH 8
PROJECT INITATION
TASK 1
A. EXAMPLES OF RE-USE OF POWER PLANTS SITES
B.RANGE OF COSTS FOR NEW DEVELOPMENT
C. BASIC SITE DATA COLLECTION
D. EXISTING CONDITIONS ASSESSMENT
TASK 2
A. SHORT & LONG TERM REGIONAL POWER DEMANDS
B. SHORT & LONG TERM INVESTMENTS FOR
REGULATORY COMPLIIANCE
TASK 3
A. IDENTIFICATION OF ALTERNATIVE USES
B. OPTIONS FOR ECONOMIC RE-USE CONSIDERATIONS
C. SUMMARIZE STAKEHOLDERS AND
KEY CHALLENGES FOR EACH OPTION
D. ECONOMIC BENFITS OF ALTERNATIVE SCHEMES
TASK 4
A. DRAFT REPORT INCLUDING RECOMMENDATIONS
AND EXECUTE SUMMARY
B. REVIEW FINDINGS WITH STAKEHOLDERS
C. FINAL REPORT / PRESENTAtION / CONCLUSIONS
TASK 5
A. TWO PUBLIC MEETINGS
TEAM MEETINGS
1
2
3
4
5
6

MEETING #1

Exploration of relevant history of the Salem Harbor Power Station

Salem Harbor context

City of Salem planning goals

Open Discussion

MEETING #2

Overview of relevant examples of power station re-use

Review of potential costs

Summary of data collected relative to site & context

Regional Energy Market Analysis

MEETING #3

Review initial alternative land use concepts

MEETING OVERVIEW

- STUDY OVERVIEW
- PRECEDENTS
- SITE CONTEXT
- REGIONAL ENERGY MARKET ANALYSIS
- POTENTIAL COST
- NEXT STEPS

PRECEDENTS

JACOBS SASAKI La Capra RCLCO

Salem Harbor Power Station

SITE ASSESSMENT STUDY

PROJECT PRECEDENT TYPES

- ALTERNATIVE POWER
- RENOVATION & CHANGE OF USE
- DEMOLITION & DEVELOPMENT

POWER PLANT PRECENDENTS

THREE CATEGORIES

1) **ALTERNATIVE POWER** : These are examples of legacy power plants that have been repurposed from older technologies (typically coal-fired) to newer technologies (typically gas turbine). The redesign of the power plant allows it to boost its capacity while simultaneously reducing its emissions and physical footprint.

2) **RENOVATION AND CHANGE OF USE** : Examples of power plants where some or all of the original structures are renovated as part of a larger redevelopment.

3) **DEMOLITION AND DEVELOPMENT**: Examples of project where the power plant structures are removed entirely in order to remediate and redevelop the site.

PROJECT PRECEDENT TYPES

- ALTERNATIVE POWER
  - St. Petersburg Florida
  - Weymouth, Massachusetts
  - Everett, Massachusetts
- RENOVATION & CHANGE OF USE
- DEMOLITION & DEVELOPMENT

ALTERNATIVE POWER

BARTOW POWER PLANT – ST. PETERSBURG, FLORIDA

- Progress Energy's Bartow power plant was rededicated in 2009 (the plant was originally dedicated 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 fuel oil to more efficient, cleaner burning natural gas.
- The upgrades include the following features:
  - More than doubling the plant's generating capacity, adding 800 megawatts (1,200 megawatts total generation);
  - Significantly reducing emissions by more than 80 percent -- including a 98 percent reduction of sulfur dioxide emissions;
  - Reducing dependence on foreign oil and improving fuel security; and
  - Increasing electricity reliability due to transmission upgrades related to the repowered plant.
- 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 to improve their aesthetic quality.

ALTERNATIVE POWER
FORE RIVER STATION – WEYMOUTH, MASSACHUSETTS

- The construction of the Fore River plant was completed by Raytheon in 2003 and the plant was sold to Chicago-based Exelon Energy.
- Fore River is an 800-megawatt natural gas power plant that has two combined cycle gas turbines and one steam turbine, for providing power to customers in New England. All three units at that plant are able to use oil or natural gas.
- Since 2003, Fore River has operated a dual fuel combined-cycle electric generating facility in Weymouth, Massachusetts. The station is configured as a main power block generating nominal 775 Megawatts (MW) of electric power. Although the station is capable of burning both natural gas and distillate fuel oil, to date Fore River has operated only on natural gas.
- The Fore River Plant replaced Boston Edison's Edgar power station, which was in operation at the location from 1925 until 1978.
- Constellation Energy (Maryland) recently purchased Fore River Station and Mystic Station (on next slide) for $1.1 billion. Constellation bought the two plants from US Power Generating through a bankruptcy sale process in November of 2010

ALTERNATIVE POWER
MYSTIC STATION – EVERETT, MASSACHUSETTS

- In 2003, Mystic Station, a new, clean-burning, natural gas-fueled power plant was put into commercial operation by Exelon Energy
- The Mystic plant features two natural-gas fired turbines that together generate up to 1,580 megawatts of power, a dual-fuel turbine that generates up to 574 megawatts and an oil-fired turbine that can generate 9 megawatts.
- Exelon spent more than $30 million on an environmental cleanup of the site before constructing the new power plants. Exelon cleaned wastewater, asbestos, groundwater, and removed an estimated 50,000 tons of dirty soil from the site as part of this Brownfield redevelopment project, which is located along the Mystic River.
- The Mystic Station project was one of the largest private construction development projects in Massachusetts. At the peak of construction, the project employed several thousand union workers.
- Mystic Station is connected to the Distrigas LNG by a dedicated, high-pressure pipeline and supplies the NSTAR grid in the Boston area.

PROJECT PRECEDENT TYPES

- ALTERNATIVE POWER
- RENOVATION & CHANGE OF USE
  - Baltimore, Maryland
  - Austin, Texas
  - Burlington, Vermont
- DEMOLITION & DEVELOPMENT

RENOVATION AND CHANGE OF USE
THE POWER PLANT – BALTIMORE, MARYLAND

The Power Plant	
Location	Baltimore Inner Harbor
Annual Visitors	8 million
Key Tenants	Hard Rock Café, Barnes and Noble
Retail	130,000 square feet
Office	30,000 square feet

1900- 1909
Three building coal power plant erected to produce power for the city's streetcars

1920's
Plant converted to create steam to heat nearby office buildings

1973-77
Plant ceases operations and the City purchases the plant for $1.65 million hoping to find a new use for it

1985
Six Flags leases the site and spends $40 million on an amusement hall before scrapping the project

1997
Cordish takes over the project and invests $50 million in the redevelopment

1999
The Power Plant redevelopment opens and leases successfully. Two years later,

Cordish follows with the $35 million Power Plant Live entertainment district.

RENOVATION AND CHANGE OF USE
THE POWER PLANT – BALTIMORE, MARYLAND

- Developed as partnership between Cordish Companies and the City of Baltimore, the Power Plant is a mixed-use project that included the first ESPN Zone in the country, Hard Rock Cafe, Barnes and Nobles, Gold's Gym and loft offices.
- Last year, Power Plant attracted over eight million visitors and generated several million dollars of direct taxes to the public sector.
- "The Power Plant is a prime example of the conversion of a functionally obsolete building into a successful, modern project. The developer saved the four towering smokestacks – visual reminders of Baltimore's industrial past – and extended the eastern edge of the Inner Harbor, compounding its success as an urban entertainment district." –Urban Land Institute
- The City of Baltimore shares in 22% of annual operating profit, starting in 2009, 10 years after leasing began.

RENOVATION AND CHANGE OF USE

SEAHOLM POWER PLANT - AUSTIN, TEXAS

Planned Development	
Site size	7.8 acres, including more than 3 acres of "open" space
Seaholm building	136,000 square feet
Seaholm Plaza	2-acre outdoor plaza
Office	62,000 square feet
Residential	275,000 square feet
Condos	80 units
Hotel	160 rooms

Plant retired from use

1989

City of Austin generates a redevelopment master plan and seeks a financial partner

2000

Projected grand opening of the project beginning with the Seaholm Plaza hotel

2012

1950 - 1958

Seaholm Power Plant is constructed

1996

Three generators are shut down and the Austin City Council decides to preserve the facility for major public use

2006

After 9-years and $13 million in remediation EPA deems site is "ready for use"

Source: seaholm.

RENOVATION AND CHANGE OF USE

SEAHOLM POWER PLANT - AUSTIN, TEXAS

- The property features gas/oil generation units (100 megawatts total when it functioned), a towering turbine room that measures 110 by 235 feet and a 65-foot-high ceiling. The main is architectural significant and consists of 110,000 square feet of useable floor area.
- The project is being developed by Southwest Strategies Group (Master Developer), Centro Partners (Residential), and La Corsha Hospitality Group (Hotel). The group expects to being construction in 2011.
- Over the past year the main structure of the power plant has been rented out as event space, mainly for parties (it rented to MTV for the South by Southwest festival) and has been leased as film set on several occasions, including the filming of 'True Grit.'
- The site currently houses a wastewater treatment plant, which will be relocated as part of the development and an electrical substation, which will remain but with a reduced footprint
- The redevelopment is expected to create more than 200 jobs and produce $2 million a year in tax revenue.

RENOVATION AND CHANGE OF USE
MORAN POWER PLANT – BURLINGTON, VERMONT

- The Moran Plant, built in 1953, is an historic coal fired power plant. It is currently a derelict structure located on Burlington's waterfront in the heart of downtown that will be redeveloped to encourage year round use, economic activity and public access in a renovated historic building.
- The City of Burlington has engaged in a community-wide process of consultation involving hundreds of meetings and over 10,000 community members to determine the future use of the Moran Plant.
- Mayor Bob Kiss and the City Council Parks, Arts & Culture Committee (PACC) have now synthesized the results of these efforts into a proposal for the redevelopment of the Moran Plant that would include a family adventure center with a world-class indoor ice and rock climbing facility, restaurant and café, and expanded community sailing center.
- According to public officials the City will not raise property taxes in order to fund the redevelopment, instead utilizing a $1 million dollar historic tax credit from the National Park Service in addition to other sources of public funding.

RENOVATION AND CHANGE OF USE
MORAN POWER PLANT – BURLINGTON, VERMONT

- In August 2008, the EPA selected the Moran Center as one of just 16 projects nationally for a Brownfields Sustainability Pilot program award, which will provide technical assistance to assess the feasibility of implementing the "green building" aspects of the Moran project, including on-site renewable energy production, energy and water conservation, innovative stormwater treatment techniques, and ecological enhancements at the site.
- As a result of the "zoning rewrite" of the Comprehensive Development Ordinance, the Moran property is now located in the newly created "Downtown Waterfront – Public Trust (DW-PT)" zone. The DW-PT zone is "intended to enhance and diversify commercial and residential development in the downtown waterfront area, and to increase access, utilization, and enjoyment of the lakeshore by the community. Strong emphasis is placed on enhanced public access to the lakeshore."
- The redesign of the main structure was performed by architecture firm Freeman French Freeman.

PROJECT PRECEDENT TYPES

- ALTERNATIVE POWER
- RENOVATION & CHANGE OF USE
- DEMOLITION & DEVELOPMENT
  - Chula Vista, California
  - Fort Pierce, Florida

PROJECT STATUS TABLE

Name/ Location	Plan	Status	Challenges
South Bay Power Plant/ Chula Vista, CA	The city of Chula Vista planned to take on the demolition and cleanup of the power plant, which was decommissioned in 2009/10 and is owned by the Port of San Diego. The deal was for the City to utilize the $50 million in funds that Dynegy had set aside for cleanup in addition to $22 million that the Port Commission had earmarked for clean-up. The goal was to clear the site for a public use but in the end the deal fell through due to questions around the financial stability of Dynegy and the uncertainty about the true cost of cleanup	Stalled	Determine true cost of demolition and cleanup; City taking on risk during times of budget difficulties
HD King Power Plant/ Fort Pierce, FL	The plant was decommissioned in 2008 after operating for 96 years. The plant sit on 7-acres of City land. In 2009 the City partnered with a Florida developer to create a redevelopment plan for a $90 million village consisting of retail, residential and hotel uses. The planned moved forward until the City discovered language in the deed stipulating that the land would revert to state ownership if used for private development. The deal is now dead though the demolition went forward in 2009.	Stalled	Restrictions on Land Use contained in the Deed

RISK / REWARD PROFILE

DEVELOPMENT RISK / REWARD TABLE

Category	Cleanup Cost	Re-purposing /Redevelopment Cost	Level of Project Uncertainty	Timeline	Public Benefit
Alternative Power	**Medium**	**High**	**Medium**	**Short**	**Medium**
Demolition and Redevelopment	**High**	**High**	**High**	**Long**	**High**
Renovation and Change of Use	**High**	**High**	**High**	**Long**	**High**

LESSONS LEARNED

SUMMARY / LESSONS LEARNED

- ALTERNATIVE REUSES –
  - Numerous Examples
  - Smaller Footprint
- RENOVATION & REUSE
  - Not Applicable – Need Quality Structure
  - Salem - Smokestack Visibility
- DEMOLITION & DEVELOPMENT
  - Relatively New Model
  - Recent Economic Conditions Unfavorable
  - Location is Most Important Once Site is Cleared

SUMMARY OF POTENTIAL LAND USES

POTENTIAL LAND USE TABLE FOR SALEM HARBOR POWER PLANT SITE

Land Use Type	Allowable Use Under Chapter 91?	Allowable Use Under DPA?	Public Benefit?	Tax Revenue Generation	Market Supportable?
Energy Uses	Y	Y	LOW	HIGH	Y
Water Dependent –Marine Terminal	Y	Y	MEDIUM	MEDIUM	Y
Recreational Uses/Trails	Y	LIMITED	HIGH	NONE	Y
Institutional Uses – Aquarium or Other	Y	MAYBE	HIGH	LOW	Y
Office	MAYBE	LIMITED	MEDIUM	HIGH	LIMITED
Retail	MAYBE	MAYBE	MEDIUM	HIGH	LIMITED
Residential	MAYBE	NO	MEDIUM	LOW	Y

10 SMART GROWTH ELEMENTS FOR COASTAL AND WATERFRONT JURISDICTIONS

From the National Oceanic and Atmospheric Administration:

1) Mix Land Uses
2) Take Advantage of Compact Design
3) Provide a Range of Housing Choices
4) Create Walkable Communities
5) Foster Distinctive, Attractive Communities
6) Preserve Openspace and Critical Environmental Areas
7) Direct Development toward Existing Communities
8) Provide a Variety of Transportation Options
9) Make Development Decisions Predictable and Fair
10) Encourage Community and Stakeholder Collaboration

SITE CONTEXT

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SITE ASSESSMENT STUDY

SITE CONTEXT

EXISTING SITE PLAN

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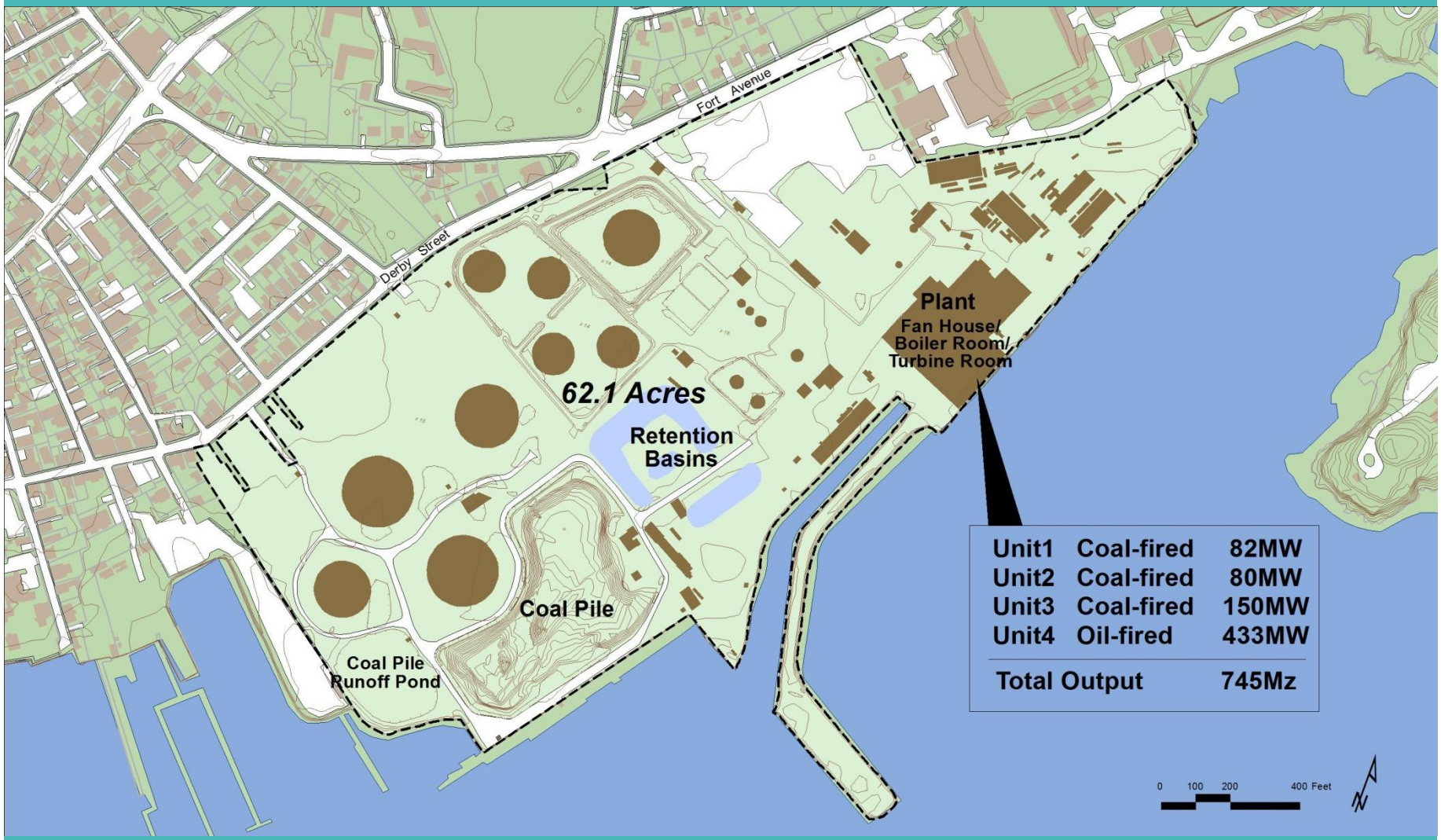
SITE CONTEXT

EXISTING SITE PLAN with POWER CAPACITY



Unit1	Coal-fired	82MW
Unit2	Coal-fired	80MW
Unit3	Coal-fired	150MW
Unit4	Oil-fired	433MW
Total Output		745Mz

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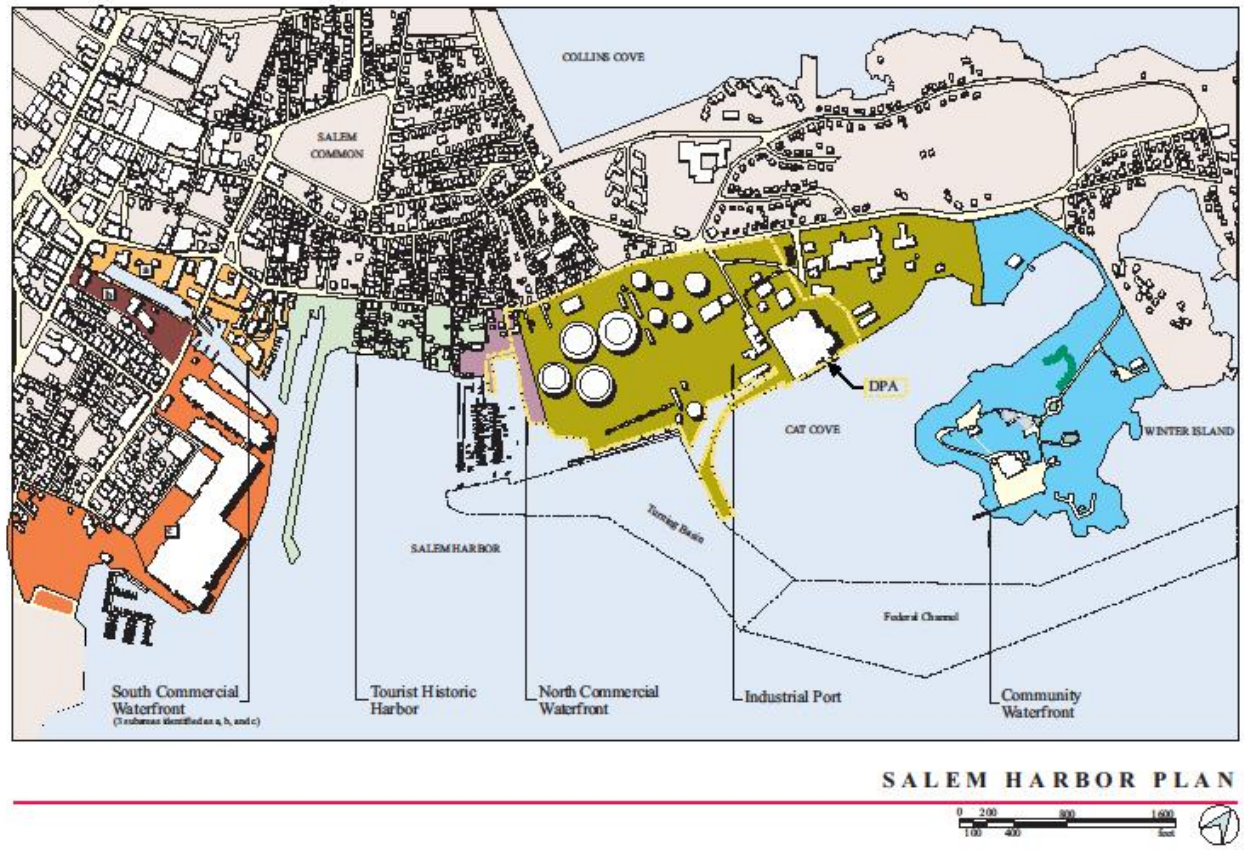
SITE ASSESSMENT STUDY

HARBOR PLAN

Figure 1: PLANNING AREAS



SITE CONTEXT

SITE ACCESS REGIONAL

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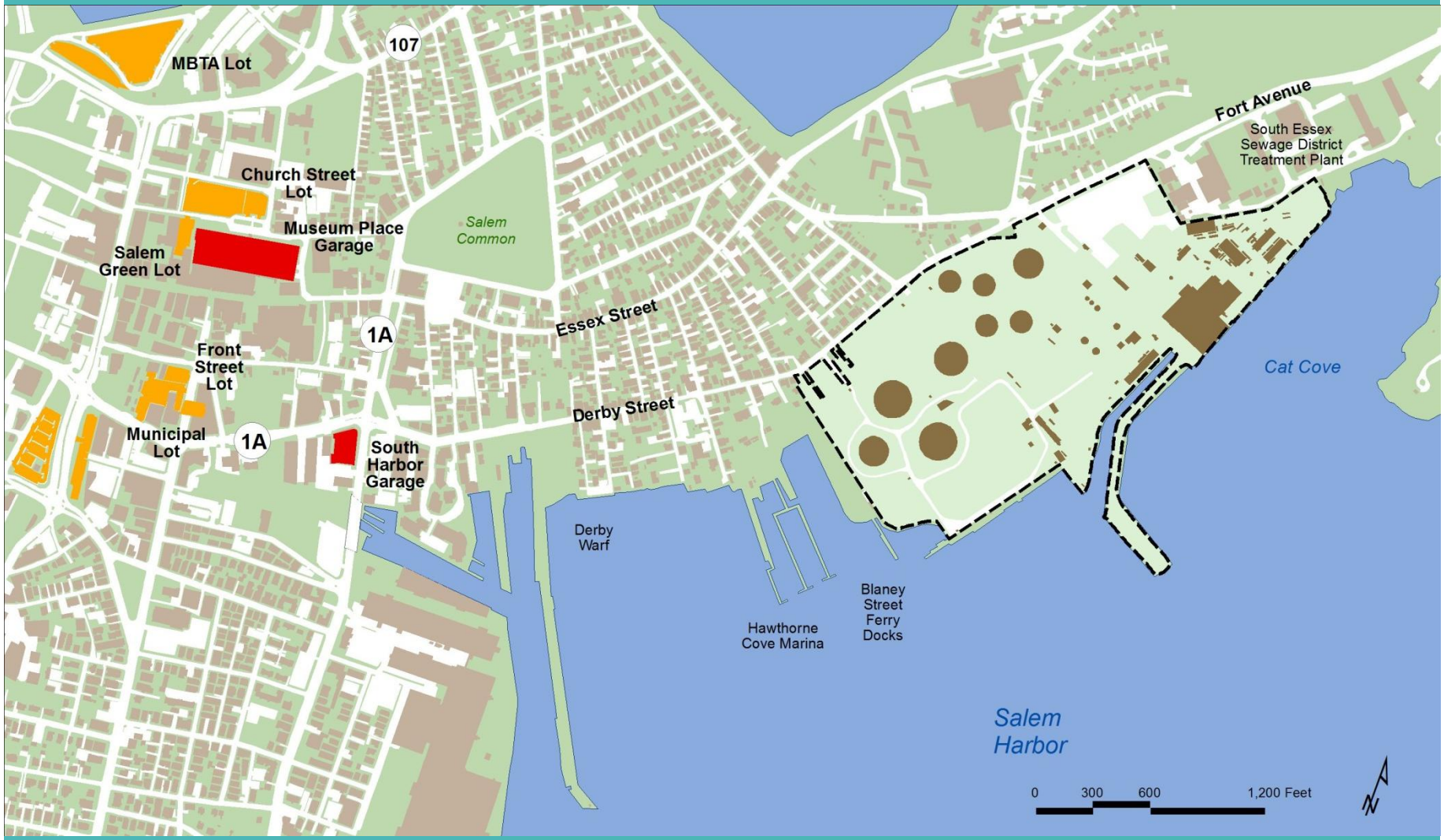
SITE CONTEXT

SITE ACCESS LOCAL



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SITE ASSESSMENT STUDY

SITE CONTEXT

CHAPTER 91 MAP

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SITE ASSESSMENT STUDY

CHAPTER 91 SUMMARY

CHAPTER 91 SUMMARY

- Massachusetts General Law Chapter 91 (Public Waterfront Act)
- Ensure that "tidelands are utilized only for water-dependent uses". or "serve a proper public purpose which provides greater benefit than detriment".
- Applies to tidelands which are defined as the historic high tide line ("the farthest landward tide line which existed prior to human alteration by filling, dredging, impoundment or other means.")

CHAPTER 91 WATER-DEPENDENT USES

CHAPTER 91 WATER-DEPENDENT USES

- Marinas
- Facilities for fishing & water based recreation.
- Parks & boardwalks.
- Aquariums & marine research, training & education.
- Passenger transportation (ferries, taxis, shuttles, cruise ships).
- Waterway public safety & law enforcement
- Shore protection related structures
- Marine industrial facilities

SITE CONTEXT

DESIGNATE PORT AREA MAP

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SITE ASSESSMENT STUDY

DESIGNATED PORT AREA (DPA) SUMMARY

- ESTABLISHED IN 1978 by CZM (Mass Office of Coastal Zone Mgmt)
- GOAL – Maintain existing port infrastructure that was built over time at great public expenses
- 11 Designated Port Areas
- Prevent development that exclude water-dependent industries
- Promote water-dependent (marine) industrial uses
- Water dependent industrial uses: industrial and infrastructure facilities dependent on marine transportation or large volumes of water for cooling, process or treatment
- Supporting DPA Uses may occupy 25% of property

DPA WATER DEPENDENT INDUSTRIAL USES

WATER DEPENDENT INDUSTRIAL USES

- Marine terminals for transfer/storage of goods transported by ship.
- Facilities associated with commercial vessel operations.
- Manufacturing facilities relying on goods shipped by water.
- Commercial fishing & processing.
- Boatyards, dry docks (construction, maintenance, service & repair)
- Industrial & infrastructure facilities dependent on water
- Promote water-dependent (marine) industrial uses.

DPA SUPPORTING & EXCLUDED USES

DPA SUPPORTING USES

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

DPA EXCLUDED USES

- Residential
- Hotels & Motels
- Recreational boat facilities
- Large Sport complexes

DESIGNATED PORT AREA (DPA)

- 11 DESIGNATED PORT AREAS (DPA)
  - GLOUCESTER
  - SALEM
  - BEVERLY
  - LYNN
  - MYSTIC RIVER
  - CHELSEA CREEK
  - EAST BOSTON
  - SOUTH BOSTON
  - WEYMOUTH / FORE RIVER
  - NEW BEDFORD-FAIRHAVEN
  - FALL RIVER / MT. HOPE BAY

SITE CONTEXT

SUBSTATION EASEMENT MAP

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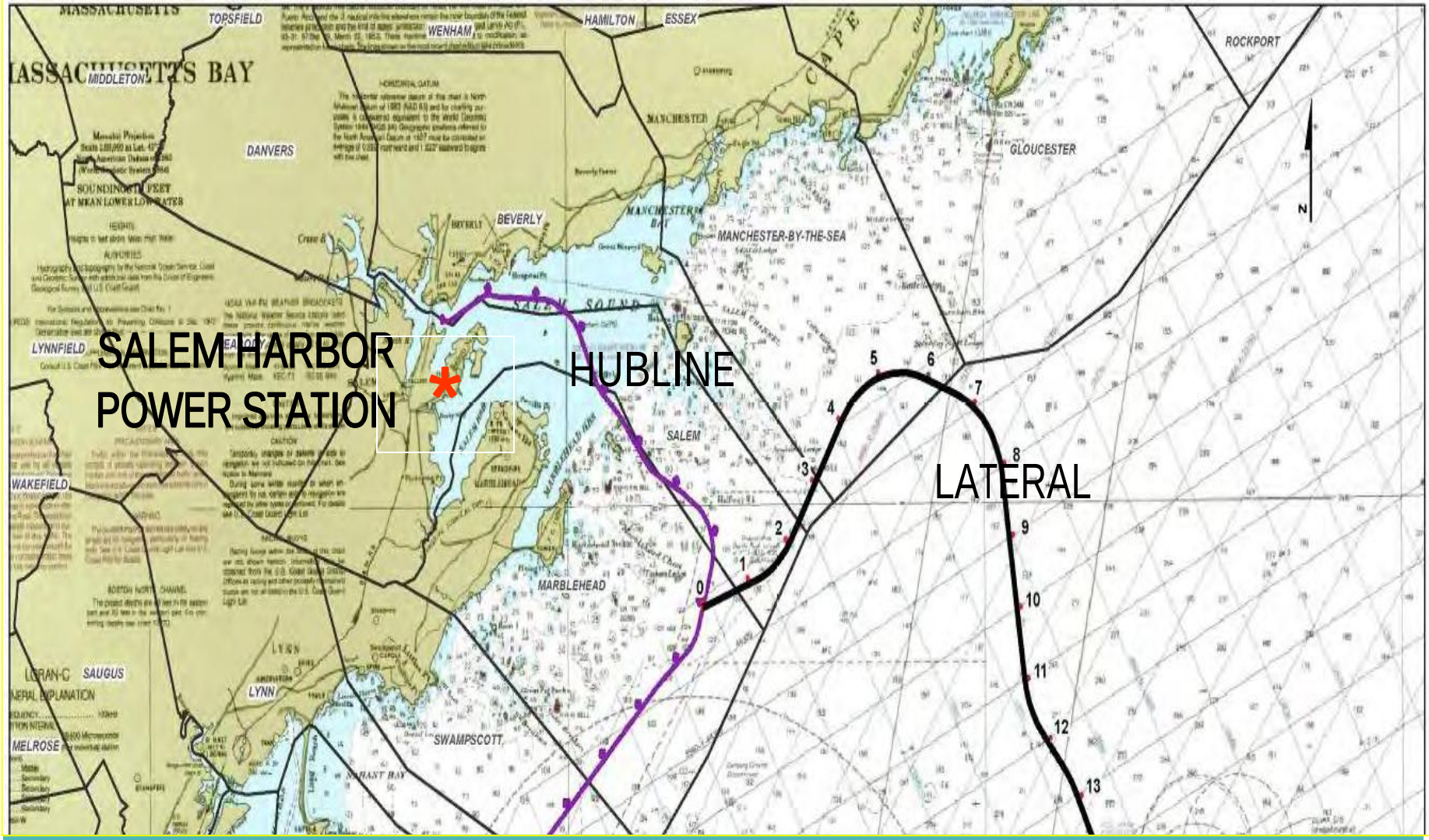
SITE ASSESSMENT STUDY

NATURAL GAS MAP NETWORK



TAX GENERATION

- 2010 USAGE & PROPERTY TAX PAYMENT OF $4.75 MILLION
- TAX REVENUE HAS DECLINED OVER LAST DECADE
- SOLD FOR $46,000,000 in 2005
- 2011 CURRENTLY UNDER NEGOTIATION

- 2010 BREAKDOWN
  - USAGE FEE $1,750,000
  - PERSONAL PROPERTY $3,000,000
    - LAND / BLDG is $800,000
  - TOTAL $4,750,000

CARBON EMISSIONS REDUCTION TAX RELIEF

- GREEN COMMUNITIES ACT OF 2008-
  "REGIONAL GREENHOUSE GAS INITIATIVE" – "RGGI"
- COOPERATIVE EFFORT AMONG ME STATES TO REDUCE CO2
- RENEWABLE ENERGY TRUST FUND TO REIMBURSE MUNICIPALITIES
- BRIDGE GAP OF REVENUE LOSS FOR AFFECTED COMMUNITIES

- COSPONSORED BY REP. KEENAN & SENATOR BERRY
- SIGNED INTO LAW IN 2008
- PENDING LEGISLATION to EXTEND FROM 2011 to 2021

PENDING REGULATIONS

- DOMINION PRESENTLY:
  - USING LOW SULFUR OIL
  - USING COAL W/ LOW SO2 & NOx RATES.
- 2015 – CLEAN AIR ACT AMMENDMENT (EPA)
  - APPLIES TO NEW & EXISTING COAL & OIL FIRED ELECTRIC POWER PLANTS
  - MERCURY, ACID GAS, SO2, NOx, PARTICULATE & EMISSIONS
  - NEW SCRUBBERS ($470 MILLION)
  - STANDARDS DEFINED IN 2011
  - COMPLIANCE BY 2015

SUMMARY

- IMPACT ITEMS
- HARBOR PLAN
- REGIONAL ACCESS
- LOCAL ACCESS / TRAFFIC
- CHAPTER 91 DESIGNATION
- DESIGNATED PORT AREA DESIGNATION
- SUBSTATION EASEMENT
- ACCESS TO NATURAL GAS
- THIRD PARTY OWNERSHIP
- TAX GENERATION / EMPLOYMENT
- CARBON EMISSIONS REDUCTION TAX RELIEF
- ISO-NE & NEED FOR RELIABILITY
- PENDING REGULATIONS
- FUTURE ENERGY MARKET
- MARKET DEMAND / VIABILITY

REGIONAL ENERGY MARKET ANALYSIS

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SITE ASSESSMENT STUDY

RECENT DEVELOPMENTS

- TWO MAJOR ENERGY MARKETS
  - ENERGY MARKET
  - CAPACITY MARKET – RELIABILITY (PERIODIC)

- RECENT TRENDS:
  - REGION HAS BEEN SHIFTING AWAY FROM COAL AND TOWARD NATURAL GAS
  - REVENUE FOR ENERGY PROVIDERS HAS DECLINED DUE TO FALL IN NATURAL GAS PRICES (INCREASED PRODUCTION
  - INCREASED INVESTMENT IN TRANSMISSION

RECENT DEVELOPMENTS

- FEB 10, 2011 – ISO-NE RECEIVED NON-PRICE RETIREMENT REQUEST FROM DOMINION TO RETIRE UNITS #1-4 BY JUNE, 2014.

- MAY 10, 2011 – ISO DETERMINES & NOTIFIES DOMINION:
  - SALEM HARBOR UNITS #1 & 2 CAN BE RETIRED IN JUNE, 2014 (MAY RETIRE EARLIER).
  - SALEM HARBOR UNITS #3 & 4 NEEDED FOR RELIABILITY IN 2014- 2015.

RECENT DEVELOPMENTS

- MAY 10, 2011
  - ISO-NE DOES NOT HAVE AUTHORITY TO PREVENT A RESOURCE FROM RETIRING.
  - ISO-NE DETERMINES THAT 415-560 MW NEEDED FOR RELIABILITY. SEVERAL HOT SPOTS WHERE POTENTIAL OUTAGES COULD OCCUR UNDER PEAK CONDITIONS
  - ISO-NE RECOMMENDS 115 KV TRANSMISSION LINE FIX TO MAKE DOMINION UNITS 3 & 4 UNNECESSARY. NOT SURE IF CAN BE COMPLETED BY 2014.
  - IF DOMINION CONTINUES TO OPERATE AFTER 2014, CAN REQUEST UPGRADE COSTS BE PAID BY RATEPAYERS.

RECENT DEVELOPMENTS

- MAY 11, 2011
  - DOMINION TELLS ISO-NE IT WILL SHUT DOWN BY JUNE, 2014.

RECENT DEVELOPMENTS

- TRANSMISSION UPGRADES FOR RELIABILITY
  - TRANSMISSION FIX MAY NOT BE READY UNTIL 2016-2019
  - DOMINION TO SHUT DOWN IN 2014.
  - COST FOR TRANSMISSION FIX COULD BE OVER $300 MILLION
  - TEMPORARY TRANSMISSION FIX COULD INCLUDE EMERGENCY GENERATION STRATEGICALLY SITED.

PREFERRED TRANSMISSION FIX WOULD INCLUDE:

38 MILES OF NEW OVERHEAD LINES IN EXISTING R.O.W

NEW WIRES IN EXISTING R.O.W.

POTENTIAL COSTS

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SITE ASSESSMENT STUDY

POTENTIAL COST OPTIONS

- COST TO UPGRADE FOR COMPLIANCE (UNITS 3 &4)
- COST FOR PARTIAL SITE CLEAN-UP
- COST FOR DEMOLITION & FULL SITE CLEANUP

POTENTIAL COSTS

COST FOR COMPLIANCE UNITS 3 & 4

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SITE ASSESSMENT STUDY

COST FOR COMPLIANCE (UNITS 3 & 4)

COST FOR COMPLIANCE ASSUMPTIONS

- CONTINUED OPERATION WILL REQUIRE ENVIRONMENTAL CONTROLS BY 2015
- ONLY UNITS 3 & 4 WILL CONTINUE TO OPERATE
- EMISSION CONTROLS FOR NITROGEN OXIDE (NOx)
- EMISSION CONTROLS FOR SULFUR COMPOUNDS (SO2 & SO3)
- EMISSION CONTROLS FOR MERCURY
  - PRECEDENT FOR MERCURY REMOVAL SET IN NH
- SCRUBBING TECHNOLOGY WILL BE INSTALLED
  - PRECEDENT – SCRUBBERS MANDATED BY NH FOR MERCURY REMOVAL
  - PROVEN TECHNOLOGY FOR SULFUR REMOVAL

COST OF COMPLIANCE (UNITS 3 & 4)

- EXISTING GENERATING UNITS
  - Unit 1 (82 MW) COAL (SHUT DOWN)
  - Unit 2 (80 MW) COAL (SHUT DOWN)
  - Unit 3 (150 MW) COAL (UPGRADE)
  - Unit 4 (433 MW) OIL (UPGRADE)

- COST TO UPGRADE FOR COMPLIANCE
  - Facilities Demolition $200,000
  - New Equipment $450,000,000
  - TOTAL COST $450,200,000

POTENTIAL COSTS

PARTIAL SITE CLEAN-UP

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PARTIAL SITE CLEAN-UP

ASSUMPTIONS FOR PARTIAL SITE CLEAN-UP

- POWER PRODUCTION OF SALEM HARBOR CAN BE REPLACED ECONOMICALLY WITH GAS TURBINE
- GAS TURBINE PLANT HAS SIGNIFICANTLY SMALLER FOOTPRINT
- GAS TURBINE COULD BE SIMPLE OR COMBINED CYCLE BASED MARKET NEED.
- SIMPLE CYCLE ARE JUST GAS TURBINES GENERATORS
- SIMPLE CYCLE ARE SMALLER & MORE ECONOMICAL
- SIMPLE CYCLE ARE FOR PEAKING & STAND-BY
- COMBINED CYCLE ARE GAS TURBINES, HEAT RECOVERY STEAM GENERATORS & STEAM TURBINES.
- DEMOLITION IS MINIMAL IF NO REDEVELOPMENT OCCURS

PARTIAL SITE CLEAN-UP

COST RANGES

- SIMPLE CYCLE & NO REDEVELOPMENT $350,000,000
  (LIMITED DEMOLITION & NO SITE CLEAN-UP)
- COMBINED CYCLE & NO REDEVELOPMENT $700,000,000
  (LIMITED DEMOLITION & NO SITE CLEAN-UP)
- SIMPLE CYCLE & REDEVELOPMENT $520,000,000
  (DEMOLITION & SITE CLEAN-UP)
- COMBINED CYCLE & REDEVELOPMENT $870,000,000
  (DEMOLITION & SITE CLEAN-UP)

POTENTIAL COSTS

FULL SITE CLEAN-UP

JACOBS SASAKI La Capra RCLCO

Salem Harbor Power Station

SITE ASSESSMENT STUDY

FULL SITE CLEAN-UP

ASSUMPTIONS FOR FULL SITE CLEAN-UP

- BASED ON VISUAL OBSERVATION & SIMILAR FACILITIES
- PLANT CONTAINS ASBESTOS & LEAD PAINT
- ASBESTOS & LEAD PAINT COSTLY TO ABATE
- NEAREST LANDFILL FOR ASBESTOS / LEAD PAINT IS 50 MILES AWAY.

COST FOR FULL SITE CLEAN-UP

• SITE CLEAN-UP	$20,000,000
• PLANT DEMOLITION	$150,000,000
• TOTAL COST	$170,000,000

NEXT STEPS

ALTERNATIVE ENERGIES

- NATURAL GAS TURBINE
  COMBINED CYCLE / SIMPLE CYCLE
- PEAKER FACILITY
- WIND
- SOLAR
- BIOMASS
- TIDAL
- SESD-METHANE

MARINE & INDUSTRIAL USES

- ENERGY
- CARGO SHIPPING / PORTS
- COMMERCIAL FISHING
- SHIPBUILDING & REPAIR
  - DESIGN & ENGINEERING
  - SUPPLIERS
- CRUISE SHIPS
- RECREATION & TOURISM
- OCEANOGRAPHIC / SCIENCE
- EDUCATION / TRAINING / ACADEMIES
- MILITARY
- SUPPORT SERVICES to MARITIME INDUSTRIES

TRADITIONAL USES

- RESIDENTIAL
- RETAIL / RESTAURANT
- PARKING
- HOTEL
- MIXED-USE
- OFFICE

POTENTIAL SCENARIOS

- DOMINION CLOSES – PLANT IS DORMANT
- UNITS 3 & 4 ARE UPGRADED FOR COMPLIANCE
- NEW GAS TURBINE OR PEAKER FACILITY
- NEW GAS TURBINE OR PEAKER FACILITY & PARTIAL SITE DEVELOPMENT
- PARTIAL/FULL DEVELOPMENT CONSISTENT W/ CHAPTER 91 & DPA
- PARTIAL/FULL DEVELOPMENT
- OTHER

UPCOMING MEETINGS

- DERBY STREET NEIGHBORHOOD ALLIANCE
- PUBLIC MEETING
- MEETING #3
- MEETING #4
- MEETING #5
- PUBLIC MEETING

FOCUS OF NEXT MEETING

- POTENTIAL SCENARIOS
- REVIEW INITIAL ALTERNATIVE LAND USE CONCEPTS

- OPEN DISCUSSION