

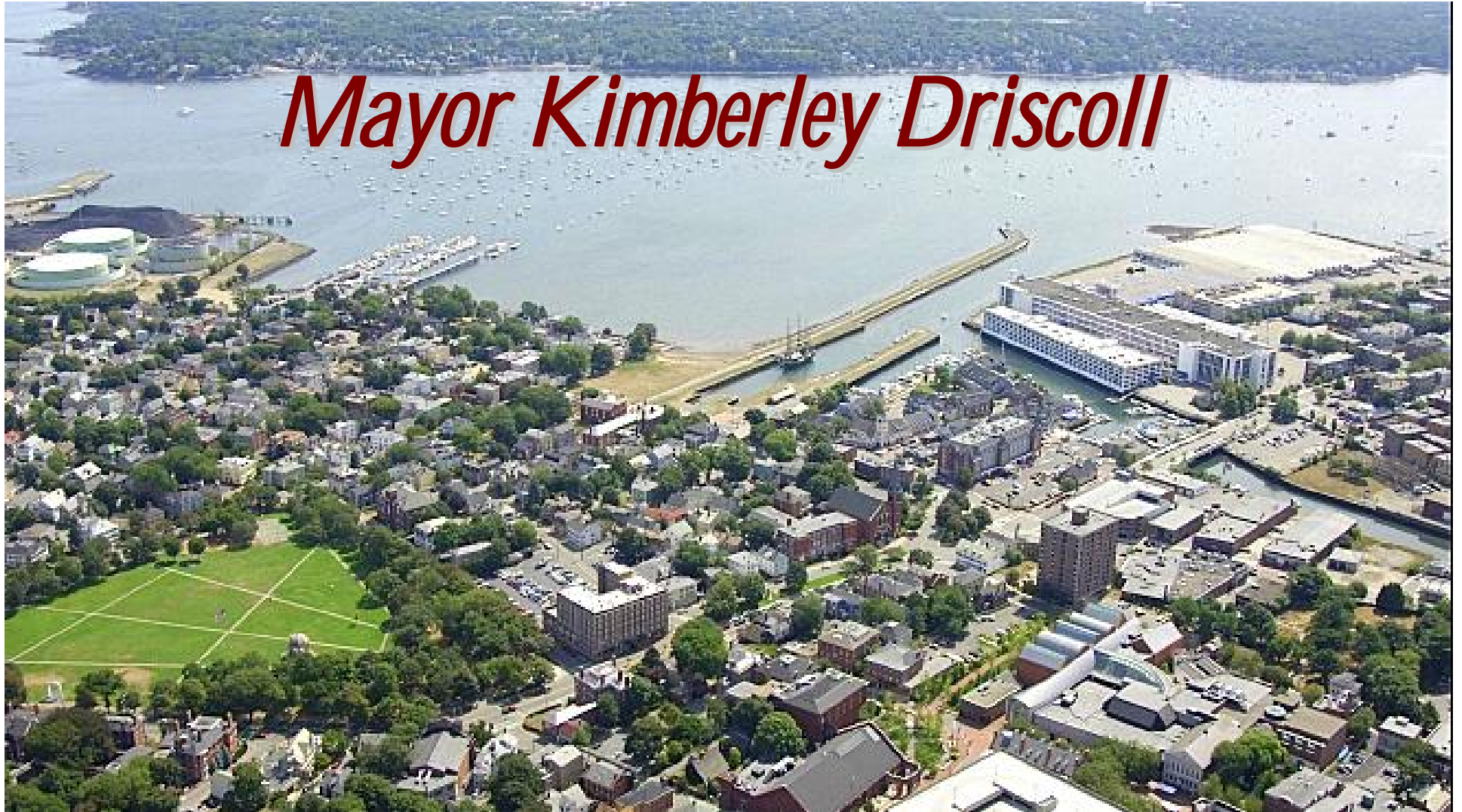


THE SALEM HARBOR POWER STATION SITE ASSESSMENT STUDY

PUBLIC MEETING #2
OCTOBER 4, 2011
CITY OF SALEM

JACOBS
SASAKI ASSOCIATES
LA CAPRA ASSOCIATES
ROBERT CHARLES LESSER & COMPANY

INTRODUCTION



Mayor Kimberley Driscoll

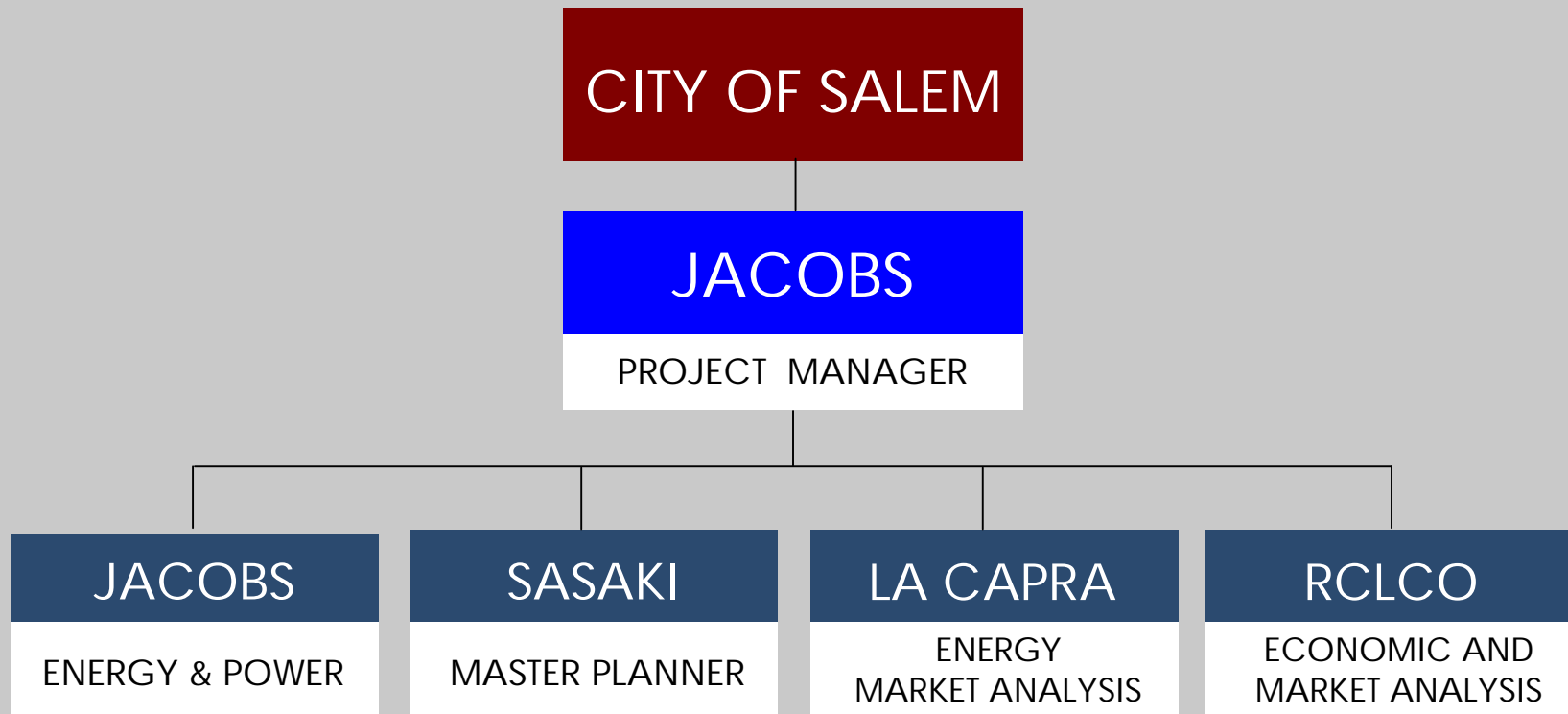


City of Salem, Massachusetts

STUDY OVERVIEW



TEAM ORGANIZATION



SCHEDULE



STUDY GOALS & OBJECTIVES

- Participation of Consultants, Stakeholders, City & Public
- Determine Dominion's Intent
 - Cost of Compliance/Plant & Site Assessment
 - Energy Market Needs (ISO-NE)
 - Cost of Alternative Energy
 - Cost of Demolition
- Identify Development Constraints & Advantages
- Identify Types of Potential Development
- Determine Economic Viability of Development
- Determine Future Impact of Development on Community
- Provide Framework for Future Development

TONIGHT'S AGENDA

Study Overview

Development Challenges

Community Response

Understanding Scale

Land Use Options

Development Strategies

Smart Plan

Final Report

Public Comments

Closing Remarks



DEVELOPMENT CHALLENGES



DEVELOPMENT CHALLENGES REVIEW

THIRD PARTY OWNERSHIP

TAX GENERATION

JOBS

LANDSIDE ACCESS/TRAFFIC

ZONING / CITY / COMMUNITY

CHAPTER 91/DESIGNATED PORT AREA (DPA)

ADJACENCY TO SUBSTATION/SESD

DEVELOPMENT TIMEFRAME

MARKET DEMAND/ECONOMIC VIABILITY

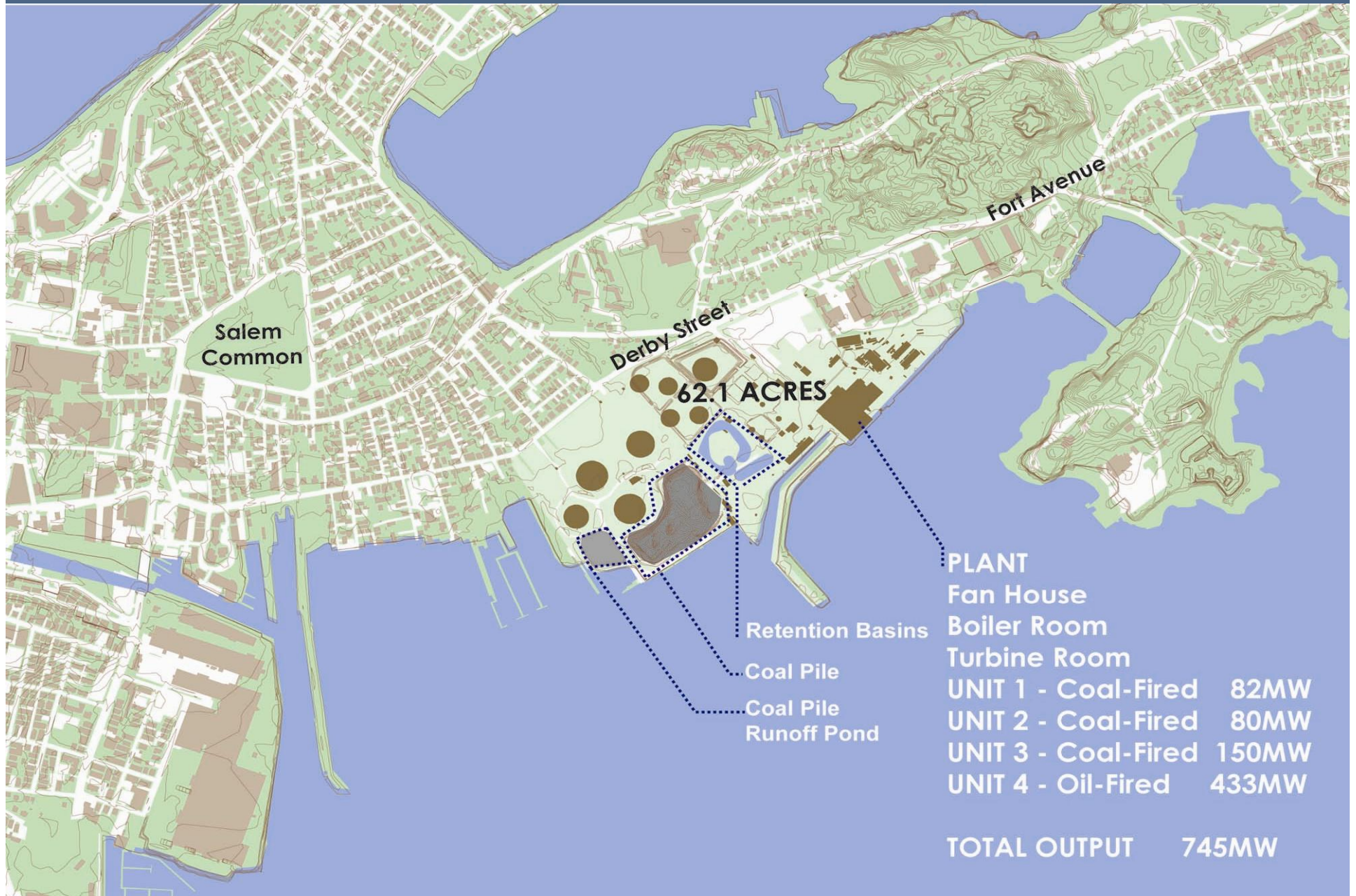
COST AND OTHER IMPACTS OF DEVELOPMENT

COST OF CLEAN-UP

COST OF CLEAN-UP



EXISTING SITE PLAN



FULL SITE CLEAN - UP



SITE REMEDIATION

KEY POINTS REGARDING SITE REMEDIATION COSTS

- No Phase I or II Environmental Studies have been completed. Difficult to estimate without these studies.
- No major known outstanding site clean-up issues documented on Commonwealth of Massachusetts DEP web-site.
- Western tanks to be demolished by owner within one year after closing.
- Site clean-up could be in the \$5 million to \$20 million range (not including building demolition).
- Level of clean-up costs varies with type of future redevelopment.

BUILDING DEMOLITION

KEY POINTS REGARDING BUILDING DEMOLITION COSTS

- Precedent demolition costs for similar facilities are limited.
- Assumption based on experience, regional variations, assumed quantity takeoffs, and visual tour.
- Asbestos and lead abatement cost will be significant, and we have allotted \$10 million for abatement.
- Assuming no implosion due to adjacency to residential area.
- Salvage value (for steel/copper) varies significantly based on current market prices and availability of willing buyer. We have estimated \$20 million to \$25 million for salvage based on current market prices.

SITE REMEDIATION AND BUILDING DEMOLITION

ANTICIPATED COST FOR SITE REMEDIATION AND COST OF CLEAN-UP.

Estimated cost of demolition and site remediation of the entire Salem Harbor Power Station would be approximately \$75 million, with a likely range from \$60 to \$85 million when considering regional premiums, adjacency to residential and historic properties, contingencies, and credit for salvage value.

SITE CLEARING AND PREPARATION

KEY POINTS REGARDING BUILDING DEMOLITION COSTS

Cost of demolition and site remediation of coal-fired power plants are in the range of \$75,000 - \$100,000 per megawatt of capacity according to the American Clean Skies Foundation.

Applied to Salem Harbor Power Station:

HIGH: $745 \text{ MW} * 100,000/\text{MW} = \74.5 million

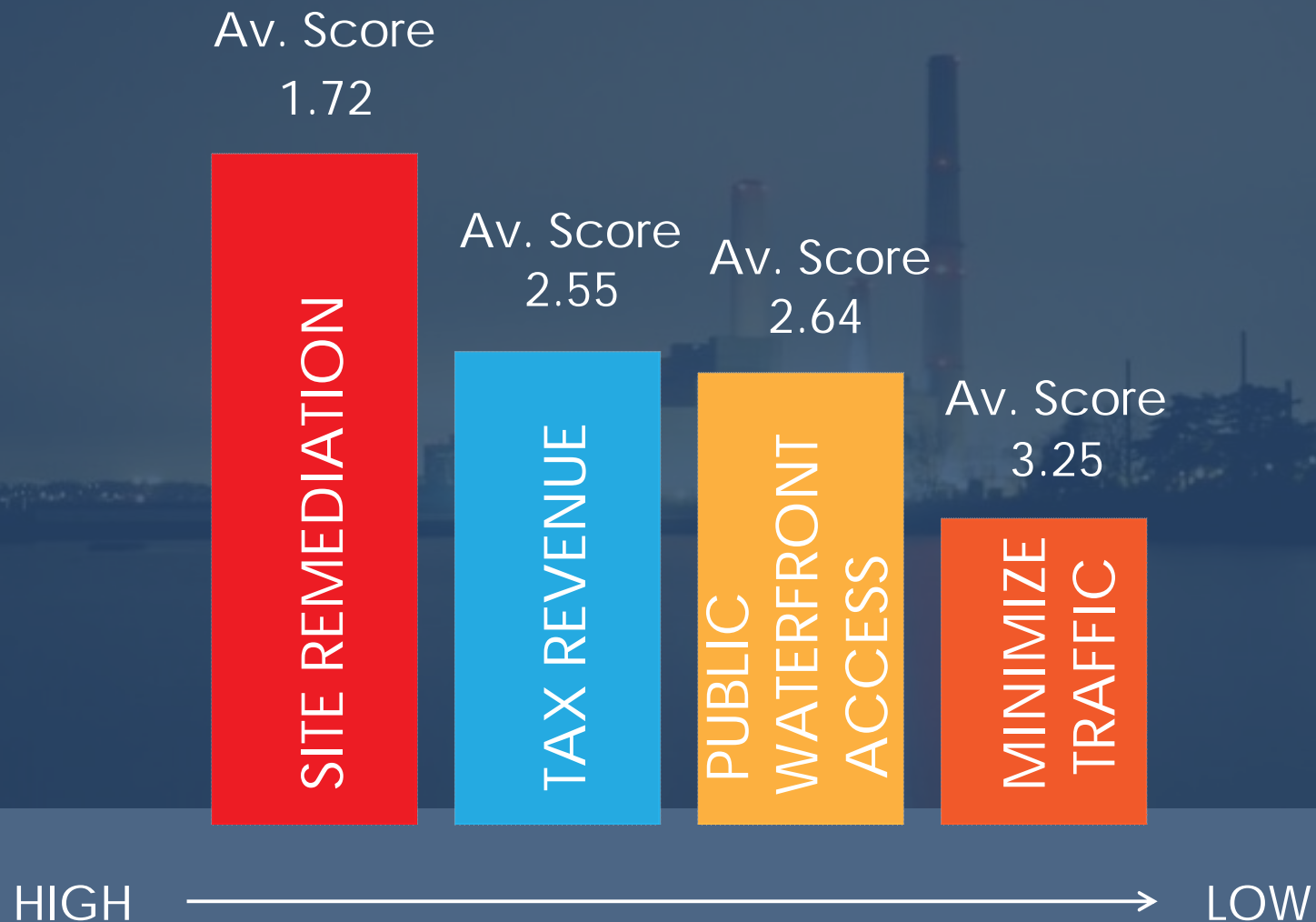
LOW: $745 \text{ MW} * 75,000/\text{MW} = \55.9 million

COMMUNITY RESPONSE



COMMUNITY RESPONSE TO QUESTION #1

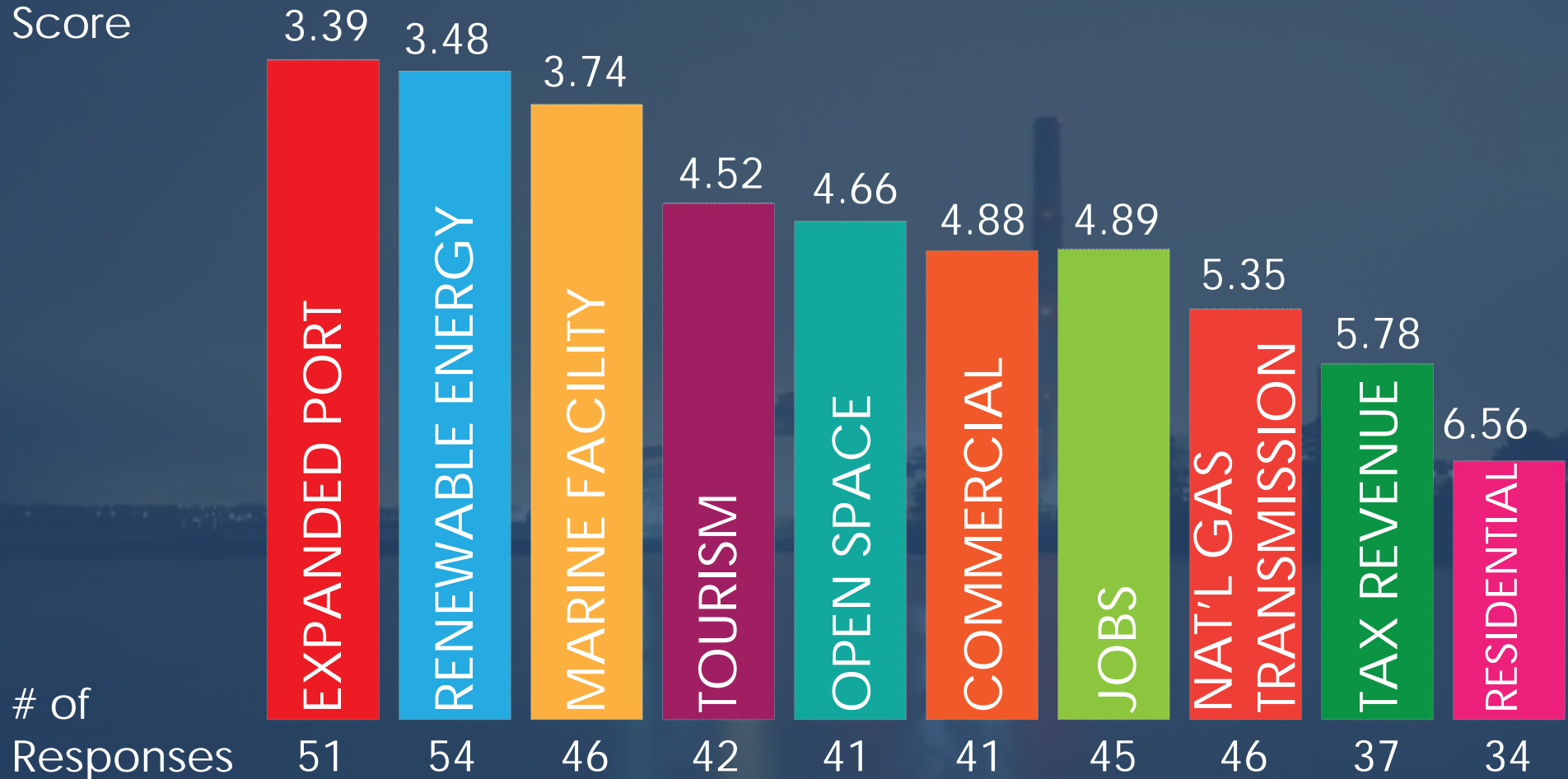
"What are your priorities for redevelopment?"



COMMUNITY RESPONSE TO QUESTION #2

"Rank the different uses you'd like to see on site"

Av.
Score



HIGH

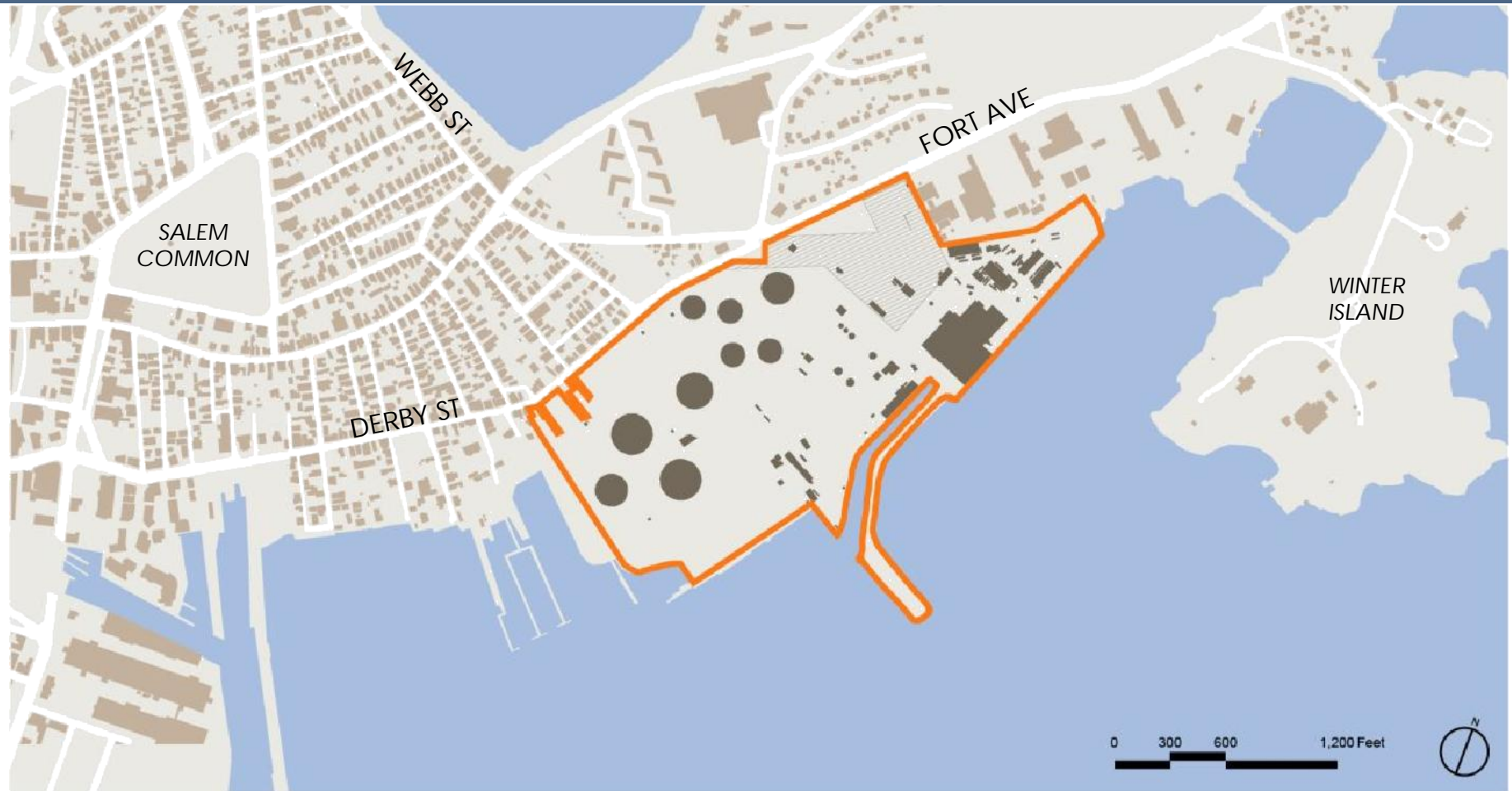
LOW

UNDERSTANDING SCALE



UNDERSTANDING SCALE

62 ACRE INDUSTRIAL SITE ON SALEM'S WATERFRONT



UNDERSTANDING SCALE

53 ACRES OF POTENTIAL DEVELOPMENT



UNDERSTANDING SCALE

COMPARING THE SITE WITH TWO SALEM NEIGHBORHOODS



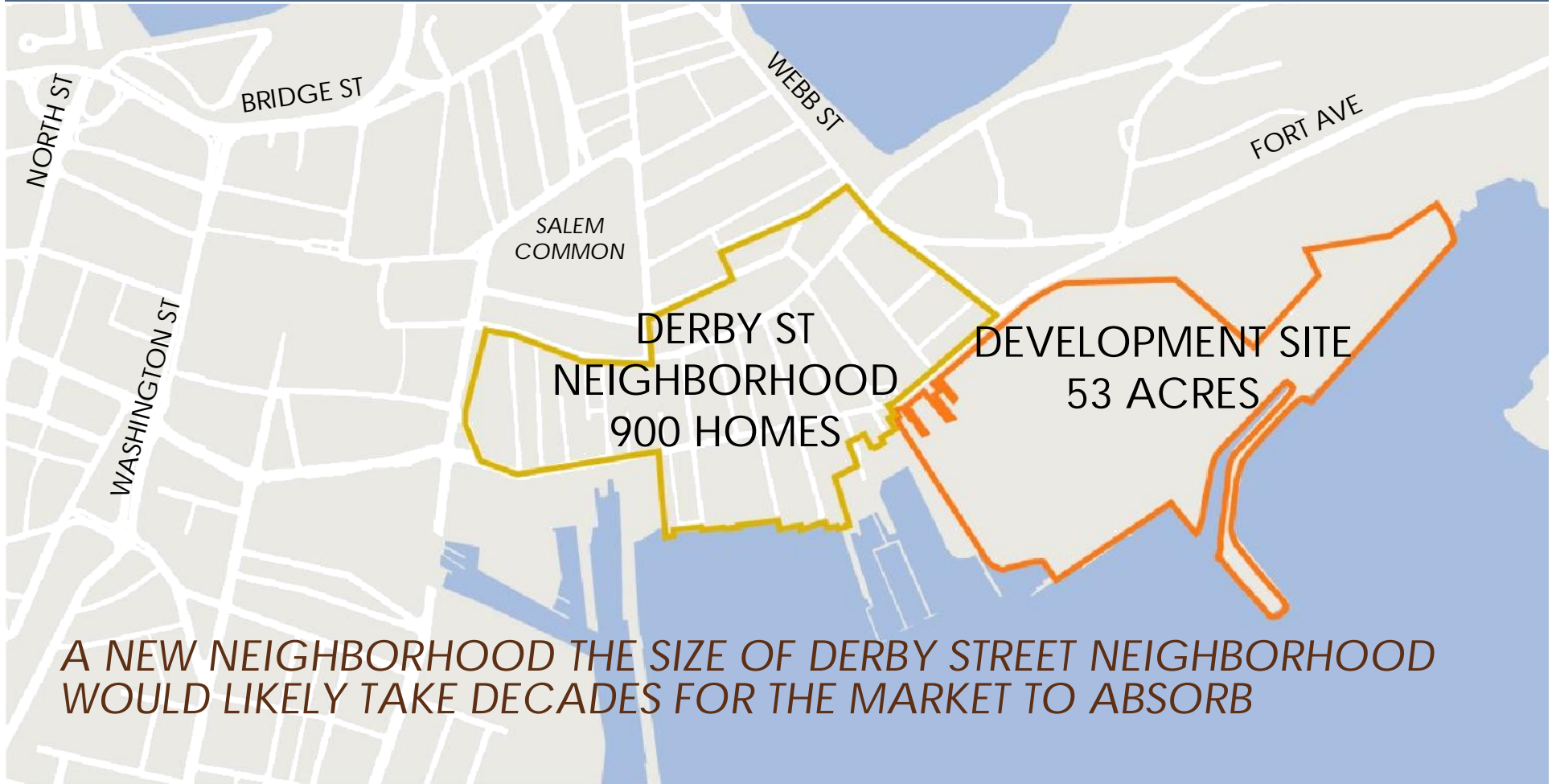
UNDERSTANDING SCALE

1,900,000 SQUARE FEET OF
NEW COMMERCIAL/OFFICE DEVELOPMENT



UNDERSTANDING SCALE

900 NEW HOMES (SMALL-SCALE RESIDENTIAL)



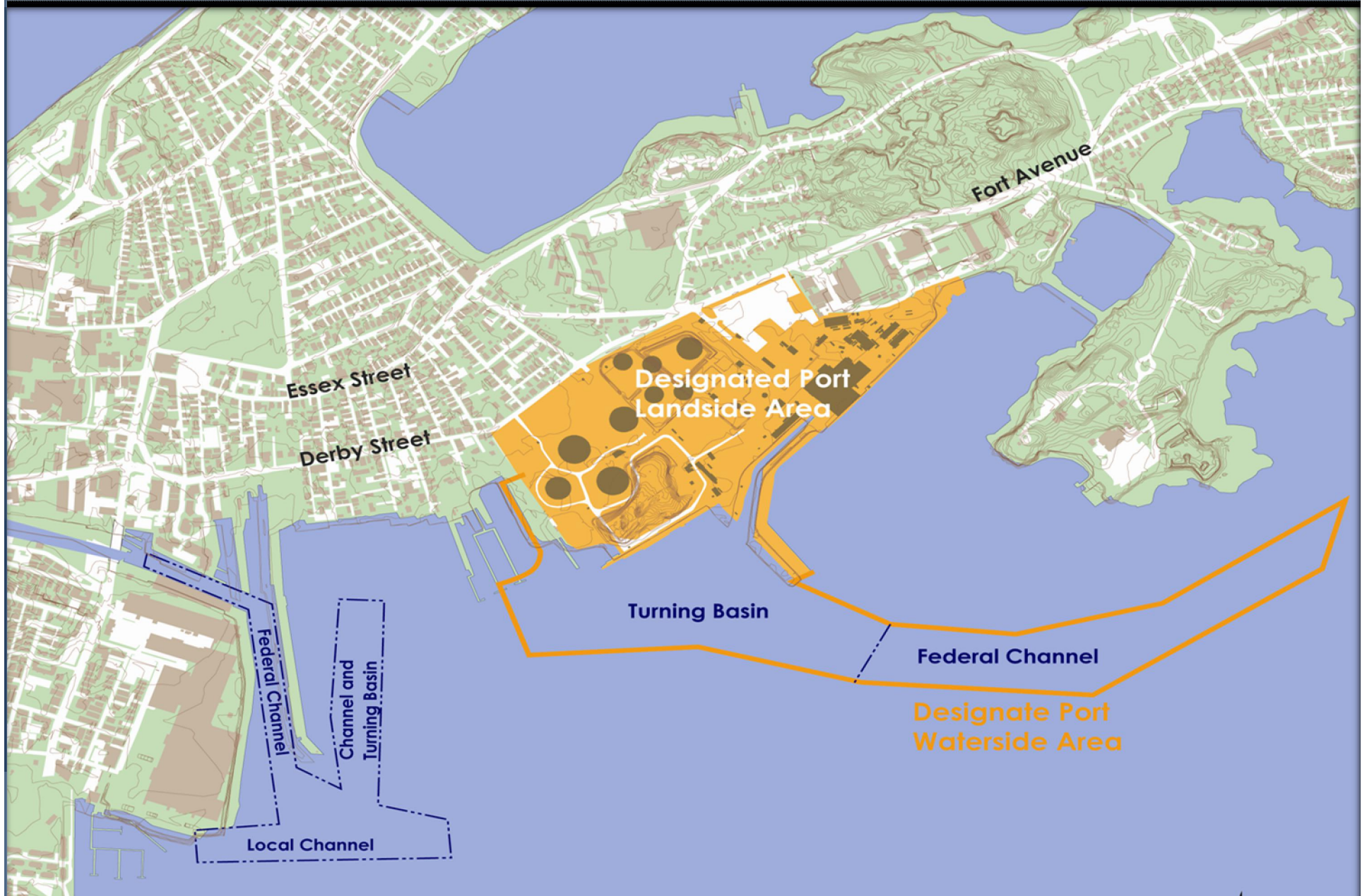
Physical Constraints on Site



CHAPTER 91



DESIGNATED PORT AREA



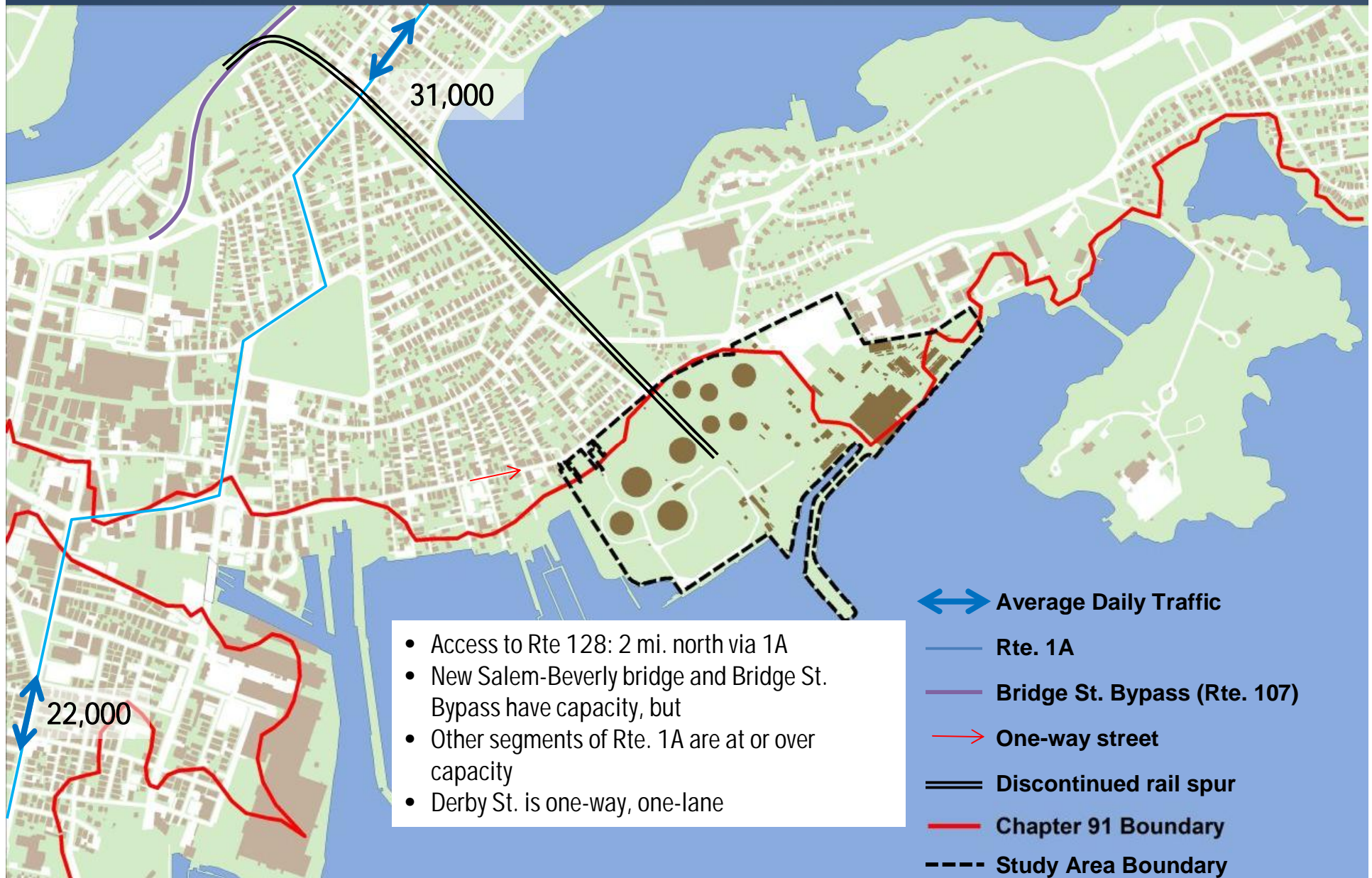
SITE ACCESS

Land access challenges / limitations



SITE ACCESS

Land access challenges / limitations



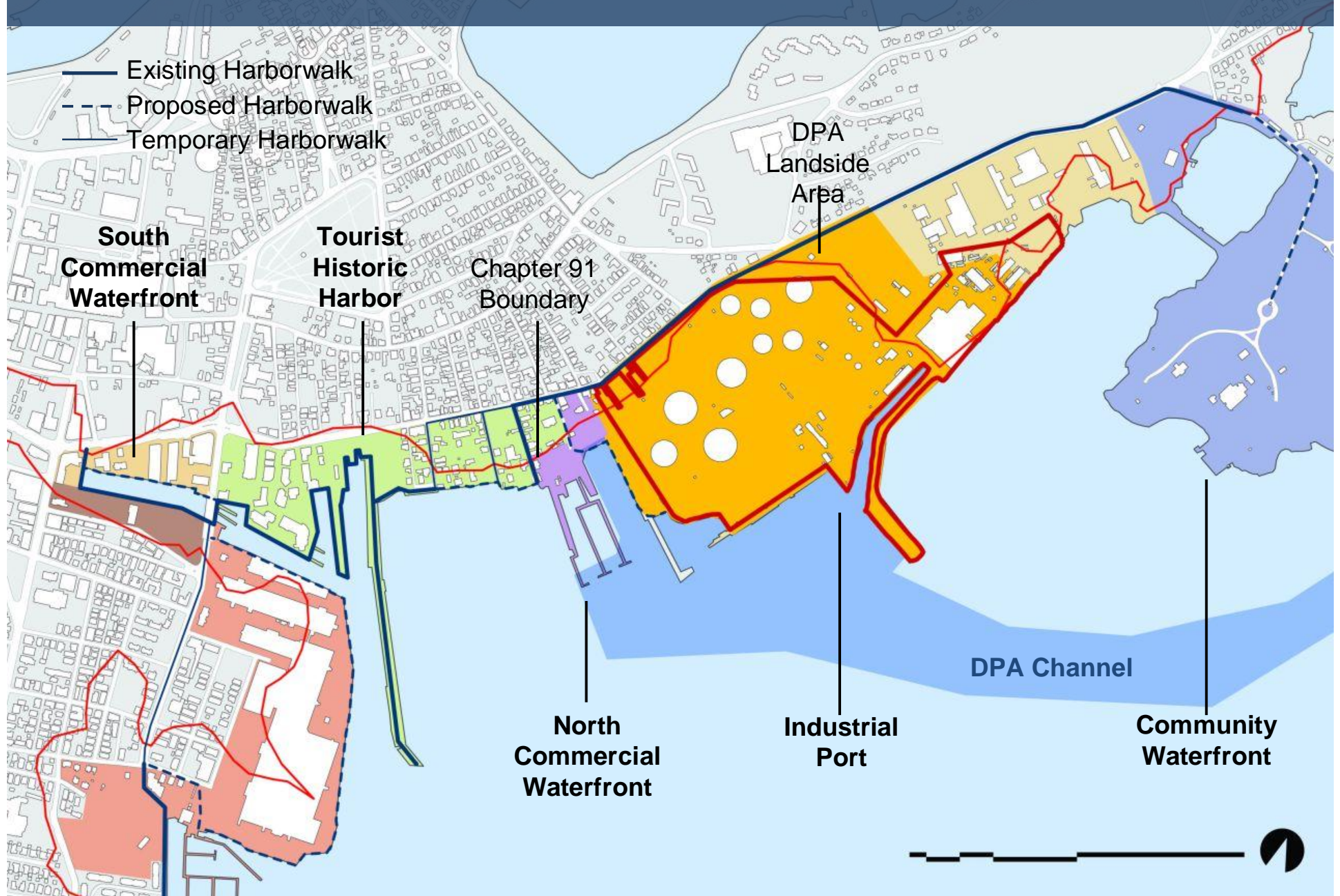
SITE ACCESS

Focus on sea-based access; minimize land-based access

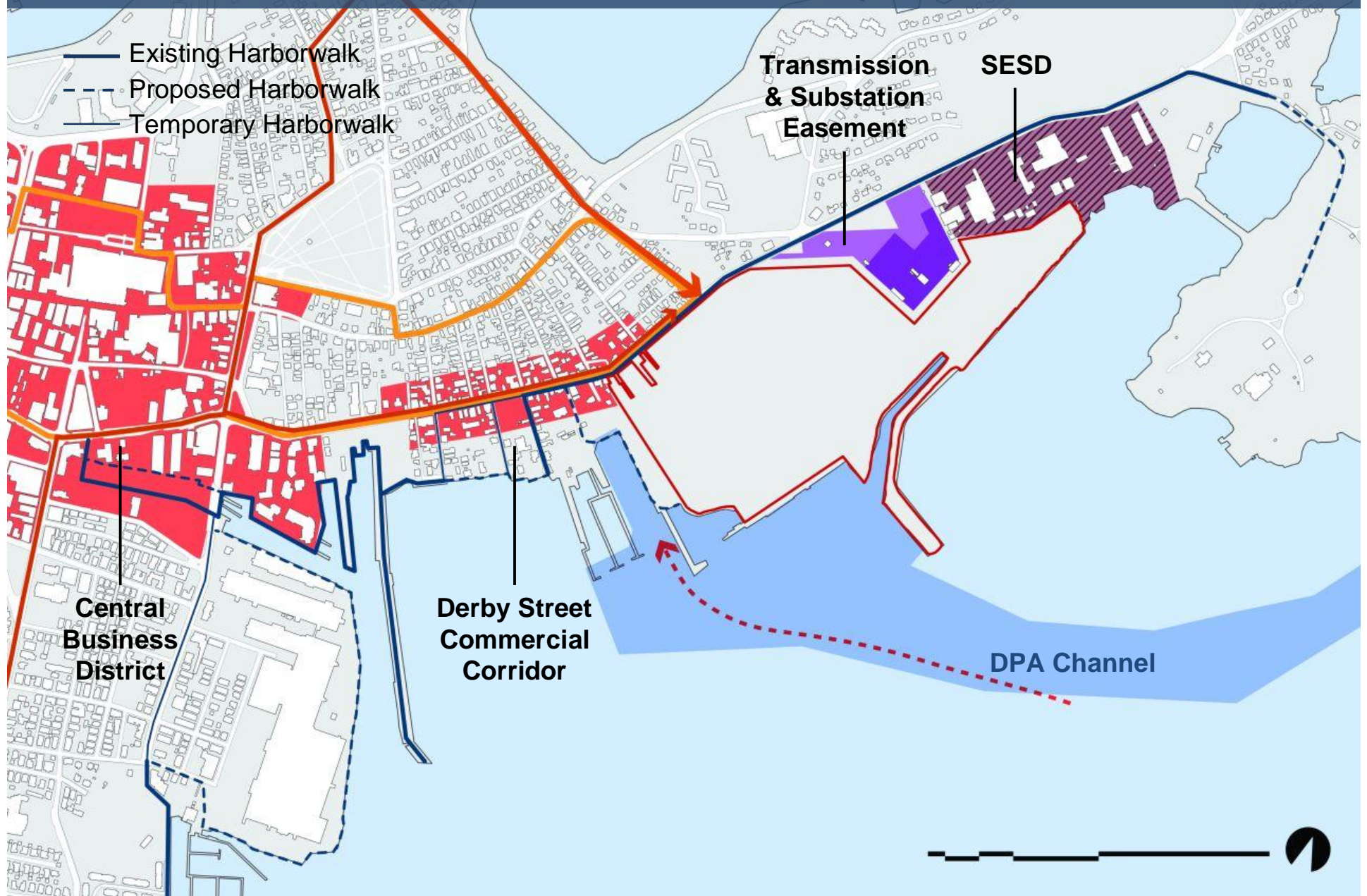


What uses on the site would MULTIPLY VALUE and take advantage of sea-based inflows and outflows of goods and people?

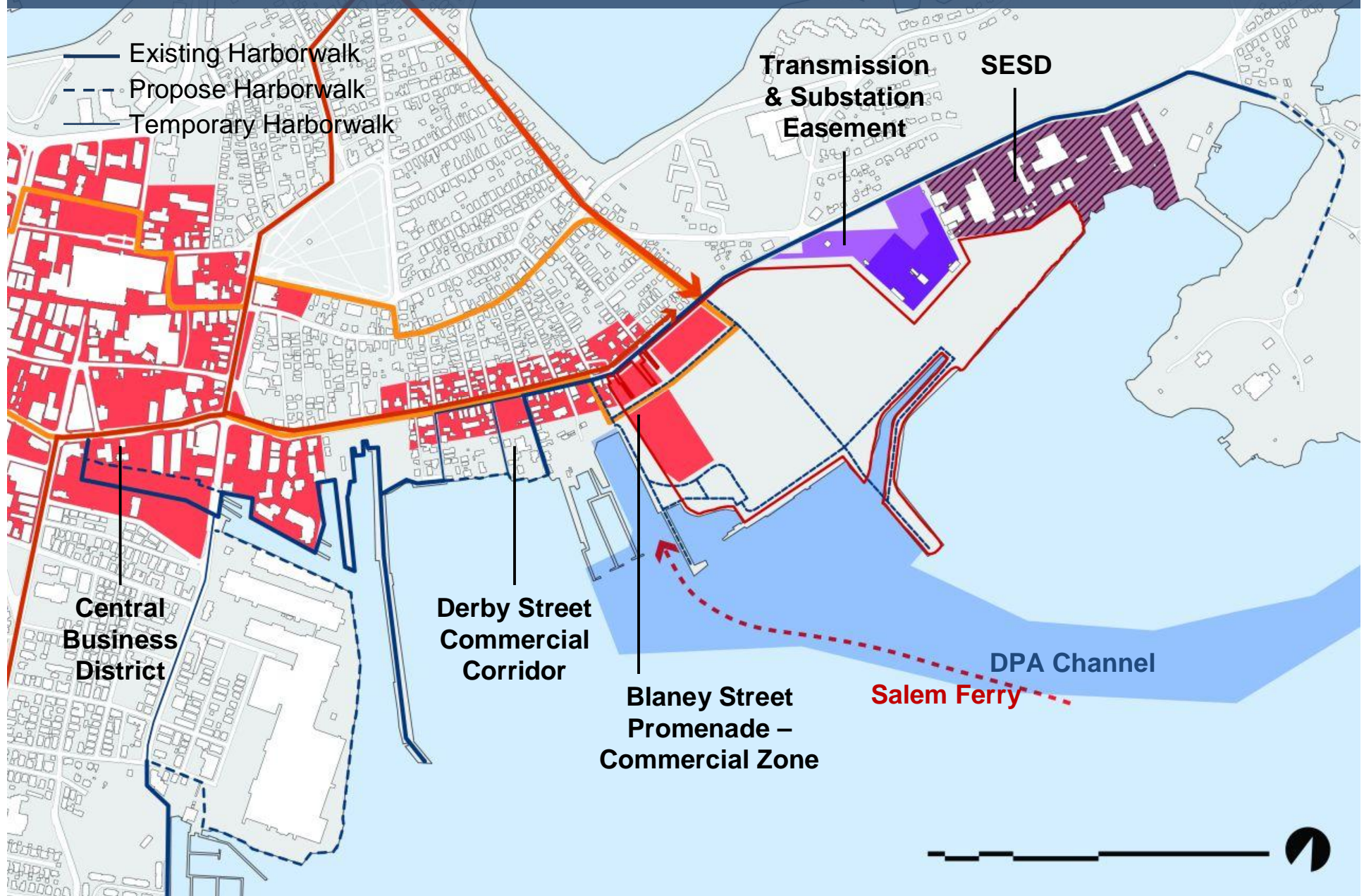
Harbor Plan



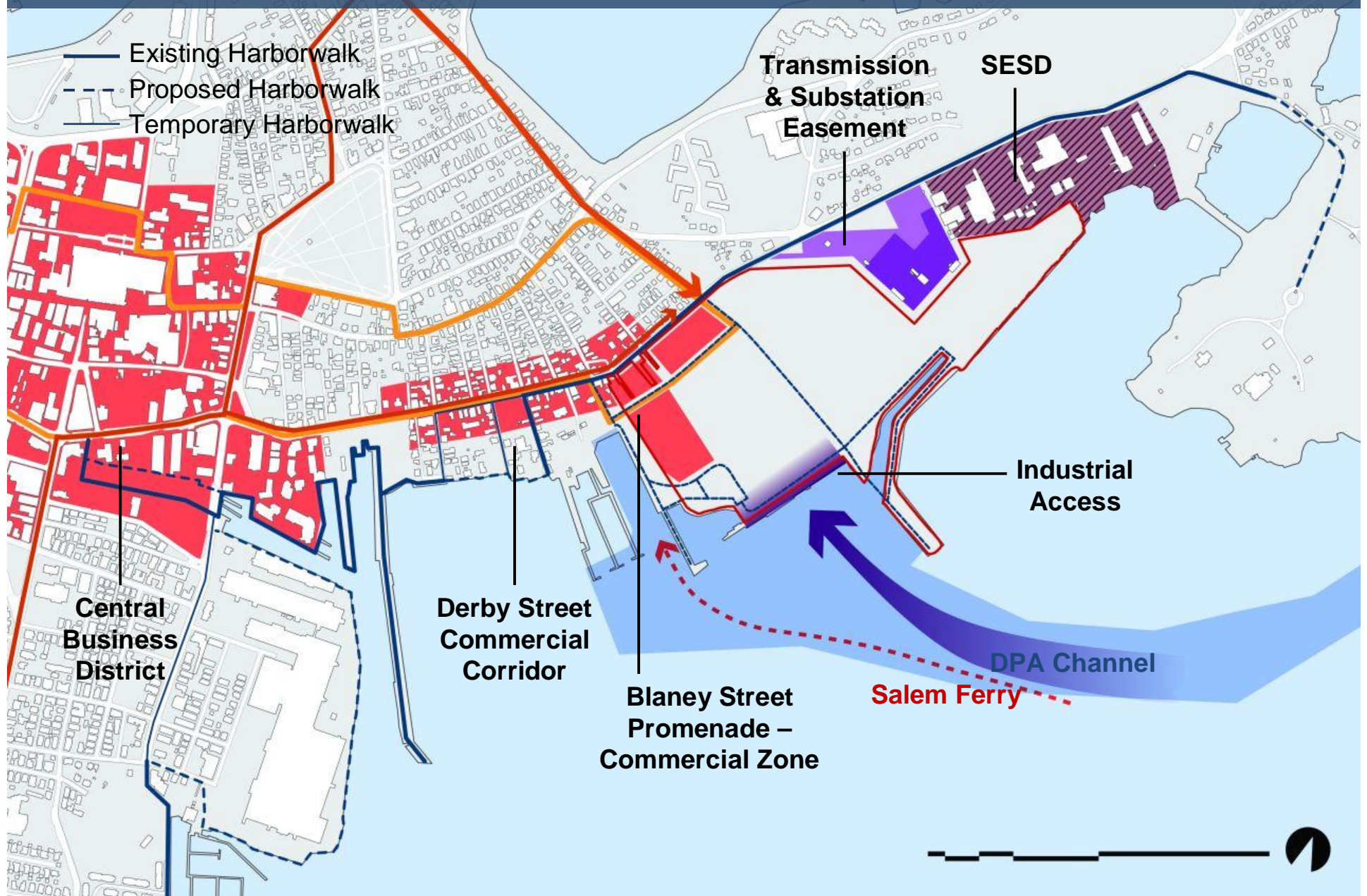
Existing Commercial Zones



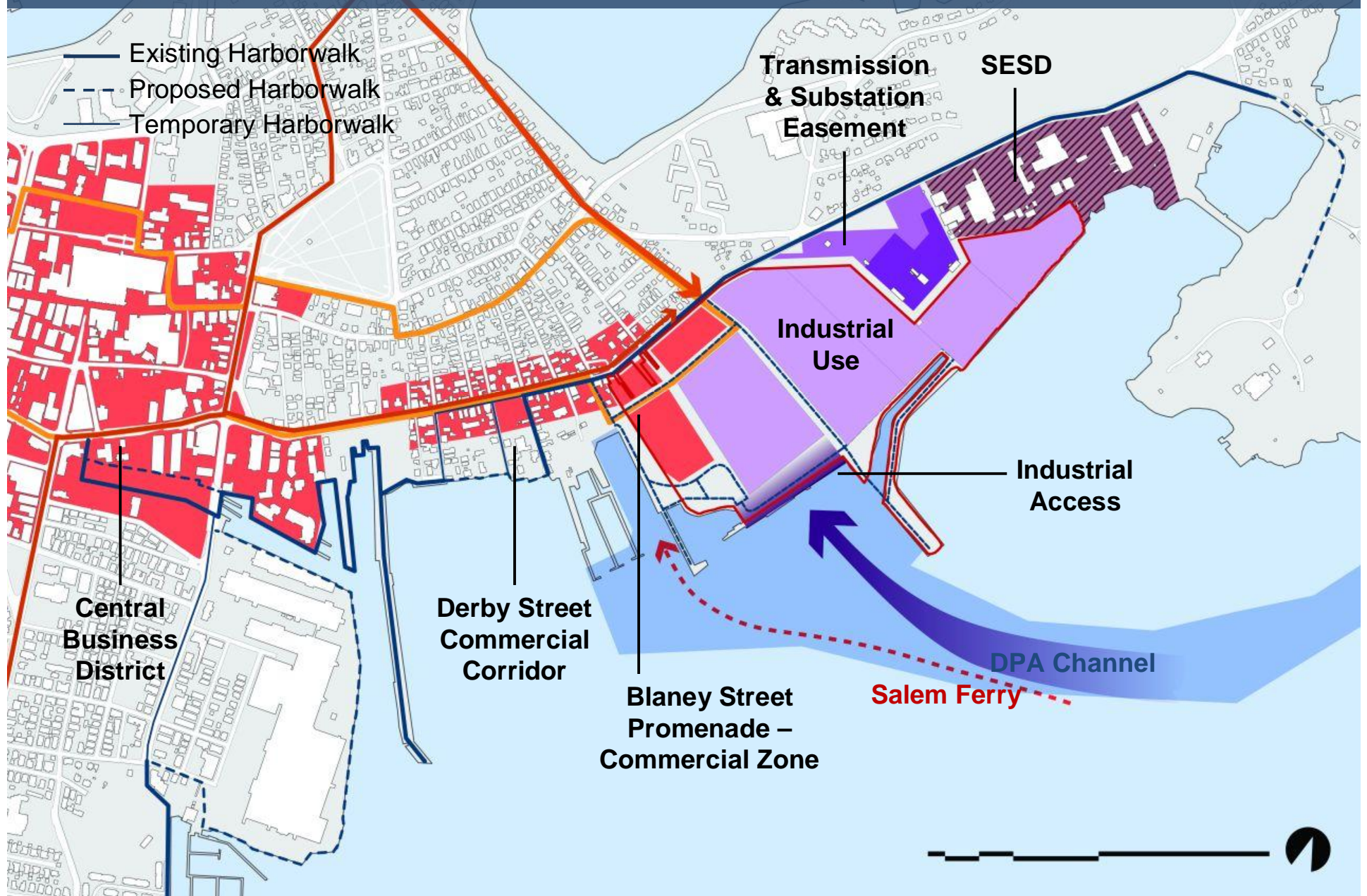
Commercial Zones and Commercial Edge



Industrial Access & Shoreline Edge



Industrial Use Proposed on Site



Spatial Options



Prioritize industrial development

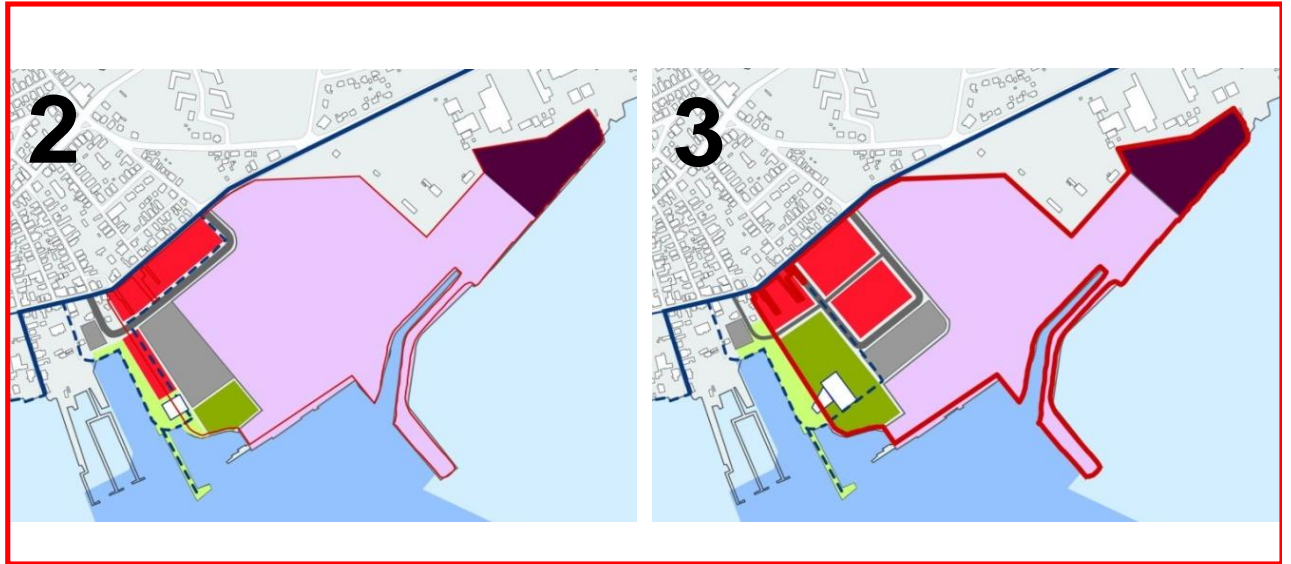


Prioritize industrial development with a commercial edge along Blaney St.



Maximum flexibility for future commercial development while maintaining industrial access

Spatial Options



- **Flexible block framework**
- **Potential for commercial and industrial development**
- **Preserve industrial access**
- **Prioritize the public realm and pedestrian movement**

POTENTIAL LAND USES

- MARINE INDUSTRIAL
 - Cruise ships/terminal
 - Manufacturing (Value-added; Lay-down facility/fabrication for wind turbine)
 - Ship building
 - Fishing (Commercial)
- ALTERNATIVE ENERGY (Wind, Solar, Natural Gas)
 - SESD Expansion
- HIGHER EDUCATION / RESEARCH
- MARINA (Commercial/Recreational)
- PARK / OPEN SPACE
- TOURISM (Resort/Hotel)
- COMMERCIAL / OFFICE / RETAIL
- RESIDENTIAL

LAND USE OPTIONS: CRUISE INDUSTRY



Cruise Industry in the Northeast: Destinations



Cruise Industry in the Northeast

- There is a strong interest in promoting Salem as a cruise destination.
- A typical passenger visiting a US port will spend roughly \$135 per day
- For passengers aboard smaller ships (such as Salem will attract), focus is on “authentic experiences.”
- “Walkability” to sights and Downtown Salem
- Blaney Street expansion plans

Day Tourism from Boston



Neighboring Land Uses



LAND USE OPTIONS

MARINE RELATED INDUSTRIAL USES (SHIP-BUILDING, ETC)



LAND USE OPTIONS

MARINE RELATED COMMERCIAL USE



LAND USE OPTIONS

MARINE RELATED RECREATIONAL USE



Hingham MA


LAND USE OPTIONS:

FISHING INDUSTRY: JODREY STATE PIER, GLOUCESTER



Jodrey State Pier, Gloucester


8 Acre site contains:


 5,000 sf office building

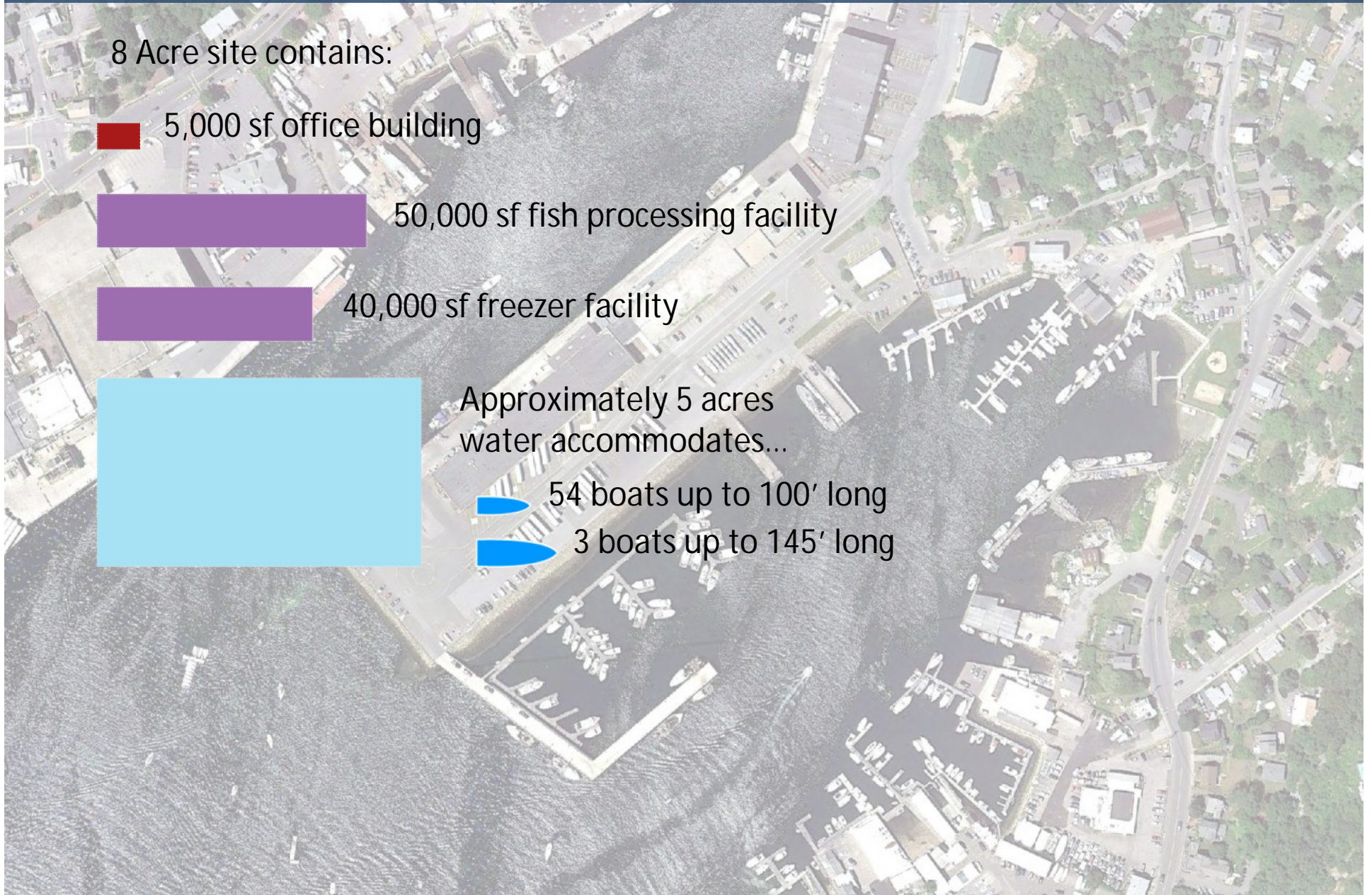
 50,000 sf fish processing facility

 40,000 sf freezer facility

 Approximately 5 acres
water accommodates...

 54 boats up to 100' long

 3 boats up to 145' long



Jodrey State Pier, Gloucester

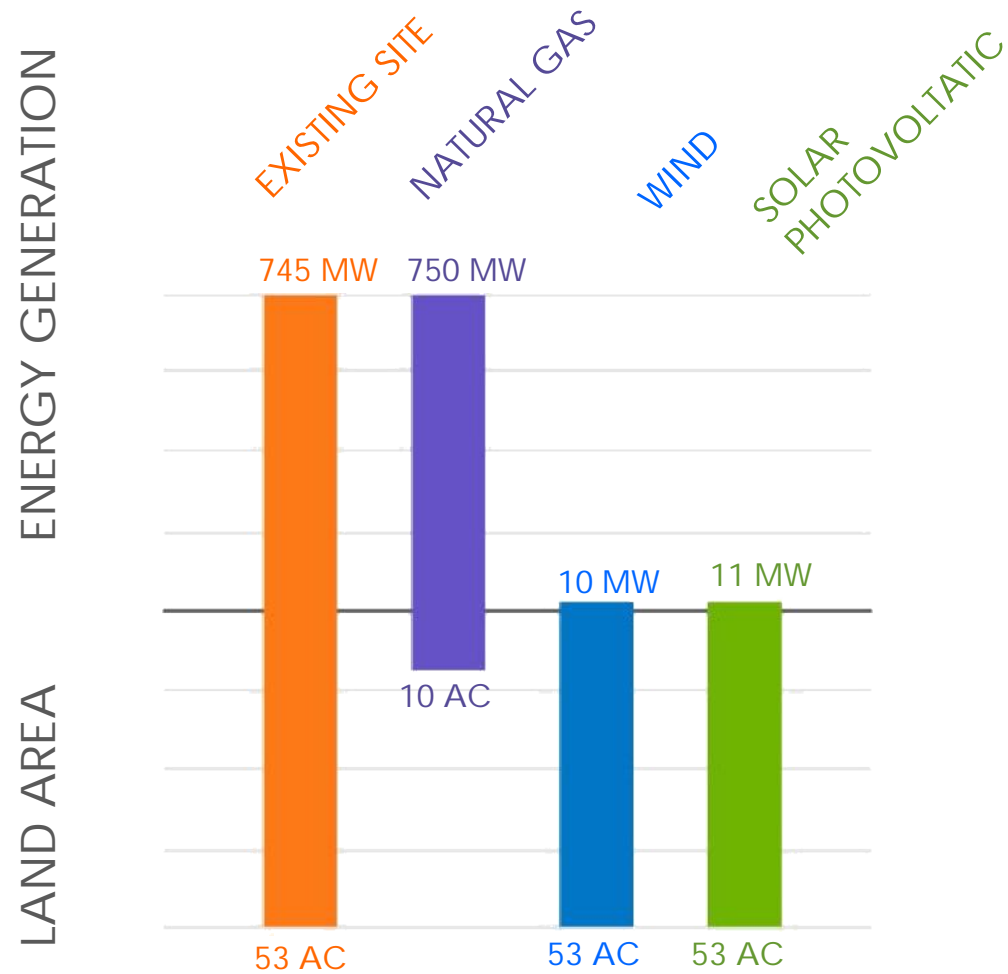
Advantages to considering a similar facility in Salem

- Relies heavily on marine transportation
- Promotes a healthy marine industrial economy
- Continues the strong regional tradition of the fishing industry
- Creates long-term employment opportunities

Challenges to considering a similar facility in Salem

- Relies heavily on land-side transportation
- Requires several smaller vessels rather than taking advantage of the deep water channel for larger vessels

ALTERNATIVE ENERGY GENERATION



Wind Energy – Component Manufacturing



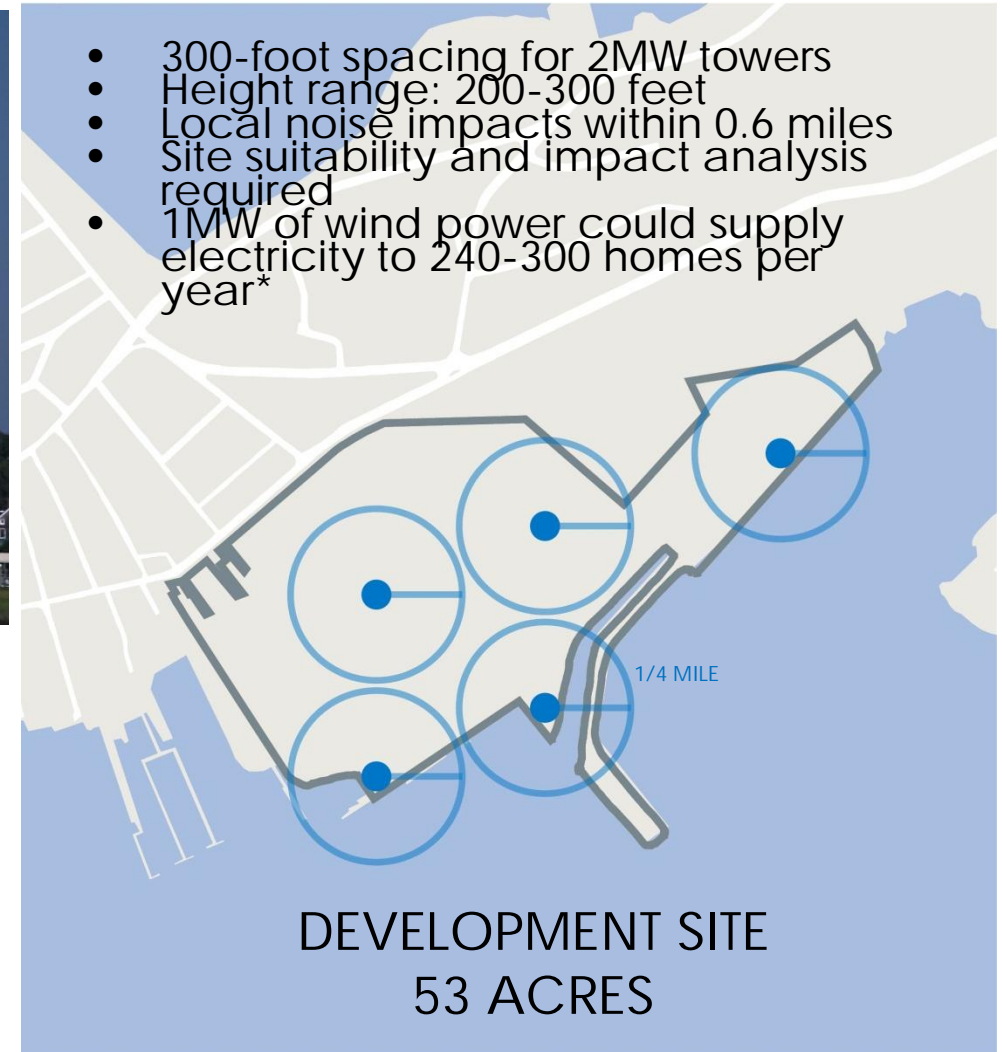
LAND USE OPTIONS

WIND POWER PLANT



2 MW turbine in Lewes, Delaware (Source: Flickr user J3[Photo])

- 300-foot spacing for 2MW towers
- Height range: 200-300 feet
- Local noise impacts within 0.6 miles
- Site suitability and impact analysis required
- 1MW of wind power could supply electricity to 240-300 homes per year*



WIND ENERGY

10 MW

EXISTING

745 MW

Possible to generate 10 MW of energy on 53 acres

source: American Wind Energy Association

LAND USE OPTIONS

LANDFALL TRANSMIT SITE – SUPPORT FOR OFFSHORE WIND



The U.K and Germany lead offshore wind production, but energy policy supports greater U.S. research & investment

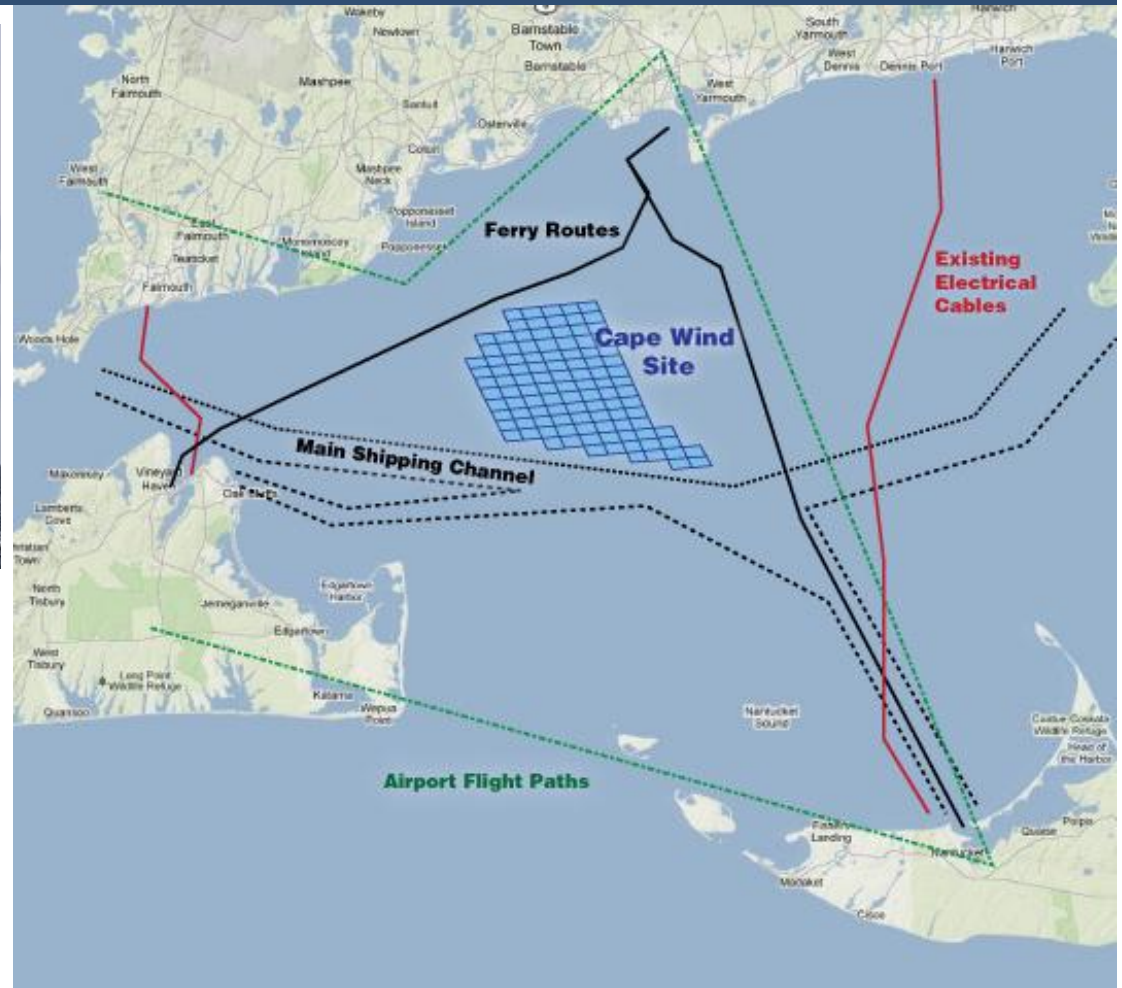
WIND ENERGY

450 MW*

EXISTING

745 MW

*projected energy at Cape Wind



Power generation potential not linked to land surface area

LAND USE OPTIONS

TRANSMIT STATION FOR OFF-SHORE WIND FARM



- Minimal land area consumption
- Site connects to submarine transmission lines from the turbines and then upland to NSTAR's existing electric's ROW
- Seawall constructed above ground with remaining infrastructure below
- Underground landfall transition vaults
- Vaults are 8' x 35'; 10' below ground
- Upland transmission lines in existing utilities corridor



LAND USE OPTIONS

LAYDOWN / FABRICATION FOR WIND TURBINES



New Bedford Marine Commerce Terminal

New Bedford Marine Commerce Terminal

- 200 jobs expected
- 1,200 LF bulkhead with deep water access
- Attracts additional marine industries to area
- Docking for turbine parts delivery & barges to transport components to installation area, lay down space
- Construction cost - \$35 million (state, federal, and city resources)



Offshore Wind Energy Facilities

- Typically contain 60 – 150 turbines
- Each turbine typically generates 3-5 MW
- Components can be assembled on-site or on land
- Projected European growth can not be supported by existing facilities – all of which are in Europe

What is the potential synergy between off-shore wind presence, manufacturing ability, proximity to research institutions, and potential for renewable energy demonstration / production to draw tourists?

Salem Compared to other manufacturing sites

Port	Protected Harbor	Channel Depth	Horizontal Clearance	Overhead Clearance	24/7	Exclusive use?	Berth Length	Upland Area	Rail / Hwy access?
Salem (Dominion)	Yes	32'	280'	No vertical Obstruction	Yes	Yes	580'	Up to 45 acres	Rail: no Hwy: no
Gloucester	Yes	16-19'	200'	No vertical Obstruction	No	No	1400'	7.8 acres	Rail: yes Hwy: yes
Boston	Yes	40'-45'	430'	No vertical Obstruction	Yes	Yes	1800'	14-17 acres	Rail: limited Hwy: yes
Fore River (Ship Yard)	Yes	32'	175'	175'	Yes	Yes	800'	111 acres	Rail: yes Hwy: no
Fall River (Mount Hope Bay)	Yes	40'	400'	135'	Yes	No	620'	7 acres	Rail: yes Hwy: yes
New Bedford	Yes	30'	150'	No vertical Obstruction	Yes	Yes	1600'	10+ acres	Rail: limited Hwy: yes

Fields in red do not meet minimum recommendations

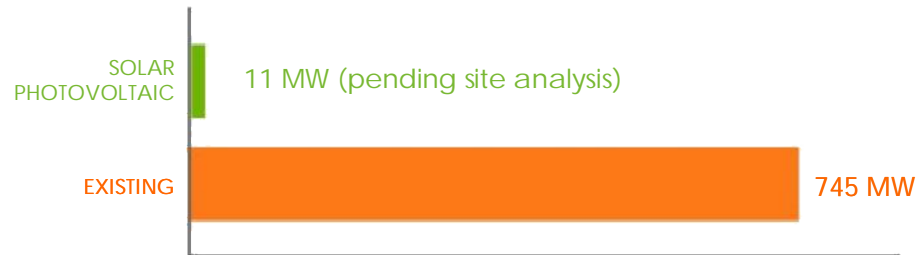
Salem meets all physical port requirements with exception of adequate landside access.

LAND USE OPTIONS

A SOLAR ENERGY PLANT ON THE SITE COULD
GENERATE APPROXIMATELY 11 MW OF ENERGY



WMEC's South Lake solar facility in Pittsfield, MA
(Source: American Capital Energy)



ON-SITE SOLAR ENERGY GENERATION
53 ACRES



LAND USE OPTIONS

NATURAL GAS POWER PLANT



Fore River Station, Weymouth, MA (Source: Patriot Ledger)

NATURAL GAS

750 MW

EXISTING

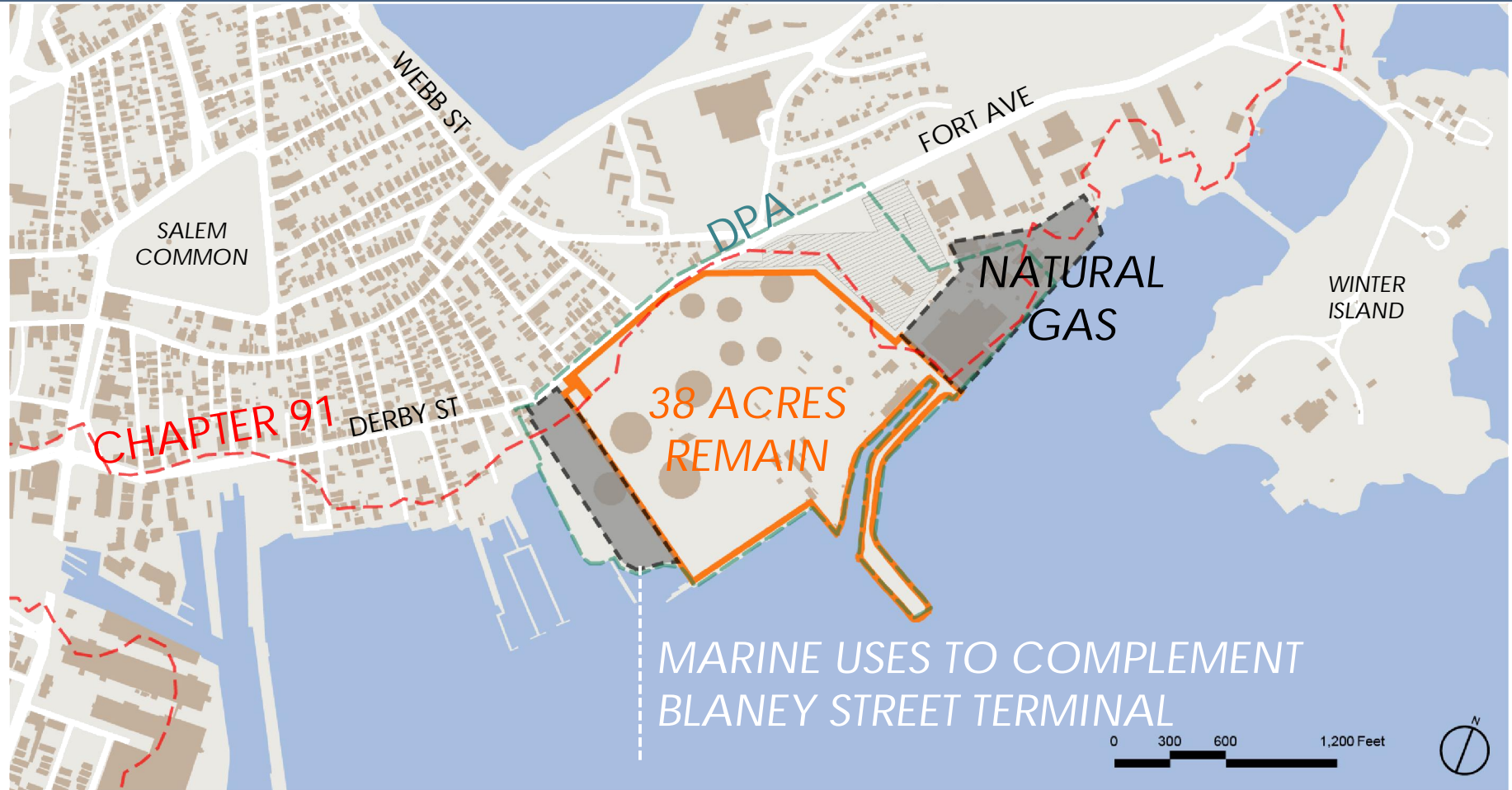
745 MW



Possible to generate 750 MW of energy on 10-15 acres

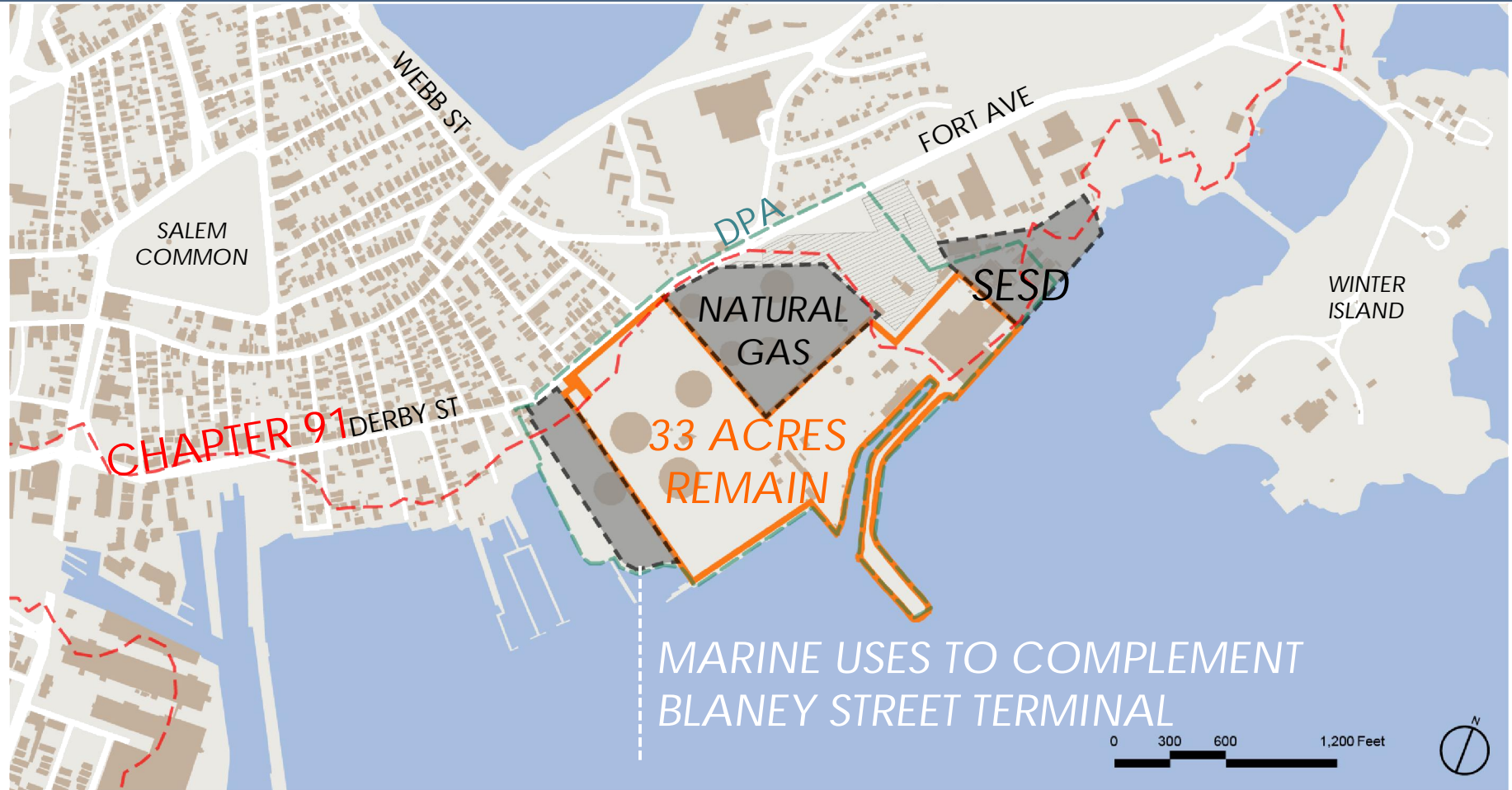
LAND USE OPTIONS

SCENARIO: MARINE USES AND NATURAL GAS POWER GENERATION



LAND USE OPTIONS

SCENARIO: MARINE USES, NATURAL GAS POWER GENERATION, AND SESD EXPANSION



NATURAL GAS POWER PLANT PROFORMAS

Evaluated Two New Power Plant Configurations

“Baseload” Natural Gas-Fired
Combined Cycle (400 MW)

“Peaker” Natural Gas-Fired
Combustion Turbine (510 MW)

Numerous Scenarios Studied:

- * Financing (Municipal v. Merchant)
- * Revenue (Energy/Capacity/Ancillary Market Products)
 - High, Base, Low
- * Expenses (Fuel–Nat. Gas
 - High, Base, Low)
- * Cost for Clean-Up (\$75 million to Zero)

NATURAL GAS COMBINED CYCLE OPTION

Natural Gas Fired Combined Cycle (Merchant Owner)

- Discount Rate – 7.6%
- Investment Bank Financing
- 80/20 Debt to Equity
- Did Not Consider “Creative Financing” Structures

Base Case Results (with NO Clean up Costs)

- Poor Economic Results
- Long Payback (~20 years)
- Low Rates of Return (<7%)

Best Economic Results Required Both

- High Energy Prices; and
- Low Natural Gas Prices
- Low Probability Conditions

NATURAL GAS COMBINED CYCLE OPTION

Natural Gas-Fired Combined Cycle (Municipal Owner)

- Discount Rate – 5.0%
- Bond Market Financing
- 80/20 Debt to Equity
- Did Not Consider “Creative Financing” Structures

Base Case (with NO Clean up Costs)

- Appear Feasible
- 7 Year Payback
- Reasonable Rate of Return (~14%)

Base Case with \$75M Clean up Borderline (Marginal)

Best Economic Results Required Both

- High Energy Prices; and
- Low Natural Gas Prices
- Low Probability Conditions

COMBUSTION TURBINE PEAKER OPTION

Natural Gas-Fired Combustion Turbine Peaker (510 MW)

All Cases Failed Economic Screening

- Payback > 35 years
- Negative NPV
- No IRR

Stress tested capital cost assumptions but Peaker still didn't screen in either merchant or municipal case

- Removed \$1M gas pipeline expansion costs
- Removed site clean-up costs

Peaker economics did not make sense at the site in the analysis:

- Based on Current Market Rules
- Assuming No "Creative Financing"

LAND USE OPTIONS

HIGHER EDUCATION/RESEARCH



WOODS HOLE
OCEANOGRAPHIC INSTITUTE
FALMOUTH, MA
62 ACRES



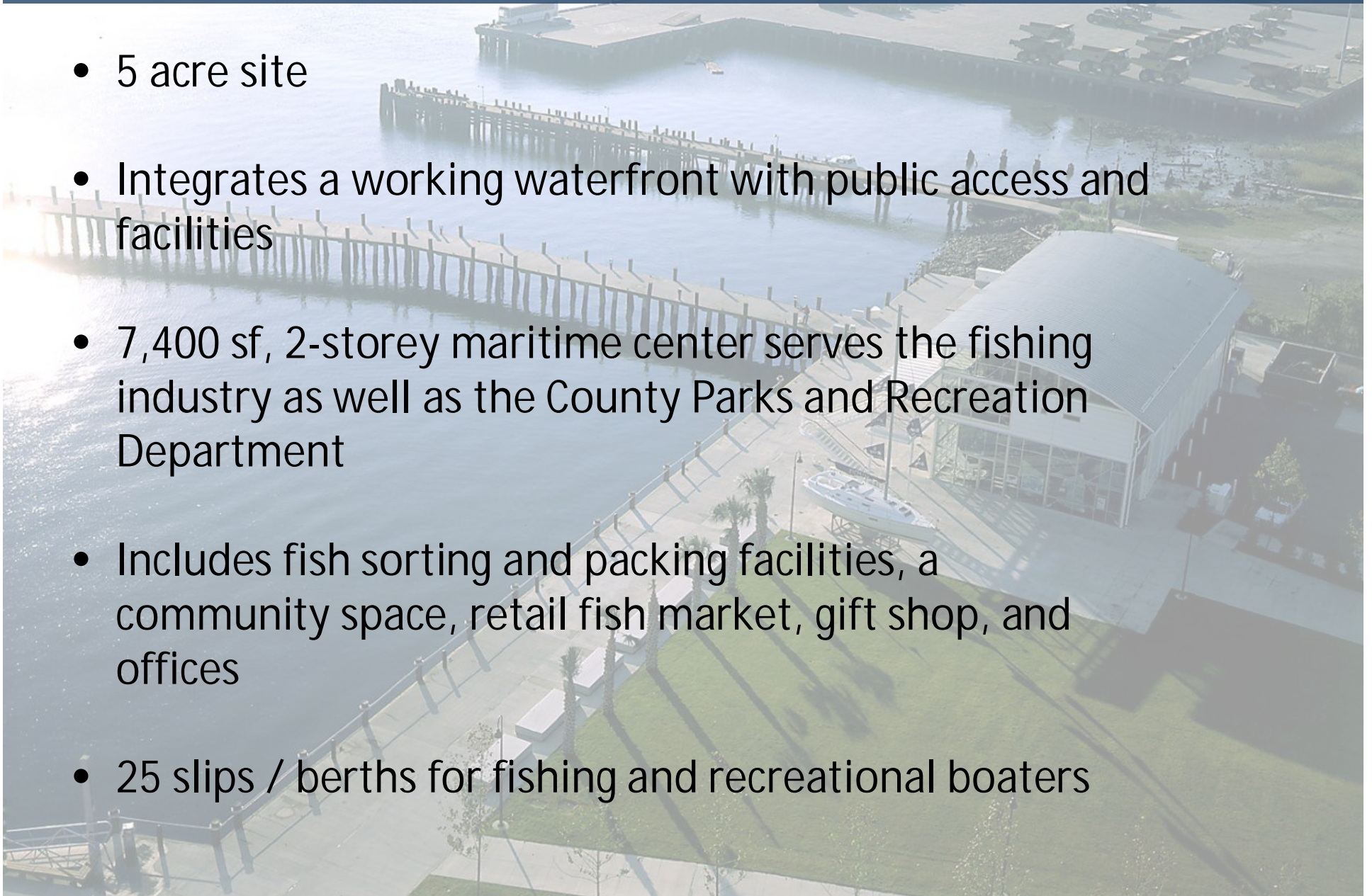
Charleston Maritime Center

The Charleston Maritime Center is the first of many projects in Charleston's long-range plan to redevelop and revitalize the historic waterfront and provide waters-edge access to its residents and visitors.



Charleston Maritime Center

- 5 acre site
- Integrates a working waterfront with public access and facilities
- 7,400 sf, 2-storey maritime center serves the fishing industry as well as the County Parks and Recreation Department
- Includes fish sorting and packing facilities, a community space, retail fish market, gift shop, and offices
- 25 slips / berths for fishing and recreational boaters



Charleston Maritime Center - 1999



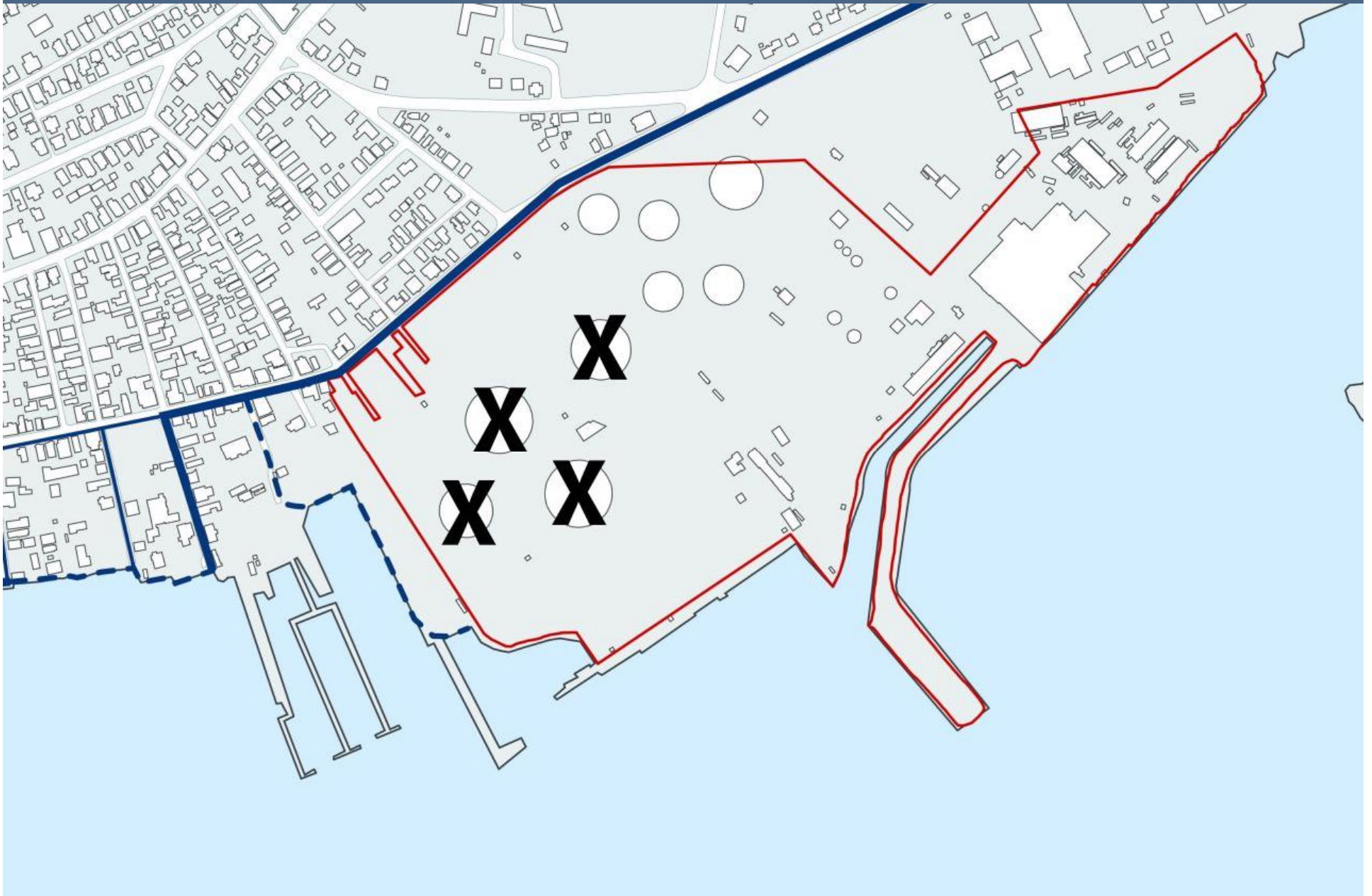
Charleston Maritime Center - 2010



SITE REDEVELOPMENT PRIORITIES

- Comply with regulatory environment
- Replace as much tax revenue as possible
- Provide public waterfront access
- Propose uses for which there is market demand
- Promote a mix of uses that will contribute to a healthy marine industrial / commercial economy at Salem's waterfront
- Limit strain on roads and land-based infrastructure while taking advantage of water-based infrastructure
- Streamline phasing and implementation so as to maintain functionality on site and minimize adverse impacts

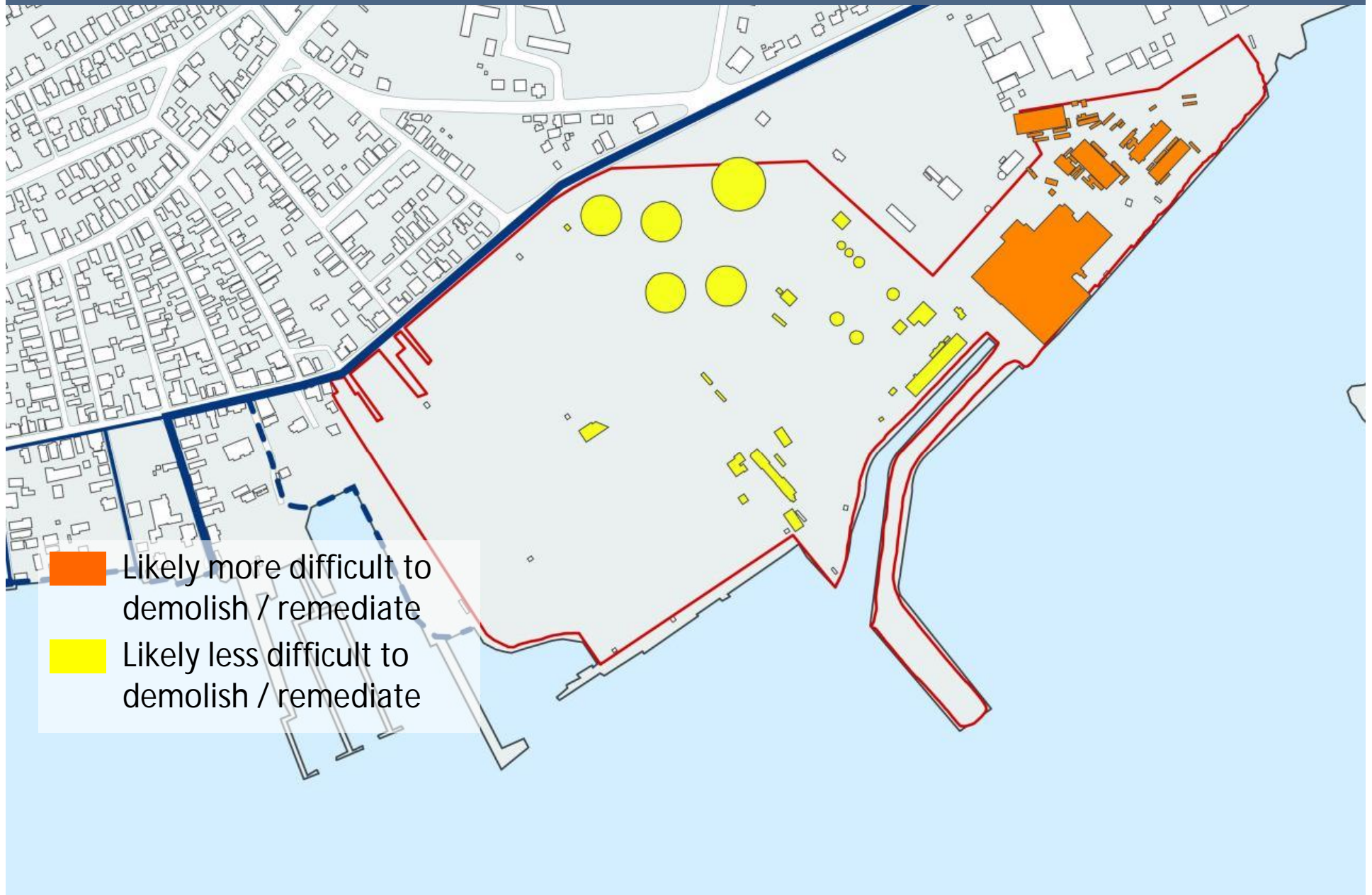
Dominion required to remove 4 large tanks



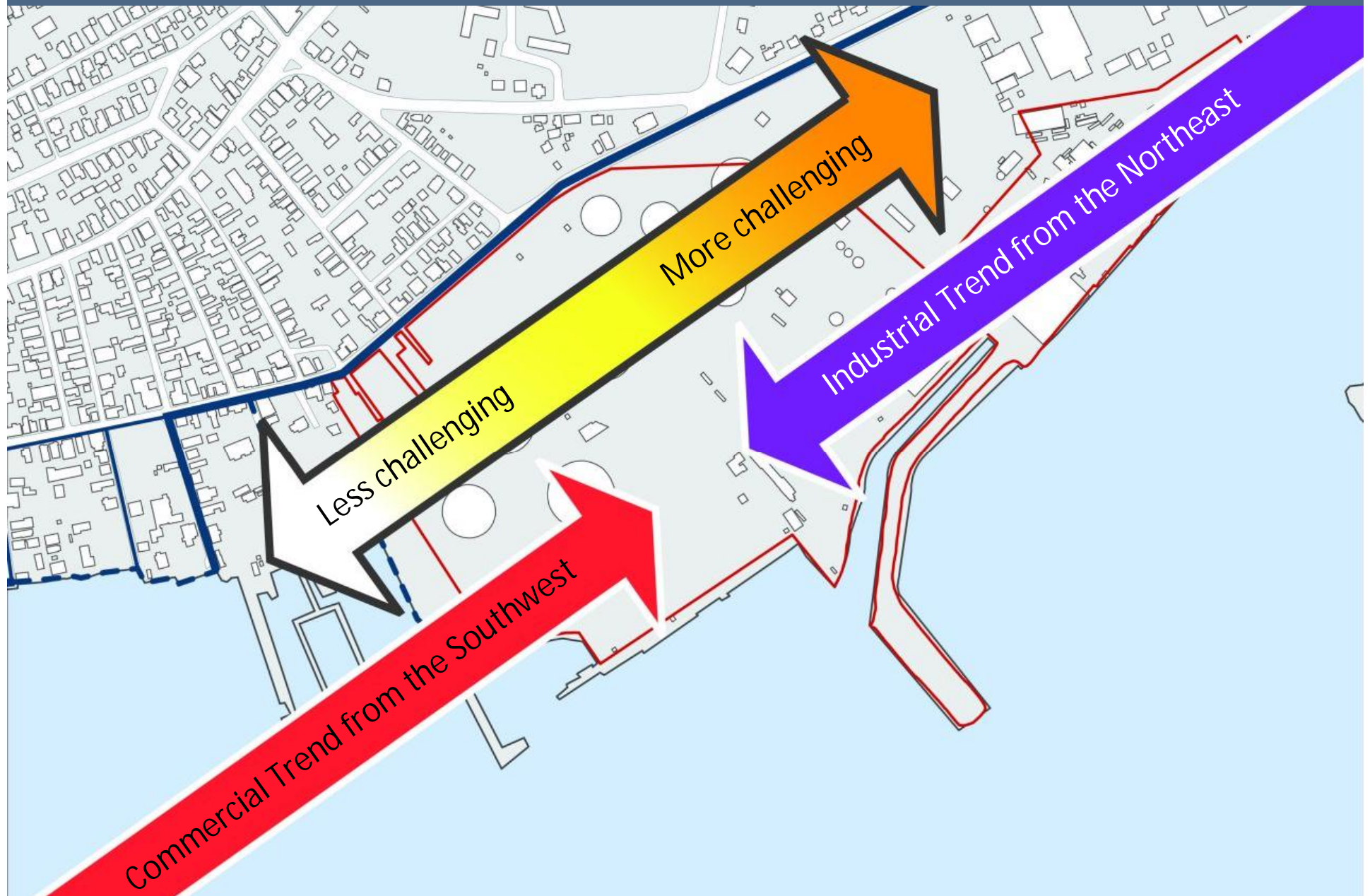
Baseline condition after tank removal



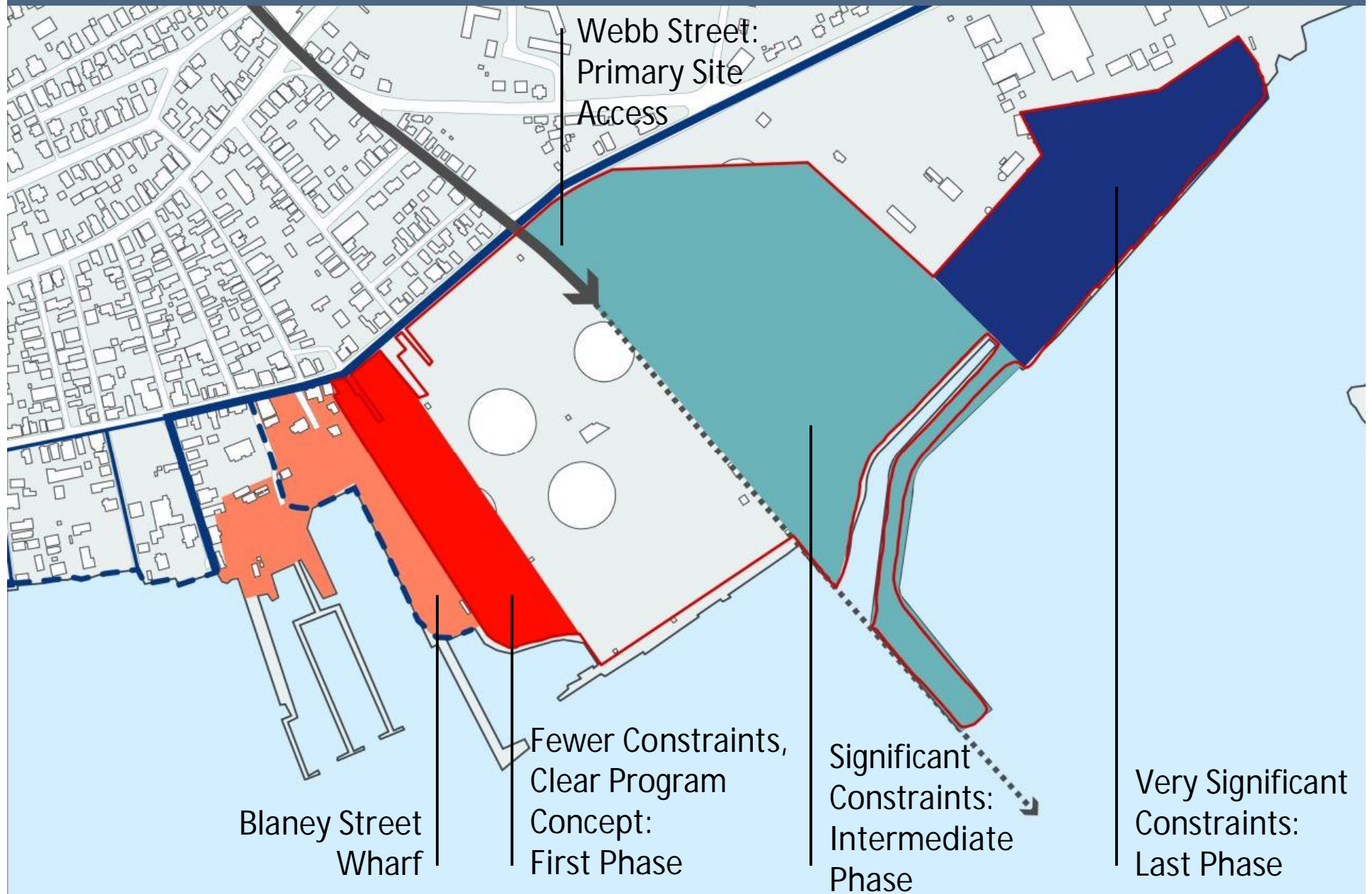
Site buildings that remain to be demolished



Challenges to development & Land Use



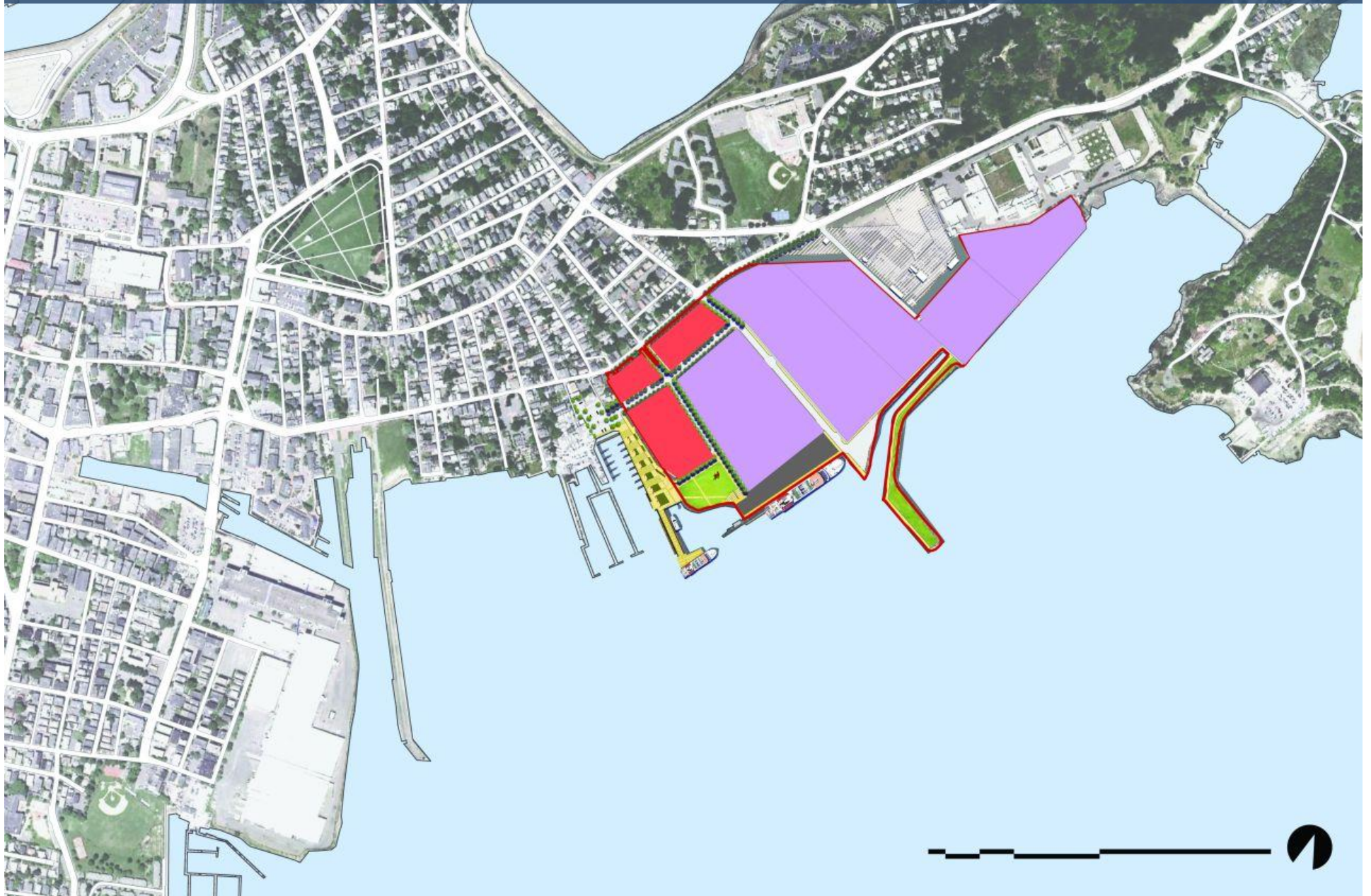
Site organization and phasing



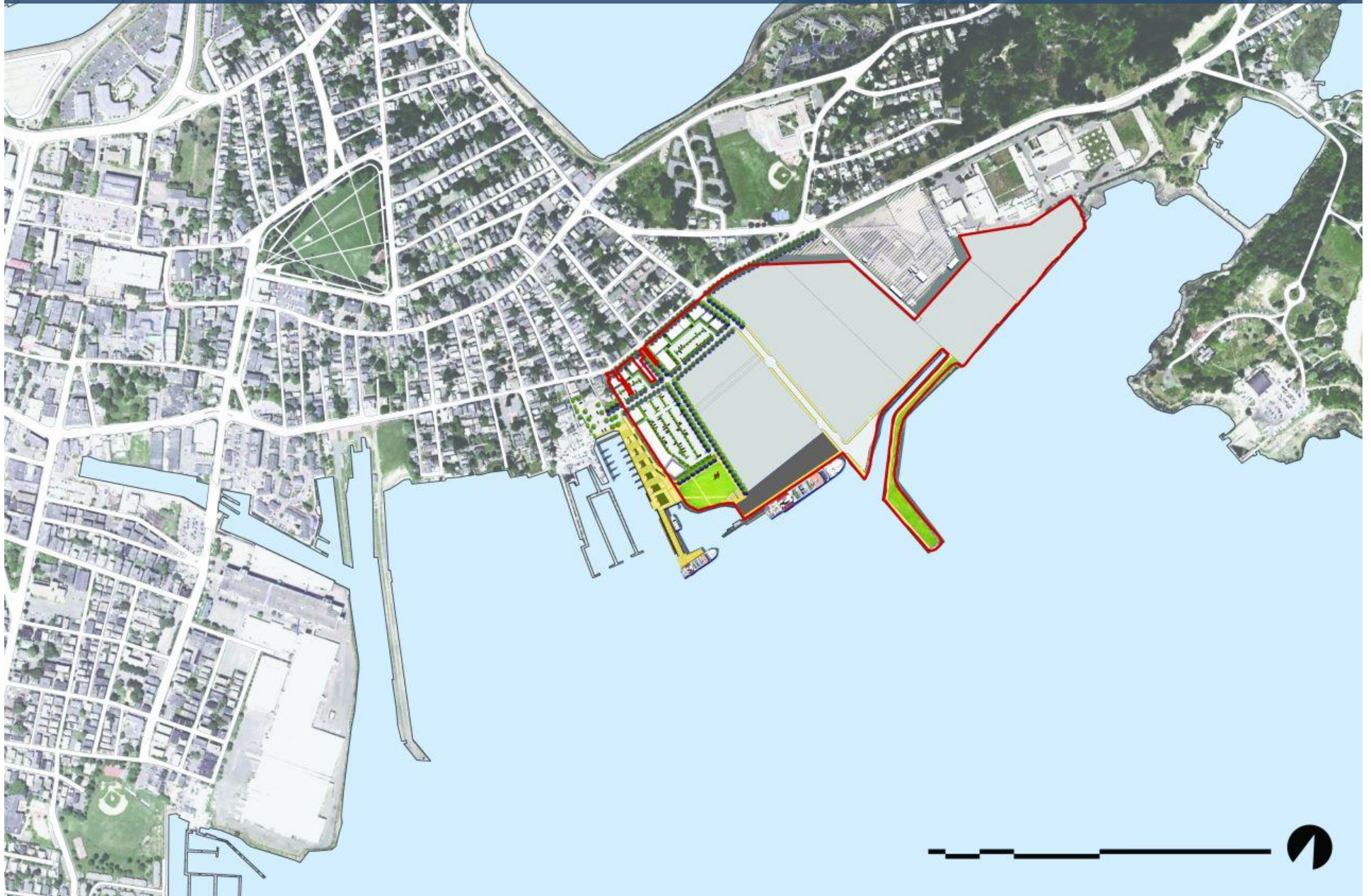
Spatial Strategy



Proposed Site Plan



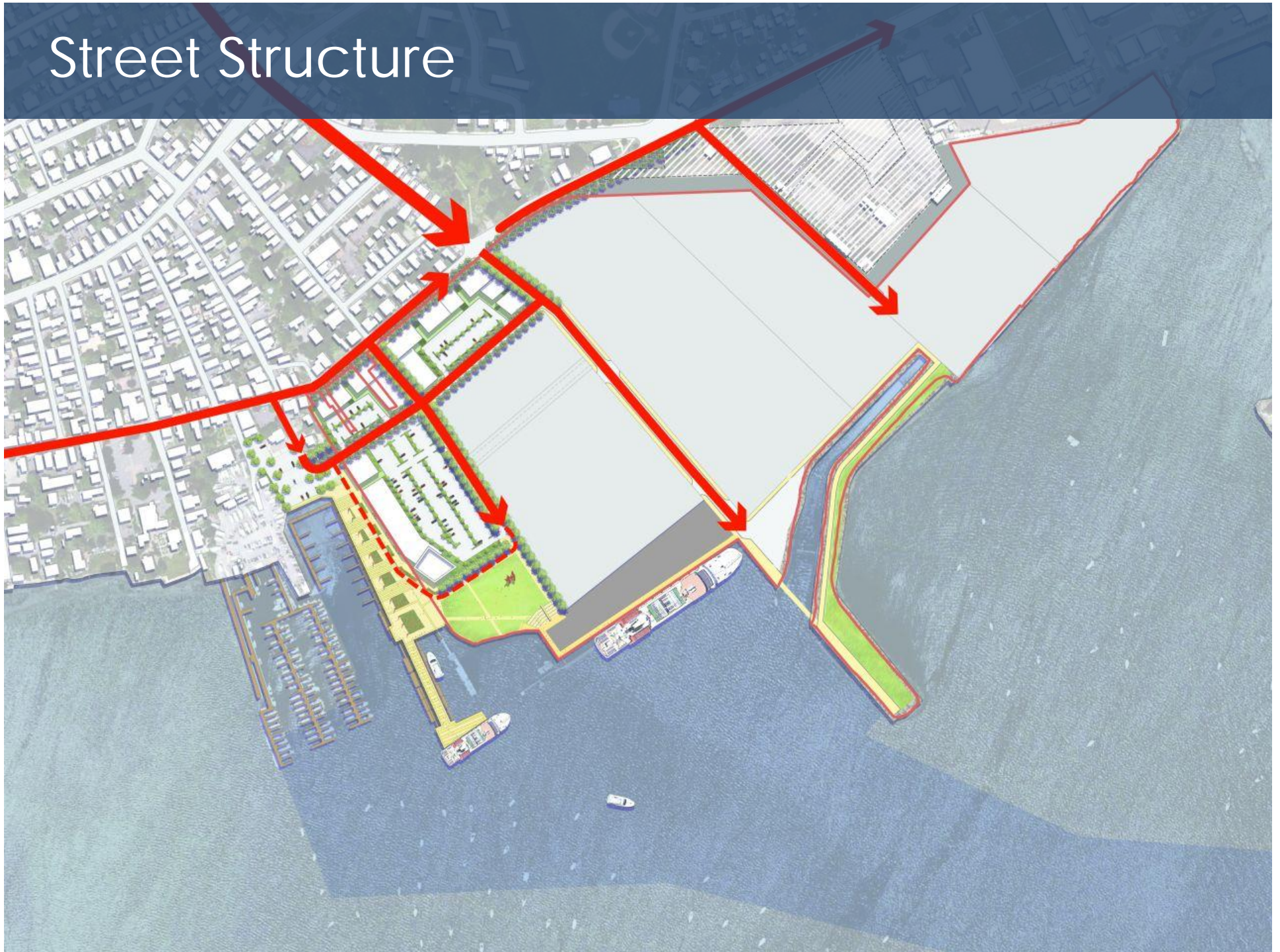
Proposed Site Plan



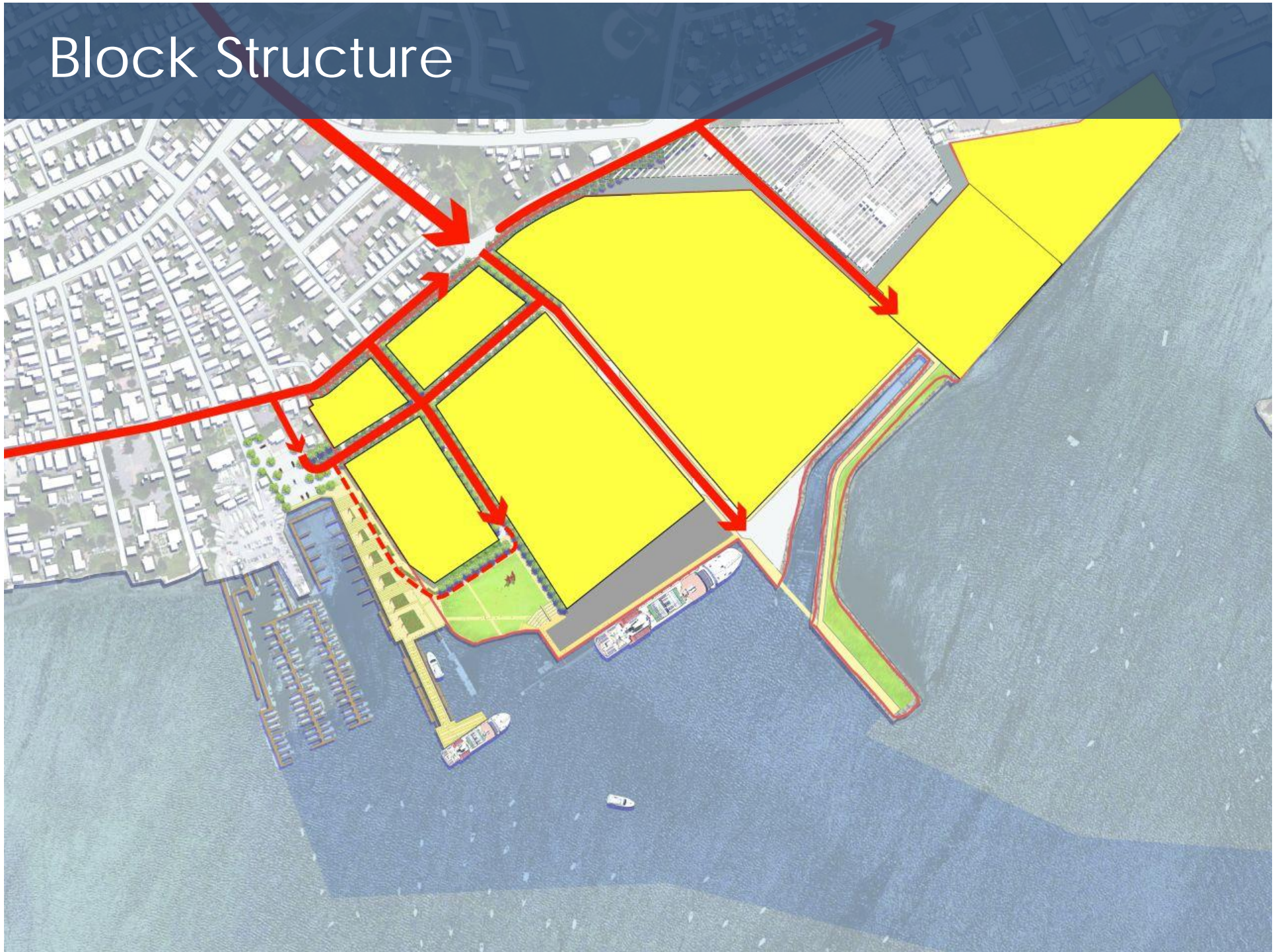
Proposed Site Plan



Street Structure



Block Structure



Pedestrian Connections - Harborwalk



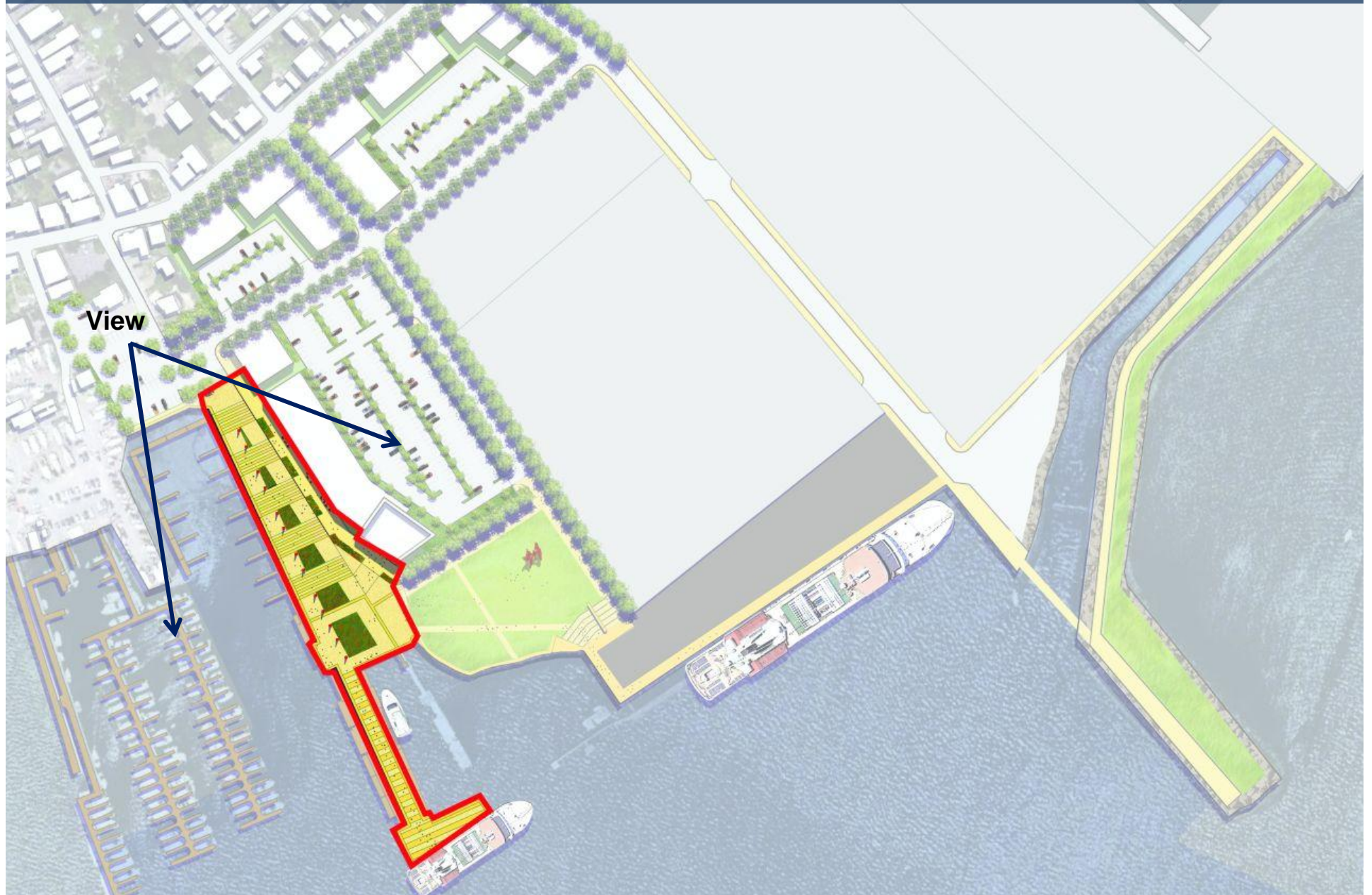
Proposed Site Plan



Public Realm & Open Spaces



Blaney Street Promenade



View of Blaney Street Wharf - Existing



View of Blaney Street Promenade Proposed



Blaney Street Promenade - Activity



National Harbor

Blaney Street Promenade - Activity



Blaney Street Promenade – Marina Edge



Boston, MA

Blaney Street Promenade - Furnishings



Gantry State Park, Queens NY

Blaney Street Promenade - Wind Turbines



Waterfront Park



Transition to Waterfront Lawn



Gantry State Park, Queens NY

Waterfront Park



Charleston

Waterfront Lawn – Transition to Industrial Edge



Gantry State Park, Queens NY



Charleston Maritime Center

Industrial Edge



Industrial Edge – Controlled Access

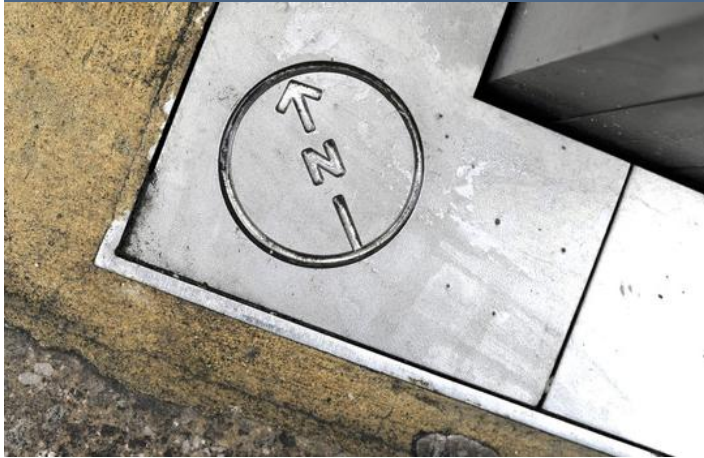


Boston, MA

Jetty Park



Environmental Graphics



Jetty Park



Gantry State Park, Queens NY

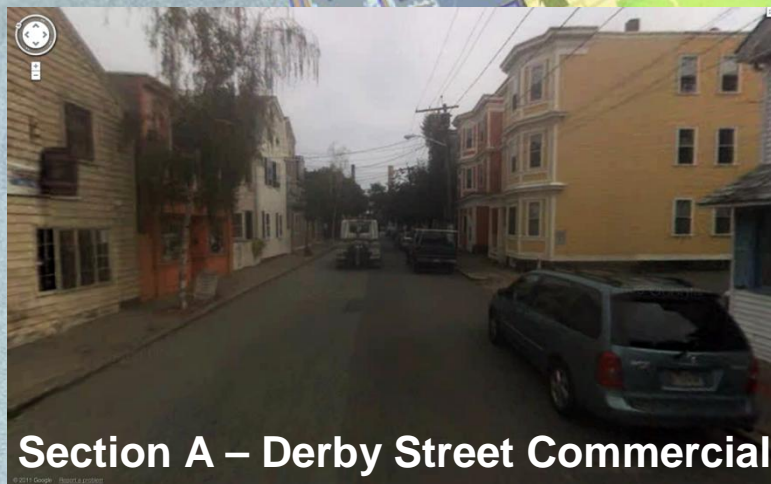


Liberty State Park, NJ

Derby Street Edge



Derby Street Edge – Street Sections

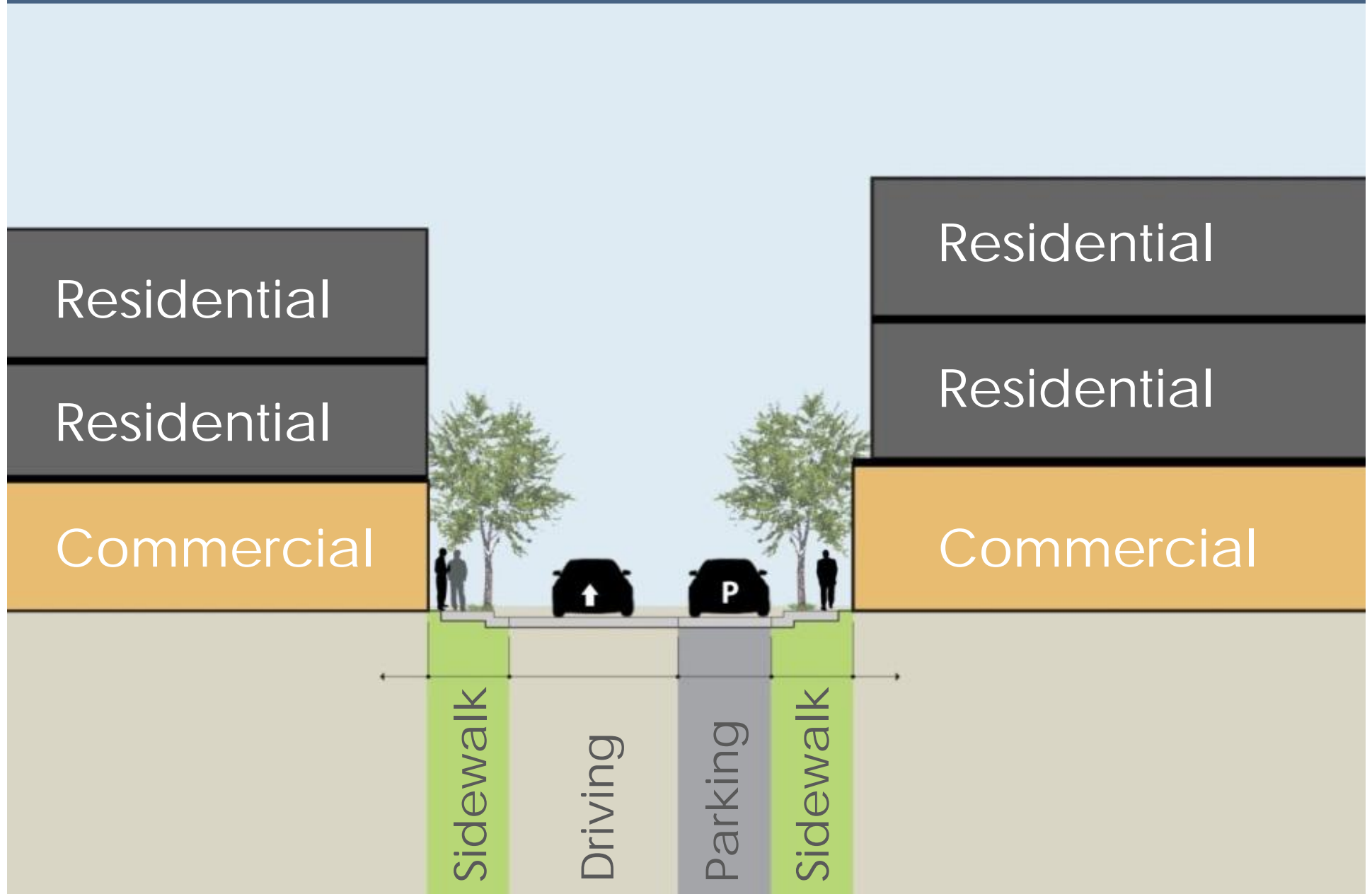


Section A – Derby Street Commercial Zone

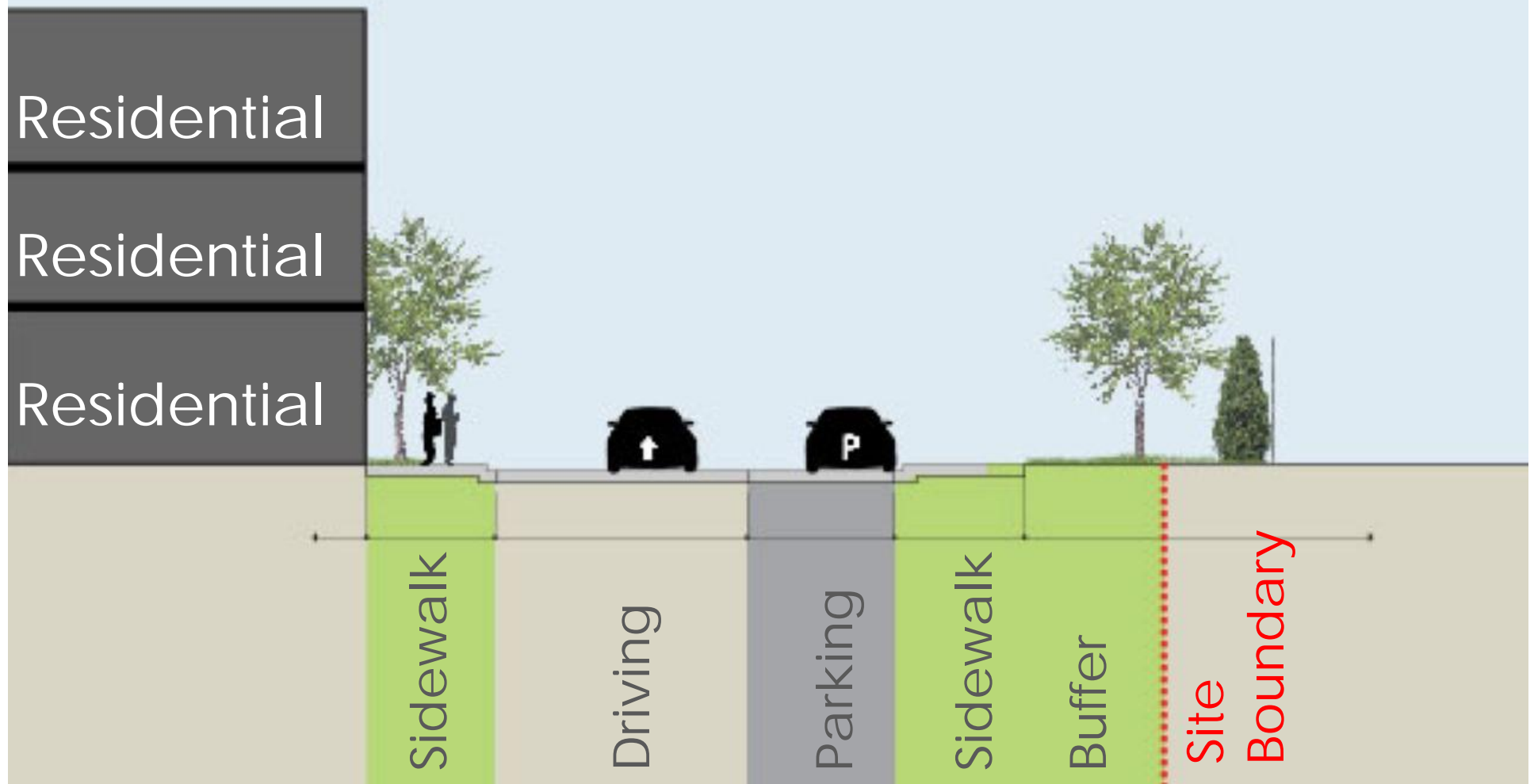


Section B – Derby Street at Project Site

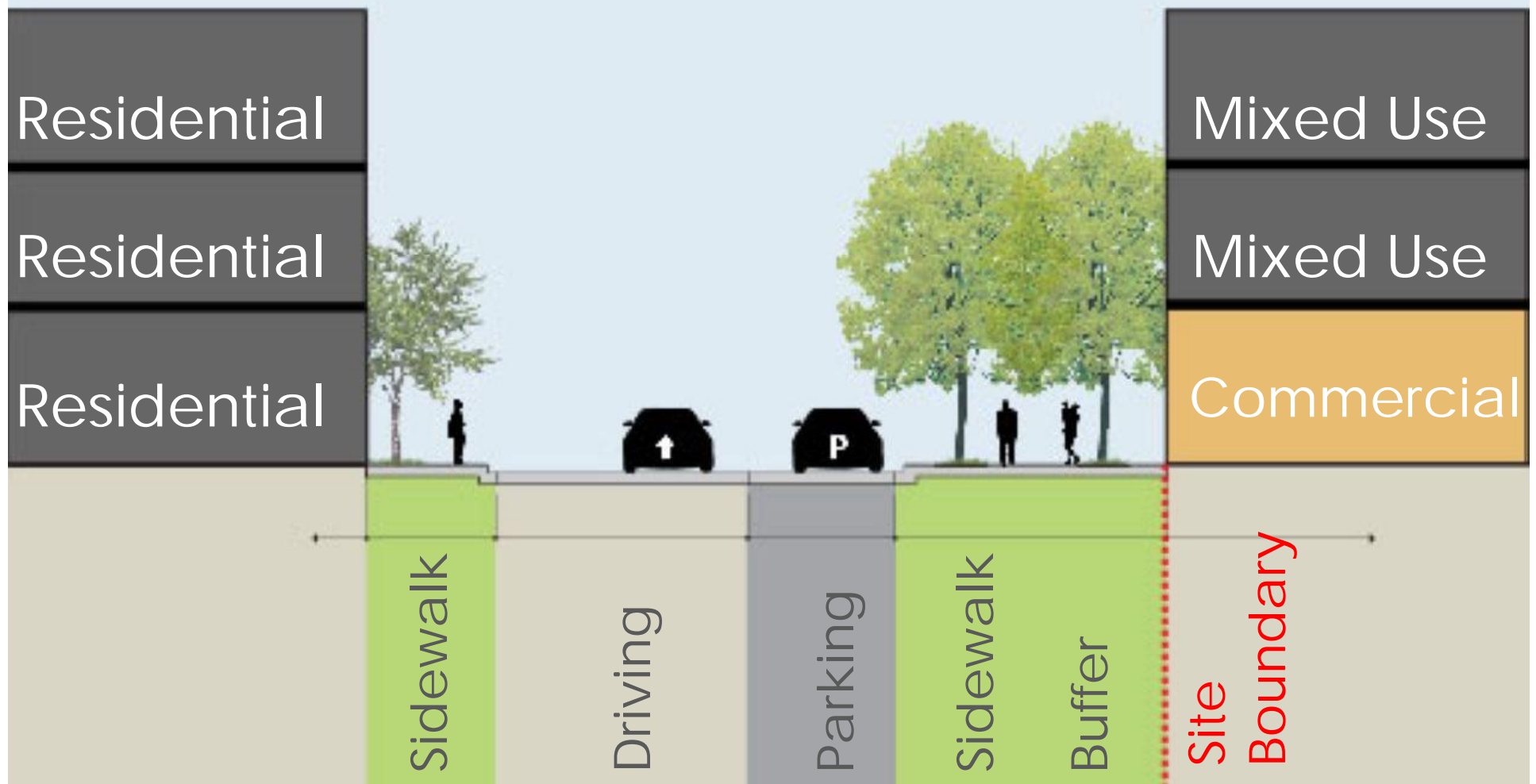
Derby Street Commercial Zone Existing



Derby Street Project Site Existing



Derby Street Project Site Proposed

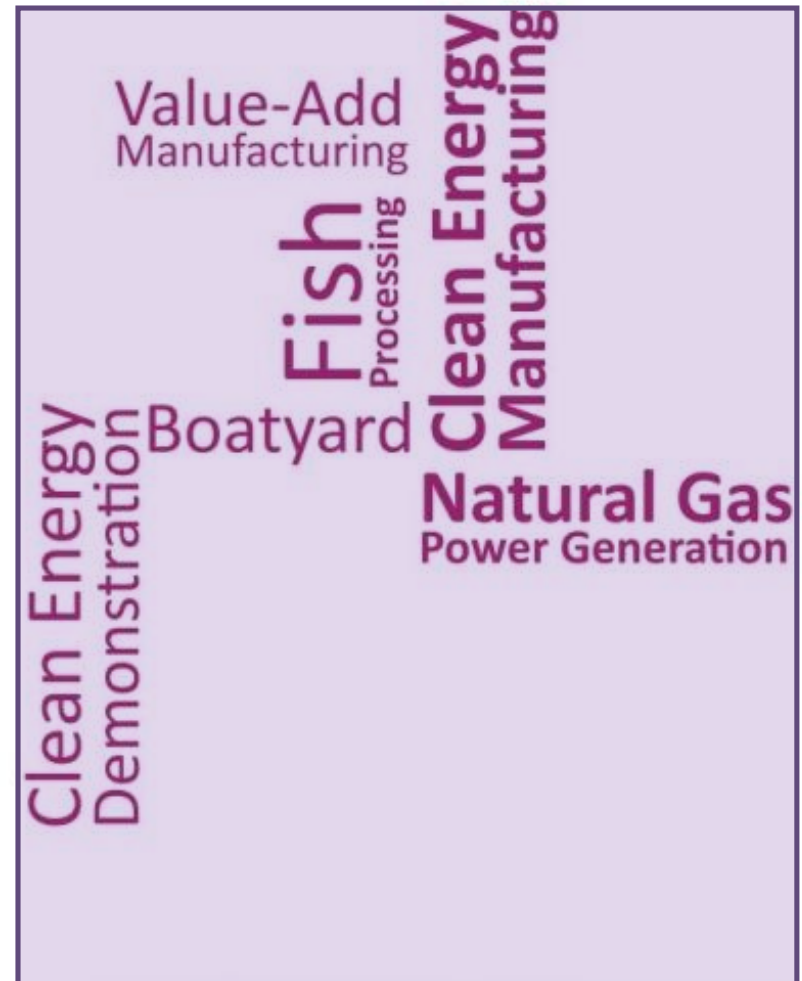


Potential Land Uses

Mixed Use



Industrial



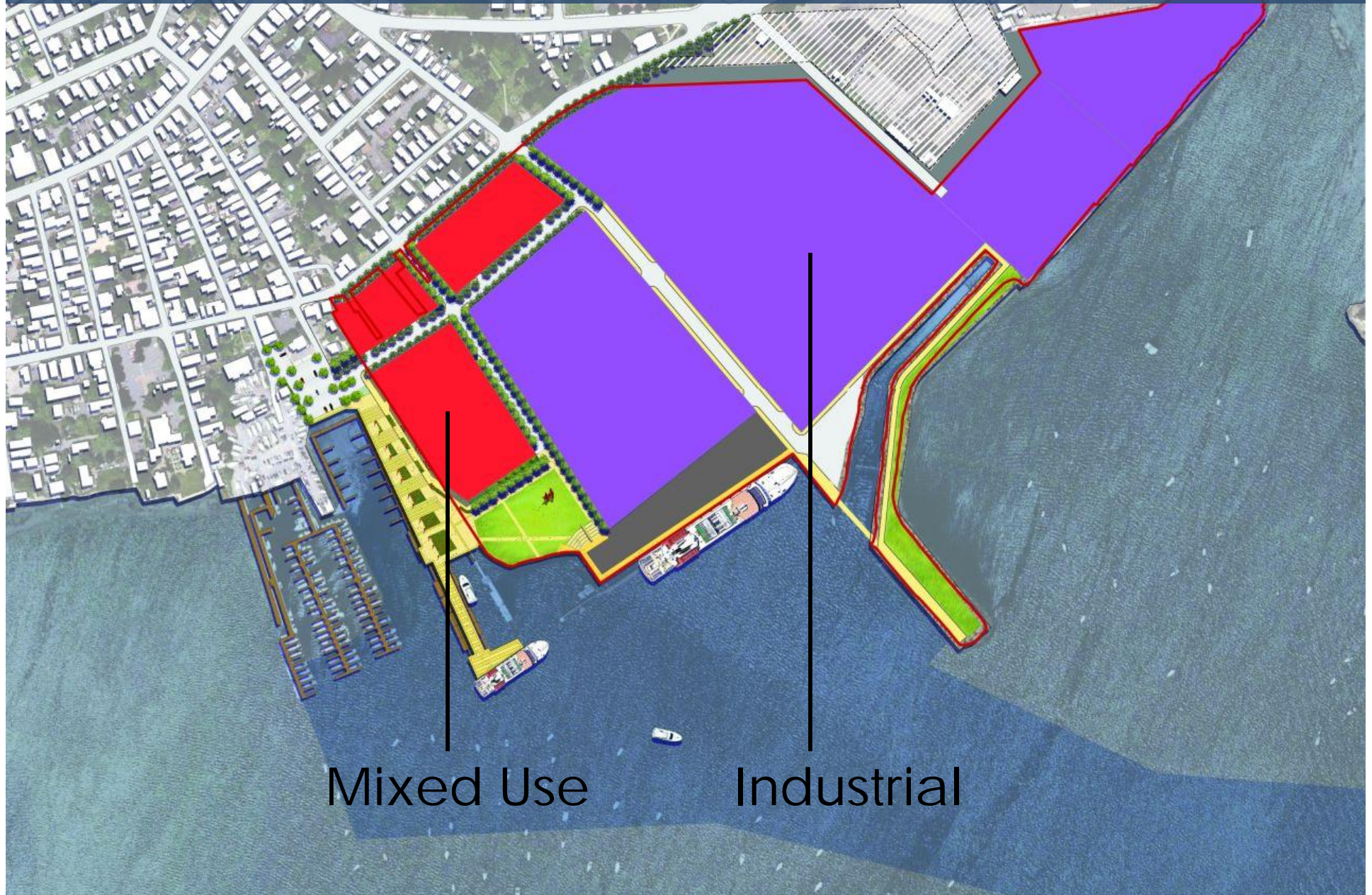
Public /
Institutional



Commercial
Hotel / Residential (Regulatory Constraints)

Industrial

Land Use by Blocks – Proposed Development



Proposed Development



Development Options - SmartPlan

- Dynamic tool allows for quick testing of development scenarios
- Measures development scenarios in terms of
 - Tax revenue
 - Job creation
 - Traffic impacts
 - Other indicators



SmartPlan – Option 1 (Phase 1)



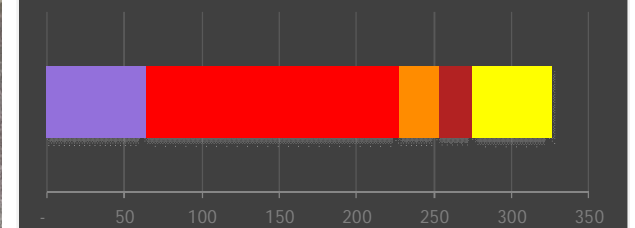
Fiscal Impact

Fiscal impact of development	\$	1,181,325
Net after Power plant	\$	(3,568,675)



Traffic

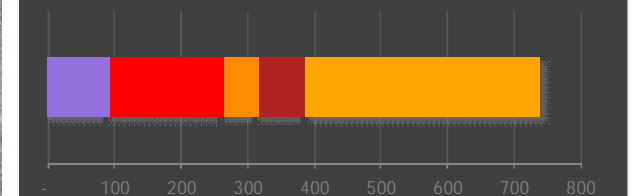
Additional PM Peak trips **277**



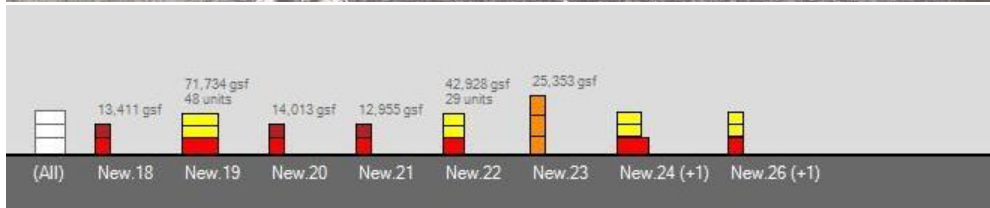
Additional daily trips **3,585**

Residents and Jobs Added

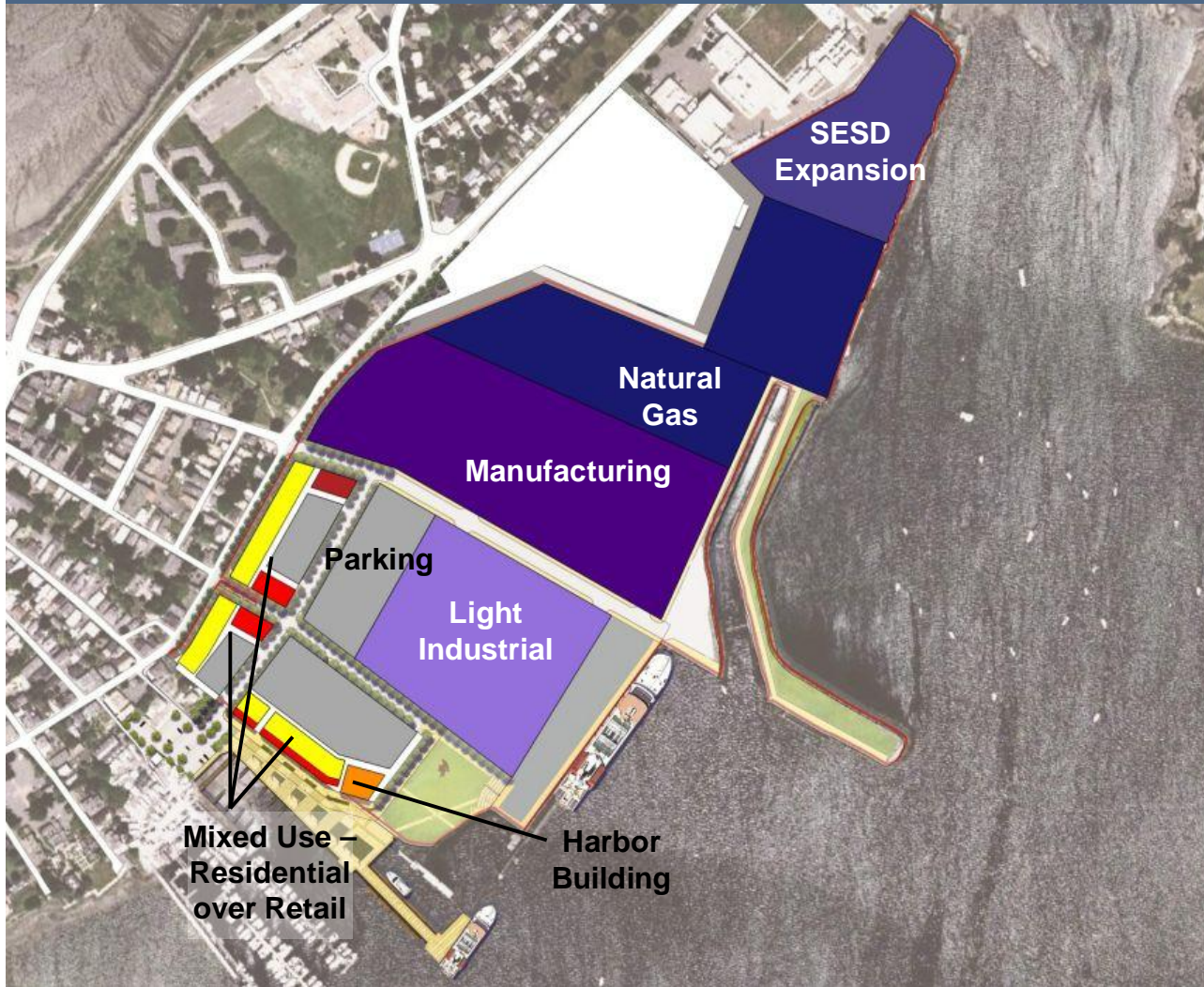
New Residents	208
Industrial Jobs	93
Commercial Jobs	647



Total New Jobs 740



SmartPlan – Option 1 (Phase 2)



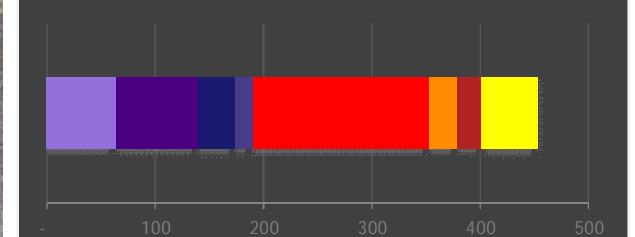
Fiscal Impact

Fiscal impact of development	\$	1,978,699
Net after Power plant	\$	(2,771,301)



Traffic

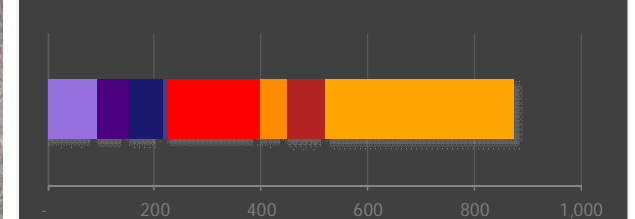
Additional PM Peak trips **402**



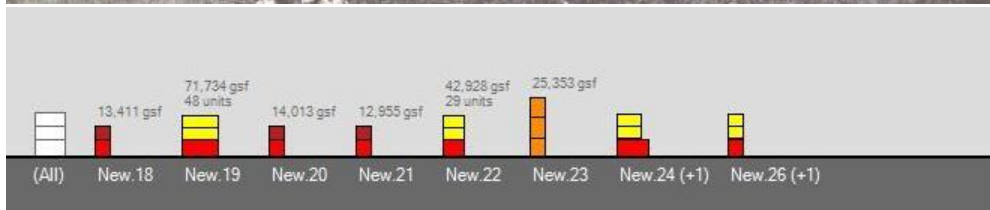
Additional daily trips **4,235**

Residents and Jobs Added

New Residents	208
Industrial Jobs	226
Commercial Jobs	647



Total New Jobs 873



SmartPlan – Option 2 (Phase 1)



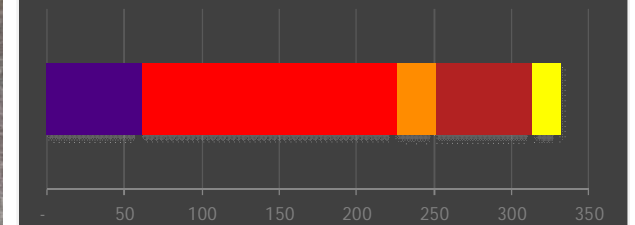
Fiscal Impact

Fiscal impact of development	\$	1,296,728
Net after Power plant	\$	(3,453,272)



Traffic

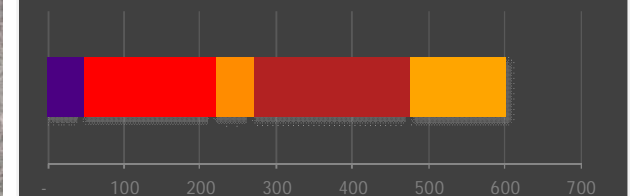
Additional PM Peak trips **281**



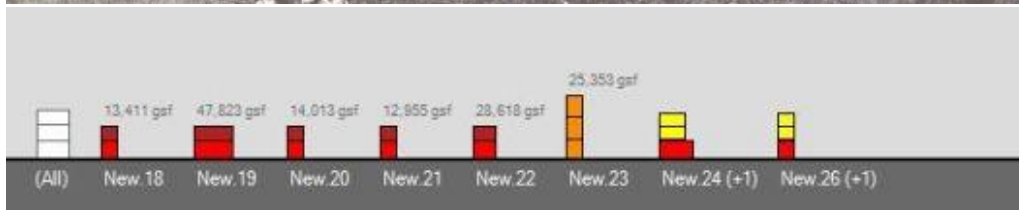
Additional daily trips **3,388**

Residents and Jobs Added

New Residents	74
Industrial Jobs	48
Commercial Jobs	552



Total New Jobs **600**

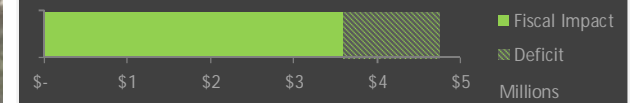


SmartPlan – Option 2 (Phase 2)



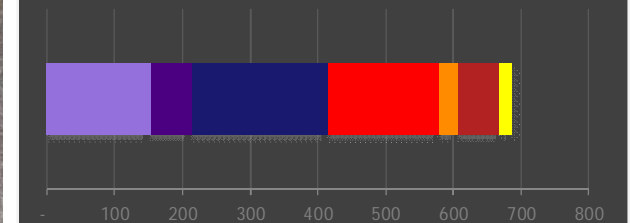
Fiscal Impact

Fiscal impact of development \$ 3,612,071
 Net after Power plant \$ (1,137,929)



Traffic

Additional PM Peak trips **636**

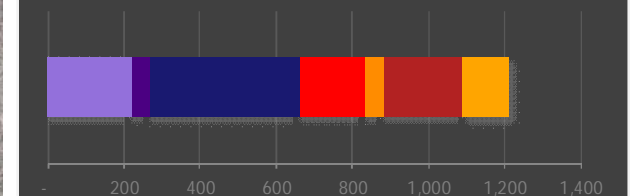


Additional daily trips **5,514**

Residents and Jobs Added

New Residents **74**

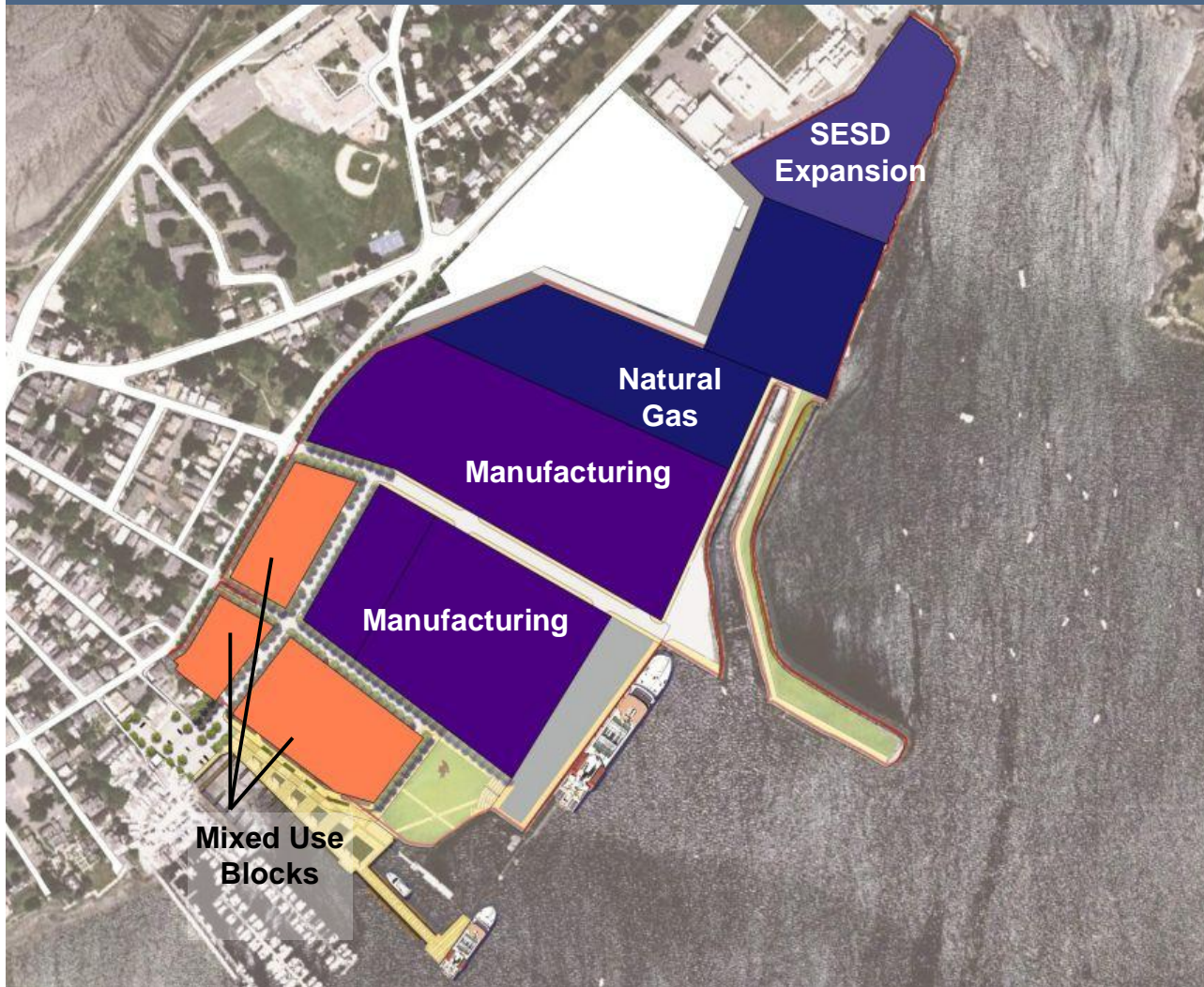
Industrial Jobs **660**
 Commercial Jobs **552**



Total New Jobs **1,212**



SmartPlan – Blocks



Options

☒ Use Rounding 1.00

+ Hotel

R&D	0	🔒
Retail	41	🔒
Harbor Building	17	🔒
Office	4	🔒
Residential	28	🔒
Hotel	10	🔒

DEVELOPMENT STRATEGIES MOVING FORWARD

How can the City of Salem use these tools to direct development?

- Street / Block framework provides a flexible base for a variety of uses
- New open spaces and Harborwalk ensure public access to the site, creating a new amenity for Salem
- SmartPlan guides decision-making based on a variety of indicators, including tax revenue and traffic
- The City can take additional measures to limit traffic and increase access to the site
 - Expanded trolley service
 - Enhanced signage and improvements to the Harborwalk

FINAL REPORT

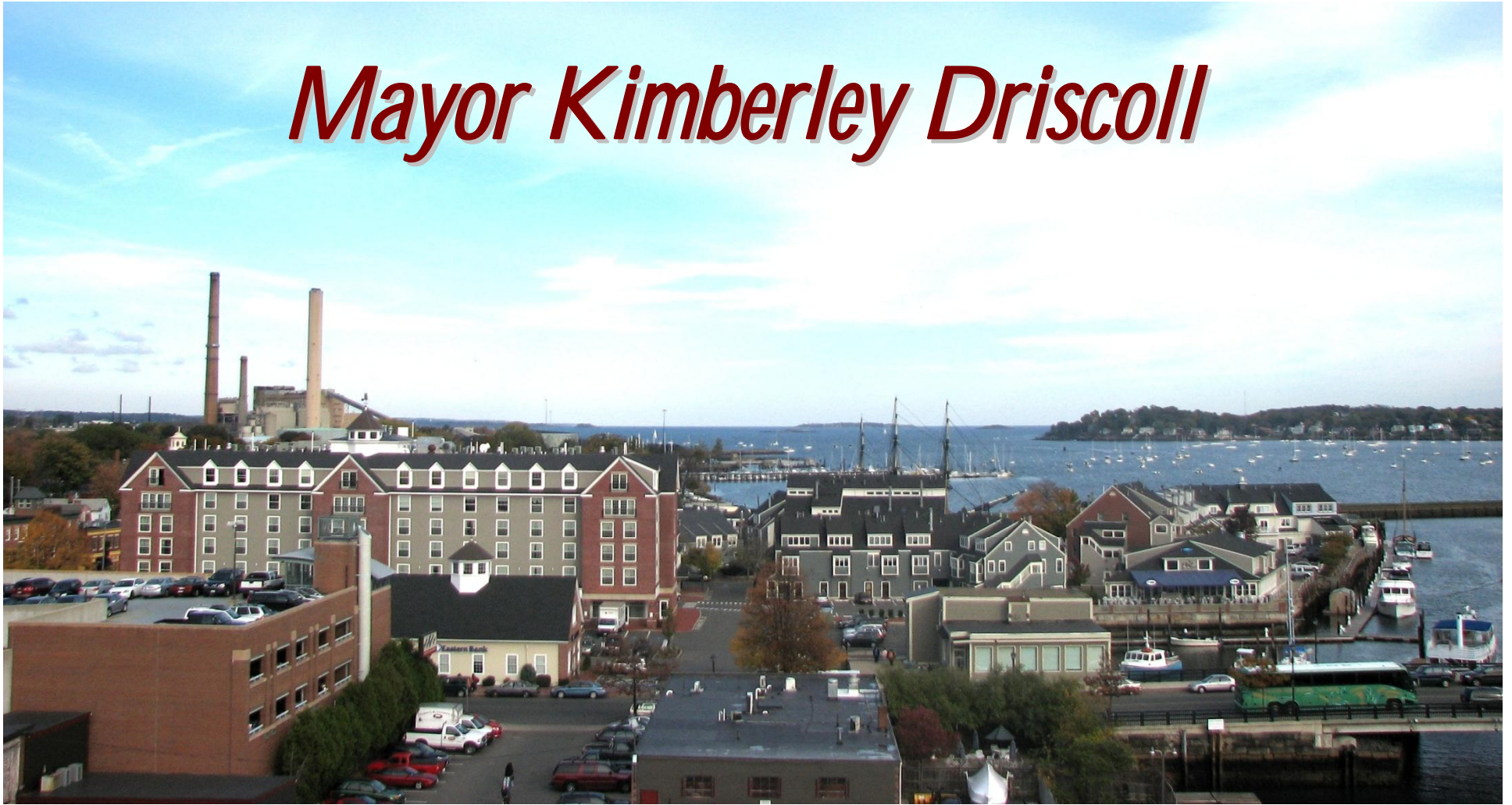
- I. INTRODUCTION
- II. HISTORY – SITE
- III. HISTORY – ENERGY MARKET
- IV. DOMINION ACTIVITY IN ENERGY MARKET
- V. SITE CLEAN-UP
- VI. DEVELOPMENT
- VII. CONCLUSIONS

The background of the slide is a dark, blue-tinted photograph of an industrial facility, possibly a power plant or refinery, with several tall smokestacks and buildings. The facility is situated near a body of water, which reflects the lights and structures. The overall atmosphere is industrial and somewhat somber due to the dark lighting and blue tint.

Public Comment

CLOSING REMARKS

Mayor Kimberley Driscoll



City of Salem, Massachusetts