BERDO COMMERCIAL BUILDINGS COMMITTEE

July 15th, 2024

EVERSOURCE

MASSACHUSETTS' GOAL:

REDUCE CARBON EMISSIONS BY AT LEAST 85% BY 2050

1990

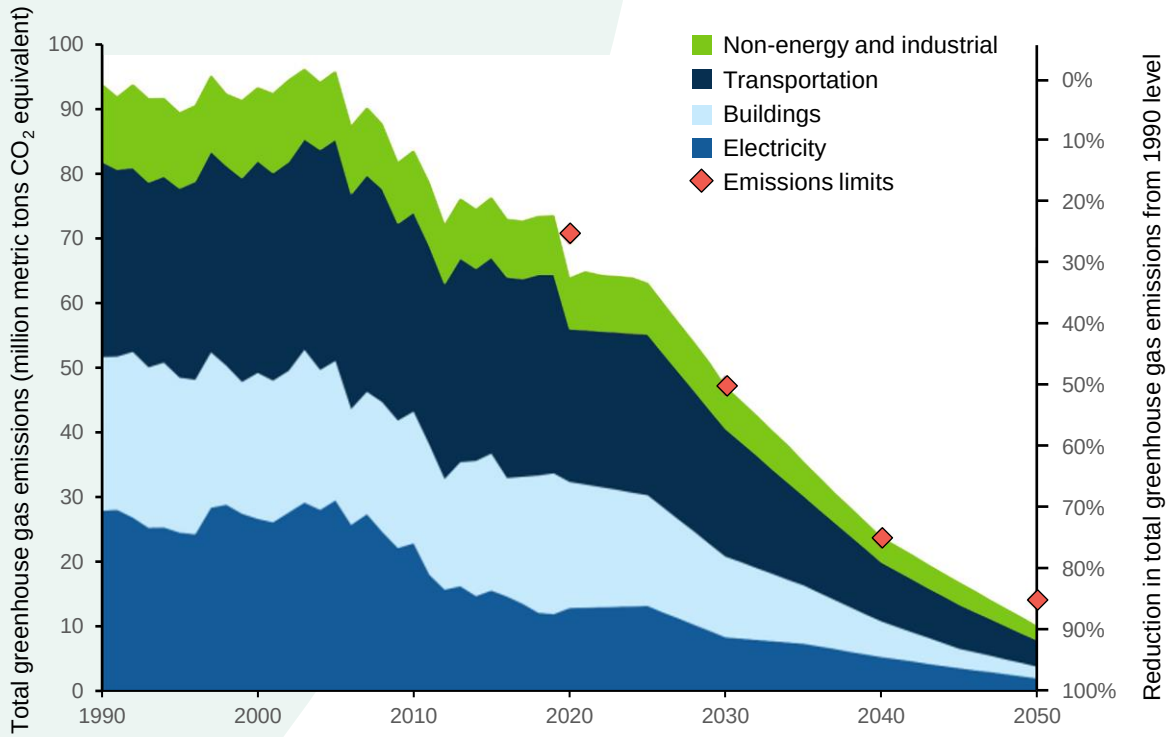
TOTAL GROSS EMISSIONS:
93 MMTCO2e

2025 **30%**

2030 **50%**

2050 **85%**

Sector Greenhouse Gas Emission as Shares of Massachusetts Economywide Total



Note: 1990 through 2019 reflect full-year historical data.
Source: Massachusetts Executive Office of Energy and Environmental Affairs

ACHIEVING A CLEAN ENERGY FUTURE REQUIRES:

Moving Away from Fossil Fuels and Using Electricity-Based Solutions

TYPICAL HOUSEHOLD TODAY:

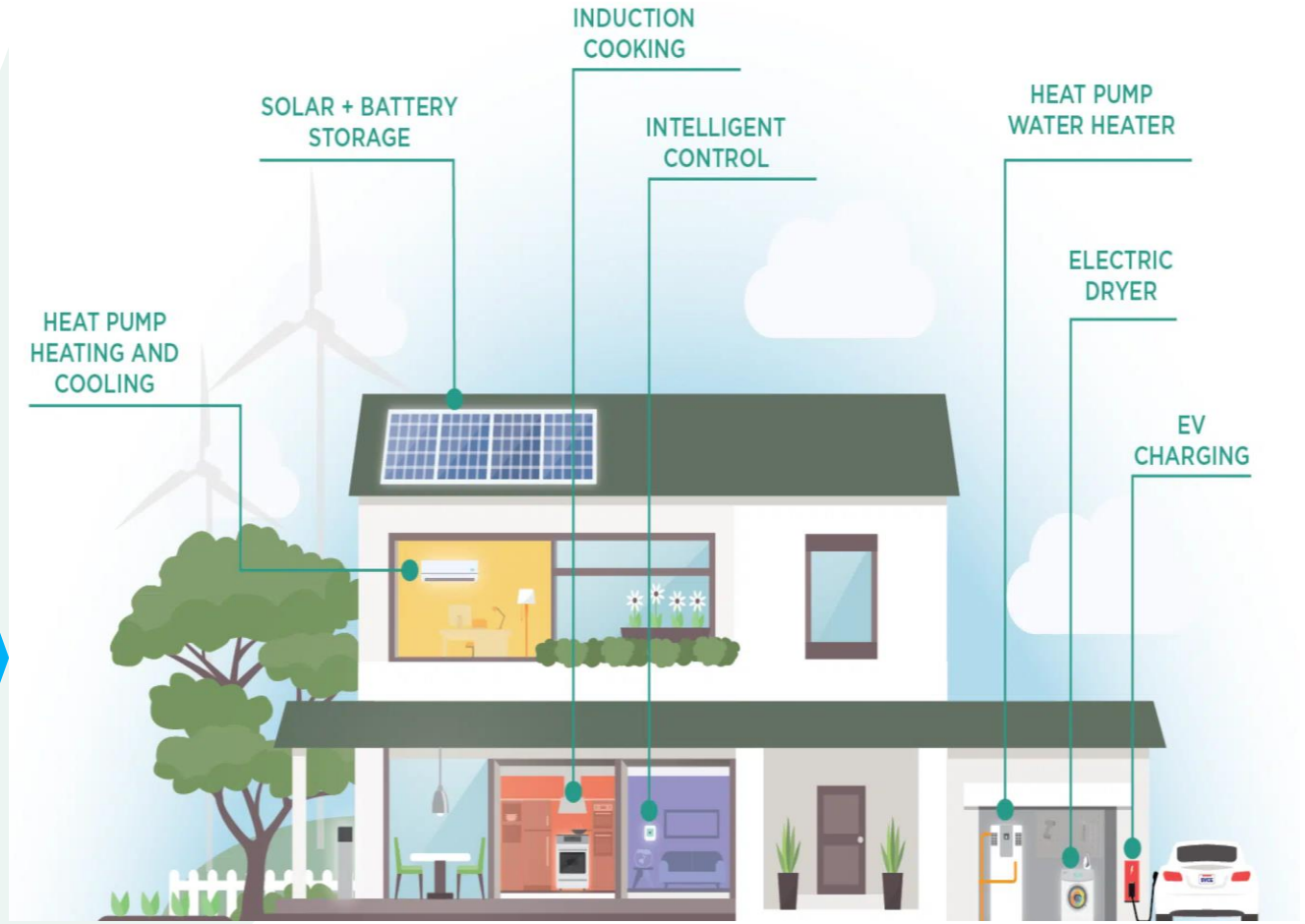
700 kWh/month

Lighting, appliances, air conditioning (seasonal) Heating likely from natural gas, oil or propane	**700 kWh**

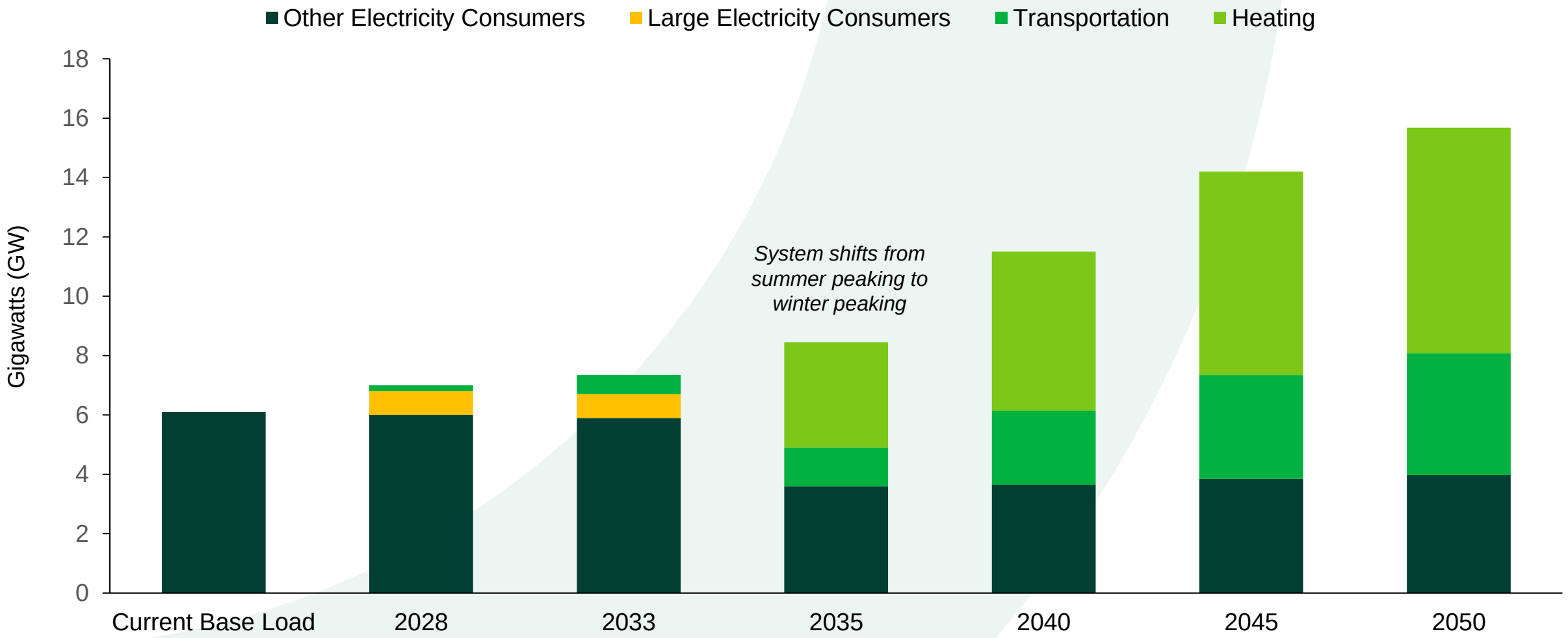
TYPICAL HOUSEHOLD IN THE FUTURE:

1,400–2,400 kWh/month

Lighting, appliances, cooling with air-source heat pump (efficiency gain of -100 kWh by replacing AC)	600 kWh
First electric vehicle	400 kWh
Second electric vehicle	400 kWh
Summer Average Energy Consumption	**1,400 kWh**
Heat pump	1,000 kWh
Winter Average Energy Consumption	**2,400 kWh**

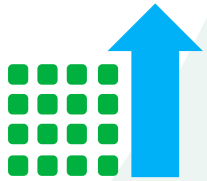


EXPECTED TO INCREASE 150% BY 2050

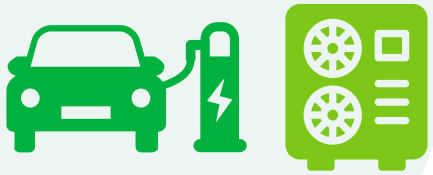


EVERSOURCE'S PLAN

IDENTIFIES NEEDED INVESTMENTS OVER THE NEXT 10 YEARS AND ADDITIONAL LIMITED UPGRADES BEYOND to support clean energy resources and drive improvements in grid reliability and resiliency



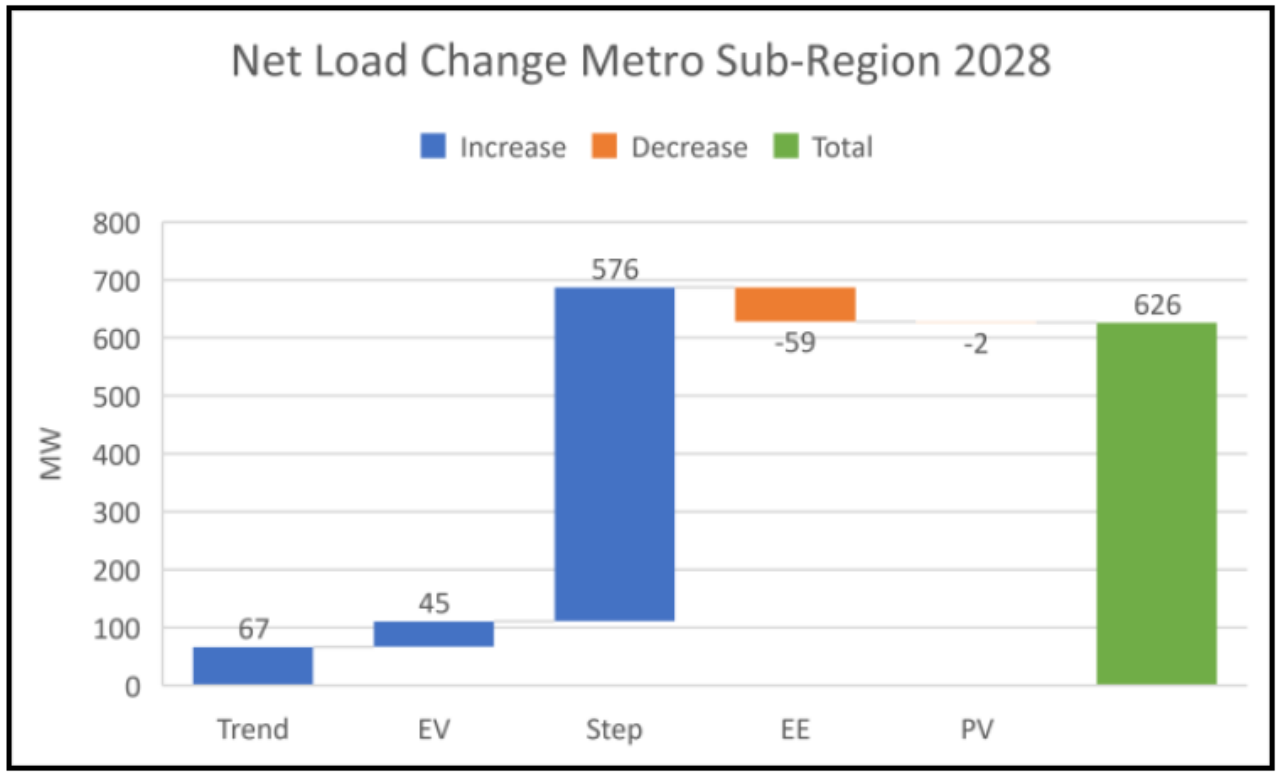
Increases electrification hosting capacity by 180% over the next decade

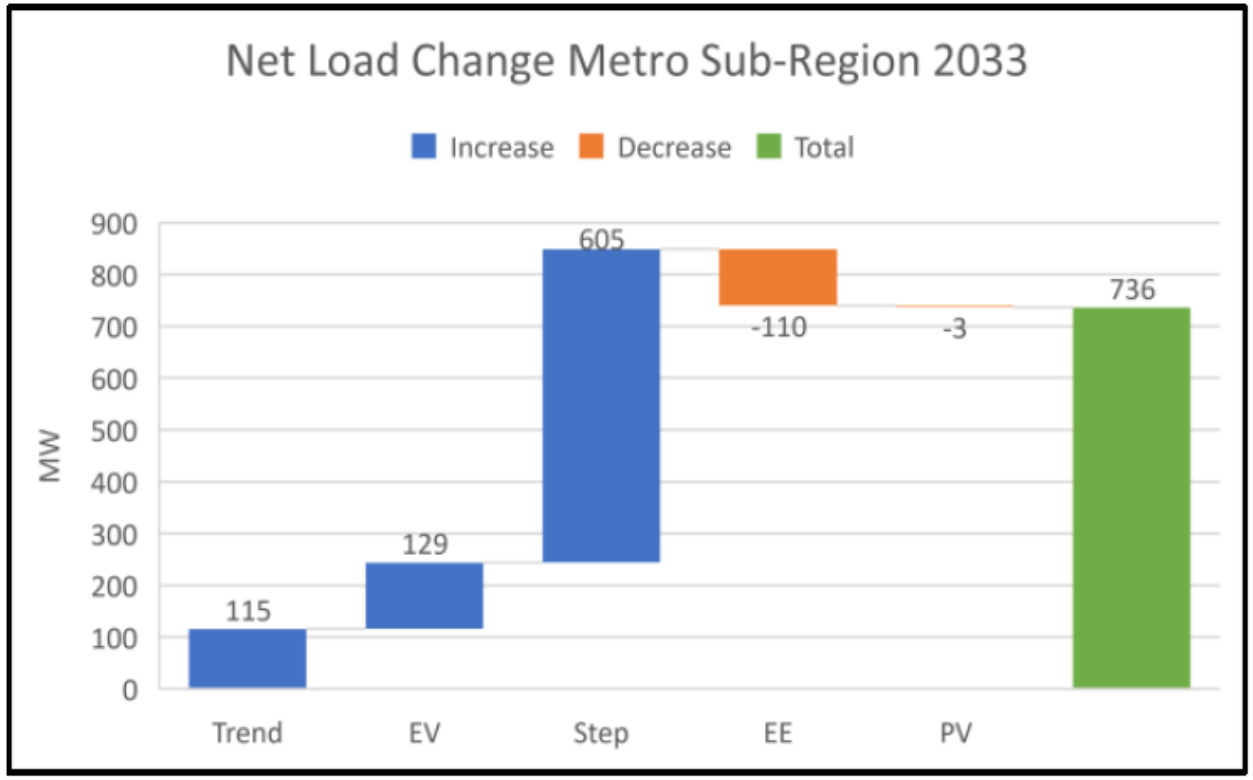


Allows for the **adoption of 2.5 million electric vehicles statewide and 1 million heat pumps,** meeting over 80% of the state's 2050 goals

Enables **5.8 GW of solar, exceeding the state's 2040 goals,** and reaching over 63% of its 2050 goals

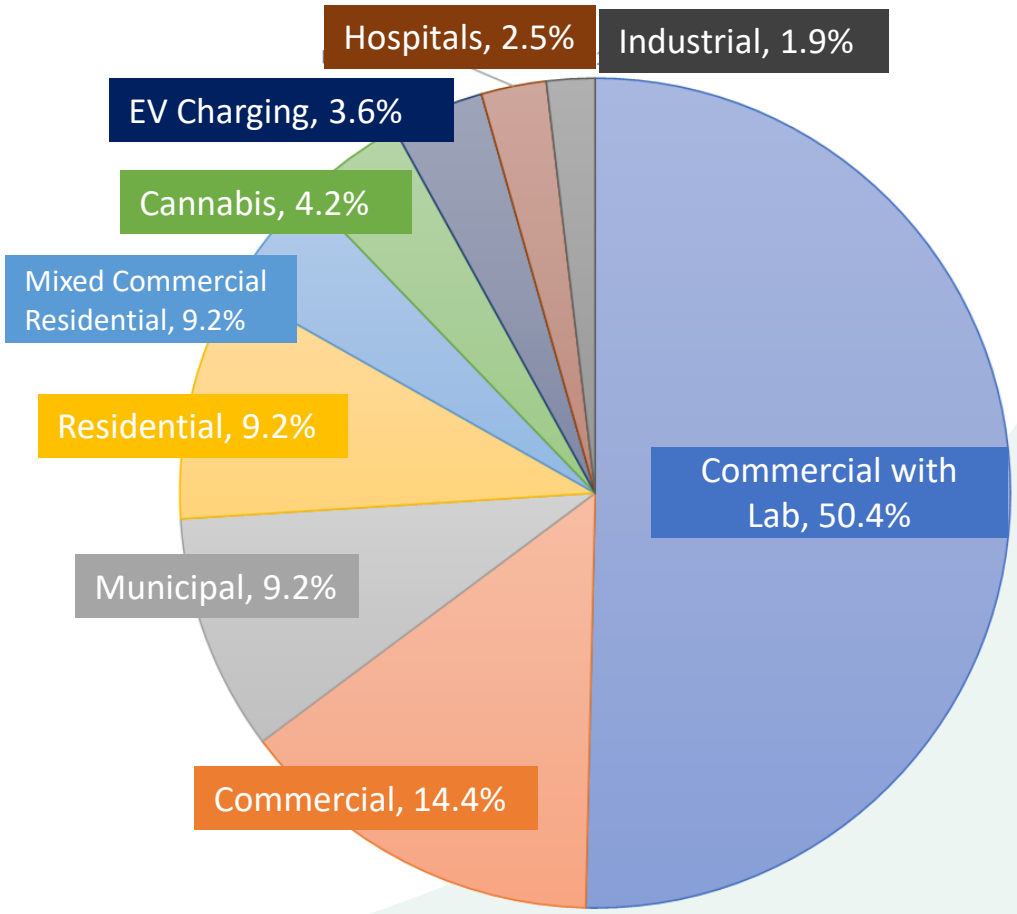
METRO BOSTON FORECAST





OVERVIEW FORECAST BOSTON

20% Demand Growth over the next decade driven by New Business Development



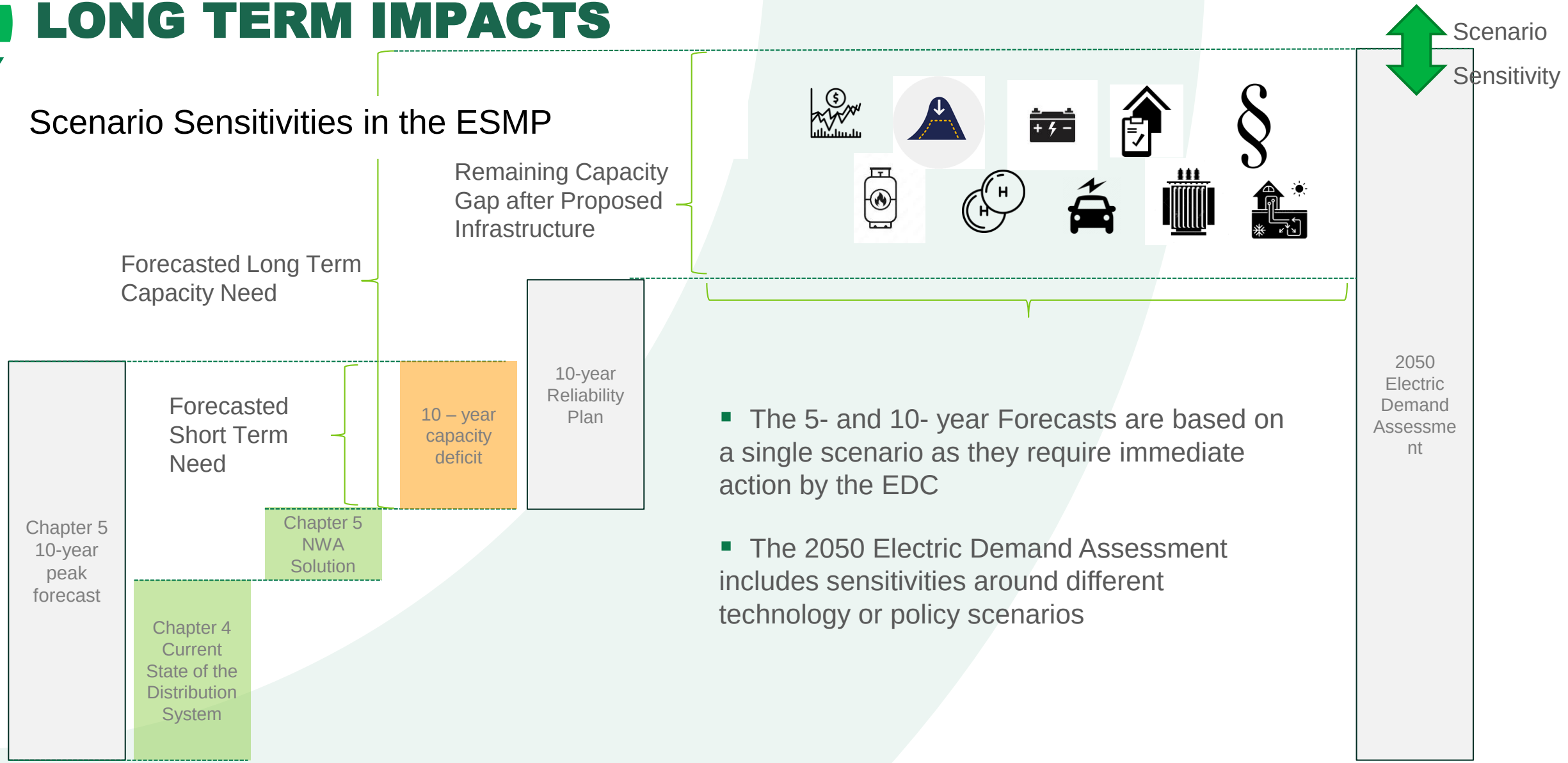
- **800+ MW** of New Business Load Growth
- **300+ MW** of Electric Vehicle Load Projected
  - **7 New** stations in Metro Boston
  - **4 New** Substation in Metro West

East Cambridge Substation

Electric Demand at 60% of Boston and 40% of Metro Boston Distribution Substations are projected to be above their equipment limits

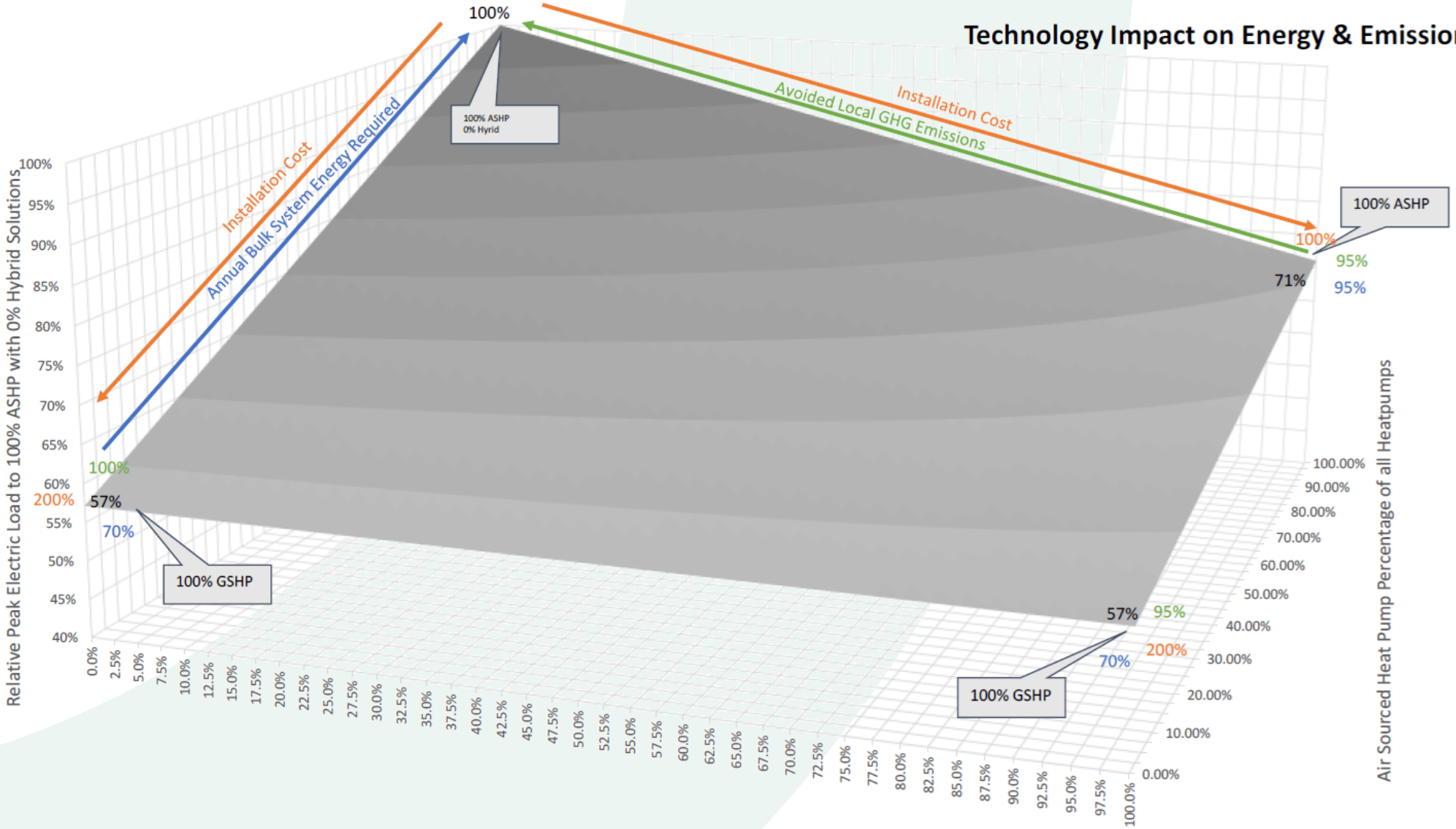
LONG TERM IMPACTS

Scenario Sensitivities in the ESMP



- The 5- and 10- year Forecasts are based on a single scenario as they require immediate action by the EDC
- The 2050 Electric Demand Assessment includes sensitivities around different technology or policy scenarios

HEATING LOAD SENSITIVITY

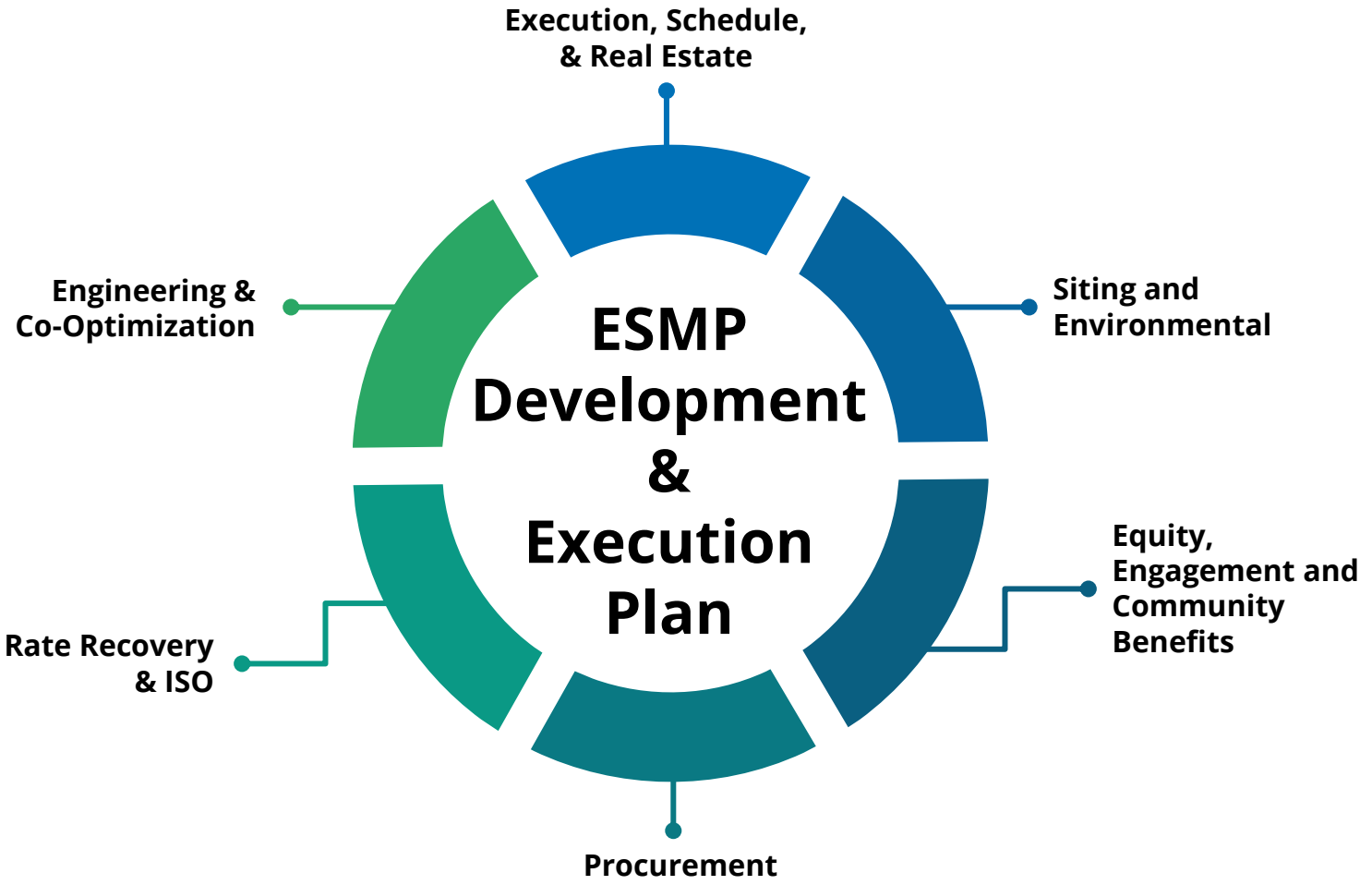


EVERSOURCE ELECTRIC SECTOR MODERNIZATION PLAN:
DEVELOPMENT & EXECUTION PLANNING

As the next phase in Electric Sector Modernization Plan (ESMP), Eversource is developing an ***ESMP Development & Execution Plan***.

This plan focuses on six key areas:

- ***Execution, Schedule, & Real Estate***
- ***Siting & Environmental***
- ***Equity, Engagement & Community Benefits***
- ***Procurement***
- ***Rate Recovery & ISO Coordination***
- ***Engineering & Co-Optimization***



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10 Year Capacity Deficiencies in Boston translate to negative reliability outcomes if not immediately addressed

Substation Name	Boston Communities Served	2030 Substation Loading %	Ten-Year Project Solution And Need Date
Chelsea	East Boston, City of Chelsea	**110**	**2025.** New East Eagle Substation #131
Andrew Sq	South End, Roxbury, Dorchester	**106**	**2032.** New South End Substation
Hyde Park	Jamaica Plain, Mattapan, Roslindale, Hyde Park	**104**	**2029.** New Hyde Park/Dorchester Substation
Dewar St.	Dorchester, Mattapan	**100**	**2029.** New Hyde Park/Dorchester Substation
Mystic	Charlestown, City of Somerville	**99**	**2032.** New Charlestown/Somerville Substation
Colburn	Fenway, LMA, Mission Hill, Jamaica Plain	**98**	**2034.** New Allston/Fenway/Brookline Substation
Baker St	West Roxbury	**97**	**2029.** New Hyde Park/Dorchester Substation
Carver St	Downtown, Back Bay	**97**	**2034.** New Metro Boston Network Substation
Electric Ave	Allston, Brighton	**96**	**2030.** Electric Ave. Substation Expansion
Kingston St	Bay Village	89	**2034.** New Metro Boston Network Substation
Chatham St	North End, West End, Beacon Hill	88	**2034.** New Metro Boston Network Substation
High St	Downtown, Bay Village, Chinatown, Leather Dist.	86	**2034.** New Metro Boston Network Substation

Refer to ESMP Table 6-14

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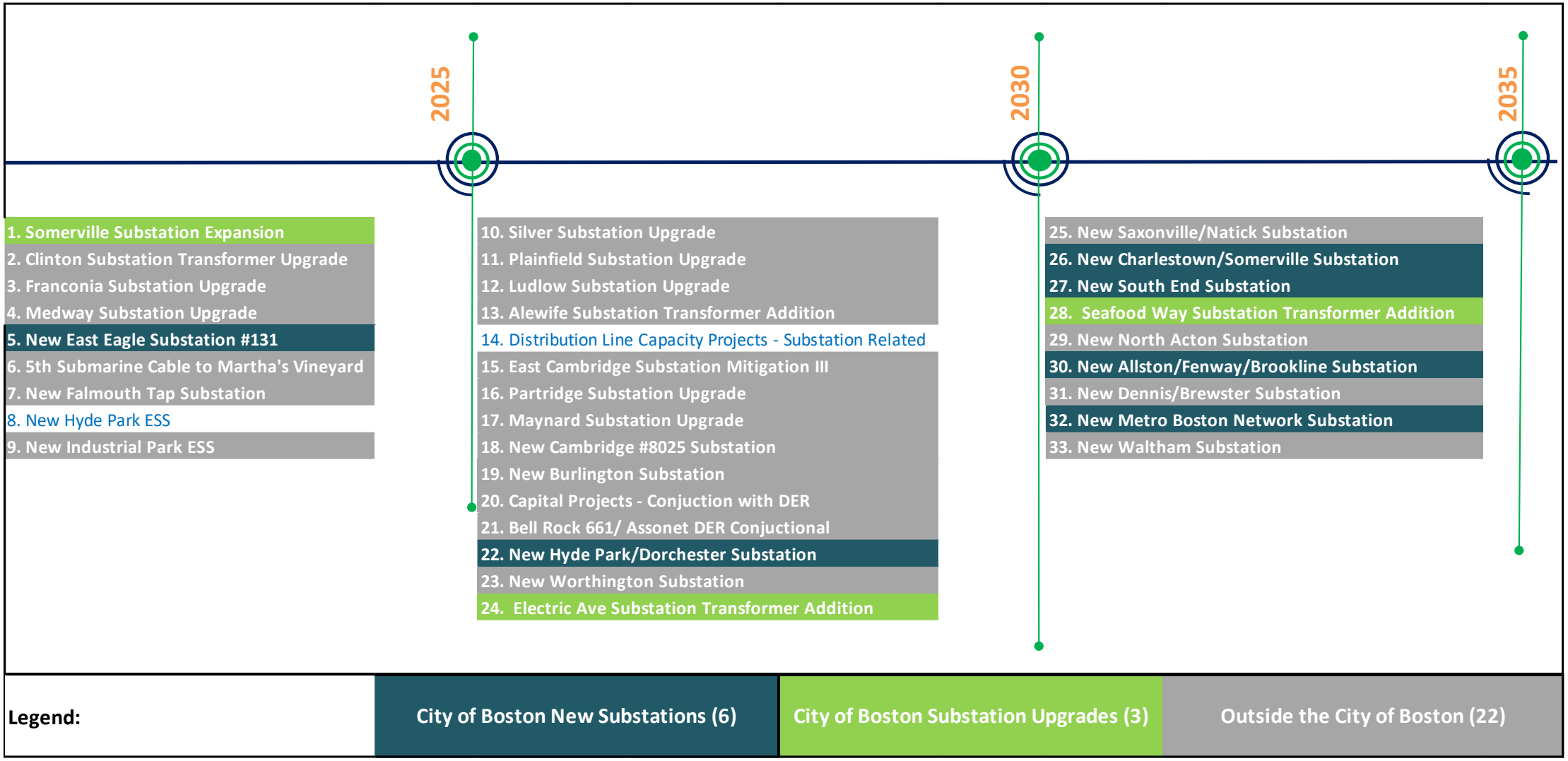
Scheduled Implementation of Major Distribution Infrastructure Project – City of Boston



Refer to ESMP Figure 6-1

Location of Major Capacity Projects in Metro Boston

(Not Including Hyde Park)

- **East Boston**

  New East Eagle Substation provides capacity relief (in progress)

- **Neighborhood of Charlestown**

  New Charlestown/Somerville Substation provides capacity relief for neighborhood of Charlestown and City of Somerville

- **Areas of Bay Village and Back Bay**

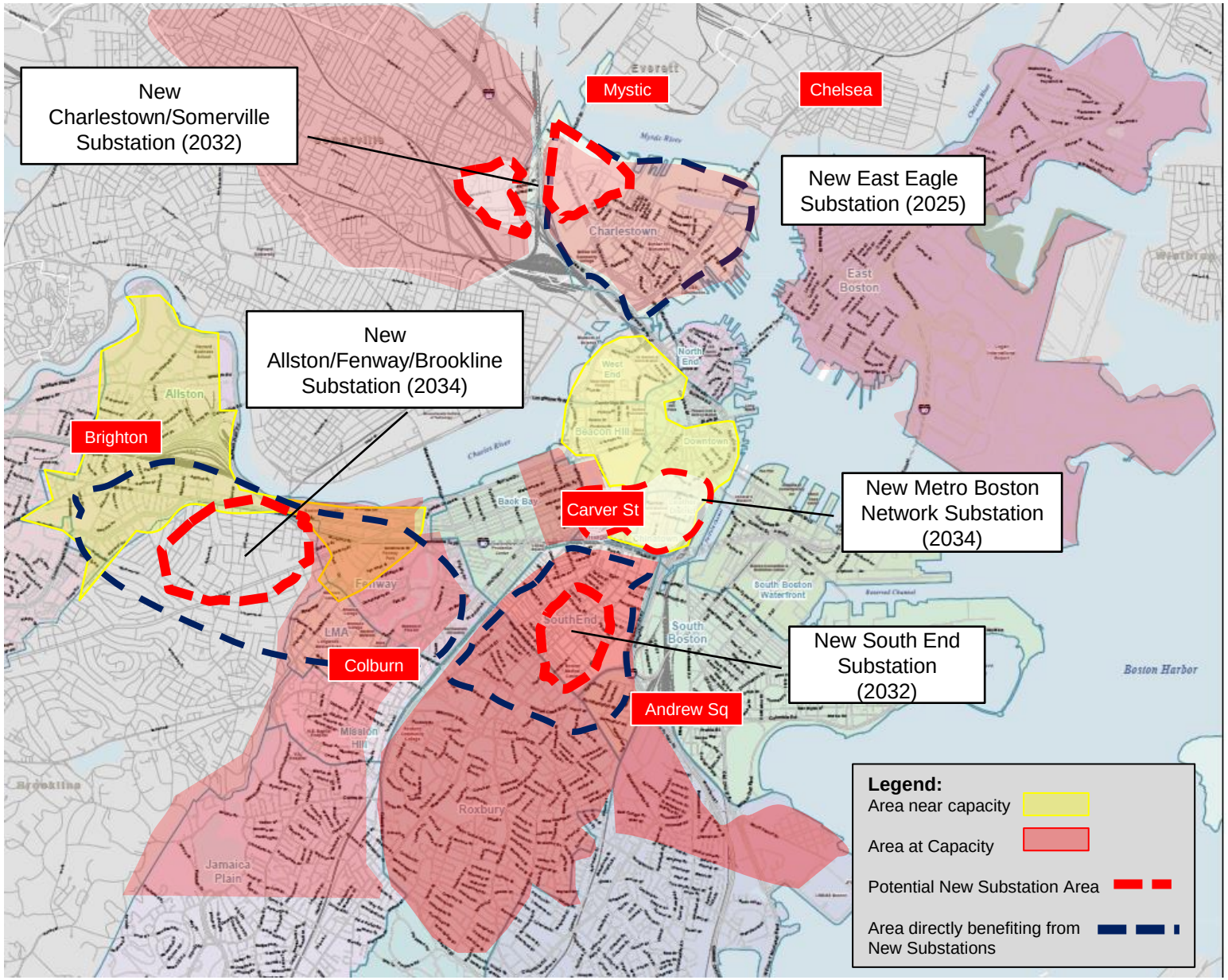
  New Metro Boston Substation provides capacity relief; also provides relief to area of Beacon Hill, West End, North End, Chinatown, Leather District, and Downtown

- **Neighborhood of Fenway, LMA, Mission Hill, and areas of Jamaica Plain**

  New Allston/Fenway/Brookline Substation provides relief to the City of Boston Neighborhoods and the Town of Brookline

- **Neighborhood of South End, Roxbury, and areas of Dorchester**

  New South End Substation provides capacity relief



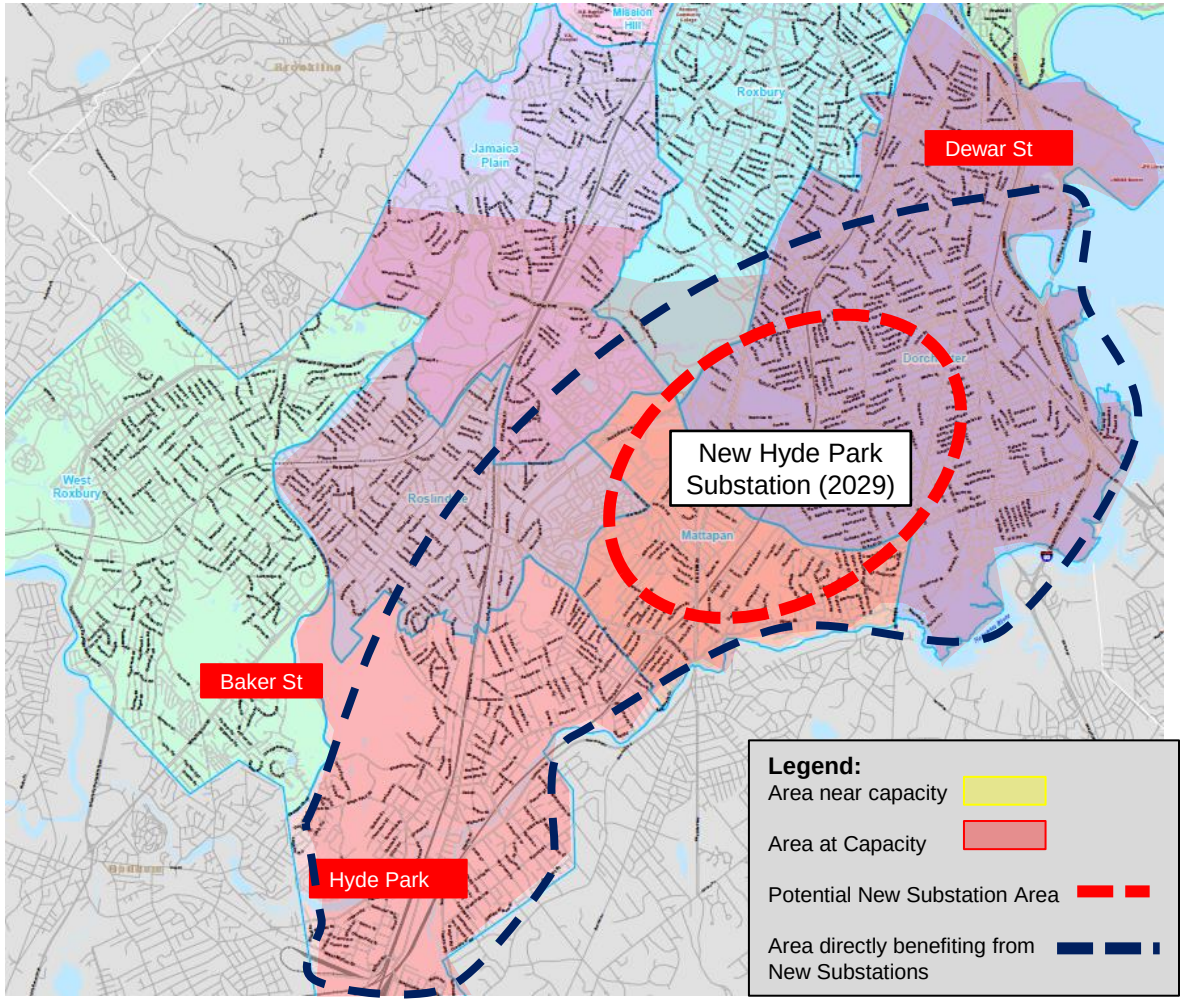
Location of Major Capacity Projects in Metro Boston

New Hyde Park Substation

- **All 3 area substations run out of headroom by 2027**
- **Impacted Neighborhoods include:**
  - Hyde Park, Mattapan, Dorchester, Roslindale, Jamaica Plain, Roxbury, South End, and South Boston
- **10-Year peak demand only includes known electric load growth**
  - Does not include recent electrification initiatives such as MBTA and City Bus Electrification
- **Approximately 70 MVA of substation capacity need within planning horizon**

Substation Capacity need within 10-years is approximately 70 MVA.

Dense city areas, one skyscraper or a block



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*For general reference only; does not apply to in all areas.

LOAD DENSITY* – ELECTRIFICATION IMPACT

Residential Street

25-100kVA

Residential Block or Commercial Building

100k-500kVA

City Building

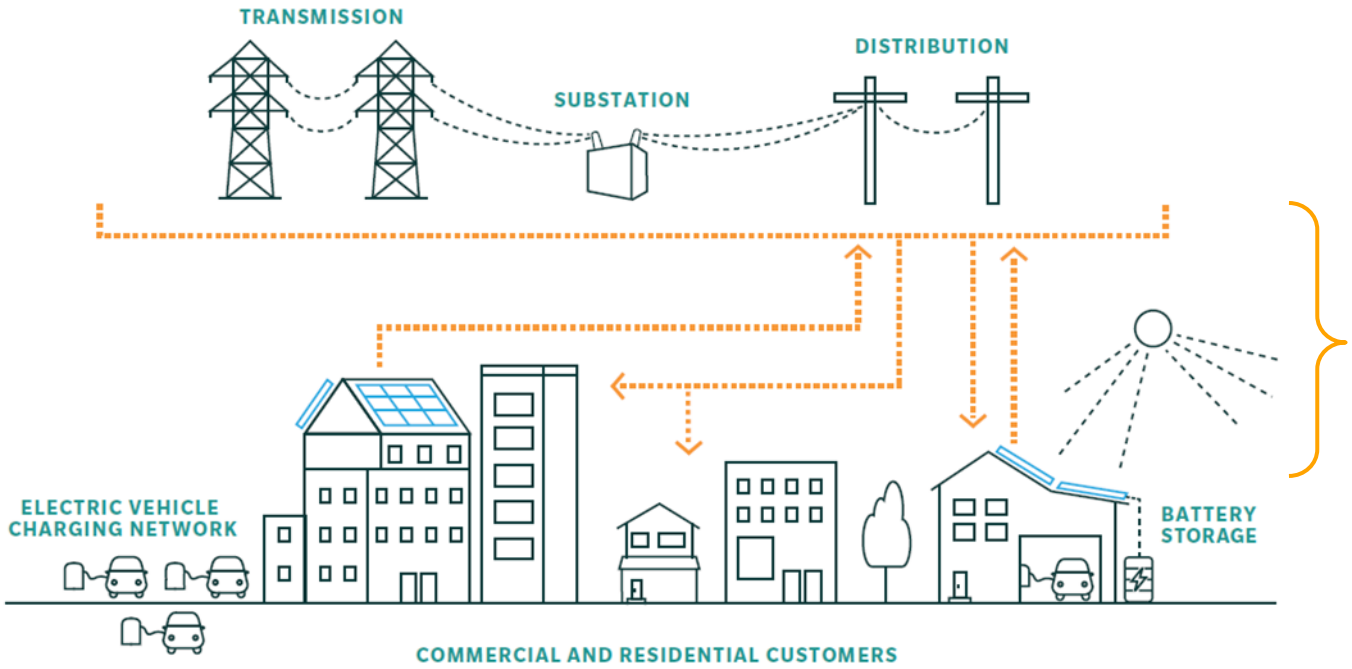
500kVA-5MVA

An entire Town Or one Skyscraper

5MVA-40MVA

Multiple blocks in Dense City Areas

40MVA+



1. Overhead Transformers
2. Underground Residential (URD)
3. Pad Mounted
4. Underground transformer
5. Aboveground - Inside Building
6. Customer Substation

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OVERVIEW PROJECTS BOSTON

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