City of Cambridge

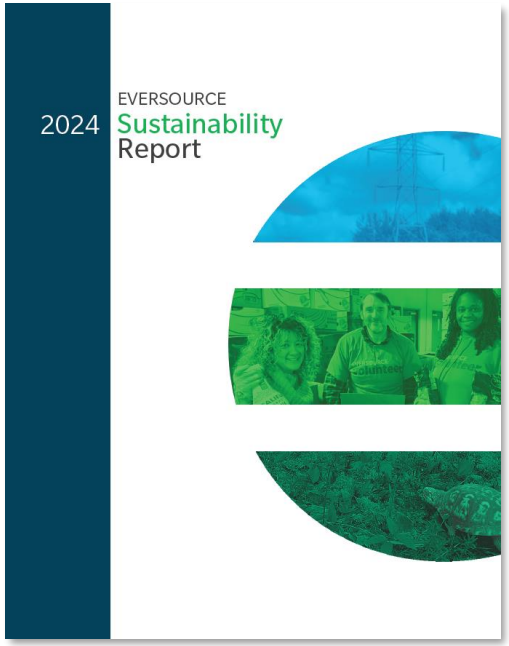
Annual Planning Board Update

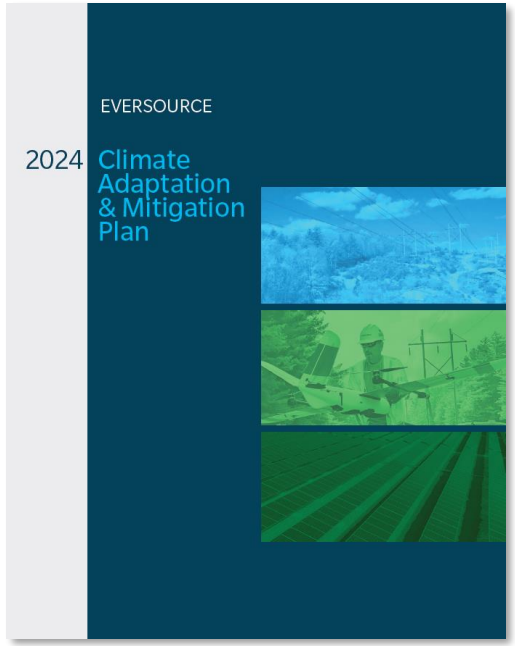
June 10th, 2025

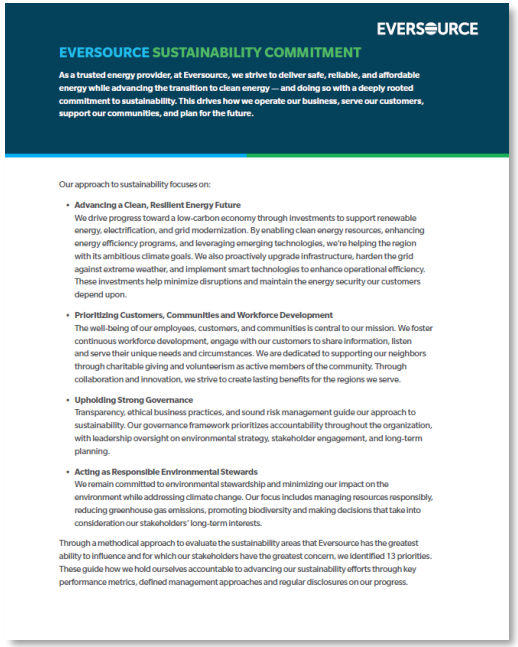
Sustainability Commitment and Disclosures

Our annual sustainability report provides key updates on Environmental, Social and Governance performance

- Visit our Sustainability webpage to see our 2024 Sustainability Report – *Coming Soon*
- Report developed using reputable sustainability disclosure frameworks, highlights 2024 accomplishments and performance updates
- Complementary updates: Climate Adaptation & Mitigation Plan and refreshed Sustainability Commitment
- New for 2025: Biodiversity Commitment







Energy Efficiency Three-Year Plan (2022-2024 Progress)

- Residential and Large Commercial

2023

- Cambridge

	Annual Electric Usage (MWh)	Annual Electric Savings (MWh)	Electric Incentives
Residential & Low-Income	235,739	956	$ 1,092,472
Commercial & Industrial	1,382,563	20,718	$ 4,564,855
Total	1,618,302	21,674	$ 5,657,327

2022

- Cambridge

	Annual Electric Usage (MWh)	Annual Electric Savings (MWh)	Electric Incentives
Residential & Low-Income	241,010	1,519	$ 959,391
Commercial & Industrial	1,396,319	24,519	$ 6,986,662
Total	1,637,329	26,038	$ 7,946,053

Heat Pumps

2023

Municipality	Installed heat pumps (accounts)	Installed heat pumps (locations)
Burlington	130	131
Cambridge	291	266

2022

Municipality	Installed heat pumps (accounts)	Installed heat pumps (locations)
Burlington	*	*
Cambridge	163	151

- Small Business Main Streets Program

	# of projects	kWh savings	therm savings	$ incentive amount
2022	64	802,344	16,622	$ 450,578.40
2023	26	364,192	1,459	$ 297,711.68
2024	59	389,643	24,851	$ 443,419.90

The Massachusetts 2025-2027 Energy Efficiency and Decarbonization Plan

Executive Summary

Reduce Greenhouse Gas Emission

Enhance Program Access

Deliver an Improved Customer Experience

Strengthen and Diversify Workforce

Electric Section Modernization Plan

Accelerating a Just Transition to a Reliable and Resilient Clean Energy Future

The Climate Law requires that the state's EDCs prepare ESMPs to proactively upgrade the distribution system and meet multiple objectives, including:

- Improve grid reliability, communications, and resiliency;
- Enable increased, timely adoption of renewable energy and DERs; Promote energy storage and electrification technologies for decarbonization;
- Prepare for climate-driven impacts on T&D systems;
- Accommodate transportation and building electrification, and other new loads; and minimize or mitigate impacts on ratepayers, including environmental justice communities

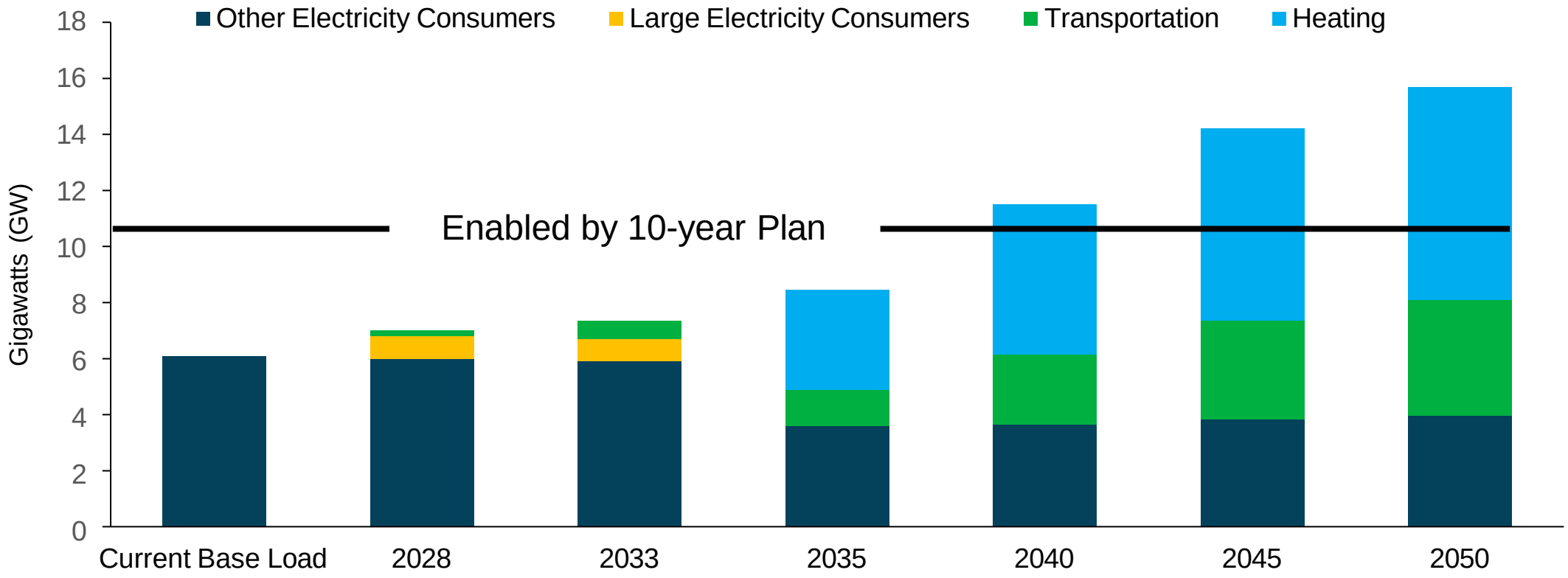
ESMP Plan Contents

1. Executive Summary
2. Compliance with the requirements outlined in the Climate Act
3. Stakeholder Engagement
4. Current State of the Distribution System
5. 5- and 10-Year Electric Demand Forecast
6. 5- and 10-Year Planning Solutions: Building for the Future
7. 5-year Electric Sector Modernization Plan
8. 2035 - 2050 Policy Drivers: Electric Demand Assessment
9. 2035 - 2050 solution set – Building a Decarbonization Future
10. Reliable and Resilient Distribution System
11. Integrated Gas-Electric Planning
12. Workforce, Economic, and Health Benefits
13. Conclusion
14. Appendix

ESMP Investment Drivers

20% INCREASE IN DEMAND BY 2033 AND 150% BY 2050

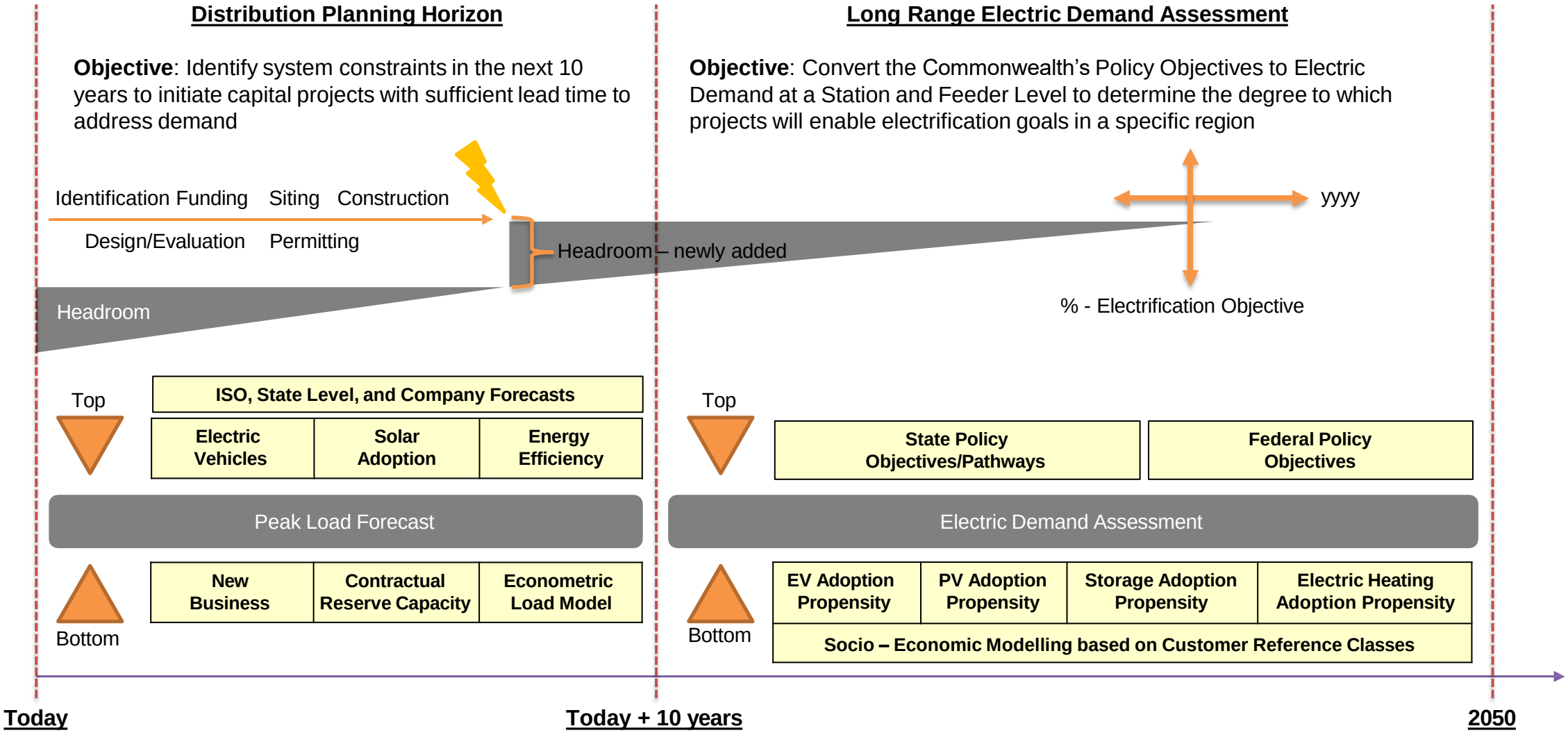
10-Year plan meets 85% of 2050 goals



Increases in **electric vehicles** projected to add **1.3 GW of winter demand by 2035**

Increases in **zero-carbon heating** projected to add **3.5 GW of winter demand by 2035**

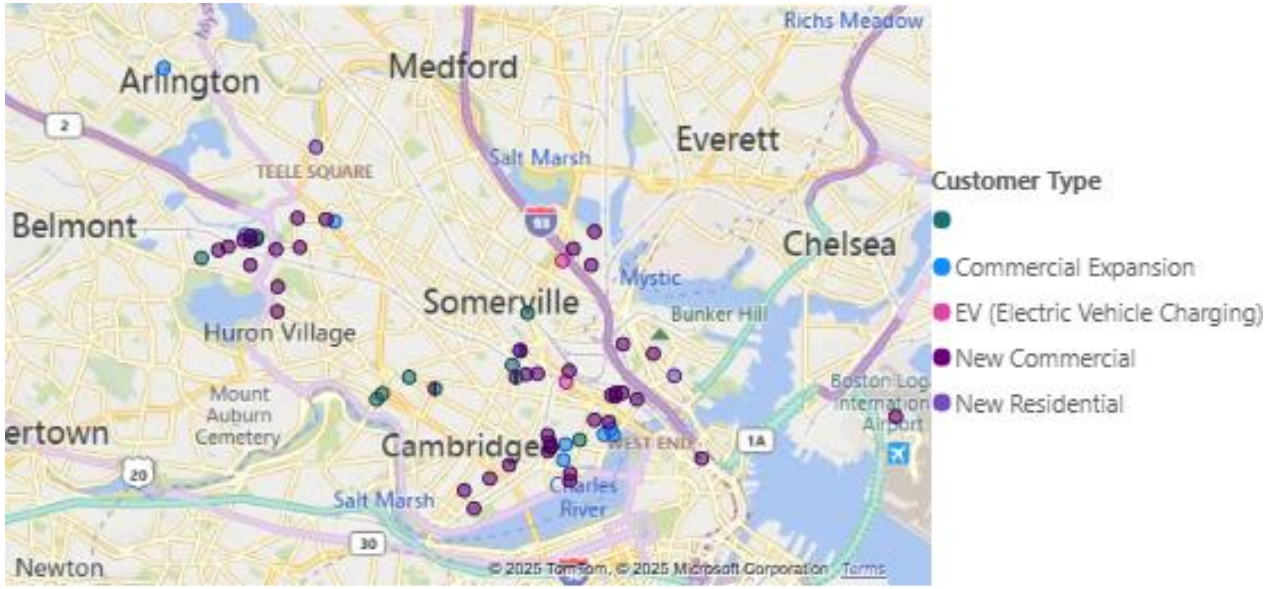
Eversource – Advanced Forecasting

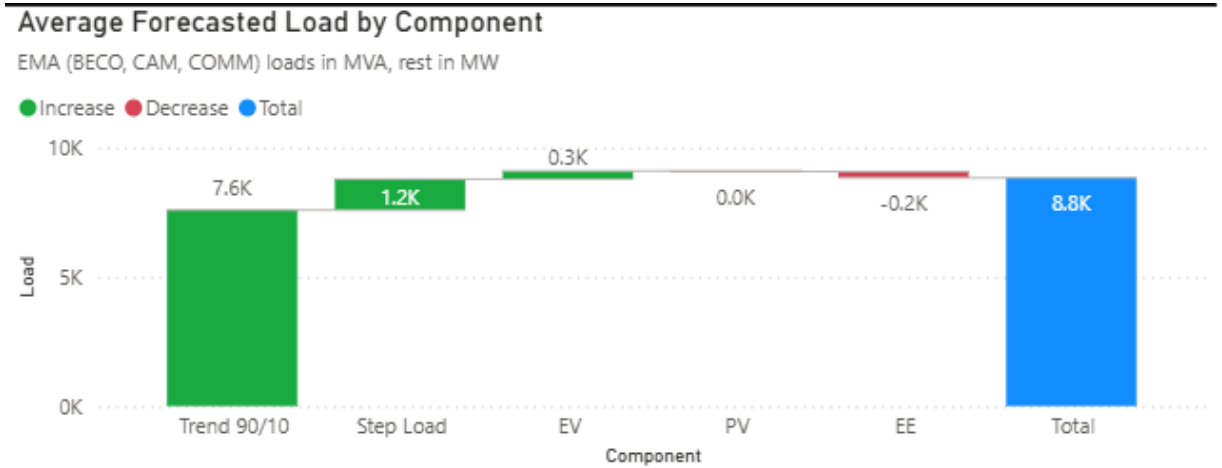


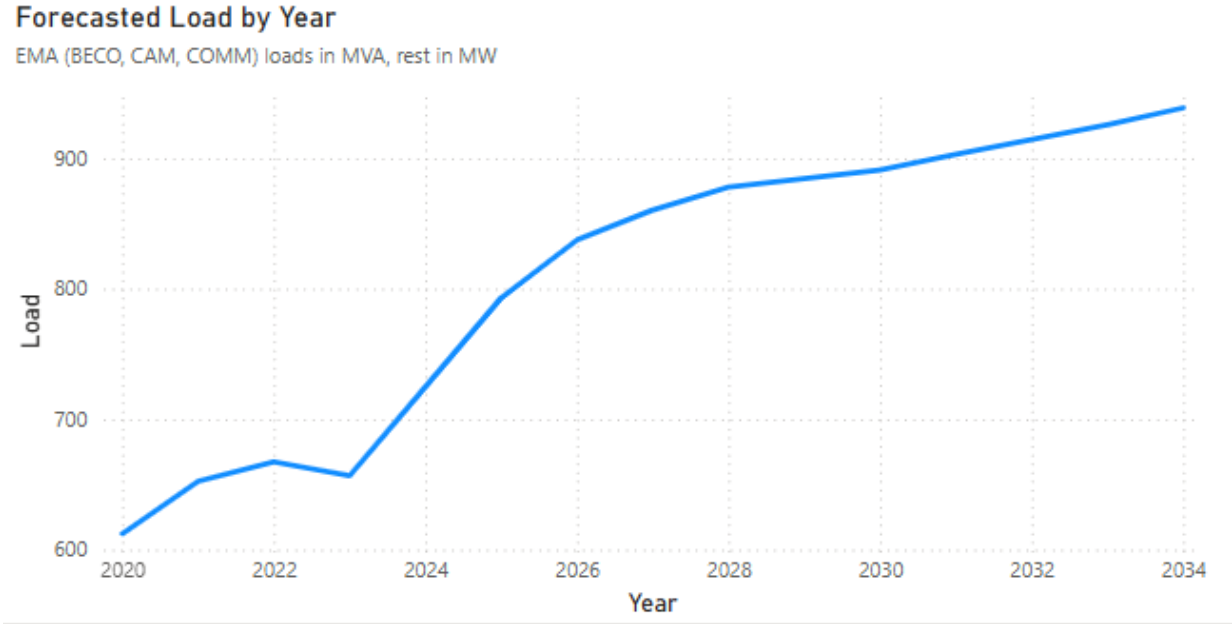
Until the Company identifies a 10-year need no long term electrification projects are triggered

What's driving the near-term demand growth in Cambridge?

- The Company is closely monitoring development in Cambridge
- New commercial building development is of a key interest
- Year Peak Forecast 2025-2034: 1.9% YoY growth (Nov 2024)
- Development of new Bio-Tech critical considering uncertain economic outlook
- Electric Vehicles adoption has slowed down







New Commercial buildings remain the single largest driver of infrastructure needs in the Cambridge area

Location of Major Capacity Projects in the 10-year Plan

- **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**

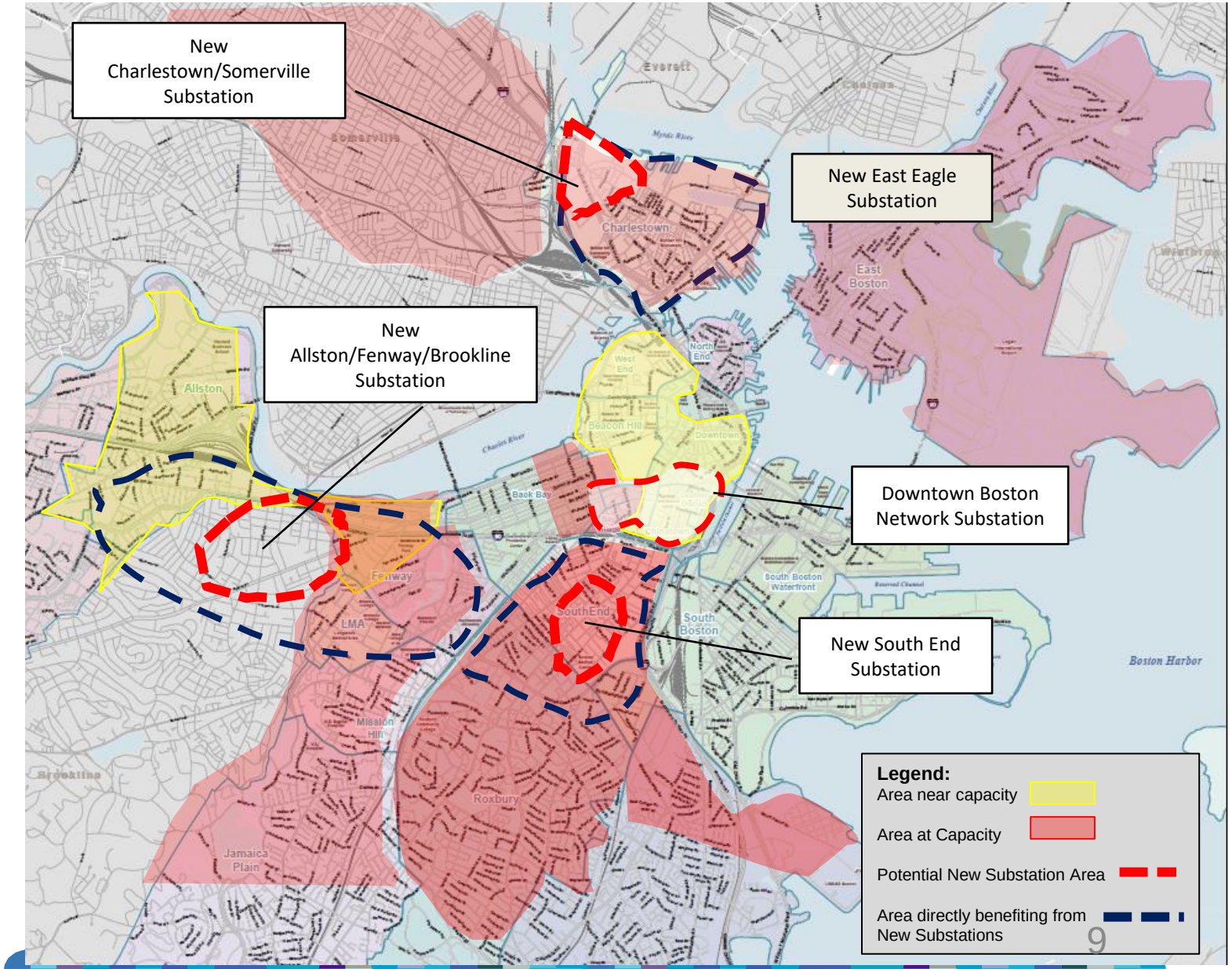
  New Metro Boston Substation provides capacity relief; also provides relief to area of Beacon Hill, West End, North End, Chinatown, Leather District, and Downtown

- **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 to the City of Boston Neighborhoods



Electric System Projects Currently Underway or Planned for Cambridge

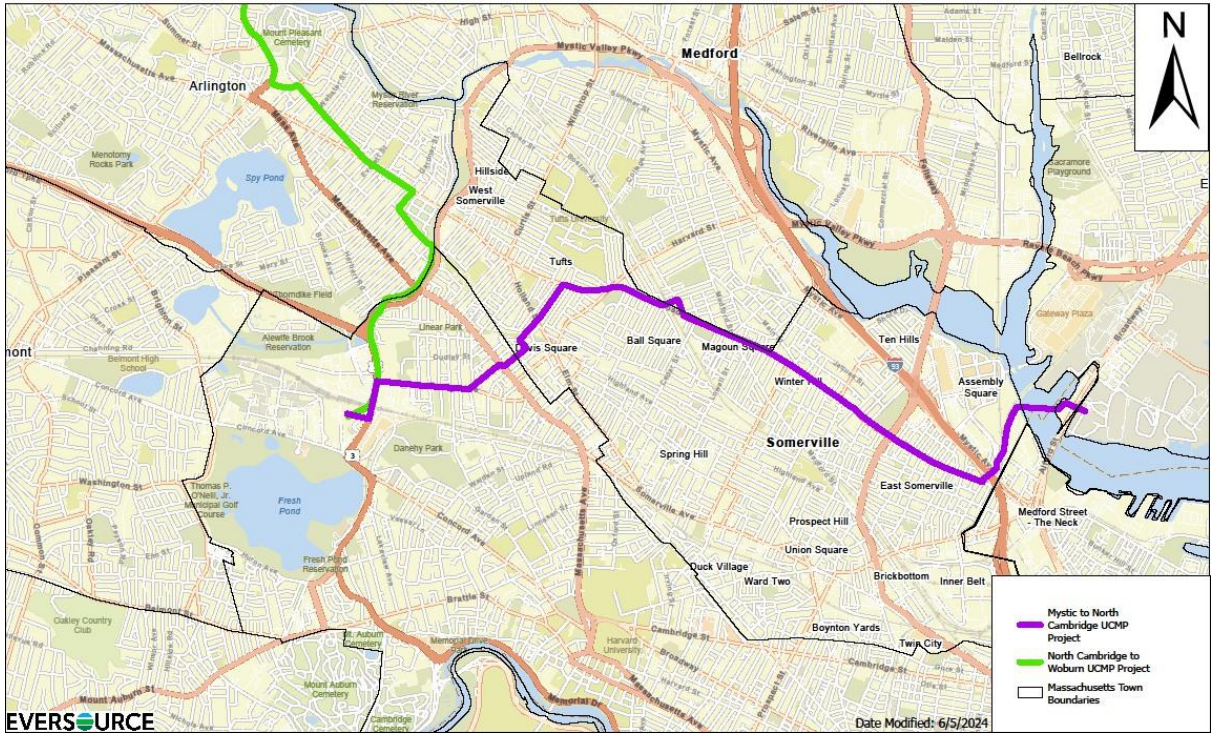
Greater Cambridge Energy Program, Substation #8025

- **Underway -** New underground substation, five underground transmission routes through city streets to existing substations in Boston, Cambridge and Somerville.

North Cambridge Substation

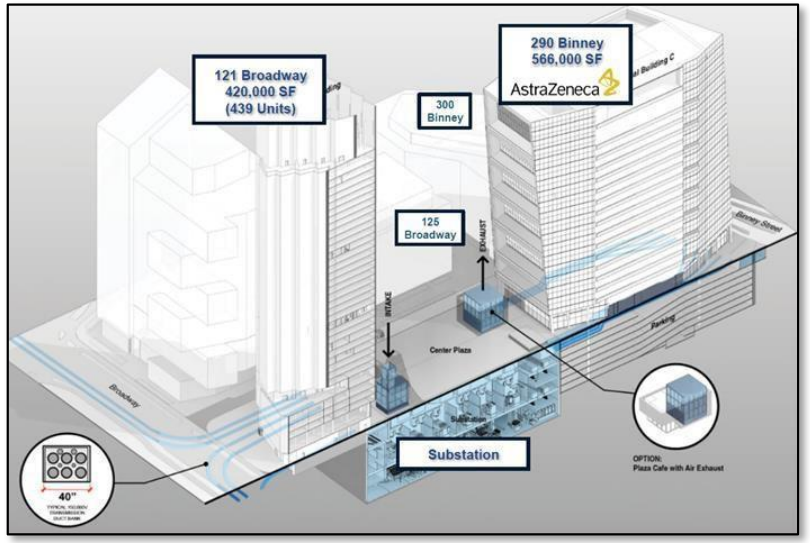
- **Planning** – Underground Cable Modernization Program (UCMP) aims to replace high pressure fluid filled (HPFF) cable with new duct bank and XLPE cable between Mystic and North Cambridge substations and North Cambridge and Woburn substations.
- **Planning -** Fence and Control House Upgrades

Cambridge Underground Cable Modernization Program (UCMP) Projects



Greater Cambridge Energy Program Details Refresher

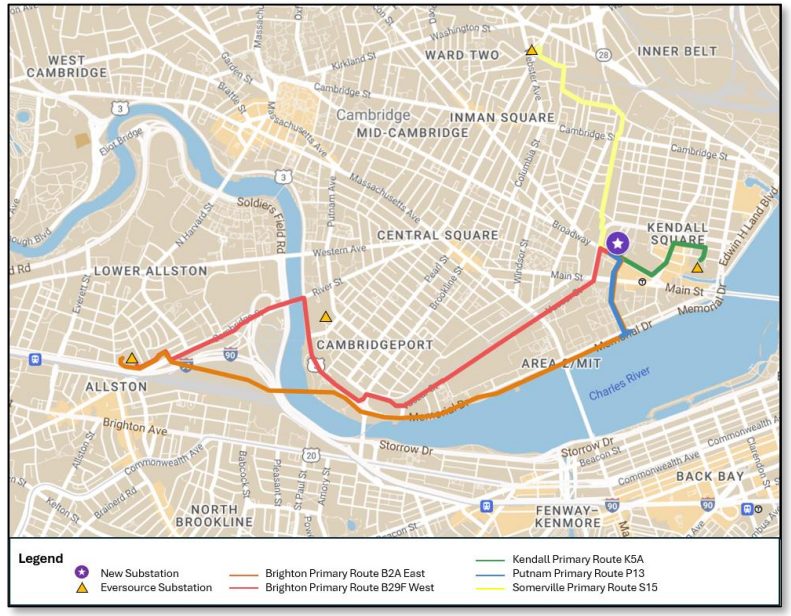
Proposal for New Substation, New Transmission Lines & Distribution Upgrades



Underground substation and adjacent buildings (Courtesy BXP)

New underground substation in Kendall Square, new transmission lines

- Integrated into Boston Properties site plans
- Public open space above substation between residential and commercial buildings
- Five new duct banks housing eight new 115-kilovolt ("kV") underground transmission lines.
- Interconnects with Allston/Brighton, Cambridge and Somerville substations.
- 36 distribution feeders and associated duct bank connect new substation to the existing distribution network



Transmission line routes as submitted to EFSB

EFSB Submittal
3/10/2022

Public Comment Period
6/28/2022

10/16/2023
EFSB begins evidentiary hearings

Q4 2024
EFSB decision

Q2'24-Q1'25
Award contracts

2025-2028
Construction

Q2 2027
BxP Vault Turnover to Eversource

2029-2031
Projected in-service date

Example Street Work

Vault installation using a crane to lower the vault into place

Traffic Flow During Vault Installation Set Up

De-watering tank system

UCMP Project Need & Scope Refresher

Underground Cable Modernization Program

NEED

LINE REPLACEMENT REQUIRED FOR

- Phasing out High Pressure Fluid Filled (HPFF) cables and replacing them with modernized solid cross-linked polyethylene (XLPE) technology.
- Safeguarding system reliability, maintaining long-established electric transmission line connections between substations.
- Planning for future energy demand.

SOLUTION

REPLACE HPFF LINES WITH XLPE - BENEFITS

- Ensuring system reliability, as XLPE technology is more widely available on the market.
- Eliminating the potential for fluid leaks from the HPFF cables to the environment.
- XLPE cables with a wider diameter cables can handle larger electricity loads, assisting with electrification efforts aligning with the Commonwealth's net zero greenhouse gas emissions goals.
- Improving restoration times in the event of a cable incident.

LOCATION

WORK AREA

- Potential XLPE routes between substations, primarily located in existing roadways, are displayed in this presentation.
- Replacement XLPE cables may require potential infrastructure upgrades within substations.
- No plans to interrupt regular electrical service to local customers

Line Routing Process

Extensive Review, Stakeholder feedback, Iterative Approach

Develop Study Area.

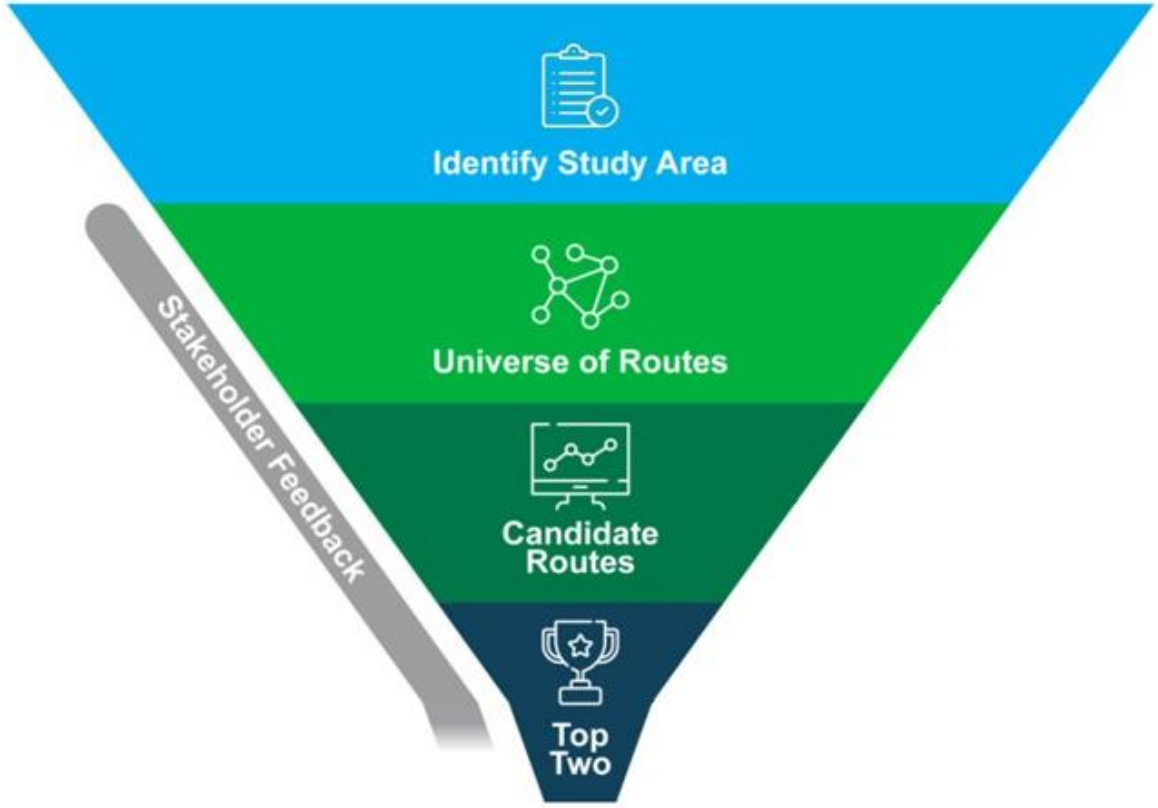
Continued outreach with critical stakeholders and community groups throughout process.

Identification of Universe of Routes
- Screening of routes for fatal flaws, significant obstacles
- Narrow down to manageable list of potential candidate routes

Confirmation of Candidate Routes
- Real Estate, trenchless crossings, contaminated soils
- Conduct Route Scoring: Environmental (Developed and Natural) and Constructability
- Community impacts
- Compare cost estimates

Identification of Top Two Routes
- Advance engineering and cost Estimates
- Real Estate discussions: Option Agreements

Select Preferred Route
- Advance engineering and cost estimate



Criteria Used to Evaluate and Rank Candidate Routes

Category	Criterion	Weight
Natural Environment	Permanently Protected Open Space / Article 97 Lands	5
	Public Shade Trees	3
	Wetland/Watercourse Resource Areas, Buffer Zones, Tidal Areas	2-3
Technical/ Constructability	Existing Utility Density (taking into consideration maximum useable corridor width, # of utility crossings, # heat-generating sources)	5
	Complex Crossings, including trenchless technology to install cables beneath rivers, MBTA rails.	4-5
Built Environment	Adjacent Residential Land Uses	5
	Sensitive Receptors	4
	Historical and Archaeological Resources	1
	Adjacent Commercial and/or Industrial Land Uses	2
	Transportation Impacts	5
	Potential to Encounter Subsurface Contamination	3

Weighting Criteria: ***Eversource used a proven approach to evaluate/score Candidate Routes, assigning weights of 1-5 to standard criteria, with the highest weights given to the consideration of protected open space (parks, Article 97 lands), residential land uses, transportation impacts, complex/trenchless crossings, and utility density.***

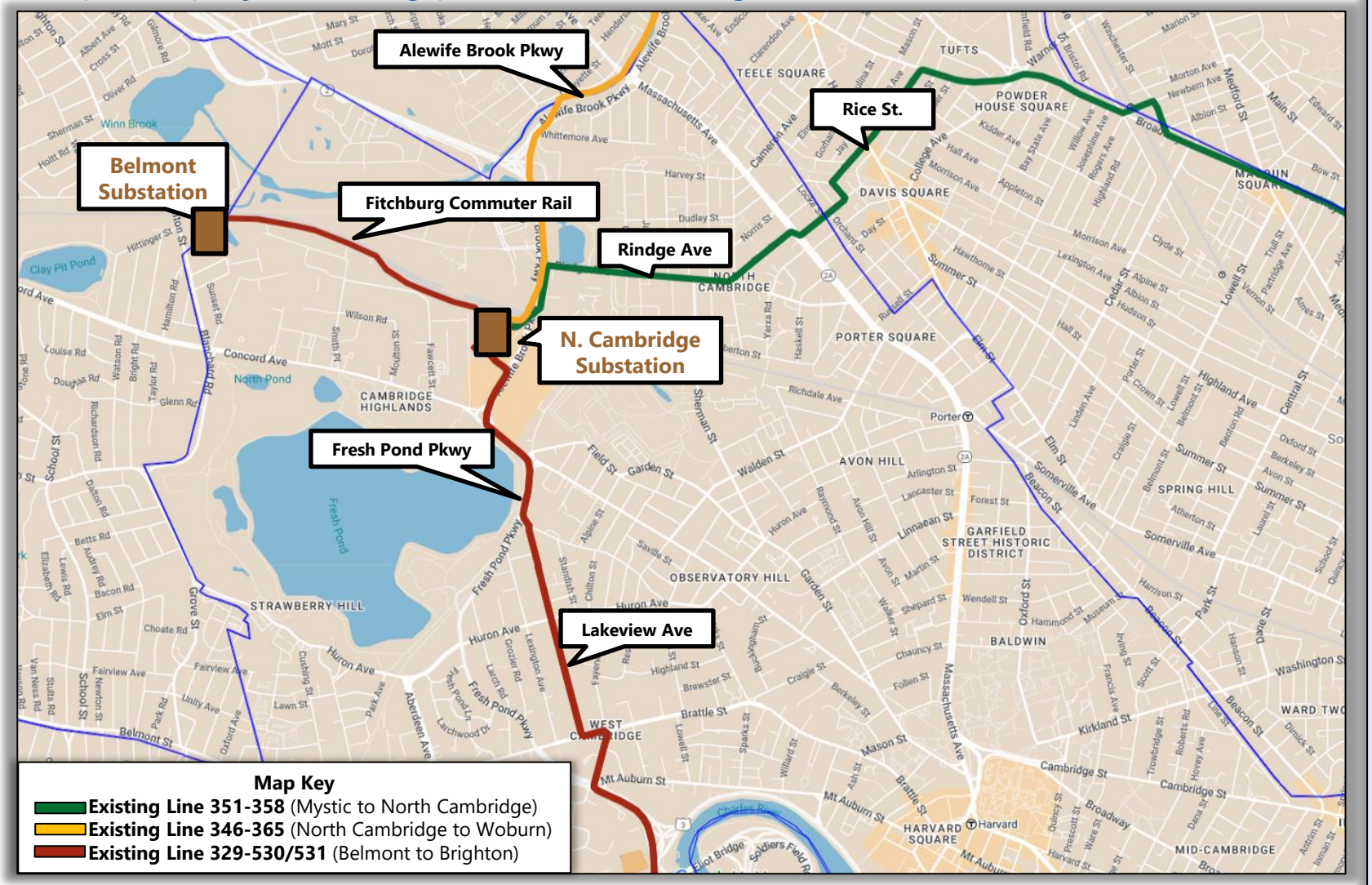
Other Factors*: In addition to the weighted scores, Eversource considers multiple other factors in the routing analysis…*

- System reliability
- Technical feasibility
- Environmental impacts
- Community impacts
- Stakeholder feedback
- Cost to ratepayers

**Scoring criteria may differ based on the conditions of each Eversource project.*

Cambridge UCMP Overview Map

Proposed projects being planned & seeking feedback



Projects & Key Updates

N. Cambridge to Woburn

- Line 346, constructed in 1976, has reached the end of its useful life of 40 years, while Line 365, built in 1986, is approaching the same milestone.
- A preferred route and a noticed alternative route have been identified after a robust routing analysis starting in 2023.

Mystic to N. Cambridge

- Line 351, constructed in 1975, originally included a spare pipe for a second 345-kV cable, which was utilized in 2001 for Line 358. Line 351 has exceeded its 40-year service life.
- Routing analyses which commenced in 2022, used an iterative process to identify the top 2 route options, which are currently being evaluated in more detail.

Belmont to Brighton

- Line 329-530/531 was constructed in 1974, has reached the end of its useful life of 40 years.
- Project was initiated this year and additional feedback will be sought on the alignment of the replacement XLPE cables along the existing HPFF alignment if possible.

Interim and Long-Term System Planning

Interim Solution 2025-2027: Delayed

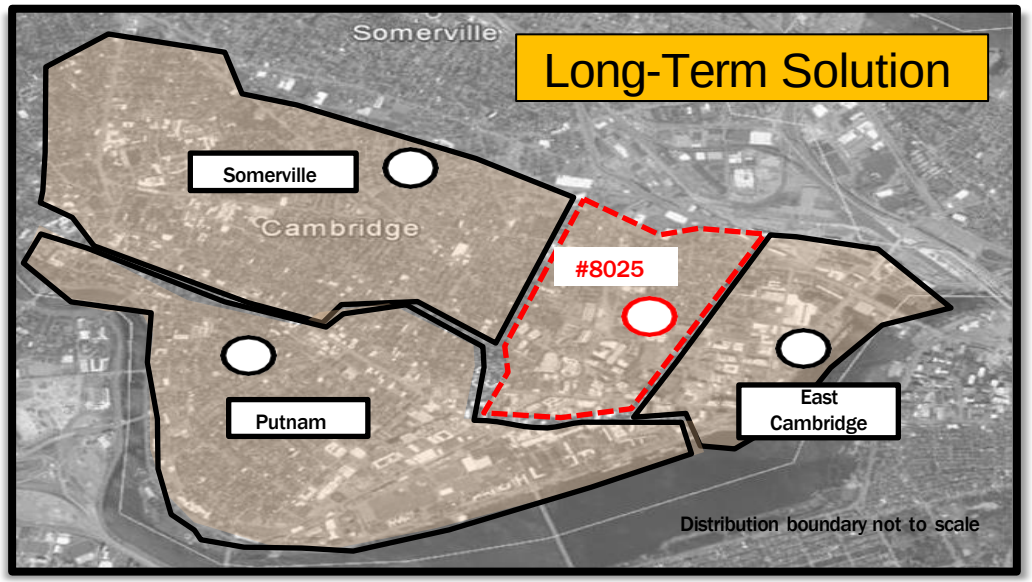
- Install 3rd Transformer at Somerville #402 Substation
- Step loads include Union Square and Boynton Yards

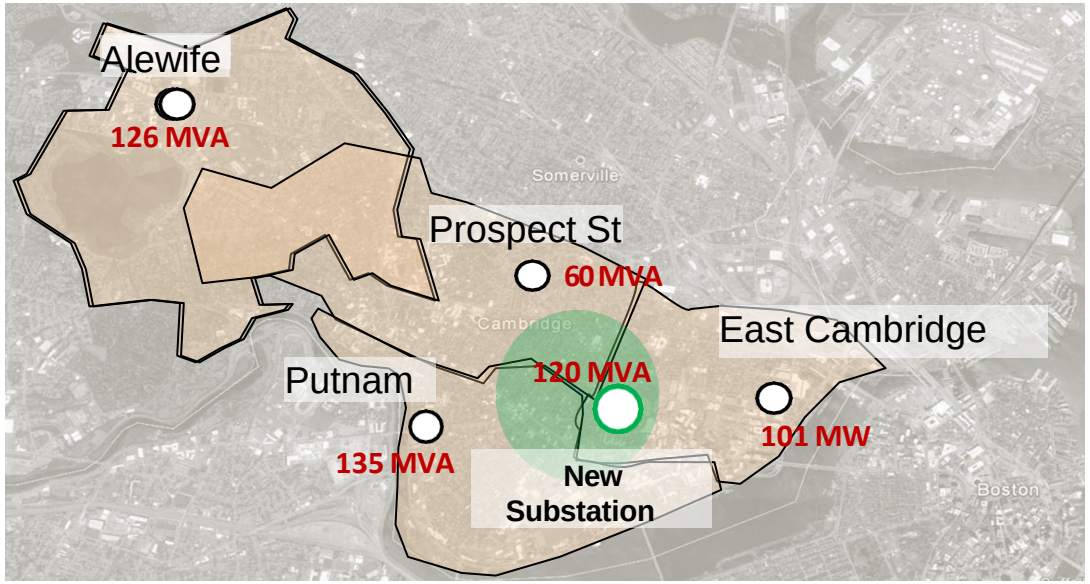
2027-2029

- Per 2025 forecast, East Cambridge #875 will be overloaded by 2028.
- Planned interim solutions will exhaust all available capacity of neighboring substations by 2027
- Developing potential solution of modifications within Kendall Station #850 building at the Kendal Power Plant for emergency load relief.
- Continued distribution street work from 2025-2028

2029 and beyond

- New distribution bulk substation #8025 (GCEP) in service by 2029 to address capacity need for all three substations
- New substation initial capacity for three (3) 90MVA transformers, expandable to four (4)





Demand in 2031 projected numbers by Bulk Station. Approximate Distribution System Boundary - Not to Scale

North Cambridge 2030 Projection

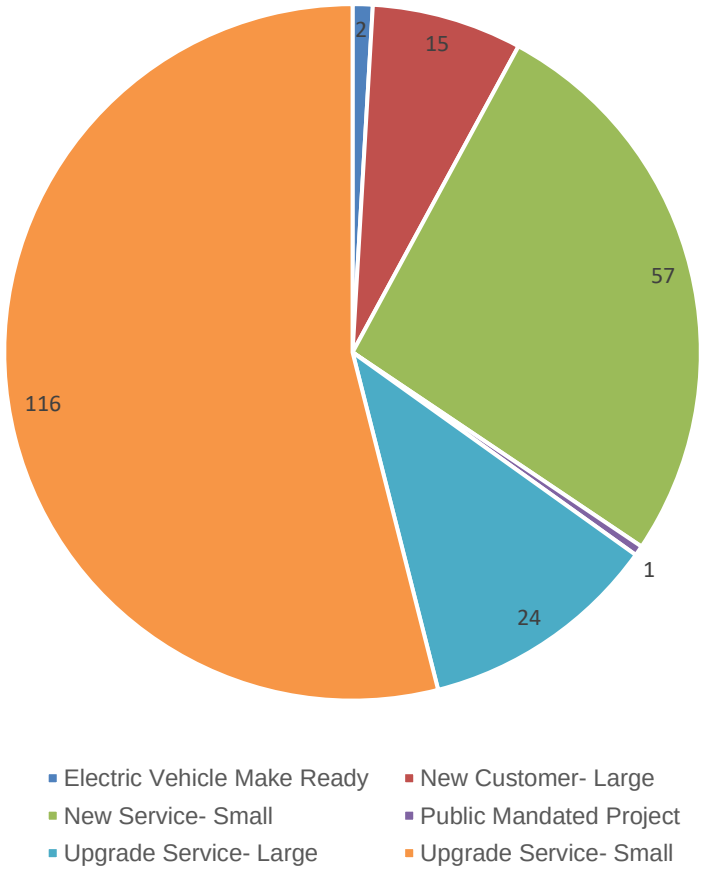
Alewife substation #828 is anticipated to be loaded to 98% by **2026**

- Alewife Station short term solution needed for June, July & August 2027.*
- Options of load transfers, battery storage and spot generation are being evaluated for the near term solution.
  - Near Term solution ~ potential load transfer
  - Longer term solution ~ install 4th transformer

*conservatively assume 3 months a year

Electric Operations- Distribution

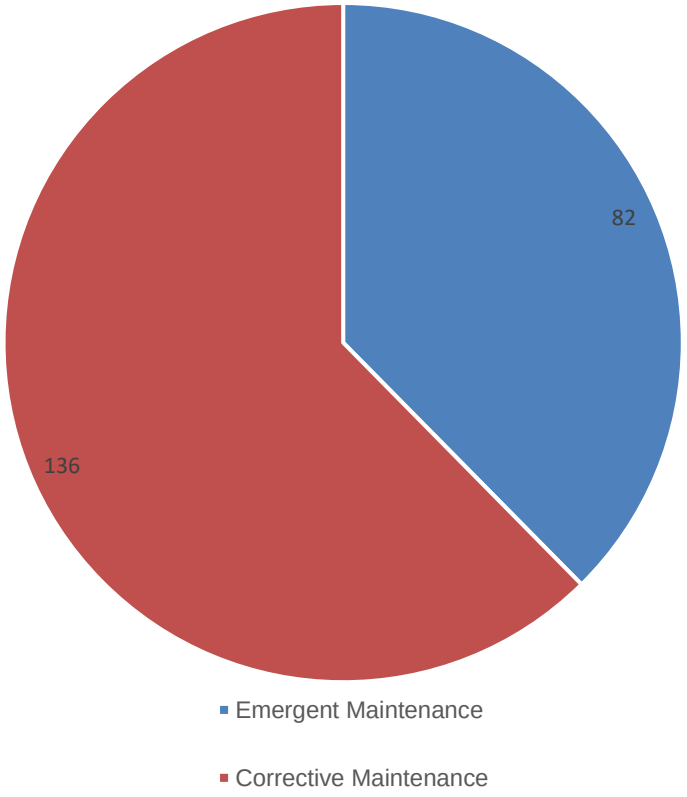
Customer Work Orders



Capital Plan 24/25

- Ongoing projects:
  - Replace manual switches with automated switches
  - Reconductor circuits
  - Add sensors for circuit visibility
  - Additional reliability projects
- Specific projects:
  - STA 402 third transformer
  - STA 8025 civil work

System Maintenance



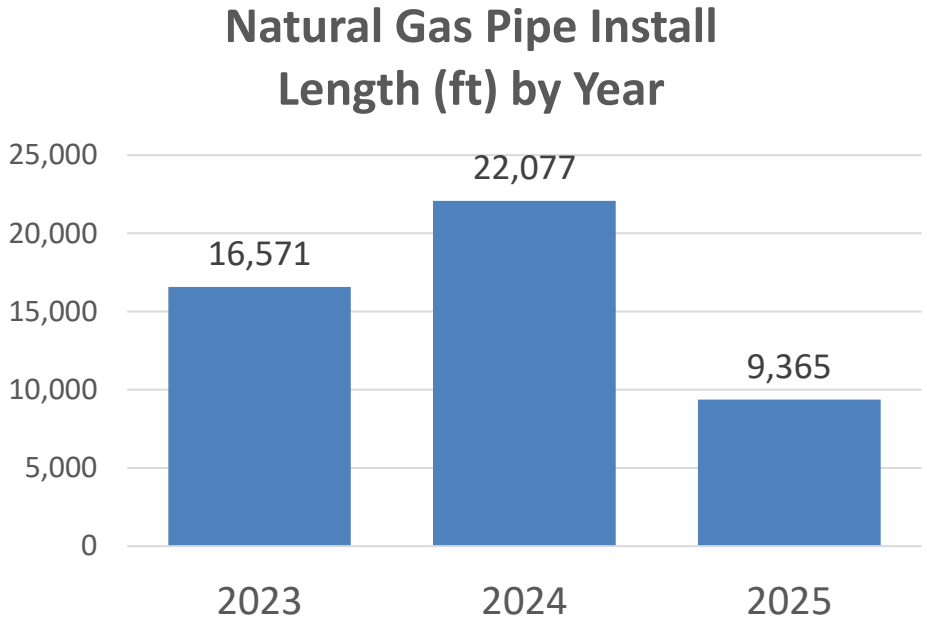
AMI Smart Meter Project

- **3-year meter system upgrade project underway in MA**
- **Customers will benefit from:**
  - Access to near real-time data on their energy usage
  - Projected bill forecasts and other reports
  - Automatic outage reporting between the meter and Eversource
  - High usage and high bill alerts
  - Remote move in and move out process
- **Everyone will benefit from:**
  - Greater reliability for the system
  - Enhanced outage response
  - Innovative rate design to save customers energy and money

	Current Meter	Smart Meter
Projected bill amounts		✓
Automatic power outage reporting		✓
High energy-use alerts		✓
High bill alerts		✓
Start and end service remotely		✓

AMI Smart Meter Work in Cambridge

- **<u>Work began on the Project in January 2025</u>**
- **<u>Network buildout work in Cambridge in December 2025</u>**
- **<u>Smart meter installations at homes, businesses, and other buildings in Cambridge starting mid-2027</u>**
  - Customers will be notified several times ahead of their smart meter exchange via mail, email, and text



Pipe Diameter	2023	2024	2025
18”	-	12	-
12”	69	3,584	2,958
8”	320	1,619	840
6”	4,802	3,013	3,750
4”	9,435	12,200	1,560
2”	1,946	1,649	257
	16,571	**22,077**	**9,365**

2025 Natural Gas Pipe Replacement Projects	
Completed	Linksy Way
	Coolidge Hill Rd / Mount Auburn St
	Coolidge Hill
	Quincy St
	Brattle Cir
In Progress	Museum St
	Edmunds St
	Garden St
	Mt Auburn St / Shaler
	May St / Vineyard St
	Hawthorne St
	Columbia St (at Harvard)
	Hancock St
	Follen St
	Brewer St / Ross St
	Mass Ave / Somerville Ave / Cameron Ave
Planned	Hews St
	Blanchard Rd
	Cottage Park Ave

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