



City of Cambridge Planning Board Meeting

June 27, 2023

Annual Utilities Coordination Presented
By:

EVERSOURCE
ENERGY

Agenda

- Eversource Sustainability Report
- Load Growth and Forecasting Review
- Natural Gas
- Geothermal
- System Planning
- Transmission
- Electric Operations
- Energy Efficiency
- Electric Vehicles
- Q&A

2022 Sustainability Report | *Coming Soon!*

Annual sustainability reports published to provide key updates on Environmental, Social and Governance performance

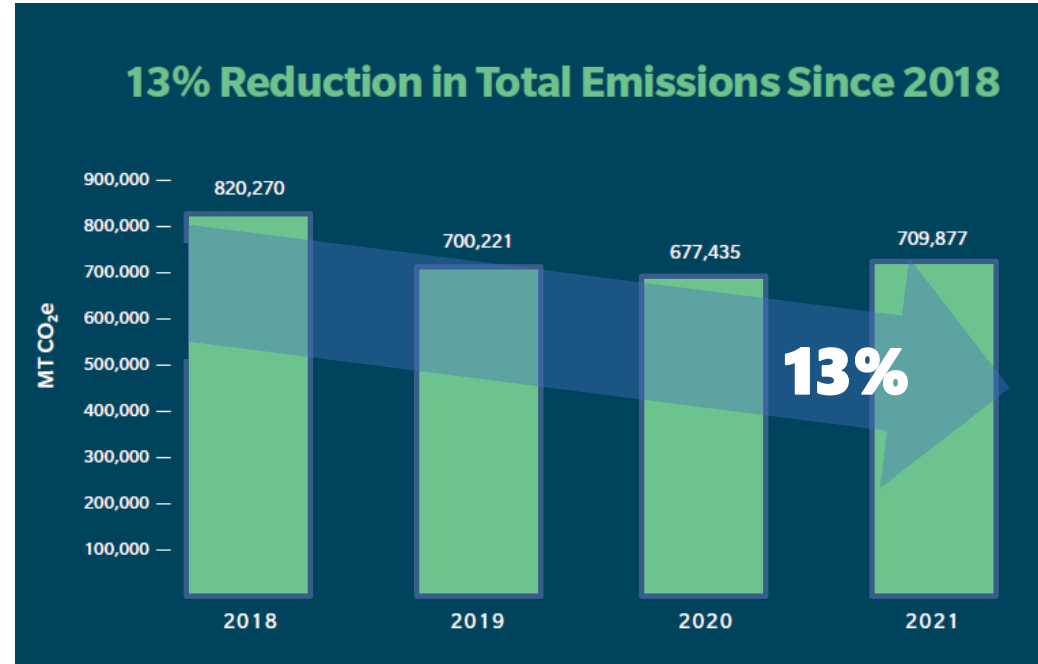


- Report is developed using reputable Sustainability disclosure frameworks (i.e. GRI, SASB, TCFD)
- Complementary publications released at the same time will include an annual Diversity Equity & Inclusion Report and an updated Climate Adaptation & Mitigation Plan



Reducing Our GHG Footprint

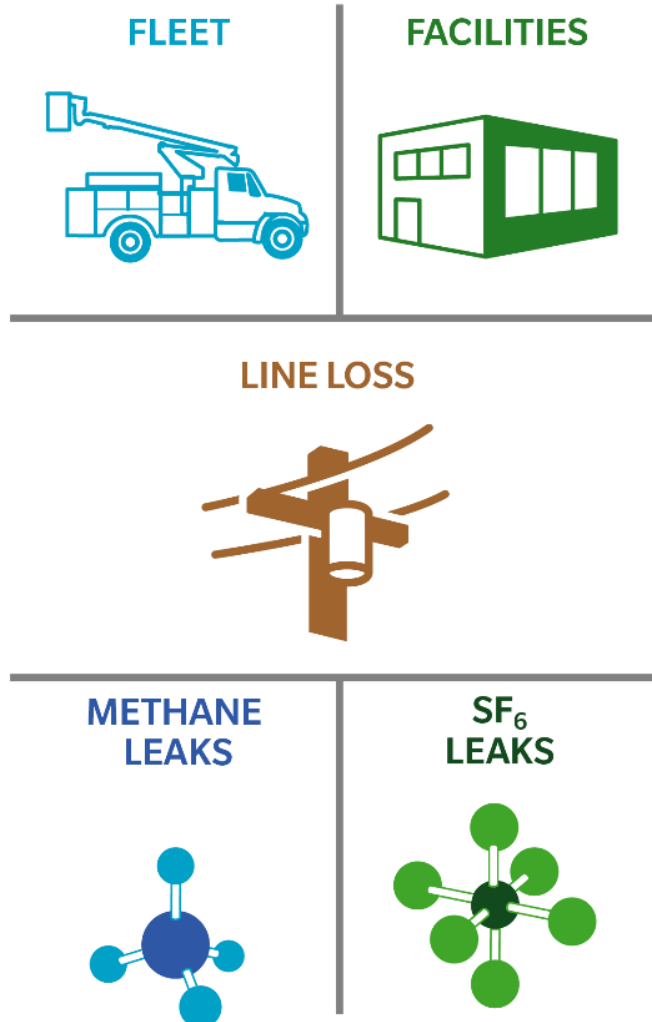
- Eversource adopted an industry-leading goal to achieve Carbon Neutrality in our operations by 2030
- We are seeking innovative solutions to reduce emissions as close to zero as possible and use credible offsets for emissions that can't be avoided
- In 2022, we built on this strong foundation of climate leadership through a formal commitment to adopt a Science Based Target (SBT)
- The SBT will complement our Carbon Neutrality Goal, while broadening our focus on indirect emissions from our value chain



SCIENCE
BASED
TARGETS

DRIVING AMBITIOUS CORPORATE CLIMATE ACTION

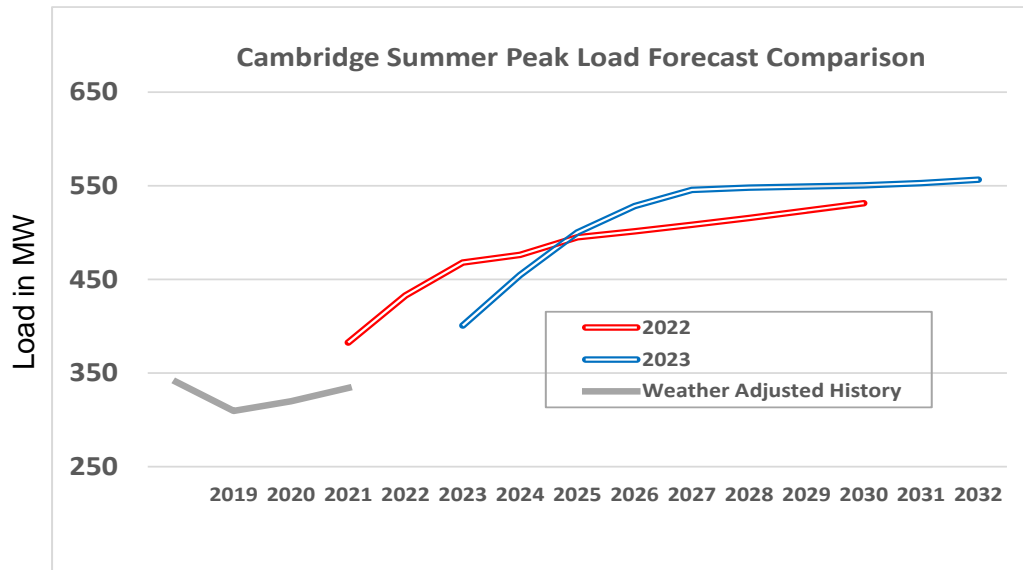
How We Are Advancing Toward Carbon Neutrality



- **Our vehicle fleet:** adding electric and hybrid vehicles
- **Our facilities:** upgrading HVAC equipment and lighting
- **Line loss:** enhancing system efficiency to reduce the energy lost when power is transmitted and distributed
- **Our natural gas distribution system:** replacing aging steel pipes to reduce methane leaks
- **SF₆ (sulfur hexafluoride):** adopting innovative solutions to replace this potent greenhouse gas

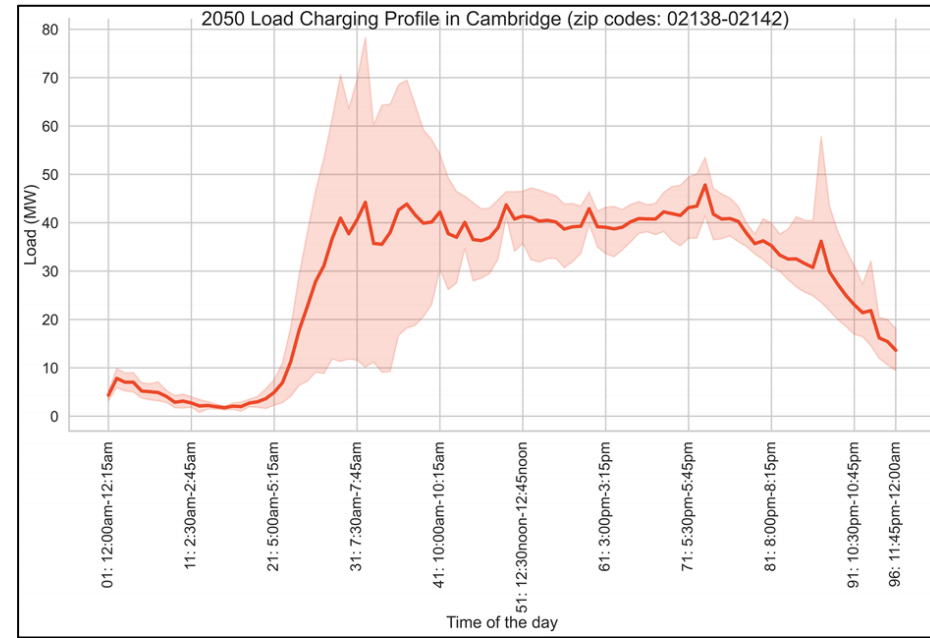
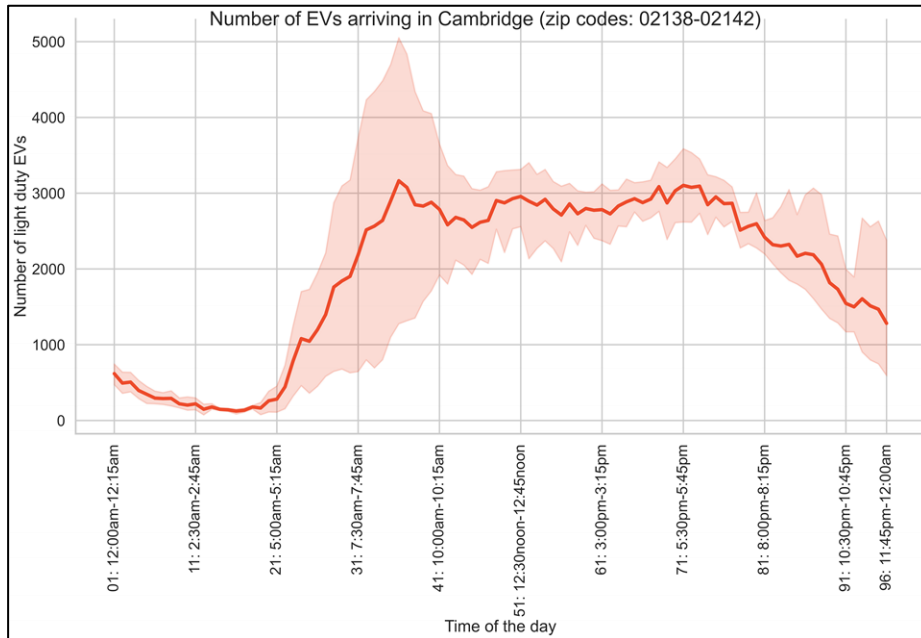
Load Forecasting Overview

- Eversource's latest forecast of electric peak demand for the City of Cambridge was finalized in March 2023
 - 10-year forecasts capture economic growth, energy efficiency, solar installations, electric vehicles charging and large customer additions



- Known large customer projects remain the primary driver of long-term electric growth in the City of Cambridge
- Gas peak day forecasts are updated every two years and are submitted to the Massachusetts Department of Public Utilities (DPU)

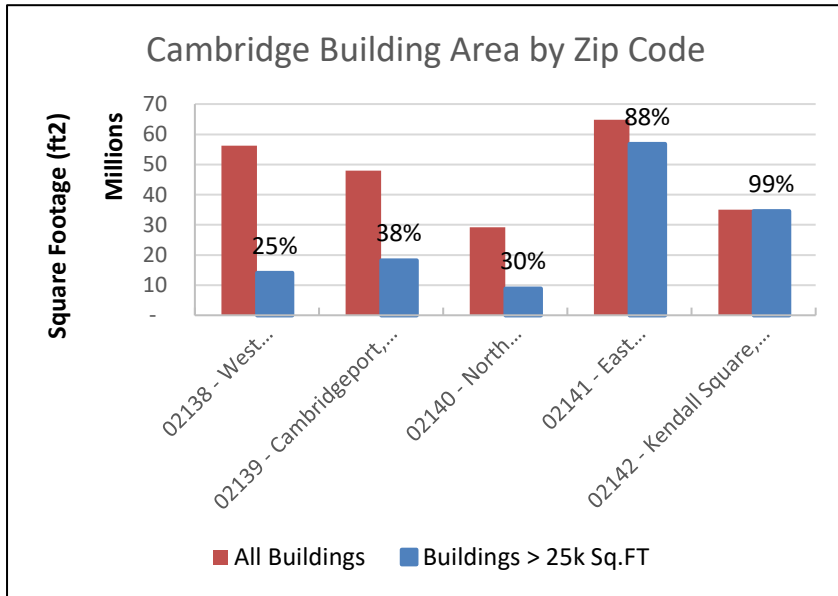
Facts and Figures: EV Arrival and Charging Profile



Assumptions:

- Vehicles charge upon trip termination with the charging duration based on previous trip length
- No consideration for utility or 3rd party charge management
- Assumes sufficient charging infrastructure, especially on site
- Assumes a 100% conversion of ICE vehicles to EV

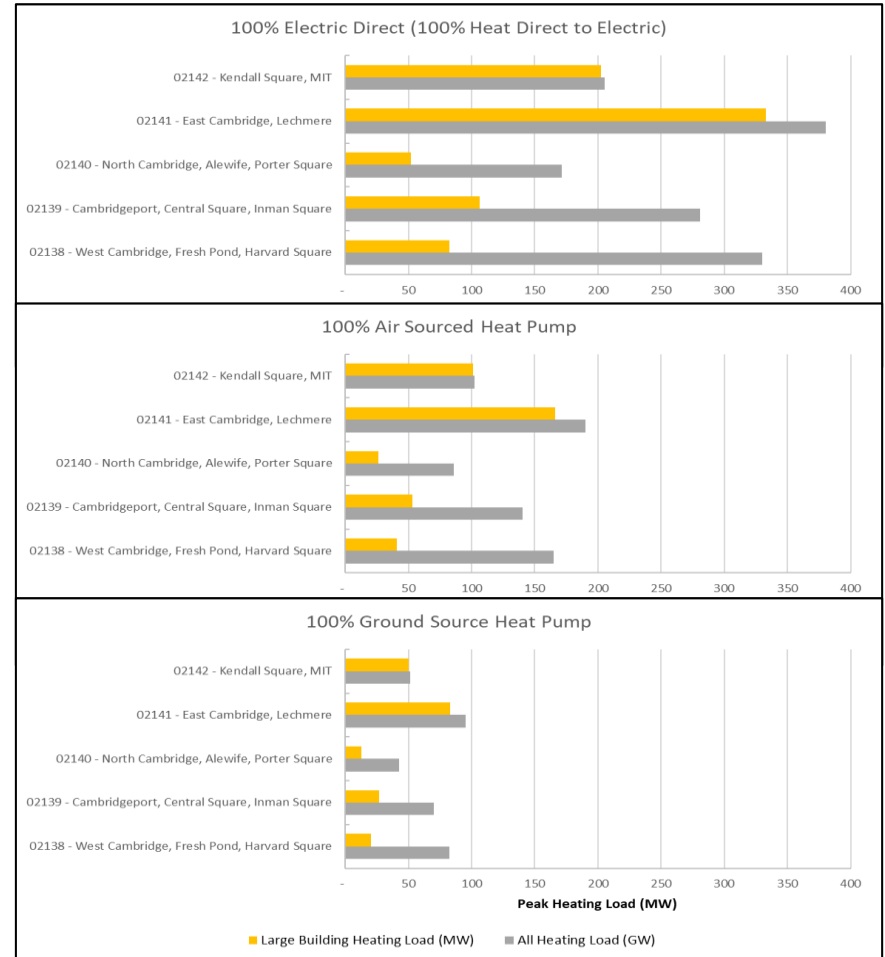
Facts and Figures: Heating Electrification



The estimated total heating demand for all buildings is **2.1 GW** for direct heat to electric demand, which represents **1 GW to 540 MW** peak electric load depending on technology.

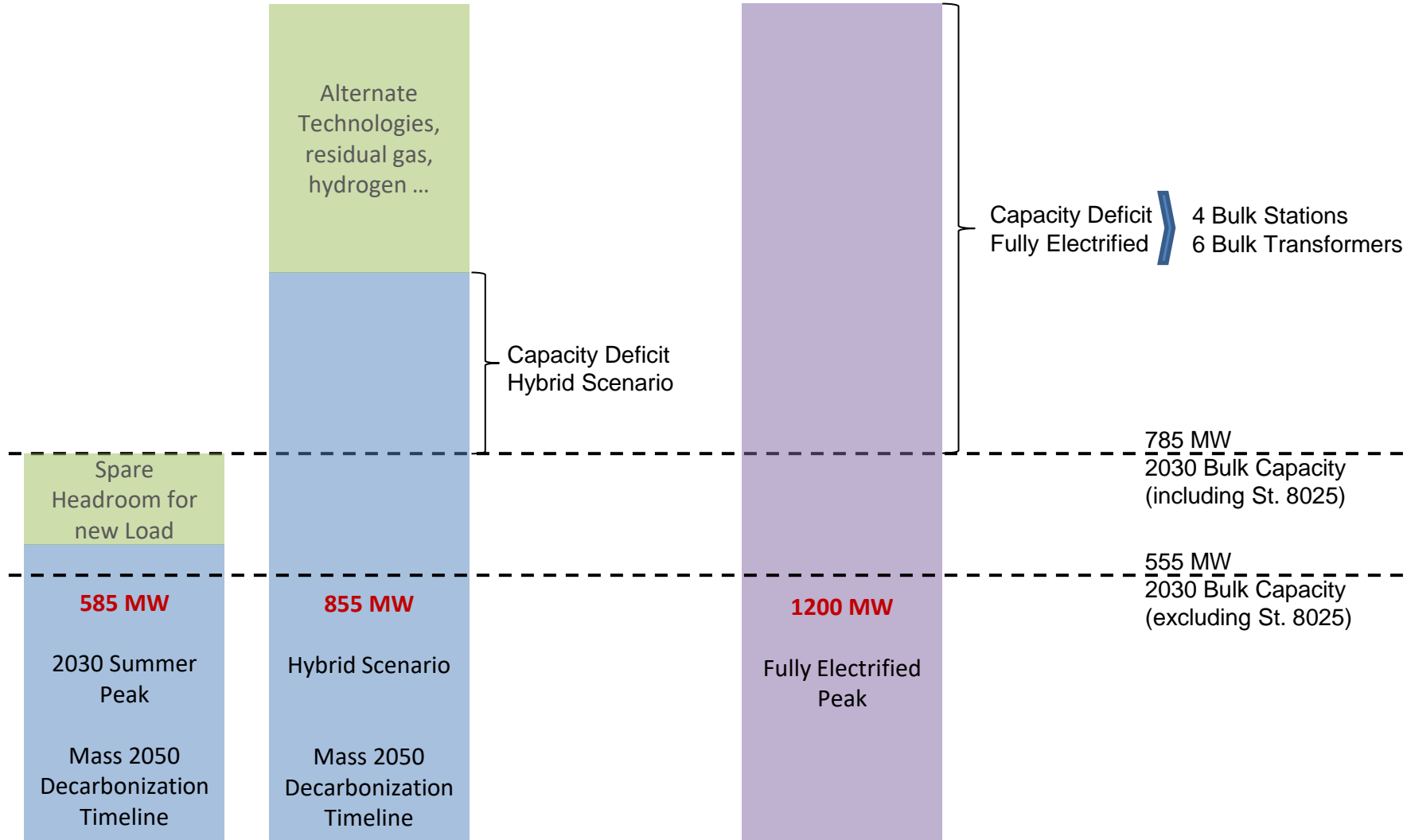
The estimated total heating demand for all buildings >25k sqft is **1.4 GW** for direct heat to electric demand, which represents **684 MW and 342 MW** electric peak load depending on technology.

*Heating potential estimated based on building square footage and peak heating assumptions



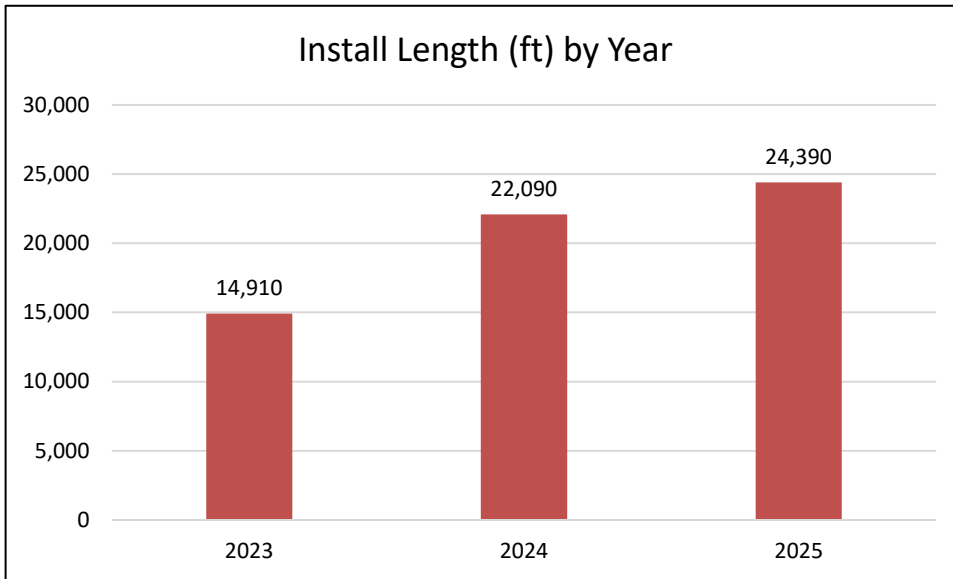
Projected Distribution Infrastructure Needs

(Does not include transmission)



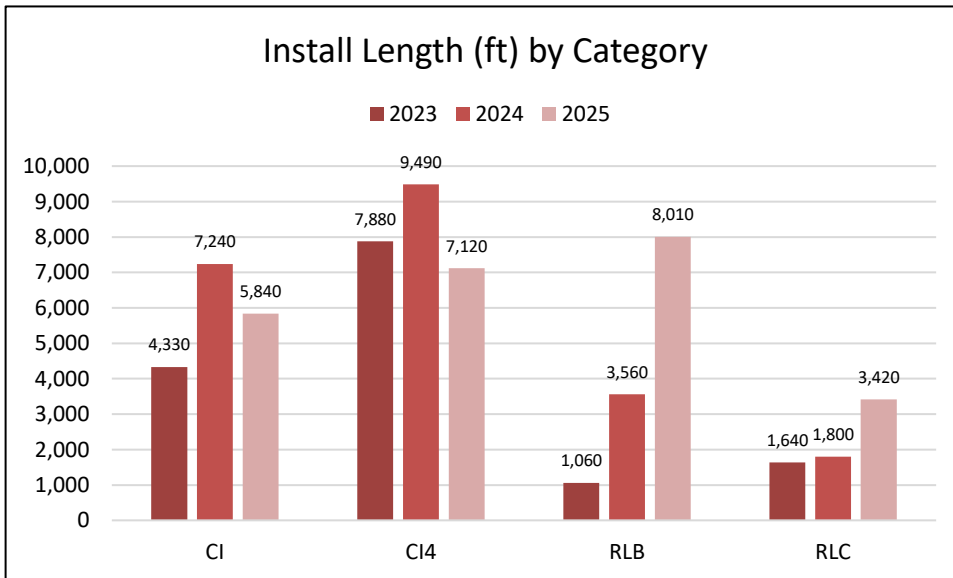
Overview of Natural Gas in Cambridge

- At Eversource, our top priority is the safety of the communities we serve, our customers, and our employees.
- In the combined territory of Cambridge & Somerville, Eversource owns, operates, and maintains over 250 miles of natural gas distribution mains and provides reliable service to 55,000 customers.
- We are always monitoring our gas systems to provide our customers with safe and reliable service
- To safely and reliably deliver natural gas to our customers, vintage pipe materials such as cast iron and steel are being replaced with state-of-the-art materials throughout the system to reduce leaks, improve capacity and extend the life of the system.



Install Length (ft) by Size

Existing Diameter	2023	2024	2025
20	10		
16			4,360
12		2,000	2,580
8	3,240	5,680	4,680
6	3,440	3,680	6,210
4	8,220	9,170	6,560
2		1,560	
	14,910	22,090	24,390



Construction Crew Count by Month

Jan	Feb	Mar	Apr	May	Jun

Jul	Aug	Sep	Oct	Nov	Dec

CI – Cast Iron > 4” diameter **CI4** – Cast Iron ≤ 4” diameter
RLB – Relay Bare Steel **RLC** – Relay Coated Steel

Investment in Safety & Reliability



- Capital investment strategy to include new safety equipment and improve system reliability at stations throughout the City
- New Gate Stations at Brookford Street and Third Street
- Improvements made to underground stations on Brattle St, Concord Ave, Huron Ave, etc.

Eversource Clean Technologies

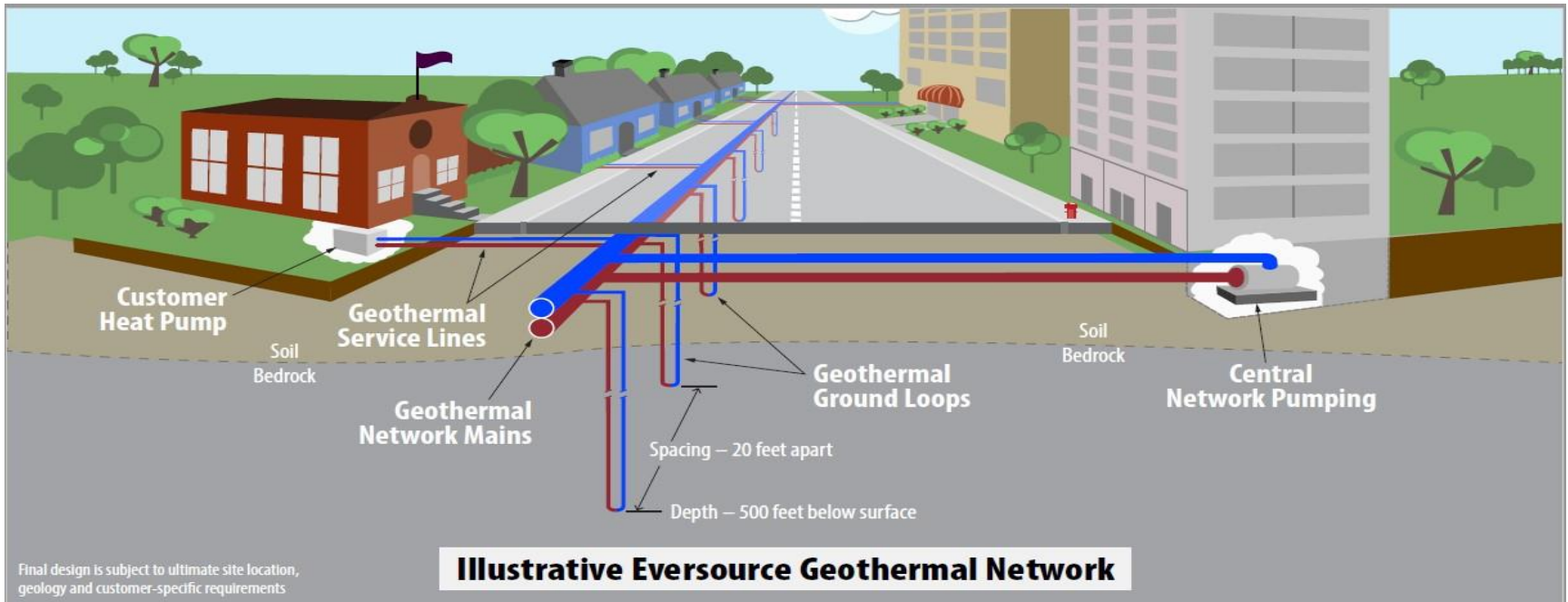
Networked Geothermal Pilot - Framingham

What is the Networked Geothermal Pilot?

Eversource’s pilot is exploring if a networked geothermal system can be used instead of or in combination with traditional energy sources like natural gas, air source heat pumps, or delivered fuels such as heating oil or propane, and is focused on serving a diverse group of customers - from single- and multi- residential and commercial - within a dense neighborhood.

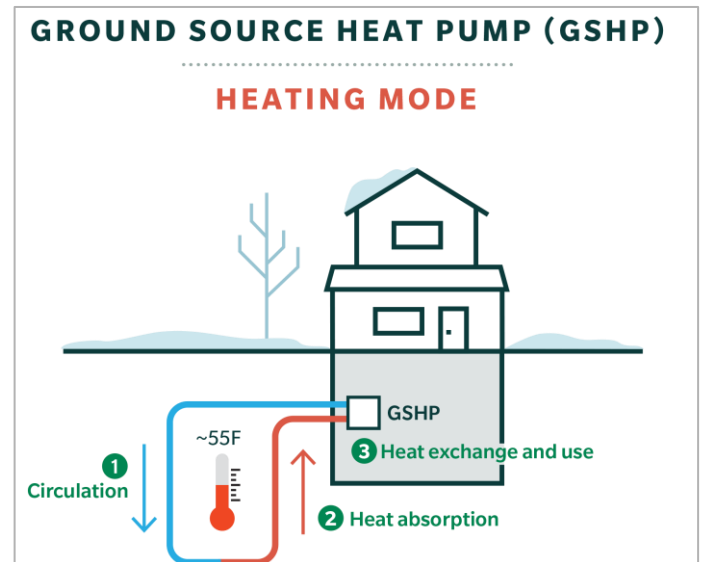
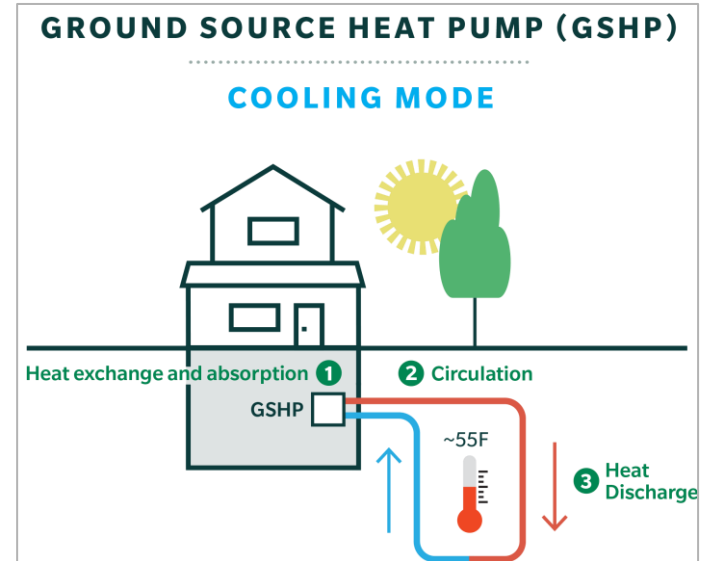
How Does it Work?

The networked geothermal system uses the Earth as a heat source during the winter and a place to get rid of unwanted indoor heat during the summer through circulating fluid in a buried piping network known as a “ground loop”, which carries the heat and exchanges it between buildings and the ground.



Geothermal Pilot - Project Status Update

- CDM Smith Design is at 100%
- RH White selected as the general contractor
- Construction mobilization and excavation scheduled for mid-June
- Work coordinated with Electric and Gas construction groups
- Geothermal Pilot Program Updates can be found at: [Eversource Geothermal](#)



Load Density - An Overview*

Residential street



25-100kVA

Residential block or commercial building



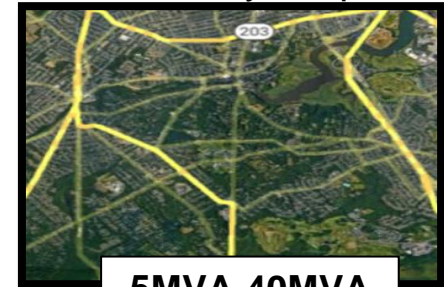
100k-500kVA

City building



500kVA-5MVA

An entire town or one skyscraper



5MVA-40MVA

Dense city areas one skyscraper or a block



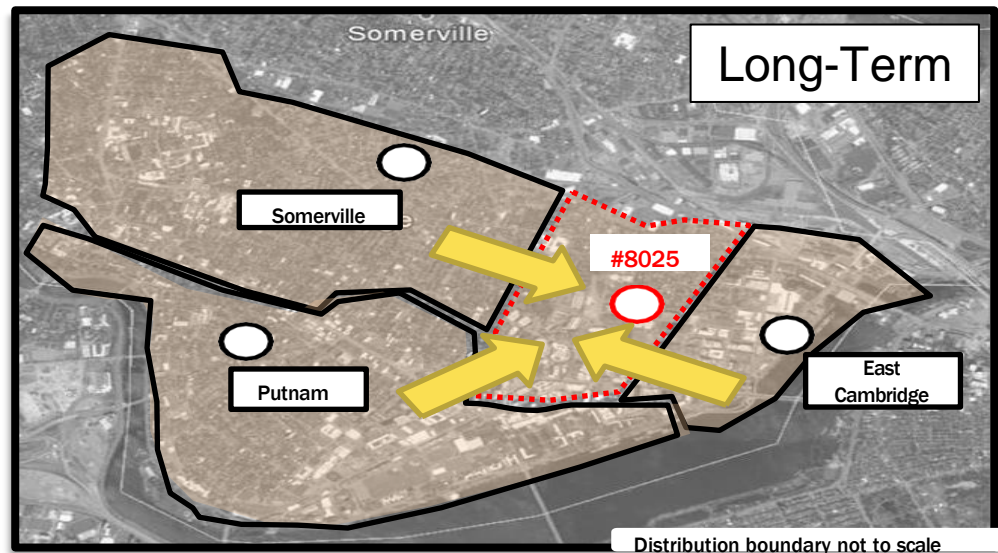
40MVA+

**For reference only; does not apply to all areas*

System Planning

Comprehensive Solution - Interim and Long Term

- Interim: 2020-2023
 - Install 4th transformer at Putnam
- Interim: 2024-2027 - **Delayed**
 - Install 3rd transformer at Somerville Substation
 - Union Square and Boynton Yards
- As per 2023 forecast, Alewife Distribution Substation is expected to be overloaded by 2025
 - Currently developing mitigation solutions
- Continued distribution street work from 2023-2027
- Interim solutions will exhaust all available capacity of neighboring substation by 2027
- 2028 and beyond:
 - New distribution bulk substation 8025 in service by 2028 is to address capacity need for all three substations
 - Initial capacity for 3-90MVA transformers, expandable to 4
 - Expansion provides long- term capacity needs



Transmission Update

Partnering with the City of Cambridge to Enable Economic Development Fueled by Clean Energy



Happening now:

- **Putnam Sound Study** has shown consistent compliance with Cambridge noise ordinance for the past 6 semi-annual readings.
- **Ready Path Solution** : In partnership with National Grid, this project to improve the reliability of region's electric system was completed ahead of schedule. News Release can be found [here](#).



On The Horizon:

The Underground Cable Modernization Program involves proactive planning to replace aging transmission lines throughout Eastern Mass. New lines will reliably handle larger electrical loads as decarbonization efforts and new development demand more electricity

- **North Cambridge to Woburn:** Project is in the study phase. As details crystallize, the team will engage you for feedback on proposed routes.
- **Mystic to North Cambridge:** Project is currently in the conceptual phase. As the project moves to study phase, the team will engage with the city.



Informational Video:

Power Grid 101 video was created to explain how Eversource's transmission system delivers energy to your home. Click [here](#) to watch.

Greater Cambridge Energy Program Update

Feedback from community, acted upon by Eversource:

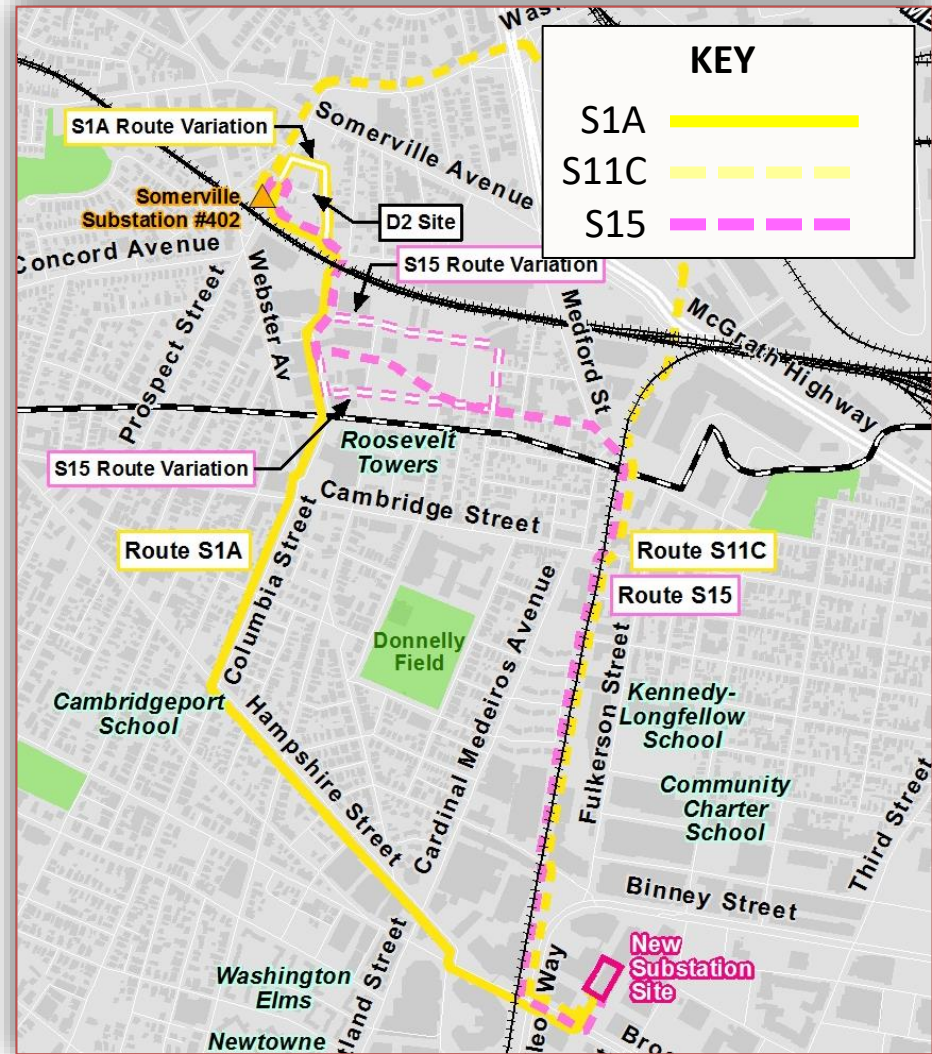
- Alternate route that avoids Hampshire/ Columbia in favor of Grand Junction path.
- Alternate route evaluation expected to be completed this summer

Kendall Square Site Activity

- Slurry wall construction underway
- Visible, active truck traffic

Energy Facilities Siting Board

- Procedural schedule forthcoming
- Decision anticipated approximately one-year thereafter.



Route S15 is the variation resulting from recent community feedback.

135 Fulkerson Street Parcel



*Aerial View of Cambridge and
Kendall Square Area*

Developing a strategy to address the goals of the City and Eversource. The goals are:

- (1) City to receive the property as early as the EFSB approval (anticipated 2024 Q2)
- (2) Eversource to maintain property for lay down, parking, etc. to construct and energize the Greater Cambridge Energy Program (anticipated Q4 2030)

Electric Operations

- Major Completed/Upcoming City Projects
- What to expect in
 - 2023/2024
- Major Development Projects



New Customer and Reliability Improvements

New Substation 8025 – Energizing 2028

- Four Transformers
- 48 Circuits

Station 402 Transformer addition relieve load while waiting on energization of Station 8025

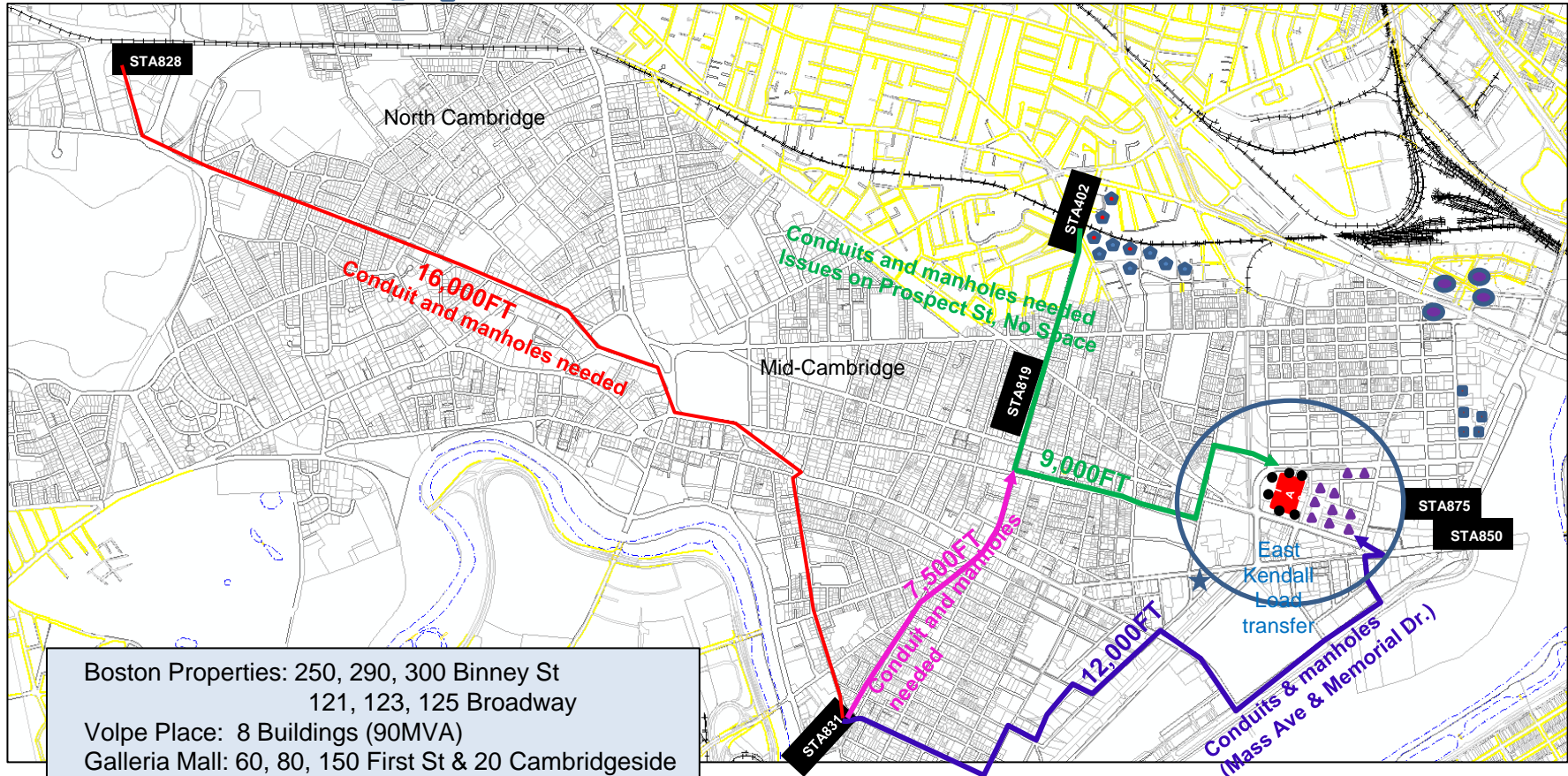
- Multi year 2-sets 6-5” conduits Union Square Somerville to East Cambridge (Kendal Square)
- 8 circuits 2 circuits a year 35 sections
- Conduit currently being installed.

New Customer and Reliability Improvements

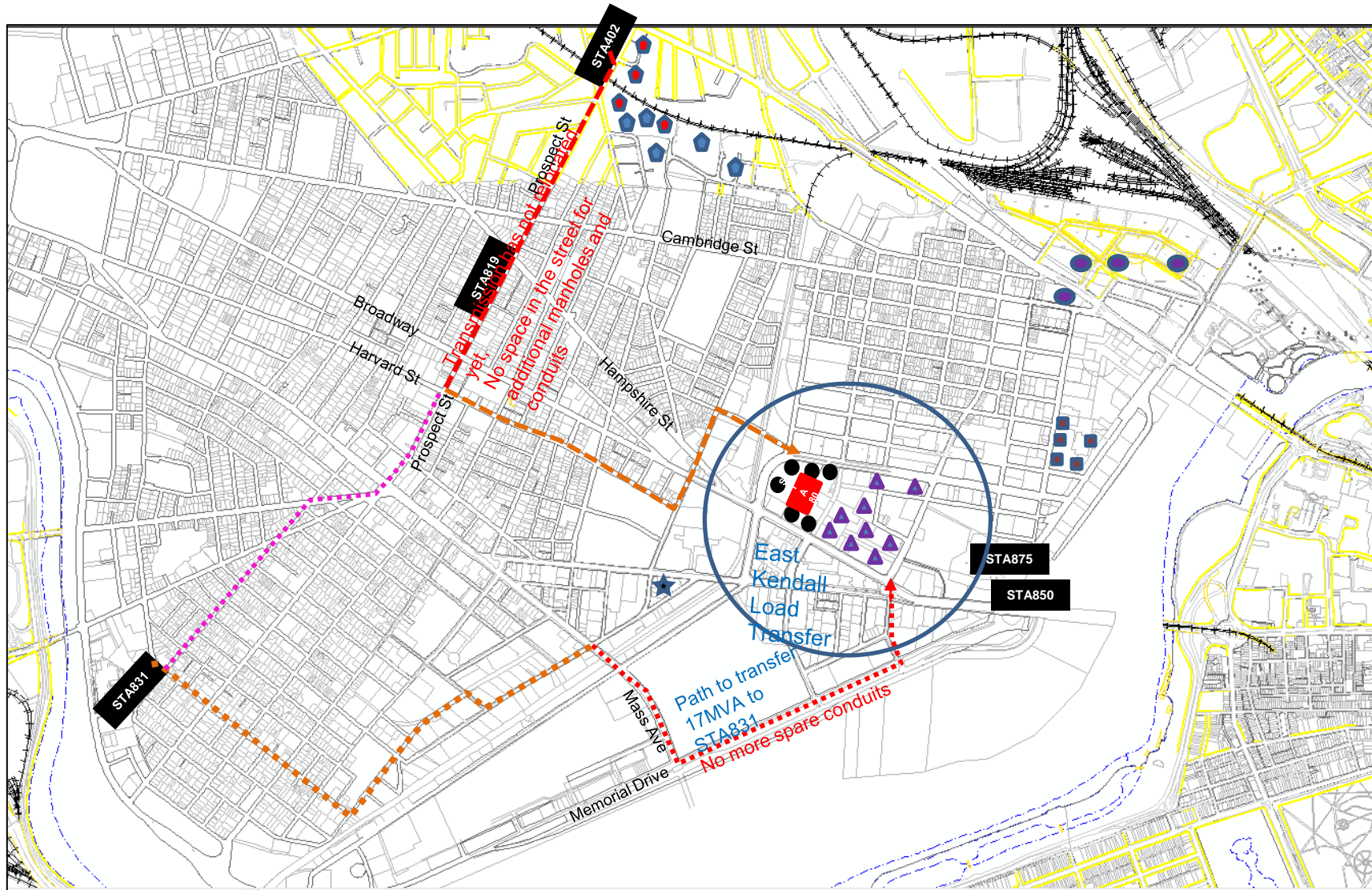
Kendall Square:

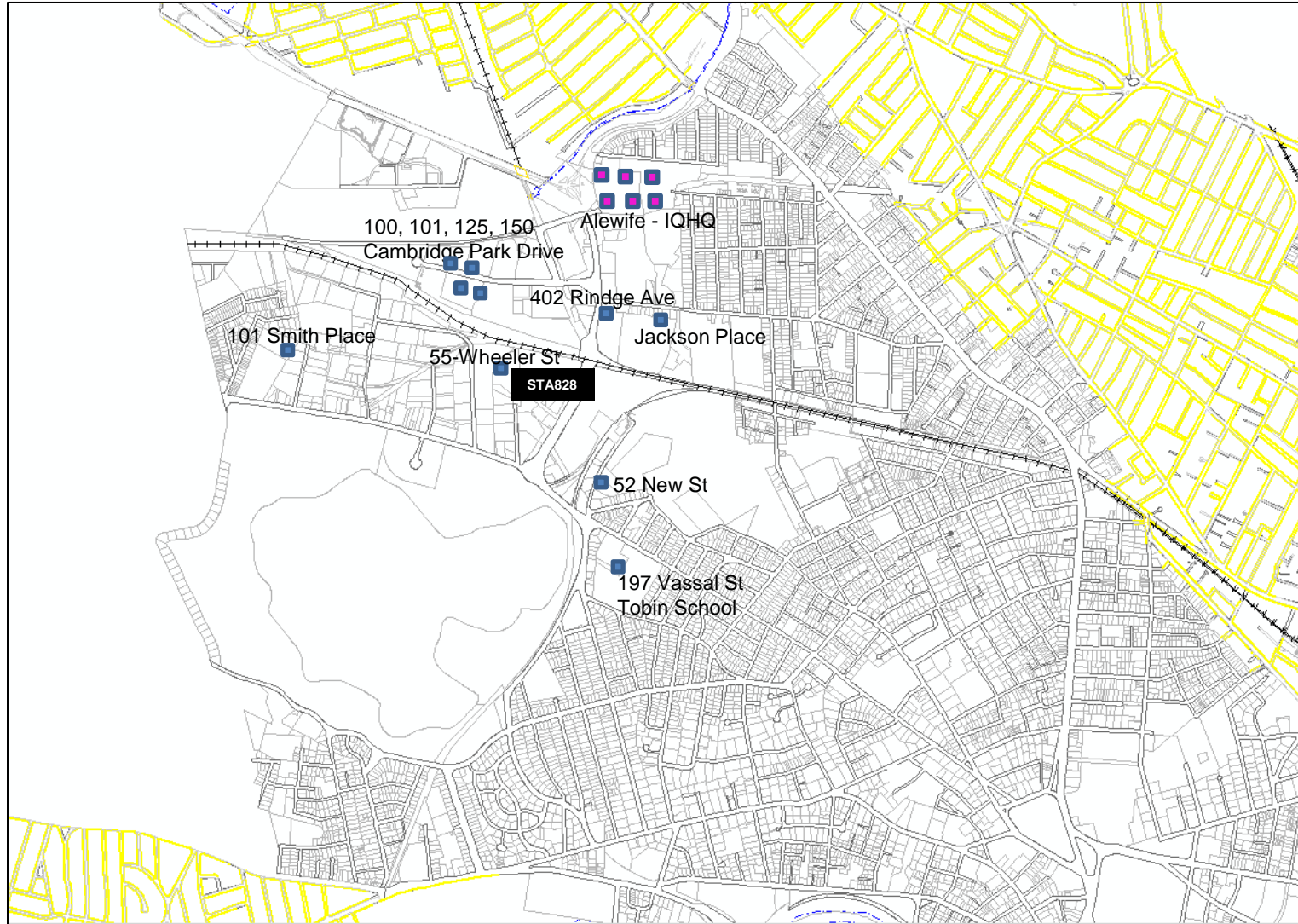
- **Volpe Center (Kendal Square) (Labs)**
 - 10 Acres 8 Buildings 80MVA
 - Civil work this year.
- **Boston Properties**
 - 6 Buildings Civil work ongoing
 - Binney St. 250-290-300 **300 Energizing this year**
 - Broadway 119-121-125 **125 Energizing this year**
- **Cambridge Crossing Multiple Buildings (Labs)**
 - Parcel I,Q,R expected this year
- **Galleria Mall**
 - 4 Buildings (Labs)
- **Fresh Pond Parkway Area**
 - **IQ – HQ Harvey St.**
 - 6 Buildings (Labs)
 - 3 – Energizing this year
 - 3- Next year

Alewife - IQHQ



- Boston Properties: 250, 290, 300 Binney St
121, 123, 125 Broadway
- Volpe Place: 8 Buildings (90MVA)
- Galleria Mall: 60, 80, 150 First St & 20 Cambridgeside
- MGH: 600 Main St
- Alewife, IQHQ: 6 buildings
- ⬠ US2, D1.2, D2.2, D3.3, D3.4 (SOM)
- ⬠ Boynton Yards (SOM)
- ⊙ Cambridge Crossing





Energy Efficiency

- 2nd Year of Current Three-Year Plan (2022-2024)
- Focus on:
 - - Energy Efficiency
 - - Decarbonization / Electrification
 - - Diversity, Equity & Inclusion
 - - Workforce Development
- Residential
- Small Business
- Large Commercial & Industrial (C&I)



Energy Efficiency

Residential:

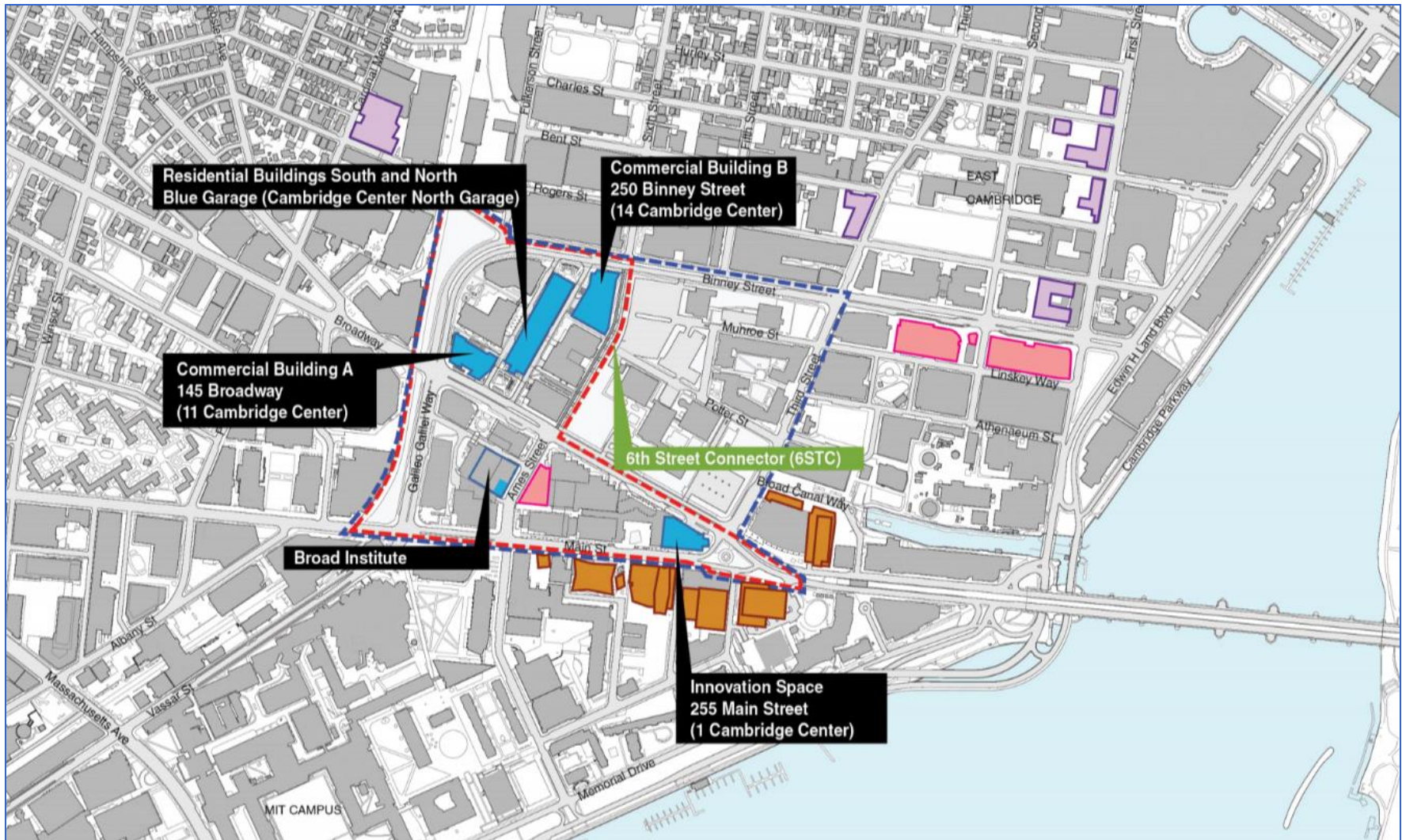
In 2022 Eversource sponsored the following in Cambridge:

- Over 1100 market-rate Home Energy Assessments (HEAs)
- 90 Income-Eligible site assessments
- Over 300 market-rate Weatherization projects
- Over 240 Income-Eligible units Weatherized
- Over 500 market-rate heating system rebates
- 11 Income-Eligible heating system replacements (serving many more dwelling units in multifamily housing stock)

New Construction: Large C & I

- Alexandria Real Estate
 - sustainable design of 325 Binney Street (Moderna's new HQ).
 - signature feature is the facility's new Groundsource Heat Pump system, which will heat/cool the facility.
 - Zero Net Energy system will displace Natural Gas as the major heating source.
- City of Cambridge
 - Tobin Montessori School
 - - Net Zero School / Pathway 1
 - - EUI under 25
 - - Cambridge an early adopter and leader for other school districts
 - Cambridge Fire Station
- Boston Properties (BXP)
 - Various Projects in Kendall Square
 - Working with BXP's design team to minimize EUI on each facility.
 - Google's New facilities
 - BP and other stakeholders....new bulk station underground near Binney Street.
 - LED Lighting, Controlled Exhaust Fans

BPX: Kendell Center Mixed Use Dev. Center



Retrofit

Large Commercial & Industrial

Major Projects with:

- Biogen
- Novartis
- Pfizer
- Harvard
- MIT

Measures include:

- Lighting / Lighting Controls
- HVAC / HVAC Controls
- Variable Frequency Drives
- Compressor repair & replacements
- Chiller upgrades
- Steam trap repair & replacements
- Over 10M Annual kWh savings in pipeline for 2023
- Estimated CO2 Reductions in excess of 10,000
- (equivalent of the electricity for 1700 homes in a year)

Retrofit

Small Business

2022 Main Streets Program / Small Biz Projects:

- 62 Projects
- 498,000 Annual kWh saved
- \$275k in electric incentives to Small Businesses
- 16,000 Annual Therms saved
- \$72k in gas incentives to Small Businesses

2023 Main Streets Program / Projects (Through March 2023)

- 14 projects
- 112,000 Annual kWh saved
- \$89k in electric incentives to Small Businesses
- 1,200 Therms saved
- \$22k in gas incentives to Small Businesses

MA EV Programs

Phase 2 Program Approved

\$188 million approved on 12/30/22 – Four-year program from 2023-2026



Commercial Program

- Public, Workplace, Multi-Unit Dwellings
- Make Ready & EVSE Rebates

Residential Program

- Single Family Homes, 2-4 Unit Dwellings
- Make Ready & EVSE Rebates

Fleet Program

- Make Ready & EVSE Rebates
- Fleet Advisory Services

Other

- Medium/Heavy-Duty Public Fleets
- EJC Community Charging Hub

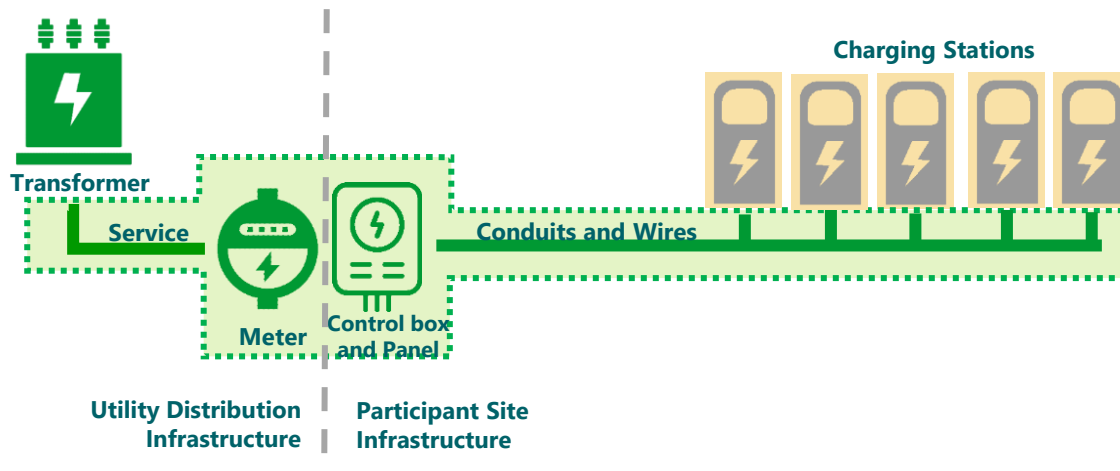
Ownership Model

Make Ready: Up to 100% total cost

- Infrastructure before the meter is owned by **Eversource**
- Infrastructure after the meter owned by **Customer**

EVSE: Rebates available

- **Customer** owns and maintains charging stations

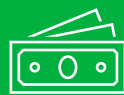


Residential Program



EV Charger Qualified Product List (QPL)

- Eligible Smart Chargers must be on this list to receive Smart Charger rebate



Eligible Costs

- Smart charger
- Wiring upgrade (labor, materials)



Required Documentation

- Receipts and invoices for purchase and installation
- Charger and EV make and model information



Managed Charging

- Participate in Managed Charging as condition for receiving rebates

Conclusion

Accommodate Load Growth, Prepare for Tomorrow

- Load growth continues to be widespread throughout Cambridge. With your continued partnership Eversource is prepared to respond to the growing demand.
- Major Transmission Projects are working to build a sustainable and reliable regional grid in the face of load growth.
- Energy Efficiency has multiple programs active and is focused on expanding presence in Cambridge through community, private and civil partnerships.
- Geothermal Pilot Program is a robust and evolving project, Eversource will continue to keep the City and elected officials in the loop as the Framingham program develops
- Eversource is committed to integrating clean energy technology into our business operations, and through major strategic initiatives across service territory



Community Relations

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