

PLANNING BOARD
FOR THE
CITY OF CAMBRIDGE

GENERAL HEARING
TUESDAY, JUNE 27, 2023
6:30 p.m.

Remote Meeting
Cambridge, Massachusetts

Catherine Preston Connolly, Vice Chair

Louis J. Bacci, Jr.

Steven A. Cohen

Hugh Russell

Ashley Tan

Community Development Staff
Iram Farooq, Assistant City Manager
Swaathi Joseph
Khalil Mogassabi



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P R O C E E D I N G S

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(6:37 p.m.)

Sitting Members: Catherine Preston Connolly, Louis J.

Bacci, Jr., Steven A. Cohen, and Hugh

Russell

CATHERINE PRESTON CONNOLLY: Hi. Good evening,
and welcome to the June 27, 2023 meeting of the Cambridge
Planning Board. My name is Catherine Preston Connolly, and
I am the Vice Chair acting as Chair this evening.

Pursuant to Chapter 2 of the Acts of 2023 adopted
by the Massachusetts General Court and approved by the
Governor, the City is authorized to use remote participation
at meetings of the Cambridge Planning Board.

All Board members, applicants, and members of the
public will state their names before speaking. All votes
will be taken by roll call.

Members of the public will be kept on mute until
it is time for public comment, and I'll give instructions
for public comment at that time. You can also find
instructions on the City's webpage for remote Planning Board
meetings.

1 This meeting is being video and audio recorded,
2 and is being streamed live on the City of Cambridge online
3 meeting portal and on cable television Channel 22, within
4 Cambridge. There will also be a transcript of the
5 proceedings.

6 I'll start by asking Staff to take Board member
7 attendance and verify that all members are audible.

8 SWAATHI JOSEPH: Thank you, Catherine. Good
9 evening, Planning Board members. We will start with the
10 roll call. Lou Bacci, are you present, and is the meeting
11 visible and audible to you?

12 LOUIS J. BACCI, JR.: Present, visible, and
13 audible.

14 SWAATHI JOSEPH: Thank you. H Theodore Cohen, are
15 you present, and is the meeting visible and audible to you?

16 [Pause]

17 Ted is absent.

18 SWAATHI JOSEPH: Steve Cohen, are you present, and
19 is the meeting visible and audible to you?

20 [Pause]

21 Steve is absent. Oh, sorry. Steve, I believe, is
22 in the process of joining, so maybe we'll come back to him.

1 I have a feeling he's trying, so hopefully he can give us an
2 audible check soon. But moving on, Hugh Russell, are you
3 present, and is the meeting visible and audible to you?

4 HUGH RUSSELL: Present, visible, and audible.

5 SWAATHI JOSEPH: Mary Flynn, are you present, and
6 is the meeting visible and audible to you?

7 [Pause]

8 Mary is absent.

9 SWAATHI JOSEPH: Catherine Preston Connolly, are
10 you present, and is the meeting visible and audible to you?

11 CATHERINE PRESTON CONNOLLY: Present, visible, and
12 audible.

13 SWAATHI JOSEPH: Steve, can you give us your roll
14 call?

15 STEVEN A. COHEN: Yes. Yes, present and audible.

16 SWAATHI JOSEPH: Thank you very much. So we have
17 five members present and three members absent, which
18 constitutes a quorum.

19 CATHERINE PRESTON CONNOLLY: All right. Thank you
20 so much.

21

22

* * * * *

(6:40 p.m.)

Sitting Members: Catherine Preston Connolly, Louis J.

Bacci, Jr., Steven A. Cohen, Hugh Russell,

and Ashley Tan

CATHERINE PRESTON CONNOLLY: All right. As usual, the first item on our agenda is an Update from the Community Development Department, which I believe this evening is being given by Iram Farooq.

Please introduce the Staff present at the meeting and begin.

IRAM FAROOQ: Thank you, Chair Connolly. Good evening. Iram Farooq, Assistant City Manager for Community Development Department. And from City Staff, I am joined by a smaller than normal representation from our Zoning and Development team, with Swaathi Joseph representing the team today. But we have a lot of other folks from the City.

So from CDD, we have Susanne Rasmussen, our Director of Environment and Transportation Planning. We have Khalil Mogassabi, our Deputy Director, Chief Planner; and from our Department of Public Works, we have the Chief Engineer, Jim Wilcox; and from the Water Department -- the

1 Cambridge Water Department, we have Mark Gallagher, who is
2 the Acting Managing Director of the Water Department. I
3 think that covers all of City Staff here.

4 And then just to go to upcoming items on the
5 Planning Board schedule -- well, actually, we have --
6 today's focus really is one of the Town Gown-like focus
7 projects or discussions, but the focus is on Utility Update.

8 And you might recall that this was begun last year
9 for the first time to put together all of the Utility
10 entities in response to some of the development in East
11 Cambridge, when there had been concern about a new
12 substation and electrical capacity.

13 And so, that has -- once that was resolved, the
14 Council thought it would be very beneficial to have an
15 annual update from all utilities, including both City
16 utilities and our other, the public utilities.

17 So we have DPW and Water Department here
18 representing the City-based utilities, and Eversource, and
19 Vicinity will be speaking to the additional energy.

20 All right, moving on, the next Planning Board
21 meeting will be July 18, so we have the next two Tuesdays we
22 do not have Planning Board meetings. It's going to be an

1 enjoyable summer fortnight for all.

2 And on July 18, we will have two General
3 Discussion items: 1627 Mass Ave, which is Design Review as
4 part of an Affordable Housing Overlay Project, and then 109
5 First Street, which is a PUD project, special permit
6 amendment. And we anticipate that's a Minor Amendment.

7 We are at this point anticipating that July 25 may
8 not be needed as a meeting and are in the process of
9 juggling the agendas and schedules for August meetings. So
10 at the next meeting, we will provide more concrete updates
11 on those upcoming meetings.

12 In other items at City Council, earlier today the
13 Council had -- the Ordinance Committee had their hearing on
14 the Cannabis zoning related amendments that the Planning
15 Board had made a positive recommendation on, and they have
16 forwarded those to the full Council, with a positive
17 recommendation.

18 And on July 19, the Ordinance Committee will have
19 a hearing on the Alewife Quadrangle Zoning Petition, which
20 the Board have also reviewed and made a favorable
21 recommendation on.

22 I do want to report just a couple other items from

1 last night's City Council meeting, which was the last
2 Council meeting before summer recess. And it was a big
3 agenda, and some significant actions. So want to note
4 those.

5 Two significant things that are perhaps somewhat
6 related to today's agenda are also very significant from a
7 climate perspective.

8 So the City Council adopted amendments to the
9 Building Energy Use Disclosure Ordinance, which has been in
10 place since 2015 and will now require emissions reductions
11 for all of the non-residential regulated buildings, and
12 essentially will create a path to Net Zero greenhouse gas
13 emissions -- I should say zero greenhouse gas emissions by
14 2035 for large construction that is 100,000 square feet and
15 larger. And for smaller buildings that are 25,000 to
16 100,000 it will be required -- the buildings will be
17 required to get to zero greenhouse gas emissions by 2050.

18 In this we're -- it was a long time coming, and
19 we're incredibly proud of the work that was done by our
20 climate team, but also, I think just a lot of consensus-
21 building with all the different stakeholders.

22 And I think it's really exciting that the Council

1 chose to adopt this last name. And it's -- it takes really
2 bold action on a climate front, and the City is also working
3 hard to think through how we can support particularly
4 smaller property owners as they transition because it's not
5 going to be easy, and this is -- applies to all existing
6 buildings.

7 And a second item on the climate front that the
8 Council discussed was a fossil fuel-free demonstration,
9 which was very recently authorized in legislation that the
10 State legislator adopted, and it enables 10 communities, of
11 which Cambridge is one, to proceed with a -- with zoning
12 that would essentially require new construction and
13 significant rehab -- or I should say major renovations to
14 not use fossil fuels and be all electric.

15 And so, the Council has taken the model Ordinance
16 language that the State has put forward and moved it to
17 second reading.

18 Our Climate team will be doing a significant
19 amount of outreach over the next six weeks or so in order to
20 work with folks to figure out whether there are any
21 particular challenges that need to be addressed, or through
22 the Ordinance. And we're also working on technical analysis

1 to support that.

2 And then we'll need to make at latest by September
3 1 a proposal to the Department of Energy at the State for
4 what our program will look like, and then it will require
5 their approval, and Council needs to act on that amendment.

6 So -- but there's a significant step there in
7 moving that to a second reading, and we have the summer to
8 come up with more specific details on that.

9 And I would say the final item I want to mention
10 is -- I'm sorry this is taking so long, but it's really
11 important and pertains to the Planning Board, which is that
12 the Council also voted on new appointments to the Planning
13 Board.

14 And they are -- this includes a new member, Mary
15 Lydecker, who is a landscape architect. Tom Sieniewicz is
16 being reappointed. And Ashley Tan will be advancing to a
17 full member status.

18 And there are two new Associate Members, whose
19 appointment was also approved last night by Council: Adam
20 Westbrook, who works in Community Engagement; and Diego
21 Macias, who is an architectural analyst, I believe.

22 And they -- so we are excited to have a slate of

1 new, new energy. Very accomplished folks who will be moving
2 onto the Board, and at the same time, incredibly chagrined,
3 because we will be losing two of our stalwart members, who
4 were rolling off after decades and multiple decades of
5 service. And that will be Hugh Russell and Steve Cohen.

6 And I have to say that even though you feel you
7 know something is coming, it's -- you almost don't believe
8 it until the formal vote happens at City Council. So I feel
9 like I am still processing this information, and I'm at a
10 little bit of a loss for words.

11 But the good news is that we do not have to say
12 goodbye to Steve and Hugh tonight, because they have both
13 very graciously agreed to stay on as Swaathi and Daniel and
14 others in Zoning and Development work on a transition plan.

15 So we will most certainly have them with us
16 through July and perhaps into August meetings as well. So
17 we will in the meantime keep everybody apprised of what that
18 timing looks like.

19 And with that, I appreciate everybody's patience,
20 as I have taken a long time on this update. But I will turn
21 it back to you, Chair. Thank you.

22 CATHERINE PRESTON CONNOLLY: Thank you. And,

1 yeah, clearly all important updates and I'm sure we will
2 have an occasion very soon to express our gratitude for both
3 Steve and Hugh's service in greater detail, and to welcome
4 our new Planning Board members as well.

* * * * *

(6:51 p.m.)

Sitting Members: Catherine Preston Connolly, Louis J.

Bacci, Jr., Steven A. Cohen, Hugh

Russell, and Ashley Tan

CATHERINE PRESTON CONNOLLY: With that, we can move on to the main item on the agenda this evening. So the next item on the agenda is a report on utility planning from the Cambridge Department of Public Works, the Cambridge Water Department, Eversource Gas and Electric Utility, and Vicinity Energy.

The Board will hear brief presentations from representatives of each utility followed by public comment, and after that the Board will have an opportunity to discuss.

We'll start with City Staff providing a brief background and overview of the process, and then have a presentation on the City's water and sewer infrastructure. Please introduce yourself and anyone else on the Staff team who will be speaking.

I believe Mr. Wilcox, that you were going to start us off with a summary of the process.

1 [Pause]

2 Are you muted?

3 JIM WILCOX: Yep, sorry about that.

4 CATHERINE PRESTON CONNOLLY: Okay.

5 JIM WILCOX: Just trying to share the screen here.

6 CATHERINE PRESTON CONNOLLY: Yep. We can see your
7 screen.

8 JIM WILCOX: Just trying to get it into slide
9 mode, slide show mode here. Here we go.

10 CATHERINE PRESTON CONNOLLY: Great.

11 Thank you.

12 JIM WILCOX: So, again, my name is Jim Wilcox. I
13 am the City Engineer at the Department of Public Works.
14 And with me tonight is Mark Gallagher, the Acting Managing
15 Director at the Cambridge Water Department.

16 So we are going to talk about utility
17 infrastructure that is maintained by the Department of
18 Public Works and the Water Department.

19 So I'll start with the Department of Public Works
20 first. So the Public Works Department maintains the sewer
21 and drainage system, and also the streets and sidewalks,
22 which there's a lot of coordination with utility projects

1 with restoration of the streets and sidewalks.

2 And Public Works also has irrigation systems at
3 most of our parks and open spaces that we also maintain.

4 One of the recent changes in the last year is the
5 Cambridge Electrical Department is now part of Public Works.
6 So the City Electrician is now working with his staff at
7 DPW. And the Electrical Division maintains the City's
8 street light system, fire alarm system, and communication
9 systems between City buildings and other facilities.

10 Moving electrical over to DPW has been a change.
11 We're able to provide some administrative and engineering
12 support to the Electrical Department and the City
13 Electrician, Mark Mello, is the primary point of contact
14 with Eversource Electric and the privacy communication
15 utility companies in Cambridge. So he's been at big help,
16 and with DPW in coordination our projects with the utility
17 companies.

18 So one of the plans that I'd like to talk first is
19 our five-year sidewalk and street reconstruction plan. This
20 is a plan that gets a lot of attention, because it lays out
21 where Public Works is going to reconstruct streets and
22 sidewalks over the next five years.

1 Work on this plan involves extensive coordination
2 with the utility companies, because we do give the utility
3 companies an opportunity to upgrade their infrastructure on
4 the locations where we're going to be working.

5 And there's also a lot of coordination with other
6 City plans, such as the Cycling Safety Ordinance,
7 transportation plans, and also the City's Vision Zero Plan.

8 So locations can move up and down on the schedule
9 and the plan, depending on different circumstances. So if
10 we have a street that's in out years and it's -- the
11 condition is deteriorating quicker than we expected, it
12 could move up. And other streets could get moved back in
13 the plan. But typically, streets that are in the two-year
14 window are pretty definite and going to be done in that
15 timeframe.

16 So the basis for design for street and sidewalk
17 program is our Complete Streets design, where we're looking
18 to make facilities that are safe and accessible for all
19 users -- so pedestrians, bicyclists, motorists, and people
20 using public transit of all ages and ability.

21 The biggest thing is to make this as safe for
22 everyone as possible. The City has a Vision Zero Plan that

1 calls for the elimination of fatalities and serious injuries
2 resulting from crashes, and that really drives how we go
3 about doing the design on these projects.

4 Another infrastructure plan that we have is a 10-
5 year-plan for the sewer and drain system. We have a 10-year
6 planning horizon on these projects, because they are
7 typically much larger and more complicated and more
8 expensive than street and sidewalk projects. They can also
9 be quite disruptive for residents and businesses, because we
10 do an awful lot of work on these projects, and we can be
11 months in particular neighborhoods doing these.

12 And because we are upgrading our sewer and
13 drainage systems as part of these projects, they often
14 require utility relocation by private utilities to make
15 space for sewer and drainage facilities.

16 So a 10-year plan really comes through a 25-year
17 investment in sewer and drainage system that was driven by
18 a couple of things; one, the City entered into a consent
19 order with the Massachusetts Ave Department of Environmental
20 Protection in 1996 to do improvements to the sewer system to
21 improve the water quality in the Charles River and the
22 Alewife Brook.

1 And the City of Cambridge is also a party in the
2 Boston Harbor Cleanup case, which created the MWRA system
3 and several years of separation work to improve the water
4 quality in the Boston Harbor as well.

5 So for our sewer separation program, what we're
6 trying to do is to take -- combine systems and separate
7 them, so a combined sewer system is a system of pipes in the
8 streets that collects sanitary waste from buildings during
9 dry weather. And during wet weather, the same pipe also
10 transports stormwater as well.

11 And that goes to the wastewater treatment plan.
12 The issue with combined sewer systems is typically there's
13 not enough capacity in those systems for large storm events.
14 So the City has seven combined sewer overflows that allow
15 for combined sewers to overflow into the Charles River and
16 Alewife Brook.

17 We have a permit from the Environmental Protection
18 Agency for these, and they're heavily regulated. And we
19 need to continually do work to reduce the number of combined
20 sewer overflows, and also the volume of those overflows.

21 So in order to the sewer separation, we typically
22 are installing separate stormwater pipes that carry

1 rainwater only, and can discharge directly into the water
2 bodies, and then dedicated sanitary sewer systems that do
3 not have rainwater and have the capacity to transport that
4 wastewater to the Deer Island treatment plant.

5 The City of Cambridge lies in two watersheds. So
6 about two-thirds of the city drains to the Charles River
7 Watershed, and the other three drains to the Alewife Brook,
8 which eventually goes into the Mystic River Watershed.

9 This map shows areas that are separated now as
10 part of the City's sewer separation projects, and also areas
11 that are still combined.

12 The areas that are still combined are probably the
13 most challenging areas, where we need to do separation work.
14 In order to do separation work, it typically involves
15 building new outfall pipes to the Charles River and Alewife
16 Brook, and the City does not really control any of the lands
17 along those water bodies. Most of that is controlled by
18 DCR.

19 So there's a lot of coordination in permitting,
20 when we do need to establish new outfalls to the water
21 bodies.

22 As part of the City's variance to discharge

1 combined overflows into the Charles River and Alewife Brook,
2 the EPA and Mass DEP have required the City of Cambridge,
3 the City of Somerville and MWRA to come up with a CSO
4 Control Plan, with the ultimate goal of eliminating combined
5 sewer overflows to these water bodies.

6 So this is a Planning and Design process that will
7 go on from starting last year through December of 2026. It
8 involves a series of community meetings, where the three
9 parties will be presenting information to the public and
10 soliciting feedback on our plans. And it will likely lead
11 to several construction projects locally in Cambridge and
12 Somerville, and also within MWRA's regional system that will
13 probably last several years into the future.

14 So one of the things that we're looking at as part
15 of all our projects in Cambridge is climate change planning.
16 But particular to the CSO Control Plan, DEPA and DEP have
17 required us to take into consideration climate change in the
18 CSO Control Plan.

19 And we have come up with rain flow predictions to
20 measure the performance of our future projects that do
21 incorporate climate change. Incorporating climate change in
22 the evaluation of performance of combined sewer overflow

1 plans is the first in the United States and it's being done
2 right here in Cambridge, Somerville, and the WRA system.

3 One of the other considerations to climate change
4 is alleviating flooding in various neighbors within the
5 city. So we do look to provide a level of protection from
6 flooding to the 2070 10-year storm event.

7 And this is a process with -- requiring private
8 developers to use that criteria when they're designing
9 stormwater management systems for their projects. But also,
10 the City is doing flood alleviation projects in public
11 spaces.

12 The City is currently doing two stormwater holding
13 tank projects for flood alleviation that are in various
14 stages of planning and construction -- one in The Port
15 Neighborhood and one on the property at the Tobin School,
16 that will provide flood relief for that part of the city.

17 The City also has a FloodViewer, where we have
18 taken a look at Planning for future flood events in the
19 city. It is a citywide GIS-based map that is available to
20 the public, and you can take a look at the different flood
21 elevations for different future storm events for every
22 property in the city. And this is an important tool that

1 uses for the design and planning of development projects.

2 DPW reviews about 300 building permit projects
3 during the typical year, and one of the things that we do
4 take a close look at is providing resiliency for flooding as
5 part of those projects.

6 So to address future storms, stormwater is needed
7 on both city property and private property. So this is done
8 through stormwater holding tanks or detention systems, both
9 on private property and city parks, city right of ways and
10 other locations. And we just have a quick table here of the
11 number of projects that have been done over the past several
12 years.

13 In addition, in areas where we have sewer capacity
14 issues, we do require sewer holding tanks to protect
15 properties from sewer backups as well.

16 Another part of the City's climate change planning
17 is looking at the Urban Heat Index throughout the city and
18 putting plans in place to address that. That's done a few
19 different ways, but the biggest way is trying to limit tree
20 canopy loss and increase canopy wherever possible.

21 So a couple of things we used: As I mentioned,
22 street trees, incorporating sprinkler parks as part of our

1 open space and park projects.

2 And also, we are starting to implement cool
3 asphalt technologies. So this picture here on the right is
4 a photo of the City's Springfield Street parking lot, where
5 we did a coating on the asphalt within the parking lot as
6 part of the Inman Square Project. And we have been
7 monitoring that, and it has provided some cooling of the
8 surface within that parking lot.

9 Again, we talked about the street canopy and
10 trying to maximize that to the extent possible. So the City
11 over the past several years has been implementing an Urban
12 Forestry Master Plan to provide more trees, and to provide a
13 better environment for trees to grow in. So we are taking a
14 much closer look at the type of soils that we are using for
15 planting trees, so that they have a better chance of
16 surviving.

17 And we just also implemented a pretty aggressive
18 watering program, also, to ensure that street trees are
19 surviving once they're planted.

20 And you can see here on the photos that once you
21 get to a 60 percent street canopy on a particular street, it
22 could have a cooling effect of up to 10 degrees.

1 Another project that we completed just last week
2 is we are starting to install sail shade structures over
3 playgrounds. So these do provide a cooling effect for
4 playground, so the playground equipment doesn't get too hot
5 for the children to use. But these also provide protection
6 from UV rays as well.

7 Another area that we're looking at as part of
8 Resiliency planning in Cambridge is also coasting flooding
9 beyond Cambridge's borders, where that flooding would affect
10 Cambridge.

11 And this map shows potential flooding due to sea-
12 level rise and storm surge, where the -- the Charles River
13 Dam and the Mystic River Dam would be overtopped or flanked
14 during future storm events. So we are looking at some
15 project interventions to help with sea-level rise and storm
16 surge.

17 So the City is currently partnering with the Town
18 of Arlington on a FEMA grant to further study these
19 interventions that would be done at the Mystic River Dam and
20 the Charles River Dam. It involves raising dam heights,
21 providing additional pumping capacity at the dams, and also
22 building flood barriers at several locations on public and

1 private property to prevent these dams from being overtopped
2 and flanked during large storms in the future.

3 Another new utility project that DPW is partnering
4 with the Community Development Department is Electric
5 Vehicle Charging.

6 So this is a program that's just getting started,
7 and we have been putting stations in -- throughout the City.
8 There's more information on the Community Development
9 website about the program and how you can submit a request
10 for charging locations. These are being primarily done
11 adjacent to city buildings and city parks where we have
12 electrical infrastructure to connect these charging stations
13 to.

14 And the City has a goal of establishing 100 of
15 these electric vehicle charging stations by June of 2027.
16 We will be bidding projects this year for the installation
17 of these stations.

18 And also, as part of Electric Vehicle Charging,
19 Public Works will be implementing a pilot permitting program
20 for residents to run charging cords over the city sidewalk,
21 where residents don't have a nearby charging station and
22 don't have a driveway where they could pull their vehicle

1 into and charge it.

2 So there will be several requirements to make sure
3 that these cords are safe and provide accessible access to
4 city sidewalks. And this is something that we will be
5 rolling out over the next few weeks.

6 That concludes the DPW portion of the
7 presentation. Again, always looking at resiliency on all of
8 our projects, and also to make projects safe and accessible
9 for all users.

10 So I'll turn it over to Mark Gallagher for the
11 Water presentation.

12 MARK GALLAGHER: Okay, thanks, Jim. Could you
13 advance the slides for me?

14 JIM WILCOX: I sure will.

15 MARK GALLAGHER: Next slide. So the Water
16 Department is made up of primarily three divisions, which is
17 the supply or watershed, which is made up of three
18 reservoirs.

19 Two of them what we call our "up country
20 reservoirs" are up in the towns of Lexington, Lincoln,
21 Weston and Waltham.

22 And then there's treatment and storage, which

1 meets the demand of -- you know, the water demands of the
2 city.

3 And then finally transmission and distribution,
4 which carries the water to each individual user.

5 Next slide?

6 So our supply. Our Watershed is made up of three
7 reservoirs -- the Hobbs Brook Lower Reservoir, and the
8 Stonybrook Reservoir, which run right along Route 95.

9 Again, along -- between Lincoln and Waltham.

10 Then that water is carried to Fresh Pond by the
11 Stonybrook conduit, which is the last reservoir in the
12 system.

13 And from there, we bring it into the treatment
14 plant, clean the water, and then that water is pumped up to
15 our storage tanks in Belmont at Payson Park. From there,
16 the water is then fed to the city by gravity out to the
17 distribution system.

18 The next slide?

19 So our distribution -- transmission and
20 distribution systems are approximately 210 miles of pipes,
21 ranging as small as 4" all the way up to 63". Our 24 miles
22 of transmission lanes are the large-diameter pipes that

1 carry the water from one location to the next [to feed] the
2 distribution system. Here you see a picture of the
3 transmission -- our 40" transmission main along Huron Ave.
4 This was 1904. That transmission main is still in service
5 today.

6 And amazingly, it still holds water really well.
7 That transmission main, you know, goes down to Cambridge
8 Common, where then it opens up into the distribution
9 network; It provides water to the rest of the city.

10 You know, pipes in the distribution system range
11 from the oldest water main we have right now that's
12 currently active was installed in 1864 on Inman Street. So,
13 you know, that water main was installed during the Civil
14 War, yet it still provides water every day.

15 Next slide, please?

16 Our transmission and distribution system,
17 obviously, is important to meet the demands of the city over
18 the years. This year is our historical average date demand.
19 Through water conservation efforts, doing -- now we do
20 annual leak detection looking for leaks underground that do
21 automatically show and using -- you know, getting out the
22 word about conservation and technological advances in, you

1 know, water-saving appliances in toilets and, you know,
2 showerheads and things like that.

3 Even though the population of the city of
4 Cambridge has continued to increase, our average daily
5 demand has continued to decrease.

6 This chart shows from 1981 to current numbers for
7 2022 and into 2023. And as you can see that line is we're
8 still technically trending down. Eventually, we will -- you
9 know, we will bottom out there. But currently right now
10 we're still on the low -- on a declining trend.

11 The blue line that you see up there is our
12 registered withdrawal limit, which is 16.16 million gallons
13 a day. And that's what we allow to withdraw per our
14 registration. And, you know, as you can see, we're -- we
15 used to be well above that back in the early '80s and
16 currently we're well below that limit.

17 Next slide, please?

18 So part of our conservation efforts, you know, to
19 reduce water loss: In 1992 we conducted an assessment of the
20 distribution system, you know, to identify areas where the
21 system needed repair or replacement, preventative
22 maintenance.

1 And, you know, we determined that 75 percent of
2 most of the leaks were found on our old 6" unlined cast iron
3 mains. So we put together a priority list of replacing
4 those mains broken down into three components.

5 And now we work closely with the DPW and other
6 utility companies whenever there is work going on for street
7 restoration and storm -- the separation work. We make sure
8 that if there's old water mains there, that we get those
9 upgraded at the same time that the other utility work is
10 going on.

11 And we've been able to reduce our annual leaks
12 from -- you know, over 120 per year back in the late '90s to
13 now on average about 45 leaks per year.

14 Next slide, please?

15 This is our list of current streets that we are
16 working on.

17 Back in 2022, we only replaced 2,400 feet of water
18 main because due to supply chain issues we were not able to
19 get any pipe -- no one, you know, private developers nor the
20 City were able to get a lot of pipe, so there wasn't a lot
21 of work done.

22 As you can see this year, supply chain issues have

1 been somewhat alleviated. It's not 100 percent, but you can
2 see we're on track to replace about two and a half miles of
3 water main.

4 The streets there in yellow are currently being
5 replaced across the city. And we hope to meet that goal and
6 to continue to upgrade the water mains across the city.

7 Next slide, please?

8 We also tried to do -- now we try to be proactive
9 in doing, as I said, leak detection surveys. We used to do
10 them infrequently, then it was every two years, now we do it
11 every year to help us prevent the water loss, and also to
12 minimize cost and disruption, you know, for unplanned water
13 main repairs.

14 One of the things, the large transmission mains
15 that you see here is where, actually, you insert the device
16 into the pipe, and it flows with the water and listens for
17 leaks from the inside, from small leaks that you can't see,
18 don't show.

19 So you wouldn't know they were there unless you do
20 things like that to prevent, you know, large water main
21 breaks, but as you see there, that was a few years ago.
22 Christmas Eve, we had a large water main break, so we're

1 trying to, you know, prevent situations like that. You
2 know, trying to be proactive versus reactive is always more
3 cost-effective.

4 Next slide, please?

5 We also -- every 10 years or so we dig up sections
6 of the transmission mains to check our cathodic protection.
7 Cathodic protection prevents -- helps prevent corrosion of
8 the water mains due to straight current across the soils.

9 And what we've been finding is that -- and has
10 been working really well, and we've seen very little
11 corrosion on these old transmission mains that were
12 installed in the late 1800s. The wall thickness is still
13 pretty good. There have been a few small areas that needed
14 replacement. But other than that, they're still pretty well
15 intact.

16 Next slide, please?

17 And obviously one of the things we also, you know,
18 look at continuously is the water quality. As a lot of you
19 may have heard, you know, this year we -- there was a new
20 regulatory compliance pass, or PFAS. And we were close to
21 that -- to that limit.

22 We replaced all of the granular activated carbon

1 in all of our filters, the six filters. So there's the six
2 filters in the plant, which allowed us to reduce PFAS levels
3 from, you know, around 20 parts per trillion down to
4 basically a non-detect level, starting in fall of last year
5 to present. And that's something we are going to continue
6 to monitor.

7 And we've just purchased lab equipment that will
8 allow us to do in-house testing for PFAS, which will allow
9 us to even monitor that more closely and adjust our
10 treatment process, just to make sure that those levels stay
11 at -- basically at non-detect. And that's basically my
12 presentation.

13 Thank you.

14 CATHERINE PRESTON CONNOLLY: Great. Thank you so
15 much. At this time, we can take some -- any clarifying
16 questions Board members have. We'll have time for more
17 comments and questions later if Board members have them
18 after hearing other presentations.

19 But if there are other points Board members would
20 like clarification on at this time from either of the
21 presenters, we can take those.

22 Oh, Swaathi, did you have something to add?

1 SWAATHI JOSEPH: Catherine, I apologize for
2 interrupting the flow of the meeting. I realize that I did
3 not call out Ashley's name for the roll call. So I counted
4 her as one among the five members present. So for
5 procedural compliance with your permission, may I take a
6 roll call?

7 CATHERINE PRESTON CONNOLLY: Please do.

8 SWAATHI JOSEPH: Thank you. Ashley Tan, are you
9 present, and is the meeting visible and audible to you?

10 ASHLEY TAN: Present, visible and audible.

11 SWAATHI JOSEPH: Thank you, Ashley. Thank you,
12 Catherine.

13 CATHERINE PRESTON CONNOLLY: Of course. Thank
14 you, Swaathi. All right. So one last call for any
15 clarifying questions. Hugh?

16 HUGH RUSSELL: Well, the work being done by the
17 Water Department and the Public Works is very wide in scope
18 and great importance.

19 And I have a sort of minor question. But the
20 Electric Vehicle Station Program was -- seemed to be
21 programming 100 stations. I was wondering what the
22 projected demand is. At some point, I believe we're not

1 going to be able to buy fossil fuel cars. So I was just
2 curious about that?

3 JIM WILCOX: Yeah. That's a good question, Hugh.
4 So as part of the program, these electric vehicle charging
5 stations have data on use that's accessible to the city. So
6 we're able to download how often they're used.

7 It even provides a level of data when the car is
8 fully charged and when it's plugged in beyond needing a
9 charge. So that is part of the program is to evaluate that
10 data and look at locations where we potentially may need
11 additional charging stations, due to demand.

12 CATHERINE PRESTON CONNOLLY: Okay. Thank you for
13 that. Ashley?

14 ASHLEY TAN: Also had a question on the EV
15 charging. And Jim, thank you, my bad, I missed it, but you
16 said there was something coming up in the next few weeks?
17 What was that, like a study, a report, or --

18 JIM WILCOX: Yeah. So the Public Works is rolling
19 out a pilot permitting program that will allow residents to
20 charge vehicles that are parked along the curb. And it will
21 allow them to run a cord from their building across the city
22 sidewalk and then plug it into their car.

1 So we'll have some pretty strict regulations to
2 make sure that those cords are placed safely. They'll have
3 a cord ramp that's required, so people that are walking,
4 pushing a stroller, using a wheelchair or walker are able to
5 safely pass over those cords.

6 But that's something that we'll be rolling out in
7 the next few weeks. And we have had some interest in this
8 program, so that's why we're doing it.

9 ASHLEY TAN: Thank you.

10 CATHERINE PRESTON CONNOLLY: Susanne, did you want
11 to add something on that question?

12 SUSANNE RASMUSSEN: I did, if I may.

13 CATHERINE PRESTON CONNOLLY: Yeah.

14 SUSANNE RASMUSSEN: So in addition to what Jim has
15 just covered, and it is true -- like, we're monitoring the
16 utilization of the stations we have out, and those are
17 primarily intended to serve people that don't have access to
18 off-street parking themselves, which is a lot of the renters
19 in Cambridge.

20 We look every six months at utilization rates, and
21 we're still well ahead in terms of the amount of time
22 available for charging in the stations. We have located

1 spread across the city, both in city parking lots and -- as
2 Jim noted -- primarily in resident parking permit zones near
3 parks.

4 But in addition to this expansion of 100 stations
5 over a five-year period, which are all Level 2, which means
6 it takes several hours to reach full charge, we're also
7 looking at and working with Eversource on hopefully
8 identifying in several locations in the city where we could
9 in fast charge stations.

10 And those are the type of stations where you can
11 reach full charge in 20 to 30 minutes. So one of those
12 stations will be able to serve a much higher number of
13 vehicles in the future.

14 So it's a combination of expanding the Level 2
15 charging system, as Jim noted, letting people who don't run
16 charging cords across the sidewalk, and then a future number
17 of Level 3 stations.

18 Thank you.

19 CATHERINE PRESTON CONNOLLY: Great. Thanks for
20 that additional detail. Steve, did you have a clarifying
21 question?

22 STEVEN A. COHEN: I was just curious. At one

1 point, in a few years down the road, everybody is going to
2 have electric cars. And when that comes -- it may be five
3 years, it may be 10 years -- I'm just wondering if there
4 will be any capacity issues for everybody to have access to
5 electricity.

6 JIM WILCOX: Susanne, you want to take that one?

7 SUSANNE RASMUSSEN: Sure. So I know the
8 Eversource team is going to be discussing how EV charging
9 plays into their forecasting about the need for electricity
10 capacity in the city but I would just add that the time
11 period where the state has indicated that if California
12 moves ahead, we're also going to be move ahead with banning
13 the sale of new cars.

14 The new fossil fuel cars, or "ICE vehicles" as
15 they're called -- is in 2025. So it's 12 years from now.
16 And of course, that doesn't mandate people who own already
17 an ICE vehicle to sell it at the time. So it's -- it will
18 be a new vehicle. So there's going to be a period of time
19 when new vehicles will have to be electric, but people may
20 still keep the cars that they already have. So it's blended
21 time period.

22 And it is -- the forecasting that Eversource does

1 takes into consideration expectations about the amount of
2 vehicle charging and the time of day for vehicle charging.
3 So I believe you'll see that actually as soon as the
4 Eversource team gets going on their presentation.

5 STEVEN A. COHEN: So basically, when everybody has
6 electric cars, every car is electric, there are plans and
7 capacity to have enough electricity to provide for all of
8 those cars?

9 SUSANNE RASMUSSEN: Yes. That is what Eversource
10 has built into their forecast planning for how much electric
11 capacity is needed in the future.

12 STEVEN A. COHEN: Thanks.

13 CATHERINE PRESTON CONNOLLY: That provides an
14 excellent transition, since Steve is the last Board member
15 with a clarifying question to our next thing presenter, who
16 will be Jason Wright from Eversource.

17 Mr. Wright, please start by introducing yourself
18 and anyone else on your team who will be speaking tonight.

19 JASON WRIGHT: Yes. Hello, Chair, members of the
20 Board. I just want to start off by saying thank you for
21 having us this evening. On behalf of the entire Eversource
22 team, I would also like to thank the City of Cambridge

1 leadership as well as their personnel for their continued
2 partnership. That's paramount for us in allowing us to
3 continue the delivery of safe, reliable and clean energy to
4 all of Cambridge's residents.

5 If I'm, I know we have quite a few -- just in the
6 -- in the interest of time, we have quite a few members here
7 from Eversource. If you'll allow me to, I can introduce
8 them shortly before they speak on their respective slides.

9 CATHERINE PRESTON CONNOLLY: That would be fine.

10 JASON WRIGHT: Fantastic. Thank you so much. Just
11 let me share my screen. Great. Can we see that?

12 CATHERINE PRESTON CONNOLLY: Yes, we can.

13 JASON WRIGHT: Very good. Thank you so much.
14 Okay. So real quickly, I just want to present a quick
15 agenda for us today. We will be reviewing or doing a quick
16 update on the Sustainability Report, discuss load growth and
17 forecasting review not only on the electric side, but also
18 natural gas.

19 We'll provide a quick update on geothermal, system
20 planning, transmission, the Greater Cambridge Energy GCEP,
21 electric operations, energy efficiency, and we'll end with
22 an overview on electric vehicles.

1 So the 2022 Sustainability Report, it's actually
2 due to be coming out within the next week or two. I just
3 wanted to cover that quickly to let you know that the report
4 itself, as well as the Diversity, Equity and Inclusion
5 Report and updated Climate Adaption and Mitigation Plan will
6 also be provided.

7 As I said that report is forthcoming, and I am
8 happy to forward that to the Board members once it is made
9 public within the next week or two.

10 Specific or of great importance to Eversource is
11 our -- is reducing our greenhouse gas footprint. Eversource
12 has adopted an industry-leading goal to achieve carbon-
13 neutrality in our operations by 2030.

14 Again, a quick overview of that reduction from
15 2018 to 2021 shows, as you can see in the graph, a 13
16 percent reduction. A lot -- the report itself goes into a
17 lot more specifics, but nonetheless I thought it best to
18 provide a high-level overview to that account.

19 So you may ask how we're advantage towards this.
20 Several ways, as you can imagine. We're in the process of
21 adding electric and hybrid vehicles to our fleet.

22 We're also in the process of upgrading HVAC

1 equipment, as well as lighting for our area distribution
2 centers addressing line loss through enhancing system
3 efficiency for both transmission as well as distribution
4 lines.

5 We're also in the process of another version of
6 GCEP, or a gas version of GCEP -- excuse me, where we
7 replace aging steel pipes to reduce methane leaks -- we'll
8 touch on that a little bit more later -- as well as adopting
9 innovative solutions to replace potent greenhouse gases.

10 I'll turn it over to Sophia Zhang to discuss --
11 from Advanced Forecasting. She's going to give us a high-
12 level overview of load forecast in Cambridge over the next
13 -- I believe -- 10 years.

14 Sophia, can you --

15 SOPHIA ZHANG: Yes. Thank you, Jason.

16 JASON WRIGHT: Yep. Thank you.

17 SOPHIA ZHANG: So for Eversource we have just
18 issued our electric peak demand for the City of Cambridge in
19 March 2023. The graph shows a 10-year projection that
20 captures economic growth, energy efficiency, solar, EV and
21 large customer additions.

22 So large customer projects are still the primary

1 driver of electric growth. We've seen climate increase in
2 the 10-year forecast from last year to this year due to new
3 business development.

4 We've also seen delays on new developments, which
5 has pushed the sharp (phonetic) load rise back a year or two
6 if you're seeing on the graph from 2026 to about 2028.

7 So this forecast includes electric vehicles, but
8 it is not yet adjusted for the updated view, the Building
9 Energy Use Disclosure Ordinance.

10 Next slide, please?

11 So I'm just showing a couple of graphs to give
12 people a sense of what a potential EV arrival and charging
13 profile would look like coming into the city.

14 These are some of the same slides that we
15 presented to the City Council prior, and it looks at vehicle
16 charging and terminating based on current traffic trends.
17 So not actual EVs yet, but the projected trends if all of
18 our ICE vehicles were converted to electric vehicles.

19 Next slide, please?

20 And then similarly, we also have done a heating
21 electrification assessment looking at what it would take to
22 heat existing buildings and heatable square footage from gas

1 instead to direct electric heat or air source heat pumps or
2 the even more efficient ground source heating.

3 So as of now, only considering large buildings,
4 which is what the BEUDO specifically looks at. We're
5 looking at about 1.4 GW for large buildings over 25,000
6 square feet, going to, like, direct demand.

7 And as you go to Eversource heat pump, it
8 increases to about 684 MW, and going further to a more
9 efficient ground-source heat pump scenario, that would be
10 342 MW electric peak load. So it varies a bit depending on
11 the technology. And I'll show you in the next slide what
12 that capacity would look like in terms of infrastructure.

13 So Jason, if you can go to the next slide.

14 So in this slide, we're showing what the projected
15 distribution infrastructure need would look like that --
16 this does not include transmission at the moment, on the far
17 left.

18 So the first bar is what the Cambridge system
19 would look like in 2030 with all of the current forecasted
20 trends, having a summer peak and following the Massachusetts
21 2050 decarbonization timeline.

22 So as you can see, the bottom dotted line is the

1 current bulk capacity excluding the new East Cambridge
2 substation.

3 And then the top dotted line is what the 2030 bulk
4 capacity would be if we were to include the new 8025
5 substation East Cambridge. So you're looking at increasing
6 that capacity by almost 200 MW.

7 What that would mean is the expected peak of 2030
8 vehicle 585 MW would just be over the bulk capacity,
9 excluding the station but we will still have spare room for
10 new load if we were including the new station.

11 And then to the right of that in the second bar is
12 where we're expecting a hybrid scenario. So if a proportion
13 of the gas load was to be displaced by nonelectric
14 alternative clean solutions, so that would be ground source
15 to heat pumps so geothermal heating, residual gas, hydrogen.
16 So not entirely electric load.

17 The rest of the load made up in the blue color
18 would be coming from Eversource heat pumps or direct
19 electric heating. And that is anticipated to be about 855
20 MW. So that would actually exceed the bulk capacity in
21 2030, if we were going to go that route.

22 And the last bar is if there are no alternative

1 nonelectric clean solutions employed, if we're going to go
2 fully electrified using air source heat pumps, what that
3 load will look like. So that would be about 1200 MW if we
4 wanted to heat all of Cambridge using the air source heat
5 pumps.

6 So as you can see here, there is some leverage on
7 the total peak when electrifying, and it highly depends on
8 the kind of policies that are enacted.

9 And I will pass it back to Jason to look at the
10 overview of natural gas in Cambridge, which would really
11 play into a huge part of the gas-to-electricity conversion.
12 Thank you.

13 JASON WRIGHT: Thank you, Sophia. Appreciate
14 that. All right. Up next, I'm going to turn it over to
15 Rich Dellisola. He's our gas -- from Gas Fields Operations.
16 He's going to give us an overview of -- or on natural gas,
17 as well as GCEP.

18 Rich?

19 RICH DELLISOLA: Good evening, everybody. Rich
20 Dellisola, for those who don't know me; [UNCLEAR] supervisor
21 in Massachusetts, and 99.9 percent in the Cambridge and
22 Somerville area. [UNCLEAR] Natural gas. Again, a top

1 priority is safety of the communities that we serve, our
2 customers, and our employees.

3 So my territory for Cambridge and Somerville alone
4 maintains over 250 miles of natural gas distribution mains
5 and provides reliable service to 55,000 customers. And we
6 all know that number's climbing as we speak. Besides
7 replacing pipe loads (phonetic), monitoring our gas systems
8 to provide customer safety -- to safely and reliably deliver
9 natural gas to our customers.

10 Vintage pipes with cast iron and steel are being
11 replaced with state-of-the-art materials with the plastic to
12 reduce leaks, improve capacity to extend life of the system.
13 We have a lot of cast iron in the ground to [UNCLEAR] all
14 other areas. As you may know, at the Huron Ave, Concord Ave
15 area, that 95 percent plastic through the years that's been
16 replaced. And we're just going through the whole city to
17 continue our work.

18 Next slide, please? Nothing there. I'm going to
19 slide over where the -- okay.

20 So you can see in 2023 we replaced just -- almost
21 15,000 feet of pipe. In 2024, we're looking to do 22,000
22 feet of pipe, and the GCEP again for 2025 is 24,000 feet.

1 So we are increasing cast iron plates and steel. 80 percent
2 of it is cast iron we're replacing.

3 We have roughly about 13 or 14 [UNCLEAR] crews,
4 which is our contractor, and two or three Neuco crews, which
5 is our contractor also. So that -- that's between Cambridge
6 and Somerville, where we have -- lower Cambridge and
7 Somerville. So there are a lot of main replacements in the
8 ground that we're doing as we speak.

9 And it's nonstop. And I know years ago we always
10 took a break during the winter, and I appreciate Jim
11 Wilcox's team for allowing us to continue during the winter
12 where the conditions, you know, does make a difference on
13 how long we're working through the winter, and how many days
14 we actually have off.

15 Last winter, we had a good winter. Not much snow
16 and not much cold, so we got a lot done last winter, but
17 we're going to continue to do the work and do it safely.

18 Next slide?

19 The next slide is probably -- I'm doing it on the
20 phone and the computer.

21 All right. The next slide, if you guys have been
22 around, picture on your left: I've been doing this about 40

1 years and that is a Third Street Station. Over \$50 million-
2 dollar project. That's state-of-the-art. That went on for
3 a couple of years now. I was in charge of that job.

4 And I'll tell you between the City, Eversource,
5 and the contractors, for the system that's out there,
6 there's five or six different pressures out there. You've
7 got the 433 line with the 400 pounds of gas, which is
8 incredible. 90, 60 and more pressure. A lot of lines to
9 replace and a lot of great effort by everybody out there.

10 Brookford Street, that's off of Mass Ave, that's
11 another station we did a lot of work on. The picture on
12 your right, I think that's down off of Concord Ave. That's
13 one of our regulator pits that was just done over.

14 So it's just showing we are improving. I mean,
15 granted you may not see that happening, but the Third
16 Street, and then Brookford Street, and the regulator pits
17 are being replaced when needed, there's a lot of work going
18 on that people don't see, but we are trying to get the work
19 done and do it safely, and supply the customers as needed.

20 That's it, I guess, Jason. And --

21 JASON WRIGHT: Yep. Thank you, Rich.

22 RICH DELLISOLA: Anybody have any questions on

1 anything I've gone over that you may have questions on?

2 CATHERINE PRESTON CONNOLLY: We'll probably take
3 questions at the end of the whole Eversource presentation
4 just for clarifying questions before we have public comment.

5 RICH DELLISOLA: Absolutely. Thank you.

6 JASON WRIGHT: Thank you, Rich. All right. Up
7 next, we are very excited to have recently broken ground on
8 our geothermal project. I will turn it over to Clare Kirk
9 to provide a brief update.

10 CLARE KIRK: Thank you. And on this slide, you'll
11 see Eversource's pilot, which is exploring is a network
12 geothermal system can be used instead of or in combination
13 with traditional energy sources like gas, air source heat
14 pumps -- which we've heard about -- or delivered fuels such
15 a heating oil or propane.

16 And it's focused on serving a diverse group of
17 customers from single and multi-residential, as well as
18 commercial within a dense neighborhood and downtown
19 Framingham.

20 How does it work? A lot of you on this call
21 probably are aware of some geothermal that's going on in
22 Cambridge or other parts of the state. But this particular

1 one is a -- it's a network geothermal provided by the
2 utility. But the science is the same.

3 It's the same as what's been used for decades. It
4 uses the Earth as heat source during the winter and as a
5 place to get rid of our unwanted indoor heat during the
6 summer through circulating fluid and bird (phonetic) pipe
7 network known as a "ground loop," sometimes called "the
8 ambient loop" which carries the heat and exchanges it
9 between buildings and the ground.

10 So the diagram isn't the actual Framingham one,
11 it's just a typical illustrative geothermal network. You
12 know, it shows some high-rise buildings. It shows like a
13 public building there and the in-ground loops.

14 What's not shown is there would be a bore field
15 somewhere, which would be the source of most of the heat
16 exchange between using the ground, the earth's heat and
17 bringing it to the homes.

18 Next, please?

19 So this slide shows you just an update of where we
20 are today. CDM Smith is our designer. They're pretty much
21 finished with the design, which is great news. R.H. White's
22 selected as the general contractor. They've done a lot of

1 work with us on the gas side. So, which a lot of the ground
2 loop will be similar to.

3 Mobilization is in process, and we did start
4 excavation on one of the streets. And this also requires a
5 lot of work with our other departments -- you know, Gas and
6 Electric.

7 Everyone should -- who's interested -- can use
8 this link to go to our website. It's updated almost daily.
9 There's an excellent team that keeps -- especially this
10 month there's been everything from a groundbreaking to
11 visitors from out of state.

12 So this link that's shown has a lot of information
13 for you. And these little diagrams over to the right are
14 just quick illustrations of how the cooling mode or the
15 heating mode works, depending whether it's summer or winter.
16 And these are ground source heat pumps, GSHP.

17 That's pretty much it.

18 JASON WRIGHT: Great. Thank you, Clare.

19 CLARE KIRK: You're welcome. Thank you.

20 JASON WRIGHT: This is just a quick slide that I
21 can talk through. Gives you an idea or an overview of load
22 density specific to residential streets, city buildings,

1 large skyscrapers, as well as dense city blocks. You'll see
2 the rating underneath. Again, more of just an FYI to put
3 some of these numbers into perspective that we'll be running
4 or discussing shortly.

5 With that, I want to turn it over to Juan and I
6 believe Hamza to talk us through our system planning.

7 JUAN MARTINEZ: I'll be covering it. Thank you.
8 Thank you, Jason.

9 JASON WRIGHT: Thank you.

10 JUAN MARTINEZ: That's correct. So in the next
11 few slides, you'll be seeing the term "MVA." And, you know,
12 please use the previous slide to kind of reference and give
13 you an idea of what it means, okay?

14 This slide here covers the interim and long-term
15 electric system plans for the -- for supplying the electric
16 demand in the City of Cambridge. If you look on the top
17 figure on the right, that's the interim solution. And then
18 on the bottom you'll see the long-term solution.

19 Both the interim and the -- both interim solutions
20 actually that you see on the top right rely on balancing
21 load between substations, you know, by moving load basically
22 from East Cambridge to neighboring Putnam or Somerville

1 Stations -- that's what the interim solution relies upon.

2 We're able to transfer load to -- so that will be
3 in 2020 to 2023. So that's part of the interim solution.
4 Part of that was installing the transformer at Putnam, so
5 that allowed us an interim solution of basically
6 transforming load to Putnam from East Cambridge. That's
7 shown on the top right. And that solution at the substation
8 capacity level holds us until 2023.

9 A second interim solution was -- required
10 installation of a third transformer at Somerville, which we
11 planned due to load growth in the Union Square and Boynton
12 Yards area.

13 So on the top right, you see that interim solution
14 where we tried to balance the substation loads by
15 transferring loads from East Cambridge to Somerville.

16 Unfortunately, that interim solution is delayed
17 currently. We were expected to have it in service last
18 year. Now it's currently delayed to the 2024, 2025
19 timeframe. So we are currently developing mitigation
20 solutions for East Cambridge Substation for years 2024 and,
21 you know, 2025 timeframe.

22 Both interim solutions require continued

1 distribution street work all the way from 2023 to 2027. So
2 we did the substation work, but obviously to get that
3 capacity to the streets, we will continue to do distribution
4 street work from 2023 to 2027.

5 I want to highlight that in -- as per the 2023
6 forecast, this is new. In 2023 Alewife, which is not shown
7 here, but is the station all the way to the west, that also
8 we've seen significant growth, and that's expected now to be
9 overloaded by 2025.

10 So we are also developing mitigation solutions for
11 Alewife substation until the greater Cambridge project is in
12 service, because that will allow us to basically offload
13 every single substation in the area. So that's shown on the
14 bottom.

15 2020-- the plan, the long-term plan for 2028 and
16 beyond is basically the 8025 Greater Cambridge project.
17 It's about three 90 MVA transformers expandable to four.
18 And this should provide long-term capacity for the area by
19 allowing us to basically deload all the stations into a
20 brand new station.

21 I think next slide, I think? Yep. That's about
22 it.

1 JASON WRIGHT: Great.

2 JUAN MARTINEZ: Thank you.

3 JASON WRIGHT: Thank you. Next up is Todd from
4 Project Services, who's going to give us an update on
5 transmission.

6 TODD LANHAM: Good evening and yes, Todd Lanham
7 here with Project Services. Juan did a good job of
8 explaining a lot of distribution work and activity that's
9 going on. I'm going to talk about the transmission system
10 and what we have going on in the transmission system.

11 So recently on June 12, we did our Putnam -- a
12 biannual Putnam Sound Study. Weve done six of these
13 readings, or five of these readings before this last one.

14 But the one that was done on the twelfth showed
15 consistent compliance with the Cambridge Noise Ordinance,
16 and that was in reference to what Juan mentioned, which was
17 the additional transformer there at the Putnam Station.

18 Then on June the fifteenth, Eversource and
19 National Grid announced the early completion of the Ready
20 Path Solution. And this project was joint venture between
21 Eversource and National Grid that helped reinforce and
22 update the electric grid to accept the future retirement of

1 the Mystic Generation Station.

2 So that was good news on several fronts, not only
3 being brought in under -- or excuse me, being brought in
4 sooner than expected, but also reenforcing that electric
5 grid serving the region to eventually accommodate the
6 retirement of the Mystic plant.

7 Things that are happening on the horizon: We've
8 talked to you before about how the Eversource team
9 constantly monitors the electric load, the grid, and our
10 infrastructure. And the underground cable modernization
11 program is one of these proactive steps that we're taking to
12 replace aging infrastructure throughout Eastern
13 Massachusetts.

14 These lines will reliably -- as they are replaced
15 -- the new lines will reliably handle larger electric loads,
16 and two of these lines currently that are in existence: the
17 North Cambridge to Woburn line, and the Mystic -- the North
18 Cambridge lines.

19 Both of those are being investigated and analyzed
20 currently. So you'll see more information as both of these
21 projects mature and details crystallize.

22 But this is just another example of how the

1 Eversource team is constantly working to ensure that the
2 electric grid that's serving not only Cambridge, but the
3 region is operating at peak capacity and peak performance.

4 And finally, our Communications team, they -- for
5 those that aren't in the industry, understanding what the
6 power grid is, how transmission brings energy and
7 electricity to where you use it, they created a Power Grid
8 101 video. And it explains in very simplistic terms how
9 that system works. And there's a link to that video here in
10 this presentation.

11 Encourage you to take a look at that, because it
12 is really informational.

13 So with that, if I may, Jason, I'd like to just
14 transition over to Maija Benjamins and let her talk a little
15 bit about the Greater Cambridge Energy Program.

16 Thanks, Maija.

17 MAIJA BENJAMINS: Thank you, Tom. Thank you,
18 Jason. For those of you that don't know me, I am Maija
19 Benjamin's, and I'm Leader, Strategic Project Development
20 Team at Eversource. For those of you not familiar with the
21 Greater Cambridge program, the goal is to build the first
22 underground substation in the United States that will

1 address the majority of the load growth challenges in the
2 Kendall Square area that we're facing.

3 As Todd mentioned, there's a number of other
4 efforts that are ongoing to upgrade a lot of the
5 transmission lines and facilities that these new lines will
6 connect to, and we're also looking at how we can make sure
7 that, as this project is coming online, that we're serving
8 all of the load growths in the Cambridge area.

9 So that is what Juan was touching on --
10 specifically that we -- because some of the Somerville work
11 has been delayed due to approvals there, we're going to be
12 looking at other interim solutions to make sure we're
13 addressing the load growth, and that will be specifically in
14 the Alewife area and adding potential additional equipment
15 there.

16 So that's something we'll be talking to the City
17 in more detail about in the near future. And it's something
18 we've been touching on coming up because of all the
19 development that's happening in the area.

20 So for the Greater Cambridge project, we did
21 submit our application with the Department of Public
22 Utilities in March of 2022, and have resulted in -- or

1 there's been extensive delays in receiving our procedural
2 schedule, which usually happens within two to three months
3 for a filing.

4 So we haven't been able to be successful in
5 getting the Department of Public Utilities to move that
6 application along.

7 We understand that they're understaffed at this
8 time, but we are putting a lot of pressure, because this
9 substation and the respective transmission lines are so
10 critical to meet the load growth in Cambridge and to address
11 all the commitments that we've made to the City and other
12 developers on the time frames for these projects. So we are
13 very aware of that.

14 The project has changed since what we filed in
15 March of 2022. And that was based on feedback from the
16 residents along Hampshire and Columbia Streets.

17 We had originally proposed that route for the
18 transmission line going to Somerville, because it was the
19 least-cost solution, and also balanced the environmental
20 concerns and reliability requirements for the project.

21 The Siting Board asked us to go back and relook at
22 some different routing options, which we did, and because of

1 some -- the progression of some development in Somerville,
2 we actually have another path forward that allows us to
3 partner with the City of Cambridge and build a transmission
4 line along the future Rail Trail and along the Grand
5 Junction Corridor.

6 And then also we've made some progress with MBTA
7 about crossing the Green Line, which is also something that
8 was causing delays.

9 So those are a couple pieces that we're still
10 working on. We haven't officially committed to this route
11 as our preferred route, because we do need to make sure
12 through underground surveys and engineering that the route
13 is actually constructable, which we're hoping to resolve
14 within the next two months.

15 And as you know, BXP is underway with the
16 development of their site, which they currently -- I believe
17 they poured their first slurry wall yesterday or last week.
18 And there is a lot of traffic in the area that people are
19 working with.

20 But a big part of what we're also doing is working
21 with the City on what our construction plans will be, how
22 we'll be managing our construction traffic in concert with

1 BXP and other projects happening in the City, as well as
2 different developers like MIT.

3 So I think that's it, Jason. Thank you.

4 JASON WRIGHT: Thank you, Maija. All right.

5 Next, I'll turn it over to Brian Lozier and/or Mark Baldwin
6 to talk about upcoming and completed City projects; they are
7 from the Electrical Ops.

8 MARK BALDWIN: Good evening. Good evening,
9 everybody. My name is Mark Baldwin, Director of Electric
10 Field Operations for the Metro Boston area. So I cover
11 Downtown Boston proper down to the Hyde Park area, also the
12 Somerville area work center, which also the Somerville area
13 work center, which also covers, obviously, Cambridge.

14 Brian Losier is the Service Center Manager, who's
15 also on the call this evening and dealing with a lot of
16 these projects.

17 I don't want to be too repetitive. A lot of the
18 work that we're doing this year is in support of what Maija
19 was just talking about, and also a lot of the infrastructure
20 in new customer work that's obviously greatly increased in
21 the Cambridge area.

22 But I do -- I don't want to be seen remiss about,

1 you know, our, you know, basically a large part of our work
2 plan is also keeping up with aging first, making sure that
3 the system is operating properly and as designed.

4 So, you know, that does take up a good chunk of
5 our resource power, you know, along with our preventative
6 maintenance -- stray voltage, making sure that we're doing
7 pole inspections and underground manhole inspections and all
8 those type of things on top of these things. So.

9 But I am going to talk a little bit about where
10 we're spending a lot of our resources along both new
11 customer and expanding capacity and reliability projects.

12 So Jason, can you go to the next slide?

13 Great. So again, as Maija was just talking about,
14 Substation 8025, you know, that's going to be four
15 transformers, 48 circuits.

16 So I just kind of wanted to kind of discuss about
17 the magnitude of underground work. So that's going to be an
18 extensive amount of work that we will be working towards,
19 you know, installation of the civil (phonetic) work through
20 our contractors, and then our underground crews pulling
21 those cables.

22 Currently working on Station 402 transformer

1 addition load relief while waiting for this. Again, it's
2 kind of been mentioned, but we're going to be doing eight
3 circuits -- two per year, and each of the little circuits
4 are about 35 sections.

5 A conduit is currently in progress, so you do see
6 a lot of our crews out in the Kendall Square area.

7 Next slide?

8 Just talking about Kendall Square, you know, we
9 have the Volpe Center, you know, 10 acres, eight buildings.
10 You know, 8 MBA (phonetic) again.

11 I don't want to throw out too many technical
12 terms, but you know, a lot of load in that area. The civil
13 work is going on this year; will be completed in the next
14 few years, kind of ongoing in conjunction with installing
15 that cable.

16 We also have Boston Properties, six buildings.
17 The civil work is ongoing, but we will be energizing on
18 Binney Street No. 300 -- will be energized this year, and on
19 Broadway No. 125 will be energized this year as well as in
20 Cambridge Crossing. Again, the labs in that area Parcels I,
21 Q and R are expected to be energized this year.

22 And then the Galleria Mall area, where -- again --

1 there's four large lab buildings being placed into service.

2 And then kind of as was mentioned also in the
3 Fresh Pond Parkway area IQ through HQ on Harvey Street
4 there's six buildings. Three will be energized this year,
5 and then our crews will be working for three next year.

6 So again, you know, as you see this, a lot of
7 load, a lot of work -- you know, in the Kendall Square area.

8 Next slide?

9 This is just kind of a representation of kind of
10 where the load is and what we're trying develop. You can
11 see down in the right-hand side where Station 875 will be
12 located.

13 And then kind of -- obviously what we're trying to
14 do is diversify the load as much as possible, you know,
15 trying to help diversify the area and give us as many
16 options. And, you know, kind of the projects that are
17 listed below that I just kind of mentioned on the previous
18 slides are depicted throughout this.

19 So you can kind of see, you know, with this
20 substation how it's able to help, especially in the
21 Southeast Corridor of Cambridge from Mid-Cambridge to the
22 southeast area and East Kendall to diversify that load.

1 Next slide?

2 And this is just -- again -- a little bit clearer
3 shot of the amount of buildings and infrastructure where it
4 is, and also where we have come up with multiple paths to
5 diversify the load and some of the interim steps, and those
6 conduit pathways for that work.

7 And then lastly also, I mean it's not just in the
8 southeast area, but in the northwest area that was
9 mentioned.

10 And, you know, Juan had mentioned about we're
11 seeing also substantial growth out of Station 828. You can
12 see, you know, with these new buildings coming into play,
13 we're also seeing significant load growth in that area as
14 well.

15 So we continue to work on, you know, mitigating
16 steps. You know, the Engineering Team's done a great job,
17 both from a planning perspective, and then also getting
18 design packages done and approvals through so that we can
19 get this work done and being able to keep up with the load
20 growth that's in this area.

21 I mean, I kind of manage the entire Metro Boston
22 area, and certainly this area is one of the areas of the

1 biggest growth, obviously, that we're seeing in the region.
2 So.

3 I think that is my last slide.

4 JASON WRIGHT: Thank you, Mark.

5 MARK BALDWIN: Thank you.

6 JASON WRIGHT: All right-y. I'm going to turn it
7 over now to Mark Rooney to discuss energy efficiency.

8 MARK ROONEY: Thank you, Jason. Mark Rooney. I'm
9 the Energy Efficiency Account Executive for Eversource.

10 I work with our municipal, state and federal
11 customers in our Eastern Mass territory on energy
12 efficiency, as well as now under this, you know, newer
13 three-year plan we're working under, we're in the second
14 year of the current three-year plan, the focus, as many of
15 you know, is not only energy efficiency, but
16 decarbonization, electrification. The plan includes focus
17 on Diversity, Equity, and Inclusion as well as Workforce
18 Development.

19 Our programs are really centered around their main
20 areas: Residential, Small Business and Large Commercial
21 Industrial. So I'm going to cover each of those area.

22 Next slide, Jason?

1 JASON WRIGHT: So in the residential area, these
2 are the numbers for 2022. We did over 1100 market-rate home
3 energy assessments in the city of Cambridge, 90-acre
4 eligible site assessments and over 300 market-rate
5 weatherization projects.

6 Again, you can -- I won't read the whole list
7 here, but the focus here is on weatherization, installing
8 heat pumps and electrifying in the residential space.

9 Next slide?

10 For Large Commercial Industrial, many of these
11 projects were just covered by my colleagues. But we in
12 Energy Efficiency work with these developers right from the
13 early stages of design to make the most energy efficient
14 projects possible with low energy use indexes, and -- you
15 know, to eliminate fossil fuels where possible.

16 I'll also mention that with the City of Cambridge
17 itself, we got involved early on the Tobin/Montessori
18 School, which is a Net Zero school.

19 And they are on a Path 1 course in our new
20 construction program, which is most aggressive in terms of a
21 low energy use index. So the target there is an energy use
22 index of under 25.

1 And the great thing about that program is not only
2 designing it to meet a low energy use index, but we'll come
3 back a year later and make sure it's performing as designed,
4 and there'll be additional incentives if in fact it's
5 meeting, you know, how it was designed.

6 And we're also working with the City. Another
7 example is with the newer Cambridge Fire Station.

8 Next slide, Jason?

9 This was spoken to again by my colleagues. But
10 from an energy efficiency standpoint, this is our Boston
11 Properties and what we're calling The Kendall Center Mixed
12 Use Development Center, and the various projects we're
13 working with Boston Properties on in the Kendall Square
14 area.

15 Next slide?

16 In terms of retrofit, Large Commercial Industrial,
17 we continue to work with some of the larger property owners
18 in Cambridge -- Biogen, Novartis, Pfizer, Harvard and MIT.
19 Again, not only on energy efficiency, but now really a focus
20 on reducing greenhouse gas emissions and electrifying their
21 operations.

22 Next slide, Small Business.

1 So in the Small Business space, we have a program
2 called Main Streets. And we go out and set up and really go
3 door to door and visit small businesses within the city.

4 In 2022, those Main Street programs resulted in 62
5 unique projects, or small businesses. And you can read the
6 numbers there, the results of reducing energy use -- both in
7 terms of KW hours and gas savings or therm savings.

8 Back one, Jason. I just want to cover the 2023
9 there.

10 So through March of 2023, we've done 14 projects
11 with small businesses, and we anticipate doing several more
12 Main Street programs throughout the city of Cambridge in
13 2023.

14 And I think that's it. Thank you.

15 JASON WRIGHT: Thank you, Mark. All right. And
16 last but certainly not least, I want to turn it over to Sean
17 Tully to speak about EV programs.

18 SEAN TULLY: Unmute there? All right, thanks
19 Jason. Good evening, everyone. My name is Sean Tully. I'm
20 the Manager of our Electric Mobility Group here at
21 Eversource. You know, we just recently got our Phase II
22 approval from our regulators.

1 Just to give you a snapshot of kind of the
2 interest in the program and some of the things we've
3 achieved, you know, in our previous four years that we were
4 working, there were 79 Level 2 charging ports that were
5 energized in the City of Cambridge under the program, and
6 already, since we got this approval, you know, the last time
7 we met, we were working its way through its regulatory
8 process for about a year.

9 But, you know, right at the end of 2022, we
10 received approval for the \$188 million-dollar budget from
11 DPU for a four-year program through 2026. And already over
12 the past almost full six months, we have three times the
13 amount of energized projects and ports -- specifically ports
14 -- preapproved and ready to go to construction than we did
15 in the first phase.

16 So a tremendous amount of participation from the
17 businesses and the residents in the city of Cambridge. And
18 you know, heard a little bit before from the DPW about some
19 of their projects.

20 We are continuing to work with the City in that
21 partnership on some DC fast stations expansion. We've had
22 the Water Department, the Police Department, and the DPW.

1 So we're working with the City on those.

2 And, you know, really this program is a renewal
3 and expansion. And there were some regulatory changes,
4 which are important for the city to note that I'll go
5 through.

6 So really have a renewal of our commercial
7 programs looking for those public workplace and multifamily
8 high-rise projects. We have make-ready incentives and EVSE
9 rebates for the charging stations themselves.

10 We also just launched a residential program, so
11 you've heard a little bit about that before. So we have,
12 you know, up to 1400 hours for single-family homes to, you
13 know, complete the electrical work to enable an EVSE
14 charging station at the home and then for also two- to four-
15 unit dwellings, which we call multifamily, you know, low-
16 rise multifamily for those residential programs.

17 We also have some fleet -- a new fleet component,
18 where there will be make-ready and rebates for that and as
19 well for public customers such as the City of Cambridge.
20 We'll have Fleet Advisory Services where we'll bring the
21 consultant to really talk about what vehicles are available
22 on the market, total cost of ownership, so really getting

1 set up for a transition plan to electrify the fleet.

2 So our other two program areas of note, you know,
3 our fleet program baseline is really -- our main focus on
4 the next coming years is really on passenger vehicles,
5 because there is a lot of available vehicles that are coming
6 online, especially with the Ford F-150 Lightning that's
7 available now, and the Chevy Silverado.

8 And a lot of municipalities are really, really
9 interested in the Silverado work truck that was just
10 announced. It has great battery range and seems to be a
11 great fit for a lot of commercial customers. So we do have
12 that Fleet Advisory Services to help with that.

13 And we have a separate carveout specifically for
14 immediate, heavy-duty public fleets that would serve in or
15 are located in environmental justice communities. So we
16 have a separate budget just for that.

17 And also, you know, as there were some comments
18 before about, you know, folks that don't have a garage or a
19 driveway and look to park on the street, we also have a
20 separate budget carveout for community DC fast-charging hubs
21 in Environmental Justice Communities that we'll be looking
22 at a minimum of 450 KW DC fast ports in the hub that would

1 be able to serve those folks in those areas.

2 So we can go to the next slide, Jason.

3 So something I wanted to note and just, you know,
4 really could feed into some of the earlier comments about
5 the EV charging plans that the City has. Previously, a lot
6 of the infrastructure that was installed was owned and
7 maintained by Eversource.

8 We went back to our regulators, and we've had a
9 different proposal this time based on some customer comments
10 and interest. So Eversource is still going to be able to
11 support up to 100 percent of the total cost of the
12 electrical infrastructure that would enable a customer to
13 install the charging stations.

14 But all the infrastructure after the meter will be
15 continued to be owned by the customer, and we do have the
16 ability to support projects that would be, you know, just
17 solely behind the meter projects.

18 So we do have a separate carveout for that. So a
19 lot of those ports that the city is looking to do, you know,
20 we'll be able to support those under the program. It does
21 not require a new service in every instance under this new
22 phase.

1 So we do have EVSE rebates available as well, and
2 the customer will own and maintain the charging station for
3 the term of the program for five years.

4 So the next slide, please, Jason.

5 So a few notes here on the residential program as
6 well. You know, it's trying to make it really easy. They
7 can use their electrician, or we have a list to make some
8 referrals for residential electricians, if the customer
9 needs a referral, pick a qualified charger off the Qualified
10 Products list. This is maintained by the Mass DOER.
11 There's a state-approved Standards database that has, you
12 know, Energy Star Certified and acceptable equipment that is
13 run by Mass DOER.

14 So any of those eligible costs for the -- for that
15 smart charger and the wiring upgrade labor and materials to
16 install that or service upgrades if a panel upgrade perhaps
17 is needed. You'd be surprised how many 60-amp services are
18 still out there in the world, you know. This rebate can go
19 towards that.

20 So once you complete your project and you have an
21 invoice from a licensed electrician for those eligible
22 costs, you can submit that documentation to a portal that we

1 have live, and in two to four weeks, you'll get your
2 incentive check back for that installation.

3 We are also going to be having participation in
4 managed charging as a condition for receiving the rebates.
5 This is to really help, you know, manage that load. All of
6 these electric vehicles, 80 percent of charge people are
7 going to be doing at home.

8 This is -- we continue to see this, and a lot of
9 the studies are really looking at this. So enabling all
10 this charging that people are going to be doing at home, you
11 know, having some load management programs similar to, like,
12 what used to be ConnectedSolutions.

13 This is going to be transferring to managed
14 charging to be able to enable as many customers as we can to
15 be able to charge and be able to electrify their cars when
16 they come home in the evening, or visit one of these
17 charging hubs, if they don't have a situation where they can
18 charge directly at home, and be able to do that with minimum
19 upgrades to our system.

20 So the last slide -- I think that's it for me.
21 And I'll hand it back over to Jason for some concluding
22 remarks. Thank you so much.

1 JASON WRIGHT: Thank you, Sean. Appreciate that.
2 All right. So in conclusion, I think we'll see that low
3 growth continues to be widespread throughout Cambridge.
4 With your continued partnership, we're responding and are
5 prepared to respond to the growing demand.

6 Major Transmission Projects; we're working to
7 build a sustainable, reliable, regional grid in the face of
8 this load growth. Energy efficiency has multiple -- as you
9 have seen, has multiple programs active and focused on
10 expanding a presence in Cambridge through community, private
11 and civil partnerships. Eversource has committed to
12 integrating clean energy technologies through major
13 strategic initiatives across our service territory.

14 So with that, apologies if we went a little bit
15 over, but I'd like to open it up to any questions the Board
16 may have.

17 CATHERINE PRESTON CONNOLLY: Thank you so much.
18 So I will open it up now, again, to Board members for
19 clarifying questions.

20 Any factual or quick questions we have for members
21 of the Eversource team, there will be the opportunity for
22 further questions and discussion later. But if there are

1 clarifying questions now, this would be a good time to ask
2 them.

3 Lou?

4 [Pause]

5 Lou, you're muted.

6 LOUIS J. BACCI, JR.: I'd like to have a little
7 bit more on the managed charging and how that works; a
8 little bit more in-depth. Is that a limited timing? Or
9 what is the managed part of that?

10 SEAN TULLY: Yeah, certainly. So this is a
11 proposal that's going to be going into a regulator's -- you
12 know, in the coming months. But right now, we're pondering
13 kind of two paths to participation.

14 You know, one would be a passive participation,
15 which would be, if the customer chooses to charge off-peak
16 hours, we'd have some program parameters around that
17 typically, similar to what we have for our active demand
18 response peak periods for demand response programs that Mark
19 helps the City customers with.

20 And, you know, so if the customer did charge those
21 off-peak periods, we have incentives to spur that.

22 The other thing we're pondering more and more is,

1 like, there are so many great distributed energy resources
2 -- like, you know, for solar for instance.

3 And there may be areas in the state going forward
4 where it might be beneficial to charge -- in areas for
5 example when there's excess solar generation that would be
6 able to perhaps have some incentive for the customer to do
7 that.

8 But still very little early days. But, you know,
9 those are kind of two scenarios for some -- for that managed
10 charging program that we're being asked to propose to the
11 regulators.

12 LOUIS J. BACCI, JR.: So you wouldn't be trying to
13 limit the times during the day when people would be able to
14 charge their cars, or would you do that just by financially
15 crippling them?

16 SEAN TULLY: No. The customer is, you know, as
17 in, the legacy ConnectedSolutions program, you know, the
18 customer always -- have the ability to opt out if there was
19 a time that they needed to charge.

20 You know, it's voluntary participation, and they
21 would need -- they will always have the ability, you know,
22 in that program and, if approved, going forward with managed

1 charging.

2 So, you know, I think it's really -- the emphasis
3 of this as it has been for a long time with energy
4 efficiency is not to -- in your words -- financially
5 cripple, but to incentivize the customer to charge at times
6 that would offset the need for expensive system upgrades and
7 result in energy savings for all rebaters.

8 LOUIS J. BACCI, JR.: I think they mean almost the
9 same thing. The problem is the convenience here. I -- if,
10 you know, the majority of people are either going to be
11 charging when they get home from work or so forth, or
12 whenever they use the vehicle.

13 I don't know if somebody wants to get up at
14 midnight and go plug their car in. But I understand the
15 capacity --

16 SEAN TULLY: I get that question a lot; how long
17 does it take to charge EV? You know, for my EV, when I get
18 home, it takes me two seconds to plug in and charge. You
19 know, you can schedule a lot of it through the car when you
20 want to.

21 And, you know, one of the benefits of having an EV
22 is, you can charge overnight. And when you start with the

1 City, you have first (sic) range every morning. You know,
2 there is some very interesting data that just came out.

3 I participated in the NEPC call last week; the
4 MassDOT put out some municipal-level information on
5 charging.

6 And, you know, the average commute in -- for
7 drivers in the Commonwealth is under 30 miles. And that can
8 be recharged, you know, with a Level 2 charger in under --
9 under two hours.

10 So, you know, certainly for most people when they
11 get home and they -- around 5:00 or 6:00 and they plug in,
12 the car will be topped up for that range that they traveled
13 on an average day, you know, before they go to bed.

14 LOUIS J. BACCI, JR.: Yeah. I'm thinking about
15 the people who are driving 70 miles one direction. There
16 are just some interesting issues to work out, besides the
17 work involved in supplying all of this.

18 Yeah. So I guess that's -- so basically it will
19 be rate-driven, correct?

20 SEAN TULLY: We do have a -- you know, the
21 Department asked us to propose a time-of-use rate. So we're
22 going to be sending in a proposal for that, alongside with

1 the managed charging proposals.

2 So there will potentially be some options for some
3 customers on the time of use basis. That's going to be
4 coming, but there will also be some incentives and support
5 for charging at beneficial times.

6 LOUIS J. BACCI, JR.: Hm. Okay. Thank you.

7 SEAN TULLY: You're welcome.

8 CATHERINE PRESTON CONNOLLY: Great. Hugh?

9 HUGH RUSSELL: So Swaathi, could you put up that
10 picture I sent you?

11 HUGH RUSSELL: Yeah. This is the utility pole.
12 And you'll see the second line down is the power line, and
13 it's supported by a rope that's tied to the street tree.

14 Now, my house is about 100 feet to the left.
15 There's a scaling wall that's caused the line to sag. It
16 got snagged on a truck that -- so this -- I brought this up
17 a year ago. And I think the basic question is, I don't --
18 didn't hear any comment about the aging sort of retail
19 delivery system -- the poles, the wires, the transformers.

20 And it seems to me there -- that should be part of
21 this system of -- large portions of our city are served by
22 overhead lines. I think they were put in that way because

1 the buildings already existed on electricity. My house was
2 built in 1874, and I believe the first building wired for
3 electricity in the United States was in 1881. It was a
4 hotel, and -- anyway.

5 My real question is, how are you addressing the
6 aging infrastructure? I feel that what's depicted in the
7 picture is not probably an adequate solution.

8 MARK BALDWIN: I can take that. So a couple
9 things. One is, we can take note of this and try to address
10 it. One is where that tree is located. But we can also --
11 we can make some permanent changes to that, but there may
12 have to be some substantial trimming that would have to be
13 done to that tree.

14 But besides that, I think your underlying question
15 is more around aging infrastructure, and what do we do to
16 preempt that, or how do we manage that. So as I discussed,
17 we have a very robust maintenance program in the sense that
18 we go out, we inspect, we have a third-party vendor that
19 goes out and inspects all of our poles and, you know, for
20 their integrity. And we come up with -- you know, from
21 that, we determine a list of poles that need to be replaced.

22 We have a lot of requirements to the Department of

1 Public Utilities about our reliability. And that dictates
2 to us quite a bit of, you know, the performance of a
3 circuit.

4 And then also, we -- in the areas, every year we
5 what we call, "infrared" all of our lines to make sure that
6 there's not leakage or fracking, there's not things that --
7 that are maybe not visible to the naked eye on the system
8 that could cause issues.

9 And then just last year we did another system-wide
10 -- we hired again a third-party engineering firm to do ac
11 system-wide walk-down of our system, right? Which resulted
12 in -- I don't have the number off the top of my head, but it
13 was thousands of maintenance items that needed to be
14 corrected, whether it was older cross arms that had been
15 rotted, and we've been transitioning from wooden crossarms
16 to fiberglass crossarms or plastic crossarms -- excuse me,
17 composite crossarms.

18 So all of these things is how we keep up. We have
19 loading requirements that we take a look at, you know,
20 circuits, obviously. And then on a routine basis, we
21 reconduct our areas, and bring them back to 100 percent of a
22 new line.

1 So I do think we have quite a bit. I mean, you
2 know, I know a lot of the reliability data, in all honesty,
3 is weather-dependent and driven sometimes.

4 But right now, the Metro Boston area is at an MBI
5 of just shy of 50 months, which means that an average
6 customer has not seen an interruption within 50 months.

7 Now that has predominantly been driven because of
8 the weather pattern lately has been favorable. But, you
9 know, I think it does speak to the amount of work that we've
10 been doing on the system to build a robust system.

11 CATHERINE PRESTON CONNOLLY: Okay.

12 JASON WRIGHT: Thank you, Mark. And through the
13 Chair, if we could get an address on that, so I can follow
14 up or we'll follow up with Electric Ops to -- and Vegetation
15 Management to have that address?

16 HUGH RUSSELL: So it's not a vegetation problem,
17 it's a pole that's owned by Verizon shared by three
18 utilities that's tipping over. And so, you know, I don't
19 want you butchering a street tree for a problem that isn't a
20 tree's problem.

21 JASON WRIGHT: If it's not -- I'm sorry, I was
22 just kind of looking at that picture. If it is the -- if it

1 is the pole issue, we work very closely with Verizon. We
2 have quarterly meetings with them. And in between there, we
3 do a lot of coordination work, so we can definitely work
4 with them on that.

5 HUGH RUSSELL: Okay. Well, we can, I can -- I've
6 got a file a correspondence with you guys. And so, I'll
7 just -- I can send that to you if Swaathi puts us in
8 contact.

9 CATHERINE PRESTON CONNOLLY: Great.

10 JASON WRIGHT: Certainly. Yep.

11 CATHERINE PRESTON CONNOLLY: Steve?

12 STEVEN A. COHEN: Thanks. I apologize, I ask the
13 same questions every year, and it's this year. And just a
14 fundamental understanding. And that is on the electricity,
15 where does the electricity come from? What is the fuel that
16 is used to create electricity, and then and where does that
17 fuel come from?

18 And similar question on the gas. Where does the
19 gas come from? I don't think it really is going to affect
20 any fundamental decisions, you know, that we at the state or
21 the City are doing, but it just seems a fundamental question
22 that, you know, we should all understand where these fuels

1 come from.

2 MAJA BENJAMINS: Jason, do you want me to answer
3 the electrical piece? Unless Planning wants to step in?

4 JASON WRIGHT: Yep. No, go ahead, Maija.

5 MARK BALDWIN: All right. Thank you. That's a
6 really good question, and it's something that Eversource
7 we're really focusing on to make sure that the policies that
8 are being put in place not only by Cambridge but also the
9 State and the region are reflected in the diversity of the
10 electrical sources.

11 So I would say about -- our goal at Eversource and
12 through the region in the next 25 years is to increase -- to
13 drastically decrease the portfolio of carbon emissions and
14 increase the renewable energy.

15 So right now, our portfolio is made up of many
16 different sources, including diesel generation or some type
17 of generation, but then also wind, solar, and several other
18 options.

19 But one of the -- one of the points at the
20 presentation earlier was to demonstrate -- there's such a
21 diversity of when the electricity is being used during the
22 day, and it's changing.

1 Because right now, we're a summer-peaking utility,
2 but we will be coming a winter-peaking utility as we
3 transition from gas to more electrical heating.

4 So the different sources that are coming into the
5 system also need to be balanced.

6 So as more offshore wind comes into our portfolio,
7 that's typically blowing at night. So they're typically
8 coming into our system during the day. Hydro has more, and
9 we have a little bit more control of over hydro. But all
10 those have to be balanced with when the vehicles are
11 charging and how we can keep the electricity on the system.

12 So we have more distinct numbers about where the
13 energy is coming from that we can share with you after the
14 fact. But we also have a lot of plans for the region and
15 how that -- that's going to change in the next 10-25 years,
16 to make sure there is cleaner energy on the system.

17 Does that help?

18 STEVEN A. COHEN: Well, can you -- I don't know,
19 estimate or guess even what portion of the electricity will
20 actually be generated by gas or something substantial and
21 not just theory from the sky?

22 JASON WRIGHT: If I may, I don't want to guess,

1 but I put in the Chat feature, there's a link to ISO New
2 England, and that provides a pretty -- that provides an
3 overview of, I believe, a lot of the questions that Eric's
4 team --

5 MAIJA BENJAMINS: Thank you. I know what you're
6 talking -- I know specifically what you're talking about,
7 Jason.

8 JASON WRIGHT: Yep. I'll throw that in there now.

9 CATHERINE PRESTON CONNOLLY: Yeah. I actually
10 think the Chat is disabled. The same for this type of call.
11 So if you could provide that to Staff, or to share on the
12 website, that would be great.

13 Susanne, did you want to comment on this as well?

14 SUSANNE RASMUSSEN: Yes.

15 CATHERINE PRESTON CONNOLLY: Okay.

16 SUSANNE RASMUSSEN: So the Massachusetts State
17 regulates the percentage of renewable electricity the
18 utility companies have to deliver. And currently, that
19 number is 22 percent.

20 So the -- Eversource and every other utility has
21 to go out and find generators that can provide 22 percent of
22 their load from clean energy. That is currently growing by

1 2 percent per year through the year 2029.

2 And the Regulations say that after 2029, it would
3 drop down to 1 percent. Obviously, this state would have
4 the ability to raise that, but -- so it's 22 percent this
5 year, next -- in '24 it will go to 24 percent, and then up 2
6 percent every year through at least through '29.

7 STEVEN A. COHEN: Wow. That's quite a goal. Do
8 people actually expect that they will achieve that goal?
9 That's really meaningful.

10 SUSANNE RASMUSSEN: It is a requirement. So the
11 utilities -- the only alternative would be if they can
12 cannot find generators to supply the required -- the
13 mandated percentage of clean electricity, they would have to
14 pay what's called, "Alternative Compliance Payments" to the
15 State. And the State can then invest in greenhouse gas
16 reducing activities.

17 I don't -- correct me if I'm wrong, I don't
18 believe that Eversource is paying the Alternative Compliance
19 Payments. But it's actually meeting the -- it's called The
20 Renewable Portfolio Standard.

21 STEVEN A. COHEN: Mm-hm.

22 SUSANNE RASMUSSEN: And so, that's -- and some

1 other time we can talk about the City of Cambridge is also
2 buying electricity on behalf of almost 40,000 accounts. So
3 we actually have most of the electricity supply in Cambridge
4 is purchased by the City on behalf of most accountholders in
5 Cambridge.

6 A high percentage of residents -- very, very high
7 percentage of Cambridge residents and a percentage of both
8 small and large businesses are covered in what's called, The
9 Cambridge Community Electricity Program which is an
10 aggregation of consumers that cities and towns are allowed
11 to undertake.

12 So we are seeking to increase the percentage
13 substantially, starting in 2024 over what is the currently
14 mandated amount. So we expect to announce a program that
15 will start in January, that will have significantly more
16 than the minimums that I just described.

17 STEVEN A. COHEN: Mm-hm. So I guess one other
18 question that I mentioned was about electricity -- I'm
19 sorry, gas.

20 So where is the gas coming from? Do we assume
21 that that source of gas is going to be available forever?
22 Or is there , you know, some sort of a long-term plan to

1 actually replace gas?

2 SUSANNE RASMUSSEN: You are asking some really
3 great questions that Eversource is grappling with. Because
4 there is a -- there has been concern for a number of years
5 that there's going to be a shortage of fuel for --

6 STEVEN A. COHEN: Yep.

7 SUSANNE RASMUSSEN: -- winter heating. And that
8 is something that we're working with the region and the
9 federal government on. And that's one of the reasons we're
10 so focused on bringing renewables into the grid, because it
11 provides an opportunity for more standard rates, and also
12 eliminates these concerns -- the seasonal concerns that we
13 have.

14 So, I mean, our gas comes from many different
15 areas that I can't speak to. But I can tell you that we're
16 constantly looking at making sure we have enough fuel to
17 make -- to heat homes in the winter, and then also being an
18 advocate and a partner in bringing more renewables into the
19 system as time goes on.

20 Many communities, such as the City of Cambridge,
21 are looking to completely eliminate gas in the future. We
22 think gas is an important aspect for a balanced portfolio

1 when you're looking into the future, so we have plans to
2 maintain our gas system. And we're also, as you saw today,
3 looking at other solutions for using those pipes if needed.

4 But there is concerns about future availability
5 and, which is why we're so focused on renewables. There's a
6 lot of things that we're doing that we can discuss at a
7 different time, where we're looking at getting -- we've
8 submitted applications in partnership with the state of
9 Massachusetts to get funding through the Department of
10 Energy through the federal government, to help offset the
11 cost of building transmission coming from Southern
12 Massachusetts that's bringing at least 300 MW of solar and
13 1200 MW of offshore wind, also enabling more projects to
14 come forward.

15 So we're doing a lot of things to get ahead of the
16 curve as the offshore wind is developed to bring it into the
17 system, and different things like that.

18 CATHERINE PRESTON CONNOLLY: And Susanne, did you
19 want to comment on the gas question as well?

20 SUSANNE RASMUSSEN: Yeah, just to put some sort of
21 orders of magnitude to the demand, the expected reduction in
22 the demand for gas. So Iram mentioned at the beginning of

1 the meeting that last night the City Council voted to amend
2 our Building Energy Use Disclosure Ordinance to require
3 mandatory emissions reductions.

4 And the new regulation that was adopted last night
5 will require non-residential buildings over 25,000 square
6 feet to reduce their fossil fuel emissions over time, and
7 just a sort of quick snapshot of what that means: if there
8 is full compliance with the Regulation, by 2030, the
9 greenhouse gas emissions from non-residential buildings in
10 Cambridge over 25,000 square feet will drop by 50 percent,
11 and it will go down to -- drop by 70 percent by 2035.

12 So that's a big shift in terms of the demand for
13 fossil fuel and nongreen electricity in Cambridge. So those
14 numbers are not specific only to gas, but obviously they
15 would have a big impact with gas.

16 And the other Regulation that Iram mentioned is
17 under consideration and will be up for a vote on August 7 is
18 the new state-mandated fossil fuel demonstration, which will
19 allow for the first time 10 communities in Massachusetts to
20 require new construction to not have any fossil fuel usage,
21 with the exception of laboratories and hospitals and medical
22 facilities.

1 So that will have also a significant impact in
2 terms of gas demand for new construction, which now -- like,
3 for example a residential building would probably be, like,
4 50 percent gas and 50 percent electricity.

5 So there are -- these are some really significant
6 changes in terms of the demand for gas in both existing and
7 new buildings going forward.

8 STEVEN A. COHEN: So one more follow-up, and that
9 is nuclear. We've had nuclear in the past here. I know
10 that there was some expectation that we were going to move
11 it out altogether. I don't know if we've done that yet.
12 And I'm wondering whether in the future in years to come,
13 whether nuclear will be playing any role in this fundamental
14 issue.

15 MAIJA BENJAMINS: That's a good question. I don't
16 have the answer to that. Do you, Jason?

17 JASON WRIGHT: I don't. But I can -- we can look
18 into that, certainly.

19 SUSANNE RASMUSSEN: -- I mean, I would just add
20 that there isn't any new nuclear generation that is being
21 planned. So no one -- a new significant nuclear facility is
22 extremely costly and extremely difficult to permit in the

1 United States. So I don't foresee any growth in nuclear
2 generation, unless somebody is to come up with modular
3 nuclear with --

4 JASON WRIGHT: Yeah.

5 SUSANNE RASMUSSEN: -- a completely different
6 profile and what we -- the nuclear facilities that we have
7 currently.

8 STEVEN A. COHEN: Yeah, I don't remember the name
9 of it, but is the old one -- has that closed now, or is it
10 going to be closing soon?

11 JASON WRIGHT: Pilgrim?

12 STEVEN A. COHEN: Yeah.

13 JASON WRIGHT: Pilgrim's closed, yes.

14 STEVEN A. COHEN: It is closed. Really? Thanks.

15 GERHARD WALKER: So Maija, this is Gerhard. I
16 think we do have to take this back to get more details, but
17 to at least answer a quick part of it, there are still about
18 3.5 GW of nuclear capacity participating in the New England
19 ISO. So that is still active. However, since Eversource is
20 a deregulated utility, we neither own nor operate any
21 generations of it.

22 So that is something -- I don't think that we

1 actually have the answer. We'd have to reach out to the
2 operators of the site to see what the plans are, or if there
3 are any state or federal plans for them. But since
4 Eversource neither owns or operates any of those generation
5 sites, we wouldn't automatically know.

6 STEVEN A. COHEN: Mm-hm.

7 GERHARD WALKER: But yes, they are still there.
8 There are three nuclear -- two plants, I think, but three
9 nuclear reactors in total. But don't quote me on the
10 numbers.

11 CATHERINE PRESTON CONNOLLY: All right. Lou, did
12 you have a question?

13 LOUIS J. BACCI, JR.: Yes. I had actually a
14 couple. And I guess it may be going over something, but I
15 would like to just clarify this: What percentage of your
16 supply is renewables at the moment?

17 GERHARD WALKER: So Maija, should -- can I --

18 MAIJA BENJAMINS: Yes, please.

19 GERHARD WALKER: -- I know I was a bit late to the
20 show.

21 MAIJA BENJAMINS: Yes.

22 GERHARD WALKER: I was a bit late to the show

1 here.

2 MAIJA BENJAMINS: I was actually really glad to
3 hear your talking, because I know you've got the answer to
4 this. [Laughter]

5 GERHARD WALKER: [Laughter] Yeah. I apologize. So
6 that is a good question. When you say a "power energy"
7 again, I do have to push back a little bit on that, because
8 Eversource in itself is an electric distribution company --

9 LOUIS J. BACCI, JR.: I understand.

10 GERHARD WALKER: -- and we are legally not
11 operating any power. New England ISO mix, that depends.
12 Highly variable.

13 LOUIS J. BACCI, JR.: So the electricity you are
14 distributing --

15 GERHARD WALKER: -- today wasn't such a good day.

16 LOUIS J. BACCI, JR.: -- so the electricity that
17 you are distributing --

18 GERHARD WALKER: Sorry?

19 LOUIS J. BACCI, JR.: What percentage of it is
20 renewable?

21 GERHARD WALKER: I don't know what the annual
22 average renewable in that is. If I had to take a break

1 quick look at, we can get you that number. It's probably
2 available on the New England ISO website. So that's
3 something we can easily look up and pass on to you.

4 LOUIS J. BACCI, JR.: Super.

5 GERHARD WALKER: If I had to take an educated
6 guess, it's probably around 10-15 percent total.

7 LOUIS J. BACCI, JR.: Last time I asked this
8 question --

9 GERHARD WALKER: -- you have to --

10 LOUIS J. BACCI, JR.: -- a year ago -- it was
11 about 7 percent, 7 to 10. So that's what I expected. I did
12 not believe --

13 GERHARD WALKER: Yeah.

14 LOUIS J. BACCI, JR.: -- that we were getting 22
15 percent of our electricity from renewables.

16 GERHARD WALKER: Yep.

17 LOUIS J. BACCI, JR.: So curious. Okay, so that's
18 one question. The geothermal, great idea. How practical in
19 a very densely packed street like we have in Cambridge, all
20 these separate wells and so forth of distribution,
21 especially with your added electrical capacity coming?

22 CLARE KIRK: I can take that one. Well,

1 practicality, I don't know if that's the right word, but
2 it's the bigger goal of decreasing the greenhouse gas
3 emissions for people that normally receive propane or oil.
4 So it's -- that's what we're finding out, is it cost-
5 effective, is it feasible to do this?

6 And we deliberately picked a densely populated
7 area, because they were also gas customers. That was part
8 of the DPU rate case that brought about this project.

9 So practical? Yeah, the big thing with geothermal
10 is the real estate needed for the bore fields. The rest of
11 it is pretty standard, you know, what you'd see with let's
12 say a gas line. You have a supply line and a service to a
13 property.

14 But the difference is the bore fields but day-to-
15 day almost the technology is improving on how to do bore
16 fields -- different materials for heat transfer, can they be
17 vertical, can they be horizontal?

18 So that remains to be seen. And that's one of the
19 things that Eversource is going to find out from this pilot.

20 LOUIS J. BACCI, JR.: Yeah. I'm not sure where
21 you located the pilot. I know it's in Framingham.

22 CLARE KIRK: It is. It's in Framingham.

1 LOUIS J. BACCI, JR.: I don't think it would be as
2 dense a street configuration as Cambridge.

3 CLARE KIRK: Nope. It isn't. I don't think --

4 LOUIS J. BACCI, JR.: Right.

5 CLARE KIRK: -- anything would be. With the aging
6 infrastructure and everything in Cambridge, digging and all
7 that. But Cambridge is definitely, they are looking at
8 geothermal in Cambridge. So if it isn't already there, then
9 there could be a geothermal network project coming to your
10 neighborhood soon.

11 LOUIS J. BACCI, JR.: Do you think you would ever
12 use just a what would be commonly used now is an on-site
13 system that you would develop?

14 CLARE KIRK: Not now. We're not doing that now.
15 But I know exactly what you mean. So there's like a power
16 plant, basically one bore field and it goes to the power
17 plant. Then the power plant distributes that to the various
18 customers. We're currently not looking at that. We're just
19 --

20 LOUIS J. BACCI, JR.: Oh, I know individual
21 onsites. You know, up to a specific building or --

22 CLARE KIRK: Both.

1 LOUIS J. BACCI, JR.: -- through --

2 CLARE KIRK: Nope.

3 LOUIS J. BACCI, JR.: -- the buildings?

4 CLARE KIRK: Eversource is not looking at --

5 looking at that right now, although that doesn't stop, you

6 know, Joe Homeowner from having one installed himself. Or -

7 -

8 LOUIS J. BACCI, JR.: Oh, no, I'm not thinking

9 about major construction.

10 CLARE KIRK: Yeah. For utility provided, we're

11 currently only looking at the scenario we have right now,

12 which is separate bore fields sized to supply certain

13 capacity to X number of customers.

14 LOUIS J. BACCI, JR.: Yeah. Okay.

15 SUSANNE RASMUSSEN: But if you look across the

16 country, you'll see other states are doing all kinds of

17 different things with geo.

18 LOUIS J. BACCI, JR.: Mm-hm. Oh, yeah, there's a

19 lot of different techniques. Yeah, it just the presented

20 drawings show basically a distribution system going down the

21 streets and with bore wells along the pathway and so forth.

22 That one's going to be a tough one to pull off in this city.

1 SUSANNE RASMUSSEN: Absolutely.

2 LOUIS J. BACCI, JR.: Some places it's not a
3 problem. And what was the other one I had? Oh, scheduling
4 the feeders for the Kendall -- the new Station in Kendall.
5 Have any of the feeders been permitted, or the siting and
6 permitting been completed?

7 And I don't know who wants to --

8 MAIJA BENJAMINS: Are you asking about the
9 distribution lines?

10 LOUIS J. BACCI, JR.: No, the supplies. The
11 supply for the new station.

12 MAIJA BENJAMINS: the transmission lines?

13 LOUIS J. BACCI, JR.: Correct.

14 MAIJA BENJAMINS: So that's all part of a larger
15 permitting process with the State through the Energy
16 Facilities Siting Board and the Department of Public
17 Utilities.

18 LOUIS J. BACCI, JR.: Mm-hm.

19 MAIJA BENJAMINS: We did file that -- our
20 application in March of 2022 and are still awaiting a
21 procedural schedule. Our goal is to have approval by April
22 of 2024, so that we can construct the project and meet the

1 load requirements.

2 But we have had substantial delays from receiving
3 information from the State.

4 LOUIS J. BACCI, JR.: So you haven't successfully
5 routed and permitted any of these yet?

6 MAIJA BENJAMINS: Well, we have --

7 SUSANNE RASMUSSEN: They've tried.

8 MAIJA BENJAMINS: -- we have -- our designs are
9 completed to a point where we're -- our cost estimates are
10 about what we call, "Plus or minus 25 percent preliminary
11 cost estimates." So all of the lines have been engineered.
12 The station has been engineered to a certain level.

13 We do have the routes that we're looking for, the
14 transmission lines, and we have been working with Jim Wilcox
15 as well as the Pole and Conduit Commission to make sure
16 those spaces that we've designed for are maintained.

17 But we can't -- once we have approval from the
18 State, then we go to the Pole and Conduit Commission and get
19 the granted locations needed for construction.

20 LOUIS J. BACCI, JR.: What do you expect for
21 duration to complete this one?

22 MAIJA BENJAMINS: So the -- we're -- if we receive

1 approval in 2024, we'll be looking at constructing for about
2 four to five years at that point. It won't be in a single
3 location. It's linear construction, starting in one place
4 and going to another.

5 There's specific transmission lines that we'll be
6 focusing on, because they're even more critical to feed the
7 load, as well as partnerships with the City about which
8 streets they want opened when.

9 The substation -- the transmission lines will take
10 longer to building than the substation.

11 LOUIS J. BACCI, JR.: Correct. Yeah, no, that's
12 -- so we're talking somewhere in the vicinity of 2030?

13 CLARE KIRK: The new date is 2028. So we're
14 consistently working with -- to try to pull that back. But
15 right now, we are trending to 2029.

16 LOUIS J. BACCI, JR.: Okay. Well, it seems like
17 all the demand and all the supply is going to get very
18 close at about 2030.

19 CLARE KIRK: Right. Exactly.

20 LOUIS J. BACCI, JR.: That's it. Yeah.

21 CLARE KIRK: Which is why --

22 LOUIS J. BACCI, JR.: There's a lot of work

1 involved in this and --

2 CLARE KIRK: Right. And -- which is why --

3 LOUIS J. BACCI, JR.: And to wait for the year or
4 two it easily will take to --

5 CLARE KIRK: Yeah. Which is why it's so important
6 that Mark Baldwin's team is getting out there and doing the
7 distribution work, and also that our system planning team is
8 tracking the growth, so we have interim solutions in place.

9 And because the load growth has been increasing
10 more rapidly than we anticipated, that's why we're looking
11 at Alewife to add another transformer to make sure we can
12 meet the load growth.

13 LOUIS J. BACCI, JR.: Yeah. I think I put the
14 last one in at Alewife, actually. [Laughter]. I wear a
15 couple of hats, so --

16 CLARE KIRK: Oh. That's great.

17 LOUIS J. BACCI, JR.: -- I'm curious how it's
18 going to come together. But the timing on this is getting
19 very close.

20 MAIJA BENJAMINS: Absolutely. And it's something
21 that we're very aware of and managing on a daily basis.

22 LOUIS J. BACCI, JR.: And this does not require --

1 I see the East Cambridge Substation in the drawings -- this
2 is not an additional station, correct? This is an in-place
3 Station in East Cambridge? We're talking about the Kendall
4 substation?

5 CLARE KIRK: Yep.

6 LOUIS J. BACCI, JR.: The Kendall --

7 CLARE KIRK: The new substation. Mm-hm.

8 LOUIS J. BACCI, JR.: Just checking.

9 CLARE KIRK: Mm-hm.

10 LOUIS J. BACCI, JR.: And I guess that's all I
11 have for right now. Thank you.

12 CATHERINE PRESTON CONNOLLY: Thanks, Lou.

13 GERHARD WALKER: So can I take that quick cue,
14 because I looked up your numbers, so we don't -- actually
15 can give you the answers right now.

16 CATHERINE PRESTON CONNOLLY: Okay.

17 GERHARD WALKER: So renewable generate -- was 12
18 percent of the mix. Nuclear, because the question came, was
19 26 percent of the mix, gas 52 percent, hydro 7 percent, and
20 so between new renewable and hydro, you had about 19 percent
21 non-CO2-emitting sources in there, in addition to 25 nuclear
22 and 50-some gas.

1 STEVEN A. COHEN: Mm-hm. Can you mail that to us?
2 We should have that in writing, and people should just know
3 that.

4 GERHARD WALKER: Yeah.

5 STEVEN A. COHEN: Everybody should know that and
6 have access to it.

7 GERHARD WALKER: We can definitely mail that to
8 you. It's also -- it's just if you enter into Google, "New
9 England ISO Resource Mix" it's the first hit. It's -- they
10 are published. They have to publish the mix on a regular
11 basis.

12 And, but we can definitely provide the link to the
13 New England ISO webpage. So I'm just looking at what the
14 New England ISO is publishing here.

15 CATHERINE PRESTON CONNOLLY: Great.

16 STEVEN A. COHEN: The details aren't so important,
17 it's just there's sort of the big picture of --

18 GERHARD WALKER: Yep.

19 STEVEN A. COHEN: -- so people -- not just us, you
20 know, but everybody here. It's just a fundamental
21 understanding of where their energy is coming from.

22 GERHARD WALKER: Of course. We can definitely add

1 that into -- I'm assuming, Maija, there will be an e-mail at
2 the end of the drawing to include, so everybody has access
3 to this information.

4 STEVEN A. COHEN: Great.

5 MAIJA BENJAMINS: Yeah. And the -- we did give a
6 presentation to Cambridge several months ago that did
7 include this table, that talks about where ISO New England
8 is looking at the portfolio now and where it needs to be to
9 meet the future electrical demand as well.

10 CATHERINE PRESTON CONNOLLY: Susanne, did you want
11 to add to that?

12 SUSANNE RASMUSSEN: I do. I need to step in here,
13 so -- and it's confusing. But the State requires --
14 Massachusetts Utilities -- currently in this current year to
15 deliver 22 percent of what is considered renewable energy.
16 It must be delivered -- Eversource, National Grid, it
17 doesn't matter. That goes up by 2 percent through 2029 and
18 then 1 percent.

19 And you -- and hydro was just mentioned. Hydro --
20 not all hydro, but a lot of hydro is considered part of
21 renewable. So you can't take necessarily the breakdown that
22 the ISO provides that was just mentioned. But it is a

1 requirement.

2 So when you buy electricity through Eversource in
3 Cambridge, you have to get 22 percent renewable electricity.
4 And that is a state law. And it's not something that each
5 utility gets to decide.

6 So we can -- I can provide that to Swaathi, and we
7 can add that into the presentation as well.

8 LOUIS J. BACCI, JR.: But that's --

9 SUSANNE RASMUSSEN: Not into Eversource's
10 presentation, but --

11 LOUIS J. BACCI, JR.: -- but that's --

12 SUSANNE RASMUSSEN: -- into the documents for this
13 meeting.

14 LOUIS J. BACCI, JR.: -- but that's -- but that's
15 unless Eversource has some way of buying some of that out,
16 correct?

17 SUSANNE RASMUSSEN: Yep.

18 LOUIS J. BACCI, JR.: We use carbon credits and so
19 forth?

20 SUSANNE RASMUSSEN: If they cannot secure that
21 supply, then they will be required to pay Alternative
22 Compliance Payments to the State.

1 LOUIS J. BACCI, JR.: That's what I figured they
2 would do, yep.

3 SUSANNE RASMUSSEN: Yeah. I think --

4 LOUIS J. BACCI, JR.: So they don't actually have
5 to meet it.

6 CATHERINE PRESTON CONNOLLY: I think it's --
7 Susanne's point, Lou, is worth noting. There's a difference
8 in terminology here, right?

9 LOUIS J. BACCI, JR.: Correct.

10 CATHERINE PRESTON CONNOLLY: That Eversource is
11 using renewables in a different way than the State does. So
12 I think it'll be great to get that data available and
13 distribute it to everyone so that folks can look.

14 My back of the envelope calculation when I heard
15 the breakdown Ms. Walker was giving suggested that the hydro
16 is the bulk of the difference. And so, it's -- it'll be
17 good to dig into that a little bit.

18 But it sounds like they're pretty close. It's
19 just that when Eversource has talked about renewable in the
20 past, they have separated that from hydro, whereas the State
21 does not. So.

22 LOUIS J. BACCI, JR.: Because I think we get very

1 little of their supply from hydro.

2 CATHERINE PRESTON CONNOLLY: I heard 7 percent --

3 LOUIS J. BACCI, JR.: Yeah.

4 CATHERINE PRESTON CONNOLLY: -- which is the
5 difference between -- difference between what they said they
6 --

7 LOUIS J. BACCI, JR.: Right.

8 CATHERINE PRESTON CONNOLLY: -- were doing in
9 renewables and the State requirement. So --

10 GERHARD WALKER: And I do want to clarify one
11 thing, right? So the New England ISO numbers are all the
12 New England states together, and that's not just
13 Massachusetts.

14 So -- and this is -- this is where this is, you
15 know, is a bit of moving numbers around game. If -- so 12
16 plus seven is 19, right?

17 So 19 percent of the New England ISO mix that's
18 qualified as renewable -- just for the sake of argument
19 include hydro -- I agree there might be some deductions from
20 that to your point, but for the argument here, let's call it
21 19 percent. And let's round it up, make it 20.

22 If the Massachusetts Utilities we could get to 22,

1 they'll buy proportionally higher amounts of renewable, and
2 as a result the utilities in Maine, New Hampshire and
3 Vermont will have proportionally less renewable to -- for
4 the access, right? By the fact that one party buys more
5 renewable doesn't change the mix on the ISO. It just makes
6 one bulk purchase greener and one less green.

7 So it is entirely possible for the Massachusetts
8 EVCs in their basic supply to ensure that they meet those
9 goals, even if the New England ISO market falls short of
10 those goals, right? Because the New England ISO market's
11 more than twice the size of what Massachusetts consumes. So
12 that is perfectly possible.

13 I just don't want to have those two --

14 CATHERINE PRESTON CONNOLLY: Right.

15 GERHARD WALKER: -- numbers confused. The New
16 England ISO part --

17 CATHERINE PRESTON CONNOLLY: Yeah.

18 GERHARD WALKER: -- does not represent the
19 Massachusetts energy consumption.

20 CATHERINE PRESTON CONNOLLY: Thank you again --

21 LOUIS J. BACCI, JR.: So there should be --

22 CATHERINE PRESTON CONNOLLY: -- for clarification.

1 So I think we're going to move on from the understanding of
2 all the data associated with the complexity of how the
3 energy market works.

4 Hugh, did you have a question that is not related
5 to the mix that we're going to get more data on to dig into?

6 HUGH RUSSELL: I have a comment.

7 CATHERINE PRESTON CONNOLLY: Yep.

8 HUGH RUSSELL: And it's about ground source heat
9 pumps.

10 CATHERINE PRESTON CONNOLLY: Yep.

11 HUGH RUSSELL: And that actually is a misnomer
12 because there are a variety of different ways you can get
13 energy out of the ground. But in, you know, if you've got a
14 geothermal source that's close to the surface, yes, they're
15 ground source, but around here, what we do is we -- during
16 the summer, we pump -- we heat up the rocks in the field.
17 And these fields are, you know, hundreds of feet thick and
18 hundreds of feet wide. And rock doesn't conduct heat very
19 rapidly, actually.

20 But -- so the source is actually primarily solar.
21 It's the heat that we don't want in the summer, we pump it
22 down into the ground, and in the winter, we pump that heat

1 up. And you have to use heat pumps because the temperatures
2 are, you know, the ground temperatures are not -- can't be
3 run directly through a radiator.

4 But in that sense, the ground source project is
5 really very interesting and very valuable. And it is not
6 easy. But I think we all know that 344 Broadway has, I
7 think, three or four wells that gets some or all of its
8 energy from, in terms of heating and cooling.

9 And Harvard has done this in a number of buildings
10 over the last 20 years. It's a very progressive way to
11 substitute solar energy for fossil fuel energy. It's just
12 hard to do and it's -- so it's kind of groundbreaking for
13 Eversource to be doing this experiment, because it's -- you
14 know -- but it's very important.

15 And so, I would speak to my colleagues who are
16 going to be listening to this report next year, to keep this
17 in mind.

18 CATHERINE PRESTON CONNOLLY: Thanks, Hugh. I feel
19 like we've gotten pretty far afield of clarifying questions.
20 So hopefully that will shorten our discussion after our
21 final presenter for the evening on the utility front. But
22 always good to have a robust discussion regardless of where

1 it comes in the agenda.

2 Are there any last clarifying questions for
3 Eversource before we move on to Vicinity Energy?

4 [Pause]

5 All right. Then with that, I would like to pass
6 the baton onto Patrick Haswell from Vicinity Energy to take
7 us through our last presentation for the evening.

8 KEVIN HAGERTY: All right. I think rather than
9 Patrick Haswell, I think you folks are going to have to
10 settle for Kevin Hagerty.

11 CATHERINE PRESTON CONNOLLY: Thank you very much.

12 KEVIN HAGERTY: So I'll just -- so thank you,
13 Chair Connolly and members of the Board. So I'm Kevin
14 Hagerty. I'm the President and Deputy CEO of Vicinity
15 Energy.

16 I am joined by Rick Smith, our Vice-President of
17 Business Development in the Boston Cambridge area, and Don
18 Sylvia, our regional Vice-President, who oversees the
19 District Energy System of North Boston and Cambridge.

20 It looks like we're trying to pull up the deck
21 here but having a little bit of trouble getting in touch
22 with the screen.

1 [Pause]

2 There we go. Okay, great. All right. So I'm
3 going to be talking a little bit today about our long-term
4 plans of what we're going to be doing with the Boston and
5 more importantly the Cambridge District Energy Systems.
6 I'll be talking through our decarbonization plan.

7 And ultimately, we are moving our steam district
8 energy system -- our steam from a system that's
9 predominantly supplied by natural gas to one that is going
10 to be using electricity, namely renewable electricity to
11 generate steam to the customers along the district energy
12 system.

13 So next slide?

14 All right. So first I'll talk about an update on
15 our decarbonizing plan. I'll talk a little bit about our
16 infrastructure planning, and then I'm going to be turning it
17 over to Don Silvia. And he'll run through some updates on
18 maintaining the system and infrastructure updates.

19 All right. Next slide?

20 Okay. All right. So just to set the groundwork
21 here. The district energy system of Boston and Cambridge
22 has been in place since the early 1900s. A lot of folks

1 don't know, but underneath the city streets of Boston and
2 Cambridge is approximately 24 miles of high-pressure steam
3 piping that many of the high-rises and downtown buildings
4 will use to heat the building.

5 We're also connected in most of the major
6 educational and med centers in the Boston/Cambridge area.

7 These systems started out originally as coal.
8 Now, they're no longer coal. They started out in the early
9 1900s as coal. In the 1950s, the system switched over to
10 oil. In the 1990s, or between the '70s and the '90s, the
11 system started to phase in natural gas. With the
12 deregulation of the electric grids in 1996, the system
13 integrated combined heat power, and our next step is going
14 to be switching to electrified steam.

15 And the reason I bring this up is fuel switching
16 for the district energy system is not new. So this is
17 something that the district energy system goes through every
18 several decades, as regulation requirements come into place
19 to burn cleaner fuels, or as the economics shift between
20 what kind of fuel needs to be used to provide the best
21 pricing for the customer base.

22 The district energy's central plans will shift to

1 the type of technologies that can burn or use the type of
2 fuel to produce the steam.

3 So this shift from natural gas that we're going
4 through right now to electrification -- we're using
5 electrified technologies to generate steam, is nothing new
6 for the district energy system. It's something that we've
7 done before. It's just a fuel shift.

8 All right, next slide?

9 All right. So the three technologies that we're
10 going to be using to transition our system from natural gas
11 to using electricity to generate steam is electric boilers,
12 heat pumps, and thermal storage.

13 And I know some folks have heard me talk about
14 this before: The electric boiler is going to be our first
15 -- our first push into using electrified technologies to
16 generate steam.

17 Our first electric boiler is going to be coming
18 online in mid 2024. And we've already started on that
19 project. I'll talk a little bit more about that here in a
20 second. Our demolition has started. The equipment's
21 purchased and we're on schedule to have that put in place by
22 the middle of next year.

1 The reason why we're putting in electric boilers
2 is because it's something that we can do quickly. It's
3 something that is relatively low cost compared to the other
4 technologies that we're looking at, and we're also -- we're
5 building our system around being able to respond to offshore
6 wind.

7 And electric boilers are something that we can
8 turn on and off quickly. So as offshore wind comes onto the
9 New England ISO grid and it suppresses overnight power
10 price, as someone had previously mentioned offshore wind
11 blows at night, oftentimes when people aren't using much
12 electricity.

13 So that suppresses wholesale power pricing.
14 Because we have a transmission level interconnect, we are
15 going to be taking advantage of those periods of electric
16 power surplus and turning the electric boiler on. It's
17 something that can come on quickly and can capture those
18 periods of lower pricing with -- when you're exposed to the
19 wholesale power shape like we will be with our transmission
20 level interconnect.

21 The second technology that we're going to be
22 putting in place is large-scale heat pumps. One of the

1 themes that we are pushing in order to keep costs down is
2 leveraging existing infrastructure.

3 Kendall Station in Cambridge sits right on the
4 Charles River and adjacent the Kendall Station is the Broad
5 Canal. As you walk across the boardwalk on the Broad Canal
6 and look over towards Kendall Station, you'll see two large
7 inlets that go underneath the plant. Those are large
8 cooling water inlets that were formally used for cooling
9 water for the steam turbines, which are no longer used
10 anymore.

11 We don't reject heat to the Charles River, but we
12 have all the infrastructure to pull in approximately 70- to
13 80,000 gallons a minute of water off the Charles River.

14 So we're going to be using this existing
15 infrastructure to pull the water in from the Charles River,
16 lift it up in our heat pump complex, extract or harvest
17 energy out of the Charles River.

18 And our heat pump complex will concentrate that
19 energy into steam up to full steam pressure, and we'll send
20 it out the door at much higher efficiencies than we're able
21 to realize with the electric boiler.

22 Because it's a water-source heat pump, and because

1 we can get -- we can do things with a heat-pump complex in
2 an and ultimately setting that you can't really do in a
3 building, we're able to get to I think some very competitive
4 COPs, despite the high pressures and temperature that we're
5 going to be pushing the heat up to.

6 The last technology that we're going to be
7 leveraging is thermal storage. Thermal storage is -- like I
8 said, we're trying to build this around the upsets in the
9 New England ISO grid that are going to happen with offshore
10 wind.

11 And we understand that there's going to be a --
12 there's a lot of advantage to being able to draw power in
13 overnight. It's less stress for the grid, and also the
14 right economic signals will be there to try to import as
15 much renewable energy as possible overnight. And the
16 thermal storage allows us to do that.

17 In the same footprint that we can install 25 MW of
18 electric batteries, we can install between 600 MW hours to
19 1000 MW hours of thermal heat.

20 If you ultimately don't need the energy as
21 electricity, you can actually store a lot more energy per
22 square foot than you can with electric batteries. So that's

1 why we're really looking to do thermal storage.

2 And the way this is going to work is when the
3 offshore wind is blowing between 8:00 p.m. and, say two
4 o'clock in the morning, our peak steam need in the morning
5 is between 4:00 a.m. and 8:00 a.m. That's when all the
6 building management systems turn on to get the heat into the
7 building, making people comfortable.

8 So we're really just trying to coincide those two
9 peaks. So we're going to be bringing in electrons when the
10 offshore wind is blowing, holding it for a few hours in our
11 thermal storage, and then turning it around and discharging
12 it several hours later in the morning. It's a big part of
13 what allows us to stay competitive with providing
14 electrified steam.

15 All right. So those are the three technologies
16 we'll be using. Again, electric boilers, looking -- we'll
17 have our first online in mid-2024. Heat pumps are a little
18 bit further behind. We have a joint development with MAN
19 Energy, one of the larger providers of these types of heat
20 pumps to have it online by 2026, 2027.

21 And our thermal storage, we're keeping a very
22 close eye on offshore wind penetration rates. And when that

1 gets built, we're looking to pace the wind.

2 All right. Next slide?

3 All right. So the product that we're ultimately
4 going to be selling to our customers and making available to
5 our customers is something called eSteam, which is an
6 electrically generated steam product. It's carbon-free
7 because the electricity we're going to be procuring for this
8 steam is going to be secured through renewable sources.

9 So one of the great advantages of being -- of
10 using electricity is our fuel source which generates steam
11 is you've got flexibility as to where you procure that power
12 from. And so, we're quite fortunate where we are located on
13 the grid. We're also quite fortunate with Massachusetts's
14 push towards offshore wind.

15 So we're going to be procuring renewable
16 electricity, or carbon-free electricity, or whatever kind of
17 carbon -- whatever type of electricity is mandated by
18 regulation frameworks like BUEDO (sic) and BEUDO or BERDO
19 and BEUDO, I'm sorry, to ensure that the steam that our
20 customer is getting that's generated electrically is
21 procured from a carbon-free electric source.

22 All right. And we're -- we do what we say we're

1 going to do. So we have eSteam contracts currently in
2 place. We have obligations that we need to meet to provide
3 electrically generated steam to customers. So we're moving
4 forward with our first e-boiler installation.

5 The picture on the left over there is a steam
6 turbine in Kendall Station. So we have three of those steam
7 turbines. Two of them are currently retired in place. You
8 can see how that started out as a perfectly well functioning
9 steam turbine. We've taken that turbine out, and the
10 picture on the right is what we have today.

11 So we've completed the demolition, and that space
12 there is large enough to hold two E-Boilers. So an E-Boiler
13 is about the size -- a 42-MW e-boiler is about the size of a
14 semi-truck trailer if you stand it up on end. And so, you
15 can see that we can fit about two of those vertically
16 mounted in that space there.

17 So Phase 1, we'll have our first e-boiler there,
18 and as load increases, or demand for eSteam increases, we'll
19 add a subsequent boiler there.

20 Also, as a point of information, underneath that
21 -- the concrete there, in the picture at the bottom of the
22 pit, that's actually where we have two large canals, so

1 underneath the plant that I already talked about. So there
2 will be two large surf water pumps that pull the water up
3 and deliver that to the heat pump complex so we can harvest
4 that energy.

5 All right. Next slide?

6 Okay. All right. So from here, I'll -- I'm going
7 to turn it over to Don Silvia. That's all we were going to
8 talk on our decarbonizing plan. The rest is Don talking
9 about our system maintenance and infrastructure coordination
10 and work that we're doing in Cambridge. Don?

11 DON SILVIA: Great. Thank you, Kevin. Thank you,
12 members of the Board for hearing us out tonight. You know,
13 most of our efforts the last time we met were around some
14 extension of the system in the Lansdowne Street area and
15 then ongoing maintenance that's taking place.

16 You know, currently we have a very robust
17 preventative maintenance and inspection program that's
18 ongoing. And we work closely with City of Cambridge DPW to
19 manage that program along with the DPU. You know, that
20 includes -- you know, scheduled manhole inspections. We're
21 in the manholes, you know, four times a year. And then we
22 perform mechanical maintenance.

1 We think we do a yeoman's job of keeping up with
2 the maintenance along Main Street and through the city. And
3 that's really what our focus is in Cambridge.

4 Patrick, if you want to move to the next slide?
5 And we can talk through some -- and Patrick, do you want to
6 take this one over, or do you want me to keep going with it?

7 PATRICK HASWELL: Can you hear me, Don?

8 DON SILVIA: Yep. You can hear you.

9 PATRICK HASWELL: Okay. So this is the -- the
10 MXD's substation site that I -- you probably heard
11 Eversource talk quite a bit about earlier tonight.

12 We've been working closely with Boston Properties
13 on the development of this area. And as part of the project
14 scope, we have to essentially relocate our district steam
15 line moving it over probably -- I want to say probably 12 to
16 15 feet in order to allow for the substation to be
17 developed.

18 So we're coordinating for the last three to four
19 years with Boston Properties. And that work is currently
20 underway, right now at the MXD site.

21 You want to go to the next slide, Rick?

22 Don, I don't know if you want me to take this, or

1 if you want me to?

2 DON SILVIA: No, that's fine. I think it was
3 mentioned earlier in Eversource's presentation about the
4 work that was done in the relocation of the gas transfer
5 station. So the gas transfer station that was along Third
6 Street was moved inside of the Kendall property.

7 And along with that, we took advantage of that
8 opportunity to upgrade some of our infrastructure in the
9 area, and we're still working on that along Kendall Street
10 and over to Athenaeum Street, that will include connection
11 to a new building that will be built in the Kendall Square
12 area.

13 And we'll also be doing some manhole
14 reconstruction and rebuild. So we're taking advantage of
15 the disruption of the area by other groups to leverage that
16 opportunity.

17 Next slide, Rick?

18 And this was the finished product, as Eversource
19 said. I mean, it was -- I think it was a great teaming
20 effort between Eversource, BioMed Realty developer and owner
21 in the area, along with Kendall. They provided the space
22 for them to be able to relocate the equipment inside of the

1 Kendall area.

2 And again, be able to upgrade our infrastructure
3 at the same time. So leverage that opportunity. That
4 facility is complete now and actually in service. And I
5 think it was a great example of teaming between all the
6 utilities.

7 Next slide, Rick?

8 That's you, Pat. So that's pretty much everything
9 we have.

10 CATHERINE PRESTON CONNOLLY: Okay.

11 PATRICK HASWELL: Okay.

12 CATHERINE PRESTON CONNOLLY: Well, we --

13 KEVIN HAGERTY: Thank you very much.

14 CATHERINE PRESTON CONNOLLY: We appreciate you
15 being so succinct. Are there questions for the folks from
16 Vicinity? Lou?

17 LOUIS J. BACCI, JR.: Two questions. On the
18 thermal story, this is going to be molten salt, I would
19 guess. And what kind of volume are we talking about?

20 KEVIN HAGERTY: So the -- I'll answer that in two
21 parts. So the storage technology that we're looking at are
22 two different types. So we are looking at molten salt,

1 which is well-established technology, as you know, that's
2 used in solar thermal around the world.

3 However, we think we have a little bit of time
4 here, so we're trying to push the technology envelope on our
5 thermal storage. And there are a lot of solid substrate
6 technologies that are coming out where you can actually
7 store more energy per square foot.

8 So there's some interesting -- there's a hot rock
9 technology out there that's offered by, or is being looked
10 at by several large OEMs, which is usually basically just
11 lava rock.

12 And the advantage is that -- you know, when you're
13 heating rocks up or you're heating ceramics up, you can get
14 it up to, you know, 2500 degrees Fahrenheit versus molten
15 salt, you really can't get it much higher than 700 or so
16 degrees Fahrenheit. So you can get a lot more energy per
17 square foot.

18 And the insulation difference between those higher
19 temperatures and molten salt is not that dramatic. So you
20 end up with a big square footage benefit.

21 So we're actually pushing more towards these
22 higher-temperature solid storage mediums. They're a little

1 new to the field, but there's some very promising pilot
2 presentations out there that we're keeping a close eye on.
3 And I suspect by the time we do go with thermal storage;
4 we'll be able to execute on one of these solid substrate
5 technologies versus molten salt.

6 The size is approximately the same size as -- we
7 have a million-gallon tank on our property that is -- I
8 don't know, help me out with the dimensions, Don. What's
9 the size of that tank?

10 DON SILVIA: I think it's about 80' in diameter
11 and close to 60' -- no, close to 50' high, I believe.

12 KEVIN HAGERTY: So that's the approximate size of
13 our thermal storage.

14 LOUIS J. BACCI, JR.: Not bad. And you would feel
15 the solid substrate would reduce that, by how much, do you
16 think?

17 KEVIN HAGERTY: So we would actually -- we have a
18 footprint that we aim to use. So we will use that entire
19 footprint, because a matter of are we going to be storing
20 600 MW hours of thermal storage, or 1000 MW hours of thermal
21 storage.

22 LOUIS J. BACCI, JR.: Oh, so you'd have capacity.

1 Okay.

2 KEVIN HAGERTY: Yeah.

3 LOUIS J. BACCI, JR.: Makes sense.

4 KEVIN HAGERTY: The other -- yeah, the other
5 interesting thing that happens, if we can store the solid at
6 the higher temperatures, we can leverage one of our -- I
7 don't want to get too technical, but the way we have our
8 steam turbines arranged, we can actually make our thermal
9 storage walk and talk like a 25-MW battery, because the
10 steam turbine exhausts wastes heat in the district energy
11 system.

12 So we want to try to push those higher temps,
13 because that gives us some market arbitrage opportunity as
14 well.

15 LOUIS J. BACCI, JR.: Well, that's what I was
16 curious about; that storage and the heat pump operation.
17 Would you be using that ever to create electricity?

18 KEVIN HAGERTY: So the thermal storage, if we can
19 get to the higher temperatures and the solid substrates
20 check out, yeah, we would use that to generate upwards of 25
21 MW of electricity. So we would store the energy overnight
22 at a very high temperature, and then if the market demanded,

1 we would then turn that around to generate steam and push
2 that steam through our back pressure steam turbine and
3 generate electricity.

4 Conventionally -- conversely, if the electric
5 markets weren't there, we would simply just bypass the
6 turbine and send that energy directly out to the district
7 energy system.

8 LOUIS J. BACCI, JR.: Yeah. It's a -- you know,
9 it's funny thing to say we're going to use electricity to
10 create steam to create electricity.

11 KEVIN HAGERTY: It is. And it's -- it's not
12 something that's typically done, because, you know, most
13 sites don't have access to a district energy system, which
14 is a great heat sink. But our turnaround losses with this
15 thermal storage and making it walk and talk like a 25 MW
16 battery is actually less than 10 percent.

17 LOUIS J. BACCI, JR.: Mm-hm.

18 KEVIN HAGERTY: Conversely, if you had to do this
19 on site and you didn't have a heat sink, you know, you'd be
20 taking turnaround losses, you know, 60- 70 percent or so.

21 LOUIS J. BACCI, JR.: Mm-hm.

22 KEVIN HAGERTY: Which is why people don't

1 typically do it. But with a district energy system, it
2 makes a lot of sense.

3 LOUIS J. BACCI, JR.: Sure. No. Thank you. Very
4 good answers. I thought I knew them, but I wanted to make
5 sure.

6 KEVIN HAGERTY: Yeah. It was a good question.
7 Good question.

8 CATHERINE PRESTON CONNOLLY: Hugh?

9 HUGH RUSSELL: So I'm curious, what proportion of
10 the heating of the city of Cambridge is provided by your
11 system, and what is the potential for increasing that?

12 Because I think the -- you know, your -- that
13 original three-part slide showed that what you're doing fits
14 in with the goal of trying to decarbonize energy really,
15 really well.

16 So where are you now, and where could you be?

17 KEVIN HAGERTY: So I'm going to struggle on a
18 square footage basis. I don't have that answer for you.
19 That's something that we could look into. So I can't answer
20 as to how many buildings compared to the total Cambridge
21 area are connected to the district energy system.

22 That being said, we know this is going to be a

1 very good way for buildings to economically decarbonize. So
2 we are anticipating and working towards expanding the system
3 in Cambridge to best connect as many buildings as we can.

4 We know it's a very good fit for buildings that
5 have a high-energy use. So there's a lot of lab space in
6 Cambridge. This is a very good fit for that. We're already
7 connected to most of the lab buildings, I think, in the
8 immediate area around Kendall Station.

9 But I'd have to get you an answer as to how many
10 buildings overall we're connected to.

11 HUGH RUSSELL: Maybe for next year.

12 CATHERINE PRESTON CONNOLLY: There you go.

13 KEVIN HAGERTY: Pat, can you -- or I'm sorry, Pat
14 or Don --

15 PATRICK HASWELL: So --

16 KEVIN HAGERTY: Do you guys -- Rick any ccolor to
17 add there on, to better answer Hugh's question?

18 PATRICK HASWELL: So from a square footage
19 standpoint, we serve roughly about eight or nine million
20 square feet in total in Cambridge, primarily for the
21 district system, like you mentioned, Kevin, it's all
22 primarily office and labs.

1 A lot of the new development that's going on, and
2 the BP area -- BXP area, I should say, is continuing to grow
3 with us via Green Steam and eSteam.

4 585 Kendall I think was mentioned as well with
5 BioMed Realty as well. So we continue to grow off of our
6 system, and along the system, especially those that
7 currently are utilizing gas and they are looking to, you
8 know, get greener and decarbonize. And they are looking to
9 leverage our eSteam product to do such (sic) that.

10 KEVIN HAGERTY: Thanks, Pat.

11 PATRICK HASWELL: Yep.

12 CATHERINE PRESTON CONNOLLY: Okay. Lou, did you
13 have further questions?

14 LOUIS J. BACCI, JR.: Yeah. One more quick one.

15 CATHERINE PRESTON CONNOLLY: Yep.

16 LOUIS J. BACCI, JR.: What was the percentage of
17 your steam across the river to go to Boston? Roughly,
18 nothing -- I know you do supply Boston. I don't know if
19 it's just Mass General or that facility?

20 KEVIN HAGERTY: I'm going to take a stab at this,
21 and I'm going to ask Don to help me out here. So I would
22 guess it's probably 60- 70 percent of the steam goes over to

1 Boston, Don?

2 DON SILVIA: Yeah, that's correct. it's about
3 two-thirds travels into the city of Boston right now and
4 one-third stays within Cambridge. And that's just because
5 of the way the distribution is right now.

6 As we grow in Cambridge, you know, that ratio will
7 change. We do have other capacity in Boston to supplement
8 us. But all of the steam that goes into Cambridge comes
9 from Kendall Station.

10 LOUIS J. BACCI, JR.: Right. Yeah. I -- just I
11 was curious how much of it was going into Boston. I knew
12 there was a lot. So that's fine. Thank you.

13 CATHERINE PRESTON CONNOLLY: All right. Any last
14 clarifying questions for Vicinity?

15 [Pause]

16 Okay, great. So at this time, we're going to move
17 to public comment. This is not a public hearing, but the
18 Board does take public comment at our Annual Reports from
19 the utilities.

20 So any members of the public who wish to speak
21 should now click the button that says, "Raise hand." And if
22 you're calling in by phone, you can raise your hand by

1 pressing *9.

2 We did not receive any written communications on
3 this topic prior to the meeting or at least by 5:00 p.m.
4 yesterday. If any have been submitted since that time,
5 they'll be entered into the record.

6 Swaathi, I am not seeing any raised hands. Do you
7 want to confirm that and maybe give a last call before we
8 move on from public comment?

9 Oh?

10 SWAATHI JOSEPH: We do have one raised hand. It's
11 a telephone number --

12 CATHERINE PRESTON CONNOLLY: Great.

13 SWAATHI JOSEPH: -- (617) 719-8311.

14 HUGH RUSSELL: It's Heather Hoffman, I believe.

15 SWAATHI JOSEPH: Thank you.

16 Heather, you may proceed.

17 HEATHER HOFFMAN: Hello, yes. Heather Hoffman,
18 213 Hurley Street. And first off, I really want to thank
19 the members of the Board who asked the technical questions
20 about how stuff works or provided explanations, because that
21 was the stuff that I really wanted to know, and I'm pleased
22 that the explanations were things that I think I understood.

1 And so I wanted to, I guess, confirm one thing on
2 the district energy, and that is that the jet engine is long
3 gone.

4 And I guess the other thing is if you're -- if
5 they're taking water out of the Charles and extracting the
6 heat from it, is this having an effect on the temperature of
7 the Charles? I understand they're not heating it anymore,
8 and I was thrilled when I heard that a while back.

9 But I'm just kind of curious if they're changing
10 the temperature even of that area of the Charles, and if
11 that -- if so, if that temperature change has any effect on
12 the critters who live in the river.

13 And with respect to Eversource, since the energy
14 usage one can expect in the city of Cambridge that they'll
15 have to deal with did actually change last night, I'm kind
16 of curious to know if they have taken that into account in
17 their planning, how they're figuring out where they're going
18 to put new substations and all of the other infrastructure,
19 and whether there will be a street left in Cambridge that
20 isn't dug up for all of this stuff.

21 So anyway, I'm glad that I tuned into this, and
22 thanks to all of the presenters.

1 Oh, one last question for the Water Department is
2 about the lawsuit that the City has filed against Lexington
3 with regard to the Hobbs Brook Reservoir. Is there anything
4 that the Water Department can say about that?

5 Thank you.

6 SWAATHI JOSEPH: Making a quick announcement to
7 see if there are any more public comments.

8 [Pause]

9 Catherine, I don't see any more raised hands.

10 CATHERINE PRESTON CONNOLLY: All right. Thank
11 you, Swaathi, for confirming. So now we'll move from public
12 comment to Board discussion.

13 Obviously, as I noted earlier, we've had a good
14 amount of discussion kind of as we went along this evening,
15 but are there Board members who want to kind of -- to share
16 any thoughts or comments that we haven't really gone over
17 this evening yet so far?

18 Ashley?

19 ASHLEY TAN: Thank you. I just have a quick one.
20 Thank you so much for all the presenters who presented
21 tonight. And our last presentation from Vicinity actually
22 reminded me that, you know, most of our universities --

1 larger universities at least -- have their own district
2 energy systems, or that's my understanding.

3 And they may have touched upon this in their Town
4 Gown meeting that I may not have listened that carefully,
5 but I would actually love to hear from them, you know, in
6 our next Town Gown or maybe not this meeting but a little
7 more on how they also plan on, you know, achieving the goals
8 of the City and the State with their own, you know,
9 cogeneration of power plants on their campuses.

10 Not entirely related, but same topic with --

11 CATHERINE PRESTON CONNOLLY: Yeah. Good point.
12 Perhaps the questions we pose in Town Gown should include
13 that -- the same kinds of questions we're asking of the
14 utilities to at least our larger universities.

15 Great. Thank you, Ashley.

16 Any other comments from Board members? All right.

17 All right. Then is there a motion to conclude
18 this item?

19 HUGH RUSSELL: So moved.

20 STEVEN A. COHEN: Second.

21 CATHERINE PRESTON CONNOLLY: All right. Roll call
22 vote?

1 SWAATHI JOSEPH: On that motion, Louis Bacci?

2 [Pause]

3 CATHERINE PRESTON CONNOLLY: Did we lose Lou?

4 SWAATHI JOSEPH: Okay. Let's move to H Theodore
5 Cohen. I believe Ted is absent.

6 SWAATHI JOSEPH: Steve Cohen?

7 STEVEN A. COHEN: Yes.

8 SWAATHI JOSEPH: Hugh Russell?

9 HUGH RUSSELL: Yes.

10 SWAATHI JOSEPH: Tom is absent. Ashley Tan?

11 ASHLEY TAN: Yes.

12 SWAATHI JOSEPH: Mary is absent. Moving on
13 Catherine Preston Connolly?

14 CATHERINE PRESTON CONNOLLY: Yes.

15 SWAATHI JOSEPH: Just quickly checking if Hugh --
16 Lou is back with us. He may have accidentally dropped out.

17 [Four vote YES, One ABSENT]

18 SWAATHI JOSEPH: So that is four members voting in
19 favor and one member absent.

20 CATHERINE PRESTON CONNOLLY: Okay. All right.

21 Then I believe that concludes the business on our agenda.

22 Are there any additional comments from Staff this evening?

1 SWAATHI JOSEPH: None, Chair Connolly. Just a
2 reminder that we do not have Planning Board meetings for the
3 next two weeks. Hope you all have a good Fourth of July,
4 and we shall look forward to resuming the Planning Board
5 meetings on July 18.

6 STEVEN A. COHEN: Wow. Two weeks? How are we
7 going to live? Two weeks.

8 CATHERINE PRESTON CONNOLLY: All right. Well,
9 thank you everyone. And thank you to all the utilities for
10 your presentations, and, again, the detailed discussion this
11 evening. We really appreciate your presence here and the
12 presentations you filed with the City and look forward to
13 some of the follow-up information you'll be forwarding to
14 Staff.

15 And with that, we are adjourned. Thank you all.

16 COLLECTIVE: Have a good night. Thank you.
17 Goodnight.

18 [09:44 p.m. End of proceedings.]
19
20
21
22

E R R A T A S H E E T

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I have read the foregoing transcript of the Planning Board meeting, and except for any corrections or changes noted above, I hereby subscribe to the transcript as an accurate record of the proceedings.

Name

Date

CERTIFICATE

Commonwealth of Massachusetts

Middlesex, ss.

I, Michele Dent, Notary Public in and for the
Commonwealth of Massachusetts, do hereby certify that the
above transcript is a true record, to the best of my
ability, of the proceedings.

I further certify that I am neither related to nor
employed by any of the parties in or counsel to this action,
nor am I financially interested in the outcome of this
action.

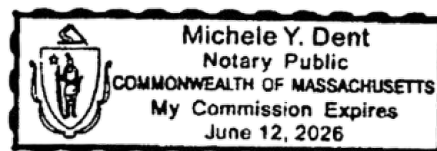
In witness whereof, I have hereunto set my hand this
seventh day of August, 2023.



Notary Public

My commission expires:

June 12, 2026



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