

# BERDO REVIEW BOARD MEETING

*June 30, 2025*



*Mayor Michelle Wu*

# BERDO REVIEW BOARD



**Jessica Boatright**  
*Board Chair*



**Gabriela Coletta Zapata**  
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*BERDO Review  
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**Dr. Claudia  
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*Policy and Equity  
Advisor*



**Zengel  
"Ziggy" Chin**

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*BERDO Review Board  
Assistant*

# Agenda

*Today's Meeting*



## Public Meeting

1. *Overview of District Energy Systems*
2. *Report and Discussion on BERDO Proposed Regulations Update*
3. *Approval of Meeting Minutes*
4. *Administrative Updates*
5. *Adjournment*

The background of the slide is a dark blue aerial wireframe map of a city, showing the outlines of buildings, streets, and parks. The map is rendered in a light blue color, creating a technical and urban aesthetic.

# District Energy Systems

*Overview*



# District Energy Uses and Trends

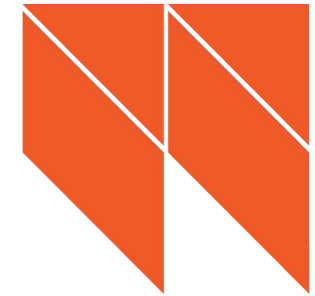
June 30, 2025

# Agenda

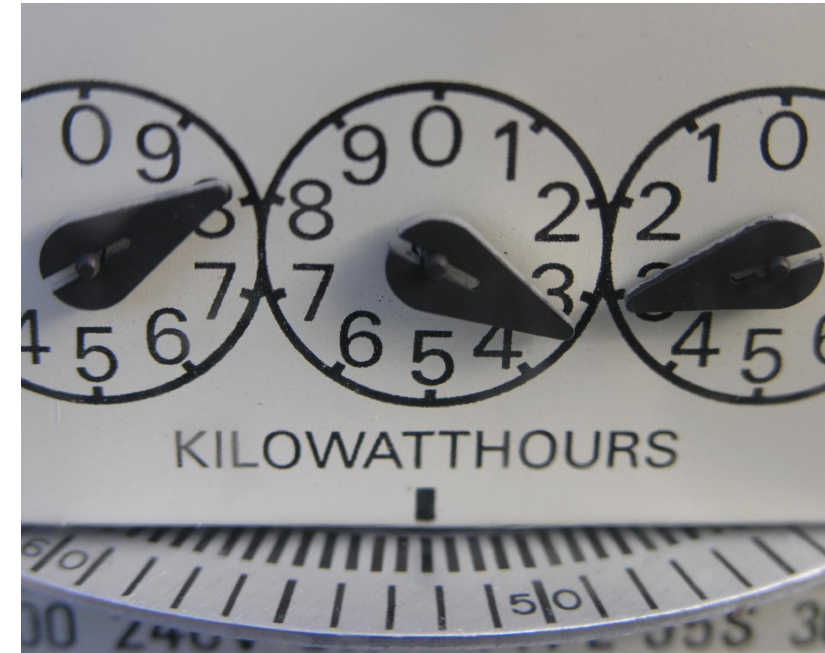


- 1. District Energy Networks**
  - Concepts and types
- 2. Types of Generated Energy**
  - Types and process
- 3. Use of District Energy**
  - Applications within Buildings
- 4. Vicinity and MATEP Networks**
  - Composition and coverage area
- 5. Decarbonization Efforts**
  - Vicinity and other efforts
- 6. BERDO GHG Emissions Factors**
  - Comparison to electricity and district energy

# 1. District Energy Networks



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# District Energy Networks



## Definition

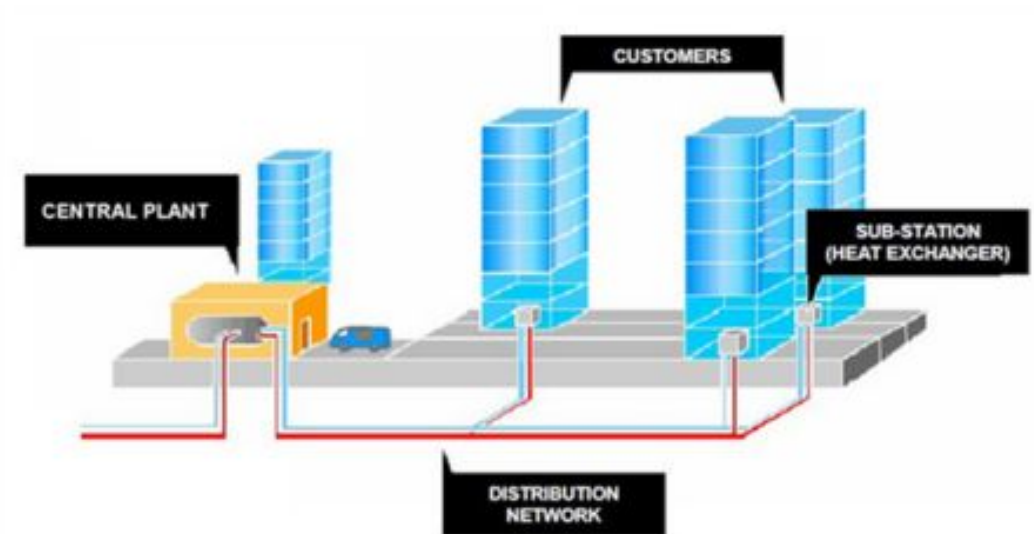
- Central plant generates hot water, steam, and/ or chilled water
- Mediums distributed through a piping network
- Multiple buildings access for heating, hot water, and/ or cooling

## Common Applications

- Dense urban areas
- University/ college campuses
- Hospital/ research campuses
- Military bases and airports

## Ownership Types

- Privately operated (e.g. Boston)
- Publicly regulated utility (e.g. New York)
- Publicly owned (e.g. federal government Washington DC)



# District Energy Networks

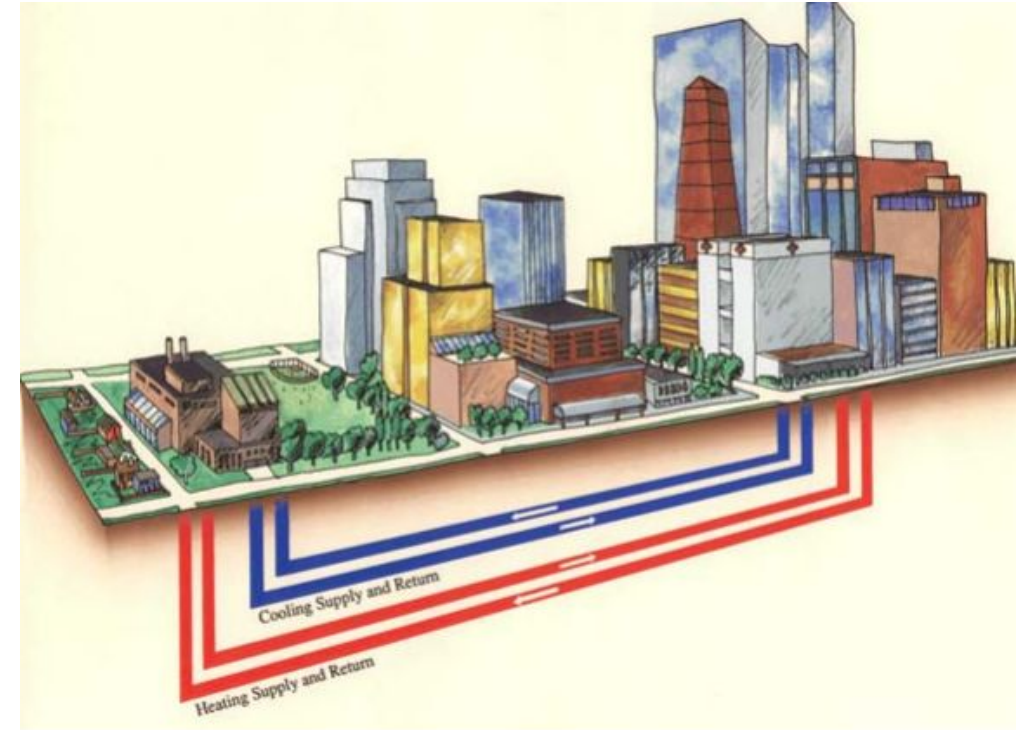


## Purpose/ Benefits of District Energy Networks

- Efficiency
  - CHP, thermal storage, geothermal heat pumps
- Reduced peak demand
- Reduced equipment cost + space for building owners
- Simplified mechanical needs within buildings
- System reliability
  - Industrial scale equipment
- Fuel Flexibility
  - 'Traditional' fuels
  - Organic matter, byproducts, etc

## History

- Late 19<sup>th</sup> Century
  - Urban Systems
  - University Systems



# District Energy Networks

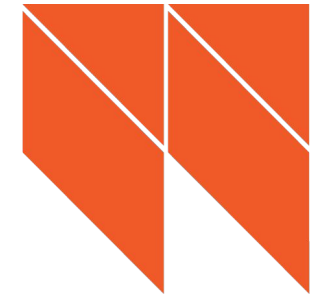


## The Spread and Structure of District Steam Systems in the U.S.

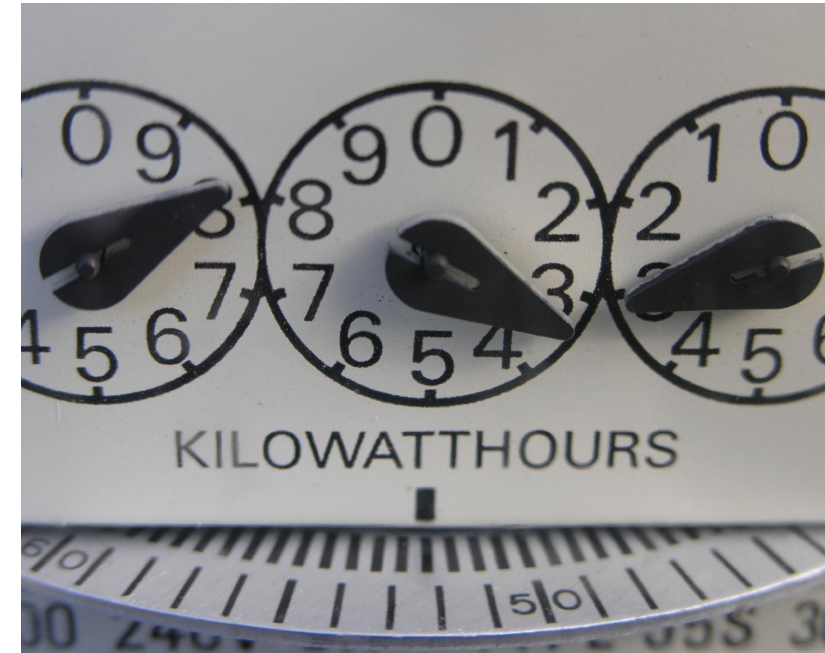
- Over 660 systems in 50 states
- Commercial and institutional buildings primarily served
  - ~ 5 billion SF in heating
  - ~ 2 billion SF in cooling
- District heating accounts for ~9% of global heating needs in building and industry
- Most major colleges and universities



# 2. Types of Generated Energy



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# Types of Generated Energy



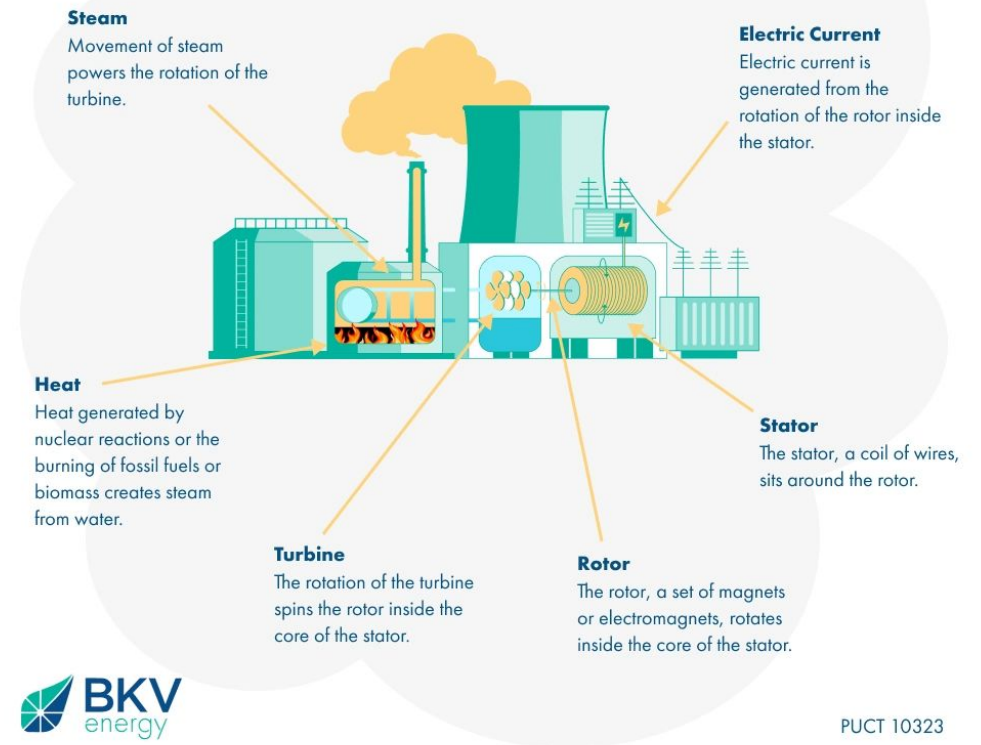
## Electricity

- Heat from various sources (natural gas/oil/coal combustion, geothermal, etc.) is used to make steam
- 75% use natural gas for generation (USDOE 2012)
- Steam is sent through a turbine that is connected to a generator
- The generator spins producing electricity which is sent to the grid

## Electricity via Renewable Energy

- Wind turbines and hydroelectric dams spin their own generators
- Solar panels convert light energy to electrical power

## How Power Plants Generate Electricity

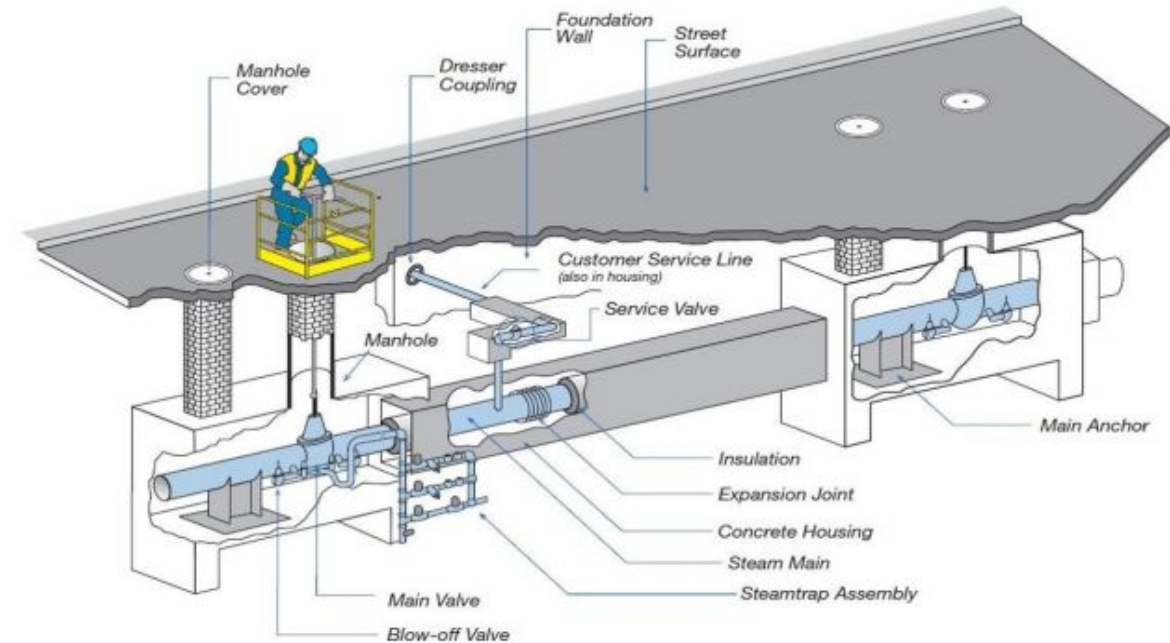


# Types of Generated Energy



## Steam and Hot Water

- Heat from various sources (natural gas/oil/coal combustion, geothermal, etc.) is used directly to make steam and hot water
- Steam and hot water is also often produced as a waste byproduct of electric production
  - Often referred to as combined heat and power or CHP
- After spinning a generator steam is available at a lower pressure or condenses to hot water which still contains usable energy
- Combined heat and power is included in 43% of all district energy systems (USDOE 2012)

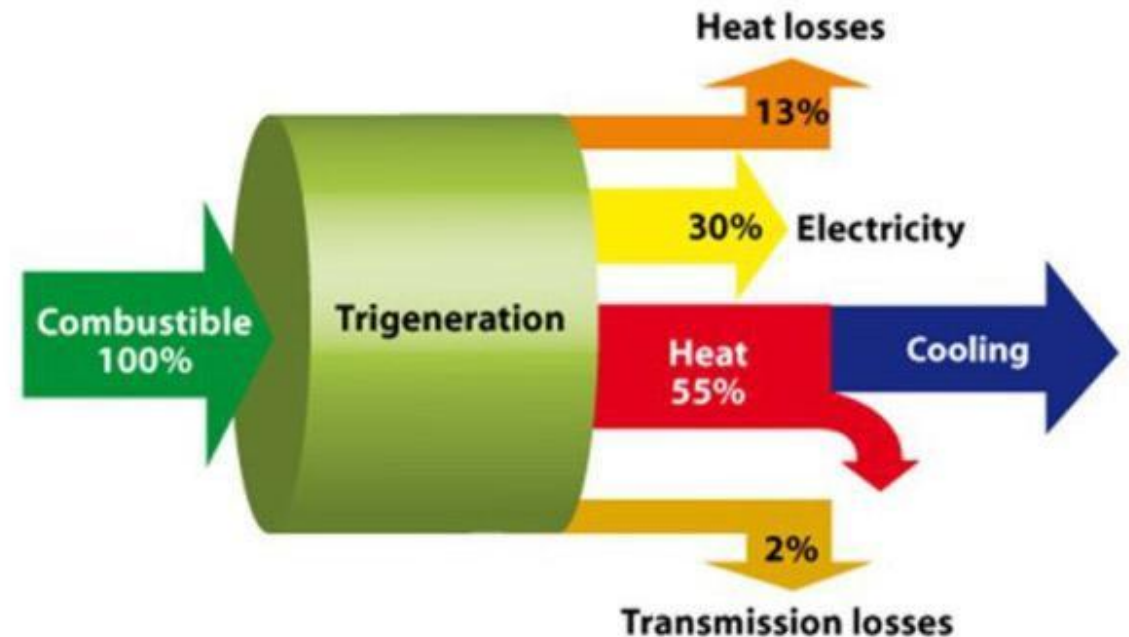


# Types of Generated Energy



## Chilled Water

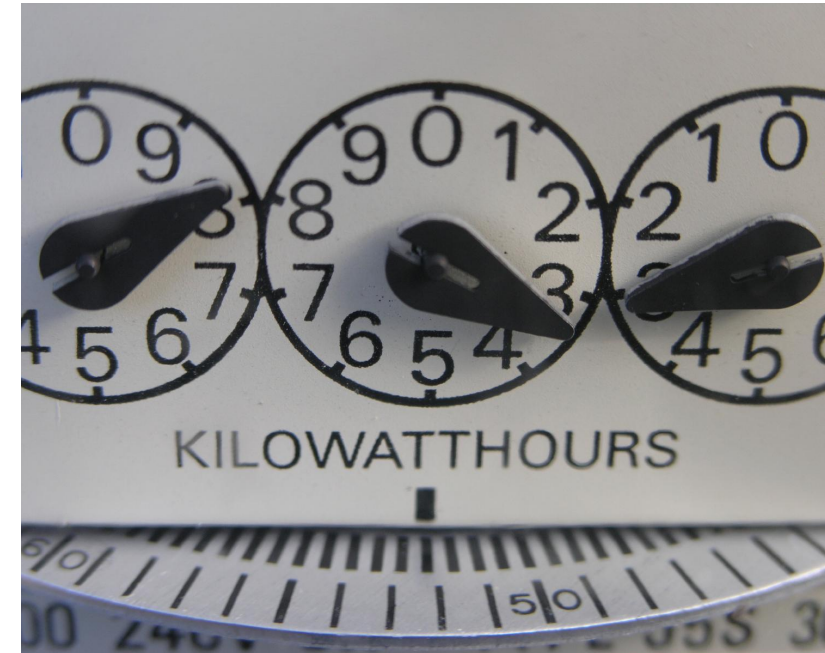
- Heat sources (primary or waste heat) can also be utilized by absorption chillers as the energy source for chilled water production
- Electricity can be utilized by large centrifugal chillers to produce chilled water
  - Often a secondary process from electricity generation
- If waste heat from electric production is used for both hot water and chilled water production this can be referred to as tri-generation



# 3. Use of District Energy



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# Use of District Energy



## Direct Use of District Steam for Heating

- District steam is delivered to the building by the utility company.
- Steam is sent to radiators, baseboards, or heating coils within air handling units to provide comfort heating.



## District Steam Heat as a Heat Source for Hydronic Heating/ Hot Water Loops

- District steam is delivered to the building by the utility company.
- Steam is sent to a heat exchanger which transfers the heat to heating hot water.
- Heating hot water is circulated by pumps to radiators, baseboards, or hot water heating coils within air handling units to provide comfort heating.



# Use of District Energy



## District Steam Heat as a Heat Source for Domestic/ Service Hot Water

- District steam is delivered to the building by the utility company.
- Steam is sent to a heat exchanger which transfers the heat to domestic hot water and/or service hot water.

## District Hot Water as a Heat Source

- District hot water is delivered to the building by the utility company.
- District hot water is sent to a heat exchanger which transfers the heat to another hot water loop internal to the building.
- The internal hot water loop is circulated by pumps to radiators, baseboards, fan coil units, induction units, or hot water heating coils within air handling units to provide comfort heating.



# Use of District Energy



## District Steam or Hot Water for Cooling

- District steam or hot water is delivered to the building by the utility company.
- The steam or hot water can be utilized as input energy to produce chilled water for comfort cooling utilizing an absorption chiller.
- The steam can also be utilized to spin a turbine connected to a chiller compressor to generate chiller water for comfort cooling.

## District Chilled Water

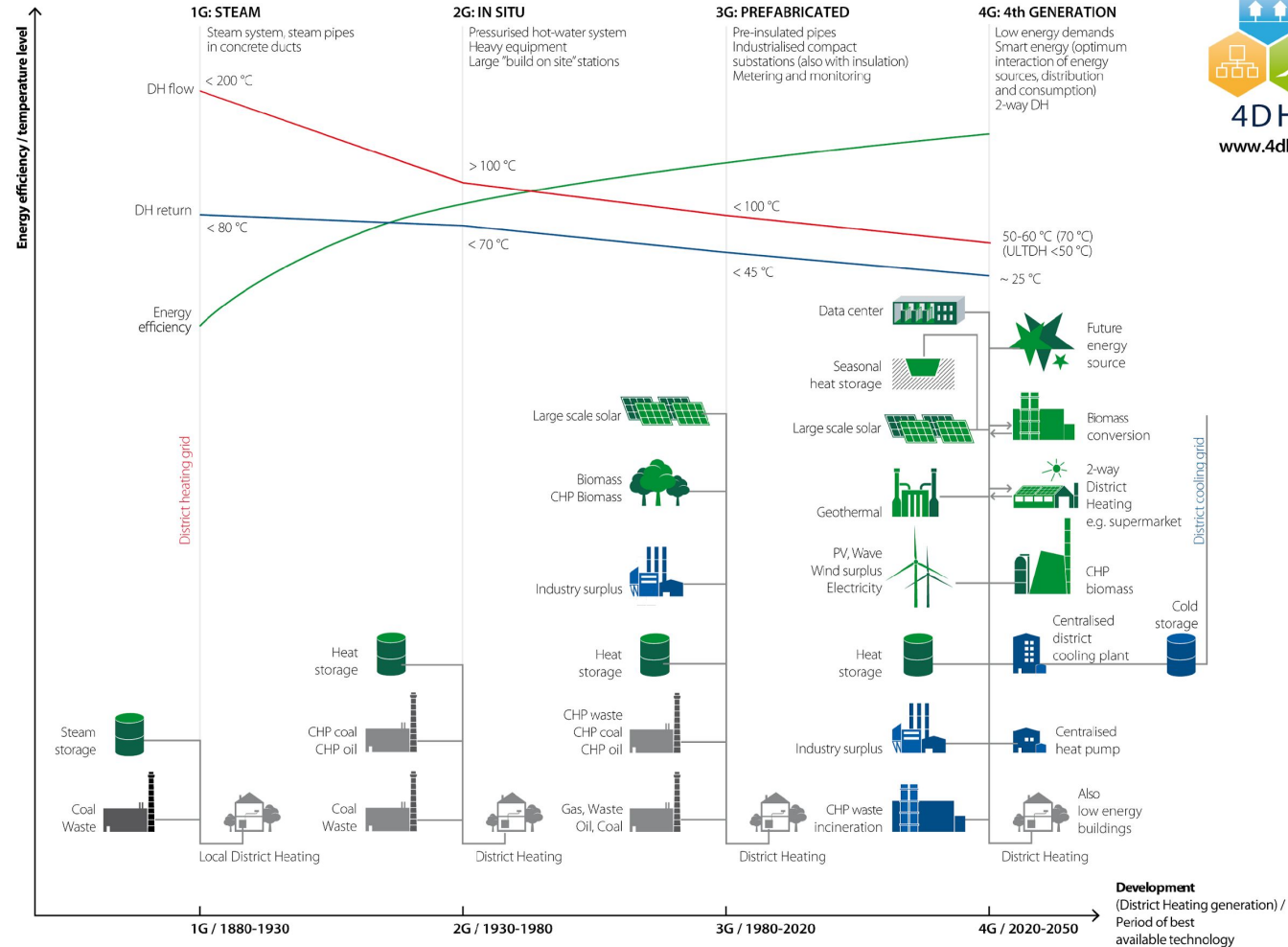
- District chilled water is delivered to the building by the utility company.
- Chilled water is sent to a heat exchanger which cools another chilled water loop internal to the building.
- The internal chilled water loop is circulated by pumps to fan coil units, induction units, or chilled water coils within air handling units to provide comfort cooling.



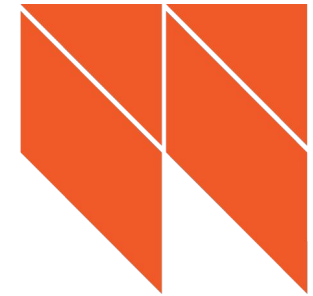
# Use of District Energy

## 4<sup>th</sup> Generation and 5<sup>th</sup> Generation Systems

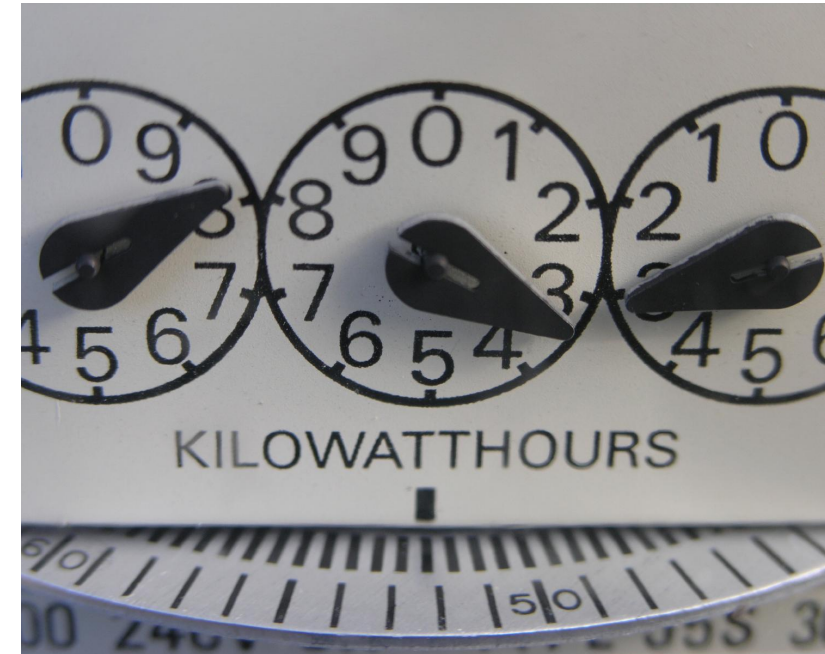
- Allow for heat injections and rejection from a variety of systems, facilitating heat recovery.
- Can be coupled with renewable energy sources and/or low energy sources like ground-source.



# 4. Vicinity and MATEP Networks



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# Vicinity



## Boston and Cambridge Customers

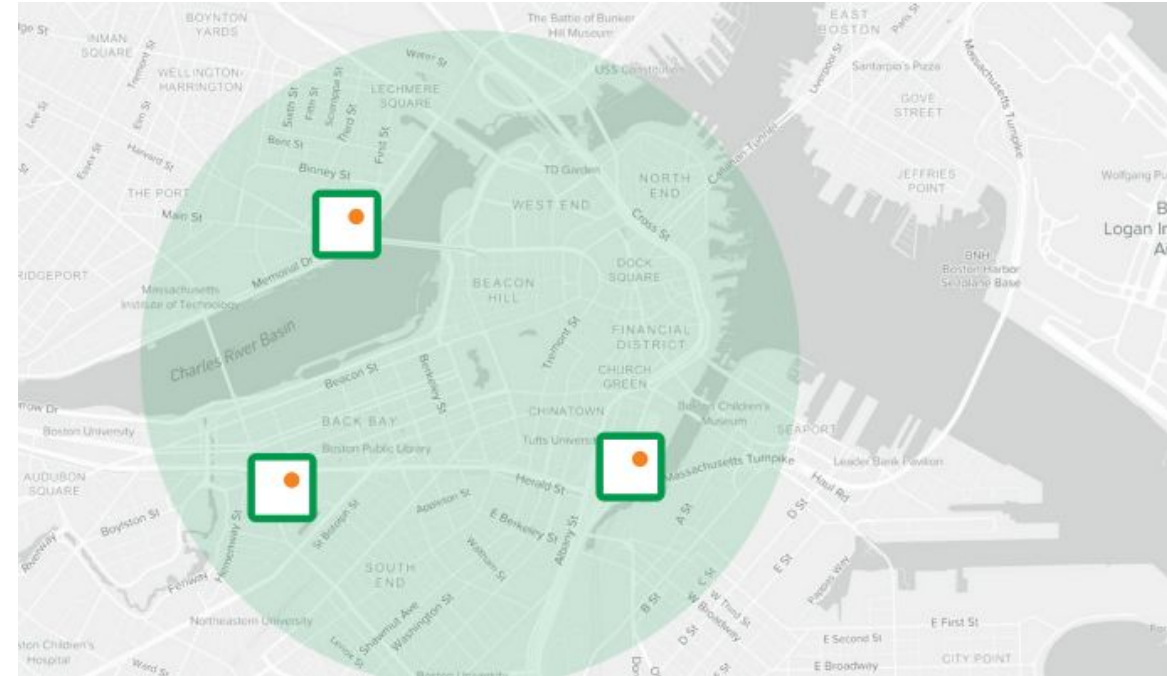
- Hospitals
- Biotech
- Commercial offices
- Higher Education
- New England Aquarium

## Scale

- 245 Buildings
- 71 million SF

## Ownership

- Vicinity is the largest owner and operator of district energy systems in the US
- Operates 19 systems in 12 cities
- Privately held



# Vicinity



## District Steam Plant

- Co-Generation (CHP) plant
  - Generates electricity
  - Utilizes waste heat
- Steam
  - Via Heat recovery steam generator

## Uses

- Heating
- Domestic Hot Water



# Medical Area Total Energy Plant (MATEP)



## Customer: Longwood Medical and Academic Area (LMA)

- Harvard Institutes of Medicine
- Brigham & Women's Hospital
- Children's Hospital Boston
- Dana Farber Cancer Institute
- Beth Israel Deaconess Medical Center
- Joslin Diabetes Center

## Scale

- 74 Buildings
- 12 million SF
- 213 acres

## Ownership

- ENGIE North America (w/Axiom Infrastructure)
- Private, publicly traded company



# Medical Area Total Energy Plant (MATEP)



## Tri-Generation/ Combined Cooling, Heat, and Power Plant (CCHP)

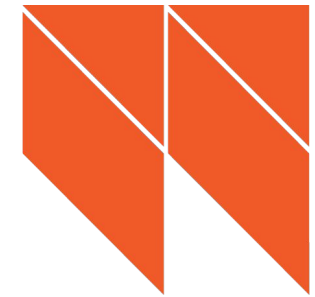
- Co-Generation (CHP) plant
  - Generates electricity
  - Utilizes waste heat
- Steam plant
- Chiller plant
- Microgrid
  - Power network that can operate independently of the main grid

## Uses

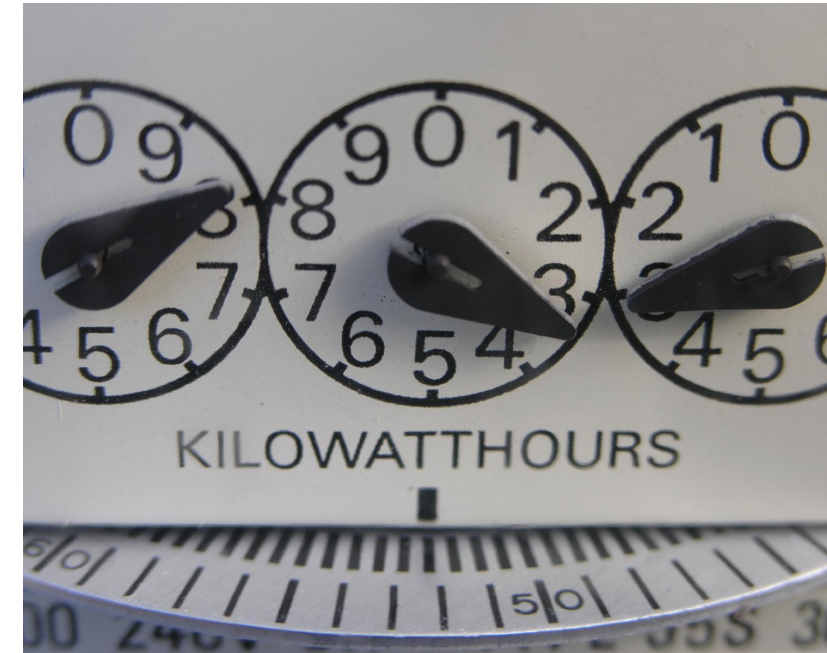
- Heating
- Domestic Hot Water
- Sterilization
- Air Conditioning



# 5. Decarbonization of District Energy Systems



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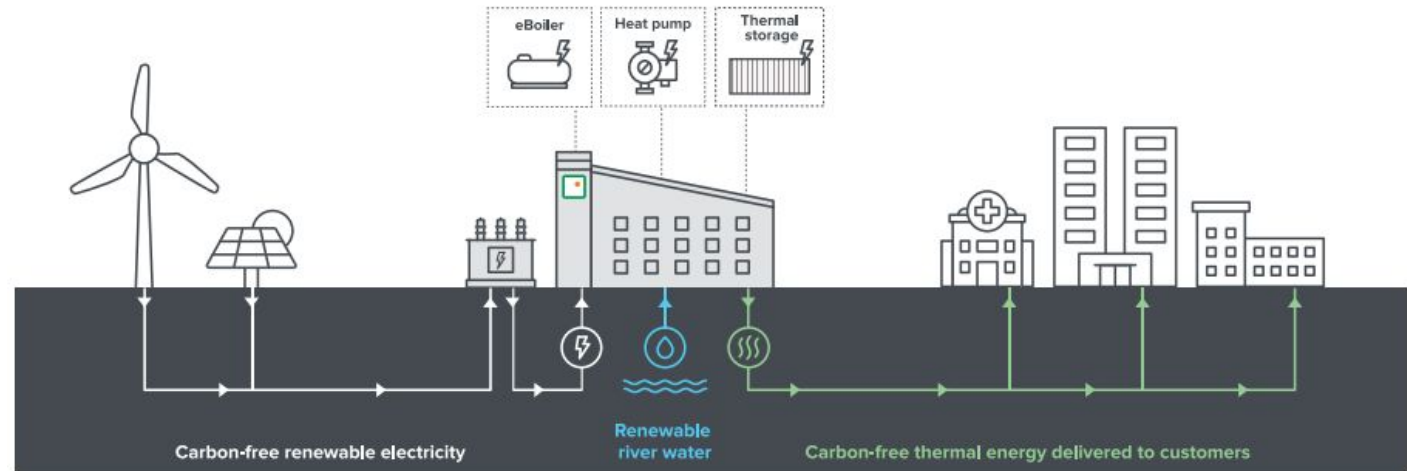


# Publicly Available Decarbonization Plans



## Vicinity - District Steam Plant

- Electric Boilers (2024)
  - Electrode Type
  - COP = 0.90-1.00
  - Allows the use of renewal energy sources
- Electric Heat Pumps (2028)
  - COP  $\geq$  2.00
  - Used to provide baseload
  - Extracts heat from local water sources
  - Improves the overall efficiency of the steam plant
- Thermal Storage (2032)
  - Allows for steam production during periods of low demand on the grid
  - Further enables the use of renewal energy sources when the power is available



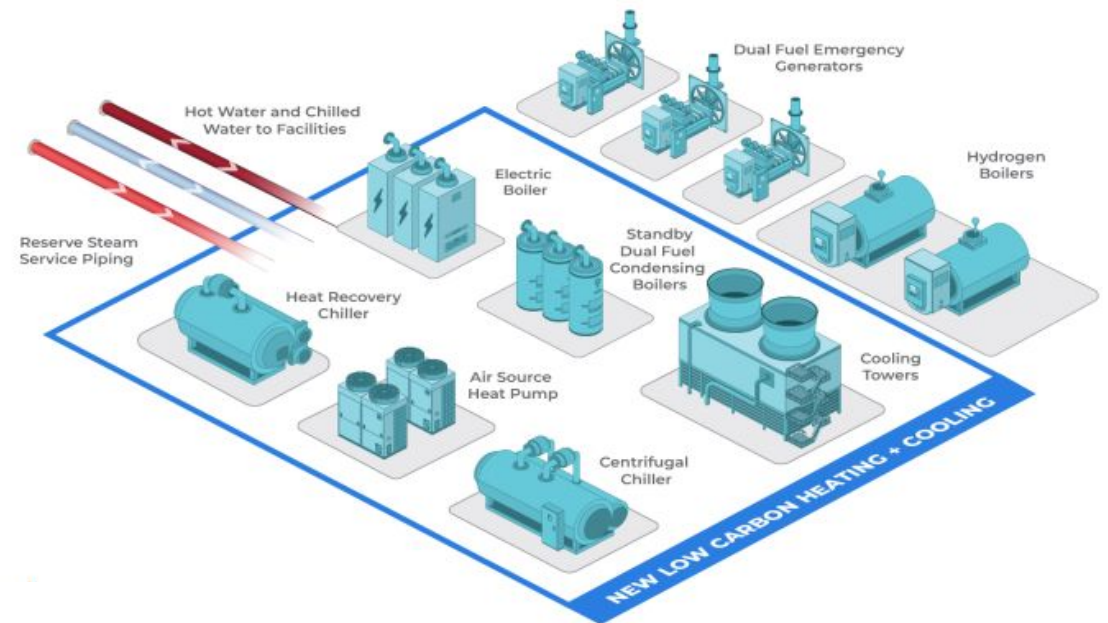
More information available from Vicinity:  
[www.vicinityenergy.us/clean-energy-future/sustainability/](http://www.vicinityenergy.us/clean-energy-future/sustainability/)

# Publicly Available Decarbonization Plans



## Other Examples

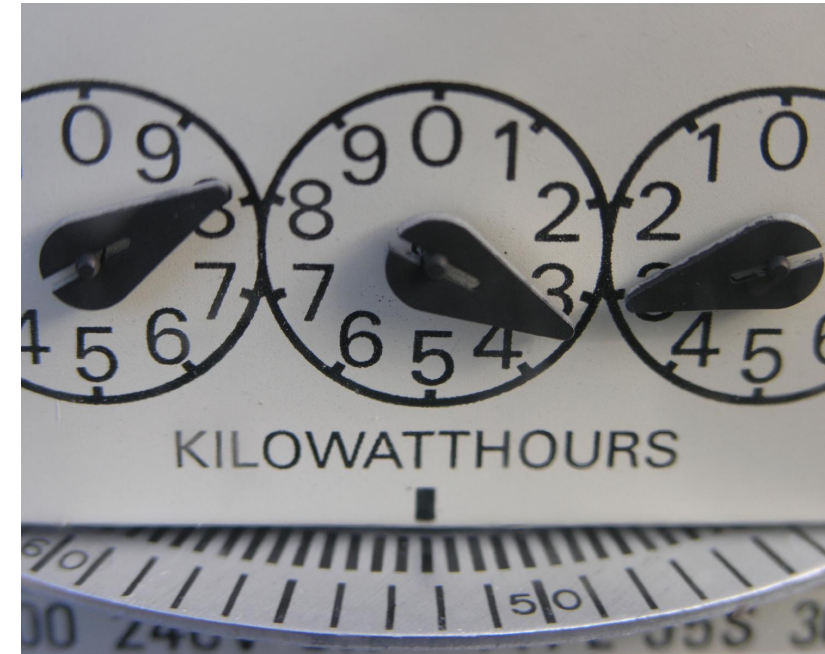
- New York, NY
  - Largest steam system in US
  - High-efficiency heat pumps pulling heat from rivers and industrial processes
  - Electric boilers powered by renewable energy
  - Thermal storage save excess heat during low-demand periods
- Seattle, WA
  - Data center waste heat capture
  - Sewer waste-heat recovery
  - Biomass
  - Battery Storage
- Chicago, IL District Cooling
  - North America's largest downtown district cooling
  - Ice thermal storage system ("ice battery") - produces ice at night when electricity is the least expensive, and melts ice during the day to reduce peak-load electricity cost and carbon emissions.
  - Reduces demand during grid strain periods



# 6. BERDO GHG Emissions Factors



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# BERDO GHG Emissions Factors



Last updated: April 11, 2025

## Vicinity and MATEP both provide Emissions Factors to the City of Boston

- The City of Boston verifies and posts emissions factors
- Emissions factors may change over time based on changes in energy generation

Emissions factors are posted on the BERDO website:

<https://docs.google.com/document/d/1blfWwuPSBeyuTFo6T6iQkLYYIybWLdSjPa-JGKDnFeA/edit?tab=t.0#heading=h.1ydsr1ej197u>

## BERDO EMISSIONS FACTORS LIST

### 2024 EMISSIONS FACTORS

The following Emissions Factors shall be used to calculate Building's emissions from 2024.

FUEL / ENERGY SOURCE	EMISSIONS FACTOR	UNITS OF CO <sub>2</sub> e	DATA SOURCE
<b>FOSSIL FUELS</b>			
Natural Gas	53.11	kg/mmBtu	EPA Energy Star Portfolio Manager
Propane	64.25	kg/mmBtu	EPA Energy Star Portfolio Manager
Fuel Oil (No. 1)	73.50	kg/mmBtu	EPA Energy Star Portfolio Manager
Fuel Oil (No. 2)	74.21	kg/mmBtu	EPA Energy Star Portfolio Manager
Fuel Oil (No. 4)	75.29	kg/mmBtu	EPA Energy Star Portfolio Manager
Fuel Oil (No. 5, 6)	75.35	kg/mmBtu	EPA Energy Star Portfolio Manager
Diesel Oil	74.21	kg/mmBtu	EPA Energy Star Portfolio Manager
Kerosene	77.69	kg/mmBtu	EPA Energy Star Portfolio Manager
<b>DISTRICT ENERGY SYSTEMS</b>			
District Steam (Vicinity, Boston)	59.1	kg/mmBtu	Submitted by District Energy System Operator in 2025**
District Steam (Vicinity, Longfellow Loop)	52.8	kg/mmBtu	Submitted by District Energy System Operator in 2025**
District Steam (MATEP)	65.0	kg/mmBtu	Submitted by District Energy System Operator in 2025**
District Chilled Water (MATEP)	56.4	kg/mmBtu	Submitted by District Energy System Operator in 2025**
District Electricity (MATEP)	71.8	kg/mmBtu	Submitted by District Energy System Operator in 2025**
Default District Hot Water	66.40	kg/mmBtu	EPA Energy Star Portfolio Manager
Default District Steam	66.40	kg/mmBtu	EPA Energy Star Portfolio Manager
Default District Chilled Water, Electric Driven Chiller	52.70	kg/mmBtu	EPA Energy Star Portfolio Manager
Default District Chilled Water, Absorption Chiller using Natural Gas	73.89	kg/mmBtu	EPA Energy Star Portfolio Manager
Default District Chilled Water, Engine-driven chiller natural gas	49.31	kg/mmBtu	EPA Energy Star Portfolio Manager
<b>ELECTRIC GRID</b>			
Projected Grid Emissions Factors*	256	kg/MWh	Environment Department
	0.256	kg/kWh	
Annual Calculated Grid Emissions Factors**	269	kg/MWh	Environment Department
	0.269	kg/kWh	

\* Per Section VIII.A.1.a. of the [Regulation](#), in the event that the annual electric grid Emissions Factor is higher than the projected electric grid Emissions Factor, the projected electric grid Emissions Factor shall be used for calculating compliance.

\*\* Documentation for the calculations of these Emissions Factors are available upon request to [energyreporting@boston.gov](mailto:energyreporting@boston.gov).

# Discussion



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# Board Q&A

*Board Members may discuss and ask questions*

The background of the slide is a dark blue wireframe illustration of a city skyline, viewed from an elevated perspective. The buildings are represented by white and light blue outlines, creating a complex geometric pattern. A semi-transparent dark blue horizontal band runs across the middle of the image, serving as a backdrop for the text.

# Presentation and Discussion

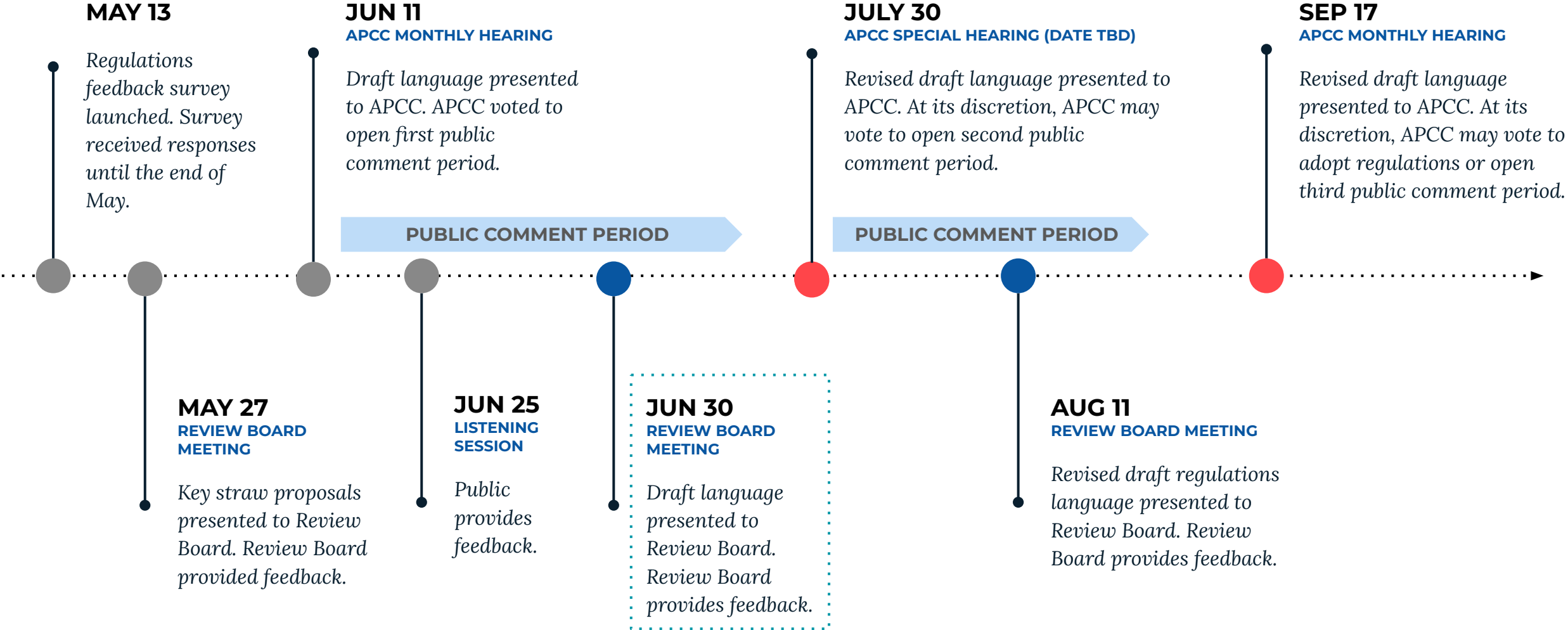
*BERDO Proposed Regulation Updates*





# 2025 BERDO Regulations Update Tentative Timeline

Timeline subject to change at the discretion of the Air Pollution Control Commission (APCC)



# Key Straw Proposals

*Straw proposals subject to change*

The Environment Department is proposing six key changes in the 2025 BERDO Regulations Update:

- 1. Streamlining requirements for third-party verification**
- 2. Modifying application deadlines for flexibility measures**
- 3. Enabling building owners to extend voting timelines for flexibility measures**
- 4. Removing requirement to record decisions related to flexibility measures in the Registry of Deeds for most flexibility measures**
- 5. Enabling the Review Board to grant exemptions on solar requirements without a Hardship Compliance Plan**
- 6. Delineating roles between the APCC, Review Board, and Environment Department**

Additional clarifying draft language related to existing BERDO procedures (e.g., reporting of buildings with shared systems, emissions calculation formulas, etc.) will be presented to APCC in June.



# 1. Streamlining requirements for third-party verification

Key proposed changes in draft language

CURRENT REQUIREMENTS	PROPOSED CHANGES
<p>In 2026 and every Verification Year thereafter, <b>all building owners</b> are required to provide a third-party verification of their reported data <b>for the five calendar years prior</b>.</p>	<p><b>Section XII.c.</b></p> <p><b>For 2025 Buildings (35+ units; 35,000+ sq. ft.):</b></p> <ul style="list-style-type: none"><li>• “[...] Owners shall provide a third-party verification of their 2025 calendar year data in 2026.</li><li>• For every Verification Year thereafter, Owners shall provide a third-party verification for the five calendar years prior.”</li></ul> <p><b>For 2030 Buildings (15 - 34 units; 20,000 - 34,999 sq. ft.):</b></p> <ul style="list-style-type: none"><li>• “[...] Owners are not required to provide third-party verification in 2026.</li><li>• Owners shall provide a third-party verification of their 2030 calendar year data in 2031.</li><li>• For every Verification Year thereafter, Owners shall provide a third-party verification for the five calendar years prior.”</li></ul>

Note: All Buildings would still be required to provide third-party verification for the first year of reporting.

## 2. Modifying application deadlines for flexibility measures

*Key proposed changes in draft language*

	CURRENT REQUIREMENTS	PROPOSED CHANGES
<b>BUILDING PORTFOLIOS</b>	<p><b>September 1</b> of the <b>previous</b> year</p> <p>(e.g. to use a Building Portfolio in 2025, apply by Sep 1 2024)</p>	<p><b>Section XI.c.</b> “Applications must be submitted by <b>September 1</b> for Building Portfolios to be used <b>that same year</b>, provided that <b>the Review Board may extend this deadline for a given year at its discretion.</b>”</p> <p>(e.g. to use a Building Portfolio in 2025, apply by Sep 1 2025)</p>
<b>INDIVIDUAL COMPLIANCE SCHEDULES</b>	<p><b>September 1</b> of the <b>previous</b> year</p>	<p><b>Section XII.c.</b> “Applications must be submitted by <b>September 1</b> to use the Individual Compliance Schedule <b>in the same year</b>, provided that <b>the Review Board may extend this deadline for a given year at its discretion.</b>”</p>
<b>SHORT-TERM HARDSHIP COMPLIANCE PLANS</b>	<p><b>October 1</b> of the <b>previous</b> year (or during the same year only for unexpected circumstances)</p>	<p><b>Section XIII.h.i.</b> “Applications for short-term Hardship Compliances Plans must be submitted by <b>October 1</b> for the Hardship Compliance Plan to be used <b>that same year, provided that the Review Board may extend this deadline for a given year at its discretion.</b>”</p>
<b>LONG-TERM HARDSHIP COMPLIANCE PLANS</b>	<p><b>April 1</b> of the <b>previous</b> year</p>	<p><b>Section XIII.h.ii.</b> “Applications for long-term Hardship Compliances Plans must be submitted by <b>July 1</b> for the Hardship Compliance Plan to be used <b>that same year, provided that the Review Board may extend this deadline for a given year at its discretion.</b>”</p>

# 3. Enabling building owners to extend voting timelines for flexibility measures

Key proposed changes in draft language

	CURRENT REQUIREMENTS	PROPOSED CHANGES
<b>BUILDING PORTFOLIOS</b>	Requirement to vote on an application within 45 / 60 / 90 Days from the Environment Department’s finding of completeness.	<b>Section XI.c.</b> “Within 45 / 60 / 90 Days of the Environment Department’s finding of completeness, <b>or at a later date upon request of the Owner</b> , the Review Board shall vote to approve [...] or deny an application.”
<b>INDIVIDUAL COMPLIANCE SCHEDULES</b>	Requirement to vote on an application within 90 Days from the Environment Department’s finding of completeness.	<b>Section XII.e.</b> “Within 90 Days of the Environment Department’s finding of completeness, <b>or at a later date upon request of the Owner</b> , the Review Board shall vote on an application.”
<b>SHORT-TERM &amp; LONG-TERM HARDSHIP COMPLIANCE PLANS</b>	Requirement to hold hearing on an application within 45 Days from the Environment Department’s finding of completeness.	<b>Section XIII.h.</b> “[...] the Review Board shall hold a public hearing on an application within 45 Days of the Environment Department’s finding of completeness, <b>or at a later date upon request of the Owner.</b> ”



# 4. Removing requirement to record decisions in the Registry of Deeds for most flexibility measures

Key proposed changes in draft language

	CURRENT REQUIREMENTS	PROPOSED CHANGES
<b>BUILDING PORTFOLIOS</b>	Required to record decisions related to approvals, modifications, and terminations.	<b>Section XI. No recording required. Related language was removed.</b>
<b>INDIVIDUAL COMPLIANCE SCHEDULES</b>	Required to record decisions related to approvals, modifications, and terminations.	<b>Section XII. No recording required. Related language was removed.</b>
<b>SHORT-TERM HARDSHIP COMPLIANCE PLANS</b>	Required to record decisions related to approval, modifications, and terminations.	<b>Section XIII. No recording required. Related language was removed.</b>
<b>LONG-TERM HARDSHIP COMPLIANCE PLANS</b>	Required to record decisions related to approvals, modifications, and terminations.	<b>Section XIII.</b> “Owners must record decisions that approve a long-term Hardship Compliance Plan with the Registry of Deeds and send proof of such recording to the Environment Department within 30 Days of issuance of the decision. <b>This requirement does not apply to Deed Restricted Residential Buildings or City Buildings.</b> [...]”



# 5. Enabling the Review Board to grant exemptions on solar requirements without a Hardship Compliance Plan

Key proposed changes in draft language

CURRENT REQUIREMENTS	PROPOSED CHANGES
<p>Building owners can use solar electricity or associated generation credits <b>without</b> MA Class I REC retirement if:</p> <ul style="list-style-type: none"><li>• Solar is located in Boston; OR</li><li>• Solar is located in Eversource Eastern MA territory; the system began operation before 2024; AND the Building began receiving electricity or net metering credits before 2024.</li></ul> <p>Building owners may apply for a Hardship Compliance Plan and request the Review Board’s approval to use solar systems that do not meet these requirements as an alternative compliance mechanism.</p>	<p><b>Section X.d.</b> “Based on extenuating circumstances, Owners may request the Review Board to approve the use of electricity or associated generation credits without corresponding REC retirement from solar generating systems located in Eversource’s Eastern Massachusetts territory that do not meet [these requirements].”</p>



# 6. Delineating roles between the APCC, Review Board, and Environment Department

*Key proposed changes in draft language*

CURRENT REQUIREMENTS	PROPOSED CHANGES
<p>Historically, Policies and Procedures have been presented alongside Regulations and adopted by the APCC at the same time.</p>	<p><b>Following the 2025 Regulations Update, Policies and Procedures should be adopted by the Review Board moving forward.</b> (Language reflected throughout Regulations and Policies and Procedures)</p>
<p>Regulations often make reference to “guidance” adopted by the APCC or the Environment Department.</p>	<p><b>We are proposing to clarify that guidance is created by the Environment Department.</b> (Language reflected throughout Regulations and Policies and Procedures)</p>

In summary, the proposed changes would clarify that:

- **Regulations are adopted by the APCC**
- **Policies and Procedures are adopted by the Review Board**
- **Guidance is adopted by the Environment Department**

# Other Draft Language

# Additional Draft Language in Regulations

## Regulations

### SECTION III. DEFINITIONS

- **Fixed** typos and capitalization of terms.\*\*

### SECTION IV. REPORTING PROCESS

- **IV. Updated** language referring to ENERGY STAR Portfolio Manager to clarify that the Environment Department may designate an alternative reporting platform.\*\*
- **IV.a. Energy and Water Use. Clarified** name of BCCE program and related language.\*\*
- **IV.b. Calculation of Gross Floor Area (GFA). Clarified** that supporting documentation used to calculate GFA must be provided for purposes of third-party verification and/or upon request.
- **IV.c. Building Use Classifications. Updated** that Appendix A has been moved to Policies and Procedures.
- **IV.h. New Information. Clarified** that any new information reported by Owners after May 15 will be included in the annual disclosure as long as the updates are submitted by the Owner prior to September 30 of the relevant year.
- **IV.j. Requesting Alternative Reporting Dates. Clarified** language regarding deadlines to request reporting extensions.

### SECTION V. OWNERSHIP CHANGES AND DESIGNATIONS

- **Added** that previous and new Owners may request the Environment Department to provide a notice of compliance status for a Building.

### SECTION VI. BUILDINGS WITH SPECIAL CONDITIONS

- **VI.a. Buildings with Shared Energy or Water Systems.**
  - **Updated** language regarding reporting procedures for buildings with shared energy or water systems to align with existing guidance from the Environment Department.
  - **Updated** that the Review Board may approve alternative apportionment processes proposed by the Owner, instead of APCC.
- **VI.f. Buildings that Serve as Standalone Power Plants or Central Power Generation Facilities. Added** new section to set reporting procedures for buildings that serve as power plants based on already existing guidance from the Environment Department.

### SECTION VII. THIRD-PARTY VERIFICATION

- **VII.c. Vacant Buildings. Removed** section because the same requirement is already covered by Section VI.e.

# Additional Draft Language in Regulations

## Regulations

### SECTION VIII. EMISSIONS FACTORS

- **VIII.a.**
  - **Updated** deadline for Environment Department to publish annual Emissions Factors to April 15, instead of April 1.
  - **Added** that the Review Board may determine an alternative source to ENERGY STAR Portfolio Manager for Emissions Factors.\*\*
  - **Updated** that Review Board may adopt Emissions Factors via Policies and Procedures, instead of the APCC.

### SECTION IX. EMISSIONS STANDARDS

- **IX.a. Emissions Standards.** **Clarified** language regarding updates to Emissions standards due to a change of the primary Building Use.
- **IX.b. Blended Emissions Standards.**
  - **Updated** language to explicitly allow Owners to opt-in or opt-out of a blended Emissions standard upon change of ownership.
  - **Clarified** language regarding updates to blended Emissions standards due to changes of primary Building Uses.

### SECTION XI. BUILDING PORTFOLIOS

- **XI.c. Application Process for Building Portfolios.** **Added** that a pending application for a new or modified Building Portfolio, or an appeal of a Review Board decision regarding a Building Portfolio, shall not stay an Owner's compliance obligations under the Ordinance or Regulations.
- **XI.e. Modifications of Approved Building Portfolios.** **Updated** language so that, following the modification of a Building Portfolio that is required to provide an Emissions standard compliance plan, the Owner will only be required to provide a short update in the next required annual progress report, instead of a new and separate modified Emissions standard compliance plan.

### SECTION XII. INDIVIDUAL COMPLIANCE SCHEDULES (ICS)

- **XII.b. Applications for ICS for Individual Buildings.** **Added** that a pending application for a new or modified ICS, or an appeal of a Review Board decision regarding an ICS, shall not stay an Owner's compliance obligations under the Ordinance or Regulations.
- **XII.c. Applications for ICS for Building Portfolios.** **Added** that a pending application for a new or modified ICS, or an appeal of a Review Board decision regarding an ICS, shall not stay an Owner's compliance obligations under the Ordinance or Regulations.

# Additional Draft Language in Regulations

## Regulations

### SECTION XIII. HARDSHIP COMPLIANCE PLANS

- **XIII. Modifications of Approved Hardship Compliance Plans.**
  - **Updated** that newly constructed Buildings, and new Buildings that begin zoning review or apply for a building permit after approval of a long-term Hardship Compliance Plan, may be added to a Building Portfolio with a Hardship Compliance Plan, provided that said Buildings meet their Building-specific Emissions standards every year regardless of any relief granted to the Building Portfolio in a Hardship Compliance Plan.
  - **Removed** the restriction that existing Buildings added to a Building Portfolio with a short-term Hardship Compliance Plan may not be subject to short-term Hardship Compliance Plans.

### SECTION XVI. REVIEW BOARD

- **XVI.b. Selection of Review Board Members.**
  - **Removed** that nominations that are selected by the Mayor but not approved by the City Council within 3 months shall be presumed to have been approved.
  - **Clarified** language regarding vacancies.

- **XVI.c. Review Board Procedures.** **Updated** language so that, if any member should fail to attend 6 consecutive meetings or more than 50% percent of total meetings in a calendar year, their seat may be considered vacated.

### SECTION XVII. EQUITABLE EMISSIONS INVESTMENT FUND

- **XVII. Funding Decisions.** **Clarified** that the requirement to hold a public hearing applies to vote on any final funding decision.

# Additional Draft Language in Policies and Procedures



## Regulations

### SECTION 2. DEFAULT ENERGY USE VALUES

- **Fixed** reference to Regulations Section.

### SECTION 3. THIRD-PARTY VERIFICATION

- **Fixed** reference to Regulations Section.
- **B. Added** Phius Certified Rater to list of credentials for third-party verifiers.

### SECTION 4. SPECIAL CONDITIONS

- **4. Removed** Section because the same requirement is already covered by Section VI.e of the Regulations.

### SECTION 4. EMISSIONS FACTORS (RENUMBERED)

- **A. Updated** that Emissions factor methodologies will be reviewed by the Review Board, instead of APCC.
- **B. Electric Grid Emissions Factors. Added** the Renewable Energy Portfolio Standard (RPS) Class I minimum annual requirements as part of the factors included in the calculations of the electric grid emissions factors.
- **C. Boston Municipal Aggregation Program. Clarified** name of BCCE program and related language.

### SECTION 5. CALCULATING BUILDING EMISSIONS (RENUMBERED)

- **B - C. Added** procedures to calculate emissions from grid electricity consumption and BCCE.
- **D. Clarified** language related to Emissions intensity.
- **E. Added** that the Environment Department may provide additional guidance to calculate Building Emissions.

### SECTION 6. BLENDED EMISSIONS STANDARDS (RENUMBERED)

- **G. Clarified** supporting documentation that can be used to verify primary Building Uses.

### SECTION 8. BUILDING PORTFOLIOS (RENUMBERED)

- **A. Applications. Added** that the Environment Department may determine an alternative source to U.S. EPA for data related to asthma rates and the Air Toxics Respiratory Hazard Index.
- **B. Emissions Standard Compliance Plans and Progress Reports. Updated** language regarding annual progress report updates for modified Building Portfolios to align with proposed Regulations change.

# Additional Draft Language in Policies and Procedures



## Regulations

### SECTION 9. ICS (RENUMBERED)

- **A. Data Sources for Baseline Year.** **Added** that the Review Board may determine an alternative source to ENERGY STAR Portfolio Manager for Emissions Factors.

### SECTION 10. HARDSHIP COMPLIANCE PLANS (RENUMBERED)

- **A. Clarified** that the “Department” refers to the Environment Department.

### SECTION 11. REVIEW BOARD POLICIES (RENUMBERED)

- **B. Designation of Community-Based Organizations.** **Updated** that the Review Board may updated the definition of Greater Boston as it relates Community-Based Organizations, instead of the APCC.

### APPENDIX A. BUILDING USE CLASSIFICATIONS

- Moved Appendix A from Regulations to Policies and Procedures.
- Added new property types from ENERGY STAR Portfolio Manager.

### APPENDIX B. PROJECTED GRID EMISSIONS FACTORS (RENUMBERED)

- Updated Projected Grid Emissions Factors to be applicable for 2027 - 2050.



# Updated Projected Emissions Factors

YEAR	OLD PROJECTIONS [Average Emissions Factors] (kg/MWh)	UPDATED PROJECTIONS [Semi-Residual Emissions Factor]* (kg/MWh)
2025	249	**
2026	242	**
2027	235	265
2028	227	265
2029	220	264
2030	213	259
2031	206	254
2032	199	249
2033	192	243
2034	185	237
2035	178	231
2036	171	224
2037	163	217
2038	156	211
2039	149	204

YEAR	OLD PROJECTIONS [Average Emissions Factors] (kg/MWh)	UPDATED PROJECTIONS [Semi-Residual Emissions Factor]* (kg/MWh)
2040	142	198
2041	135	192
2042	128	187
2043	121	182
2044	114	177
2045	107	173
2046	99	168
2047	93	163
2048	85	159
2049	78	155
2050	71	150

\* Updated projections use a “semi-residual” emissions factor approach that “takes out” the MA RPS Class I load to avoid double counting of renewable energy in MA. This aligns with the methodology used to calculate BERDO’s annual grid emissions factors.

\*\* In compliance with Section 4.b.i of Policies and Procedures, 2025 and 2026 projected emissions factors have not been updated as any new projections shall be published at least 2 years prior to use.

# Projected Grid Emissions Factor Comparison

## OLD PROJECTIONS WITH NO RPS CREDIT

$$\text{Electricity Use} \times \text{Average Emissions Factor}$$

- Does not adequately credit building owners with the RPS Class I
- Outdated projections with old RPS Class I requirements and grid conditions

## OLD PROJECTIONS WITH RPS CREDIT

$$\text{Electricity Use} \times (100\% - \text{RPS Class I}) \times \text{Average Emissions Factor}$$

- Any electricity use already covered by RPS Class I has zero emissions
- Partially double counts RPS Class I
- Outdated projections with old RPS Class I requirements and grid conditions
- Projections do not align with methodology for annual grid emissions factors

## NEW PROJECTIONS WITH RPS CREDIT

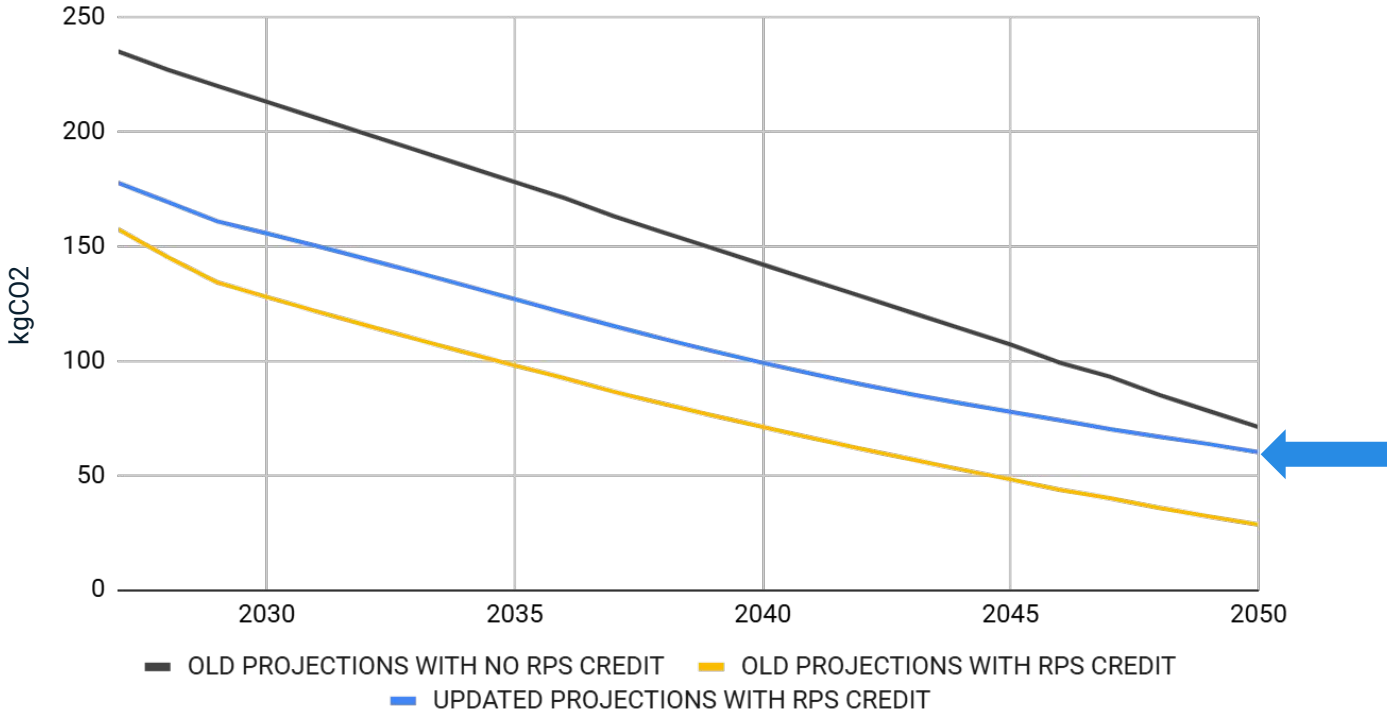
$$\text{Electricity Use} \times (100\% - \text{RPS Class I}) \times \text{Semi-Residual Emissions Factor}$$

- Any electricity use already covered by RPS Class I has zero emissions
- Credits building owners with RPS Class I without double counting
- Updated projections with most recent RPS Class I requirements and grid conditions
- Projections align with methodology for annual grid emissions factors



# Emissions Comparison for 1 MWh of Electricity Use

YEAR	kgCO2		
	OLD PROJECTIONS WITH NO RPS CREDIT	OLD PROJECTIONS WITH RPS CREDIT	UPDATED PROJECTIONS WITH RPS CREDIT
2027	235	157	178
2028	227	145	169
2029	220	134	161
2030	213	128	156
2031	206	122	150
2032	199	115	144
2033	192	109	139
2034	185	104	133
2035	178	98	127
2036	171	92	121
2037	163	86	115
2038	156	81	109
2039	149	76	104
2040	142	71	99
2041	135	66	94
2042	128	61	90
2043	121	57	85
2044	114	52	81
2045	107	48	78
2046	99	44	74
2047	93	40	70
2048	85	36	67
2049	78	32	64
2050	71	28	60



- The updated projections give credit to building owners for the RPS Class I without double counting renewable energy generation in Massachusetts.

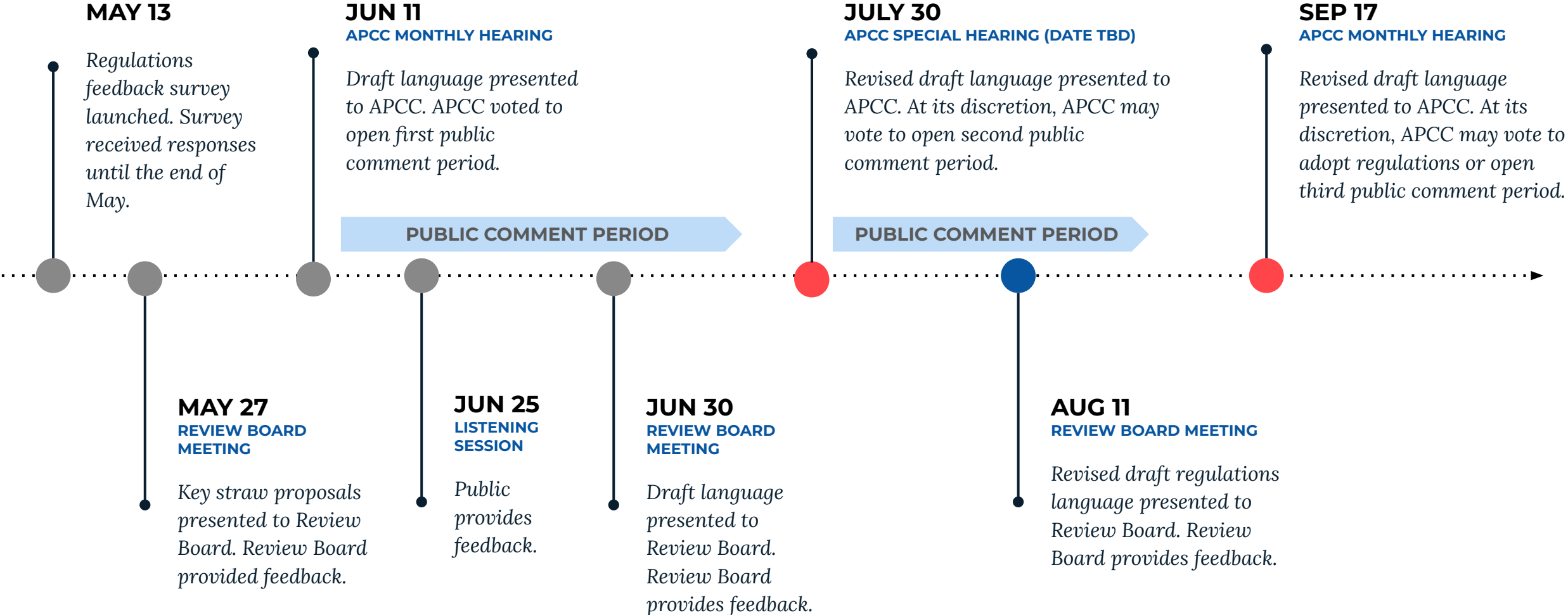
# Next Steps

- **Public comment period** on the draft language for BERDO Regulations and Policies and Procedures is open until **July 15, 2025 at 5:00 p.m.**
  - *You can find the draft Regulations and Policies and Procedures (clean and redlined versions) [here](#).*
  - *If you would like to provide comments on this draft language, you may submit written comments to [apcc@boston.gov](mailto:apcc@boston.gov) or the Air Pollution Control Commission, Boston City Hall, Environment Department, Room 709, 1 City Hall Square, Boston, MA 02201.*
- The BERDO team will work to analyze public comments and make revisions to the draft language accordingly.
- Revised draft language will be presented to the APCC on **July 30, 2025.**



# 2025 BERDO Regulations Update Tentative Timeline

Timeline subject to change at the discretion of the Air Pollution Control Commission (APCC)



The background of the slide is a dark blue wireframe illustration of a city skyline, viewed from an elevated perspective. The buildings are represented by white and light blue outlines, creating a complex geometric pattern. A semi-transparent dark blue horizontal band is overlaid across the middle of the image, serving as a background for the text.

# Board Q&A

*BERDO Regulations Update*



# Approval of Meeting Minutes

*Board votes on approving previous meeting's minutes*

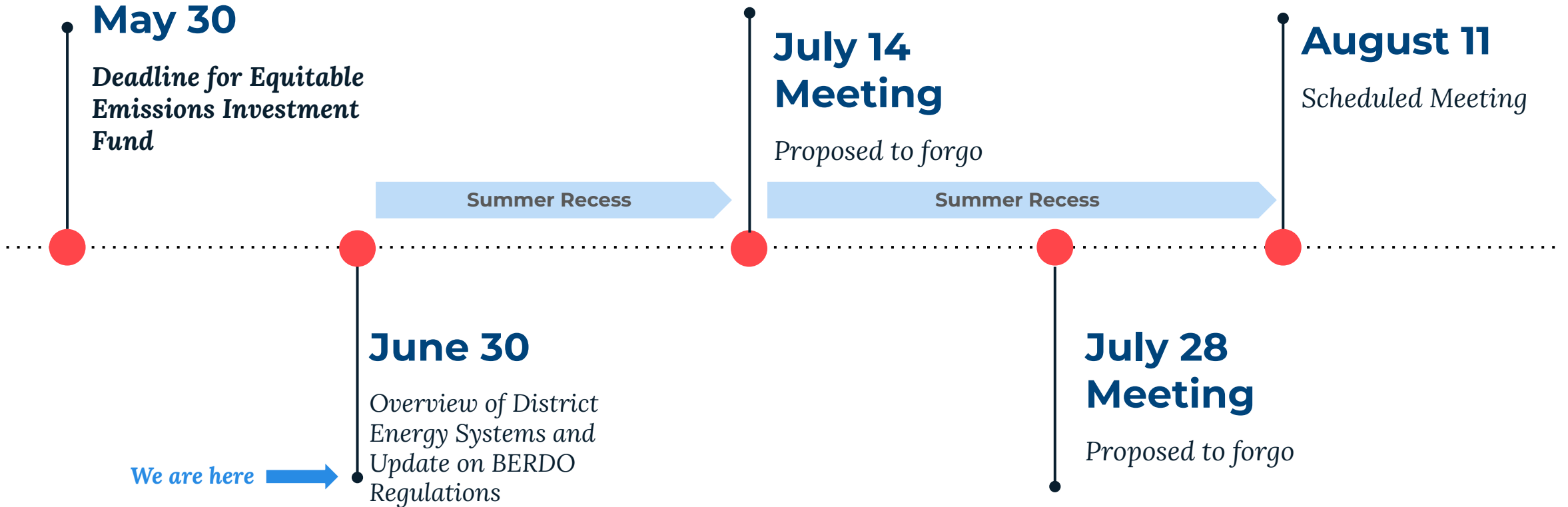
The background of the slide is a dark blue aerial wireframe map of a city, showing the outlines of buildings, streets, and parks. The lines are white and light blue, creating a technical, architectural feel.

# Administrative Updates

*Staff presents administrative updates*



# Review Board Upcoming Timeline



# Adjourn

Thank you! A recording and slide deck for this meeting will be available at [boston.gov/berdo-review-board](https://boston.gov/berdo-review-board).

