The City of Cambridge Assistant City Manager for Community Development ("the Assistant City Manager") hereby adopts these Regulations pursuant to Cambridge Municipal Ordinance Section 8.67 "Building Energy Use Disclosure and Emission Reductions".

BEUDO Regulations - Phase 1

I. Definitions

A. Generation Facility - one or more central plants producing hot water, steam, electricity, and/or chilled water for use in powering, heating or cooling more than one building in Cambridge

B. BEUDO Procedures - The published document containing information related to any Emission Factors for each compliance period, as well as other relevant information. Said document can be downloaded from the City's BEUDO webpage, or a requested from BEUDOregs@cambridgema.gov.

C. Massachusetts Class I Renewable Portfolio Standard (RPS) - The program administrated by the Commonwealth of Massachusetts described on its website and referenced in 225 CMR 14.07.

D. All definitions contained in Chapter 8.67 of the Cambridge Municipal Code are applicable to these regulations.

II. Reporting Process [this section intentionally left blank]
III. Third Party Verification [this section intentionally left blank]
IV. Property Ownership [this section intentionally left blank]
V. Baselines [this section intentionally left blank]
VI. Reduction Schedules [this section intentionally left blank]
VII. Campus Compliance [this section intentionally left blank]

VIII. Emission Factors

A. Pursuant to 8.67.010 (15), by January 1 of each year prior to each standard Compliance Period, Emission Factors to be used by all Covered Property Owners in the determination of Greenhouse Gas emissions of their Covered Properties will be published. Emission Factors to be used for each period, along with any alterations to methodology used in determining them, will be public by:
January 1, 2025 (for Compliance Period 1: 2026 to 2029)
January 1, 2029 (for Compliance Period 2: 2030 to 2034)
January 1, 2034 (for Compliance Period 3: 2035 to 2039)
January 1, 2039 (for Compliance Period 4: 2040 to 2044)
January 1, 2044 (for Compliance Period 5: 2045 to 2049)

Emission Factors for years 2010-2025 will be published by January 1, 2025 in the BEUDO Procedures for use in calculating Baseline emissions.

B. All Emission Factors for Energy use, along with additional information on the methodology used in determining them, will be published for each Compliance Period in the BEUDO Procedures by their required deadlines.

C. Emission Factors for natural gas, propane, fuel oil, diesel oil, and kerosene will be based on the standard scientific values utilized by the Environmental Protection Agency's Energy Star Portfolio Manager.

D. Emission Factors for electricity purchased from the grid will be calculated using a residual factor methodology, taking into account the Massachusetts Class I Renewable Portfolio Standard (RPS).

i. The emissions of a Covered Property's electricity use shall be calculated using the following equation:

$$\text{Electric Grid Emissions [kg CO2e]} = \left[\left(\text{Electricity consumed by Covered Property [kWh]} \times \text{(100\% - Annual RPS Class I Minimum Requirement [\%])} \right) - \text{voluntary qualified purchases of Renewable Energy [kWh]} \right] \times \text{Residual ISO New England Electric Grid Factor [kg CO2e/kWh]}$$

ii. A Time of Use methodology will be available for Covered Property Owners who are able to provide hourly profiles for the use of grid electricity. The emission factor for each hour shall be determined using a time-of-use residual factor methodology as outlined in the BEUDO Procedures. Building data and the calculation of emissions must be provided in hourly intervals.

1. A Covered Property that uses a Time of Use methodology shall also use such methodology for its Baseline years.

E. Generation Facilities

i. Emission Factors for steam, hot water, chilled water, and electricity produced by a Generation Facility will be calculated using the efficiency methodology of the World Resources Institute Greenhouse Gas Protocol.

1. All Generation Facility owners are required to submit complete verified data needed to calculate the Emission Factor of every energy output of their facility for the previous calendar year, as well as the final calculated Emission Factors, by April 1 of each year beginning in 2025.

a. Data and the resulting emission factors submitted in 2025 and 2026 (for energy produced in years 2024 and 2025, respectively) are not required to be verified.

b. Verification by an Approved Verification Body (8.67.010 (3)) is required for annual submission of data and factor calculations beginning in 2027 (for energy outputs produced in 2026 and onwards). See Section III for more information regarding verification requirements.

c. In the event that a Generation Facility, which is owned by a Covered Property Owner and connected to the Owner's Covered Property/Properties, does not provide complete and verified data to the city by the required date of a given compliance year, Emission Factors published in the BEUDO Procedures will be applied to the energy inputs for the Generation Facility, and the resulting emissions will be apportioned across the connected buildings by the Gross Floor Area of the building.

d. For a Generating Facility which is not owned by a Covered Property Owner and connected to the Owner's Covered Property/Properties, failure to provide complete and accurate data by the above date will result in application of standard scientific values utilized by Energy Star Portfolio Manager, or other similar values published by state or federal agencies, for generated products (electricity, steam, chilled or hot water, or otherwise) utilized by the Owner's Covered Property/Properties.

2. Data submitted from Generation Facility owners will be used to calculate Emission Factors for each output of the facility, using the formula below:

Allocate the total emissions to each output stream
Use the following formula:

$$E_i = \frac{\frac{Q_i}{e_i}}{\sum_{i=1}^{n} \frac{Q_i}{e_i}} \times E_T$$

where:

E_i	=	emissions allocated to output stream i
Q_i	=	energy content of output stream i
e_i	=	efficiency of the production of output stream i
E_T	=	total emissions of the district energy system
n	=	number of output streams

Further information to calculate Emission Factors of outputs will be included in the BEUDO Procedures as needed.

3. Generation Facility owners requiring an alternate methodology to be used in calculating the output Emission Factors of their plants may request the Energy Content method, endorsed by the World Resources Institute for use in Cogeneration/CHP plants, provided that:
    a. The Generation Facility owner agrees to use the alternate methodology for the remainder of the Compliance Periods in which connected Covered Property/Properties receive the outputs of said Generation Facility.
    b. The request is submitted one year prior to the first Compliance Period.
    c. Emission Factors for the Generation Facility's outputs for the Baseline years of connected Covered Property/Properties must be calculated using the same methodology.

4. Any thermal output of a Generation Facility that is produced using Renewable Electricity shall have an Emission Factor of zero (0) kgCO2e/MMBTU, provided that:
    a. The Renewable Electricity is procured, and resulting Renewable Energy Certificates are retired, in accordance with 8.67.010 (25) and the requirements in Section IX, except:
        i. The requirements for the Covered Property Owner in Section IX are fulfilled by the Generation Facility owner
        ii. Renewable Energy Certificates from a qualifying Renewable Electricity procurement shall be transferred to the Generation Facility owner for retirement.

IX. Renewable Electricity Procurement

A. The use of electricity from onsite renewable electricity generation, such as solar panels, shall be reported in the Covered Property's Energy Star Portfolio Manager account.

i. To qualify as Renewable Electricity, this electricity must be generated onsite by photovoltaic systems, solar thermal power plants, wind turbines, geothermal power plants, or other renewable energy generating sources that may be submitted to and certified by the Department.

ii. Pursuant to 8.67.010 (25), this electricity shall qualify as Renewable Electricity and be subtracted from a building's electric BEUDO emissions if either:

1. The Renewable Energy Certificates (RECs) resulting from the onsite renewable electricity generation are assigned to the Covered Property

and retired, OR

2. If the Covered Property Owner has surrendered the RECs resulting from the system to a clean energy incentive program, such as the Massachusetts SMART program, the Covered Property Owner may purchase an equivalent quantity of MA Class 1 Renewable Energy Certificates to be used in BEUDO compliance.

B. Off-site purchases of Renewable Electricity, as defined in 8.67.010 (25), must meet specific criteria in order to be subtracted from the electric emissions of a Covered Property in calculating Greenhouse Gas Emissions pursuant to 8.67.010 (19).

i. A Covered Property Owner must submit information regarding their Renewable Electricity purchases (proposed or completed) to the City for review and approval. Renewable Electricity resulting from purchases that have not been approved by the City may not be subtracted from the electric emissions of a Covered Property.

ii. All procurement contracts must be for Renewable Electricity from a newly built generating source. The following types of contracts shall qualify as newly built:

1. Contracts which are signed by the Covered Property Owner prior to a generating facility's Commercial Operation Date.

2. Contracts which support an expansion of capacity at an existing renewable energy generating source, of which the expanded capacity was not operational at the time of contract execution.

3. Facilities that were in existence or operation prior to the contract execution, but that are undergoing a repowering as defined by the United States Internal Revenue Service (Notice 2016-31) and will be considered to be again fully operational after the date which the Covered Property Owner signs the contract to repower.

4. Renewable Electricity resulting from the extension of an existing contract which was initially approved by the City per section IX.B.1. The signing organization of the original contract must match the organization, or its successor, signing the extension contract.

iii. The following types of renewable energy purchases are acceptable, provided that they meet eligibility criteria for new projects utilizing acceptable technologies as outlined in 8.67.100 (25) and all other criteria established in these BEUDO Regulations Section IX:

1. Power Purchase Agreements, including virtual Power Purchase Agreements, for electricity and bundled RECs, from renewable electricity generators connected to an electric grid in the jurisdiction of the North American Electric Reliability Corporation.

2. RECs not resulting from a Power Purchase Agreement or Virtual Power Purchase Agreement, provided that they meet the qualifications of RPS Class I eligibility, outlined in 225 CMR 14.05, as those criteria may be amended from time to time, and that they are from a new project.

3. Other types of procurements and contracts which may be submitted by a Covered Property Owner for review by the City and, upon approval, may be listed as an approved project type in the BEUDO Procedures.

iv. In the event that a Covered Property Owner is unable to complete their Renewable Electricity purchase due to breach of contract or a Force Majeure event without cause or fault of the Covered Property Owner, the owner may apply for a deferral compliance plan. Applications for a deferral must follow guidelines and deadlines as per Section XI.

C. Renewable Energy Certificates (RECs) and other environmental attributes produced by on or off-site renewable energy which are intended for use in compliance with BEUDO shall be assigned to a Covered Property or Campus in Cambridge and retired.

i. RECs to be used for BEUDO compliance shall be assigned to a Covered Property Owner, and the quantity of RECs assigned by the Owner to reach compliance of each Covered Property or Campus must be submitted to the City by the annual deadline of May 1.

ii. Assignment and tracking will be carried out pursuant to a tracking system recognized by the United States Environmental Protection Agency. Documentation attesting to REC assignment and retirement, as described in the BEUDO Procedures, of RECs used in Covered Properties must be annually reported the May 1 reporting deadline. Further proof of retirement must be made available for inspection to the City of Cambridge upon request.

iii. In calculating Greenhouse Gas Emissions, a REC may only be subtracted from a Covered Property's electricity use a given compliance year if the REC was generated either within (1) the twelve (12) months before the compliance year or (2) within the compliance year in which they are applied. Pursuant to 8.67.100(7), the REC must be obtained in the year in which it is applied.

X. Verified Carbon Credits [this section intentionally left blank]

Adopted:

Effective Date: December 20, 2024

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