

City of Watertown

**Building Emission Reduction and
Disclosure Ordinance (BERDO)**

Discussion



What is BERDO?

- B** New and Existing **B**uildings
- E** Emissions
- R** Reductions in the Green House Gases
- D** Disclosure of Energy and Emissions
- O** City **O**rdinance

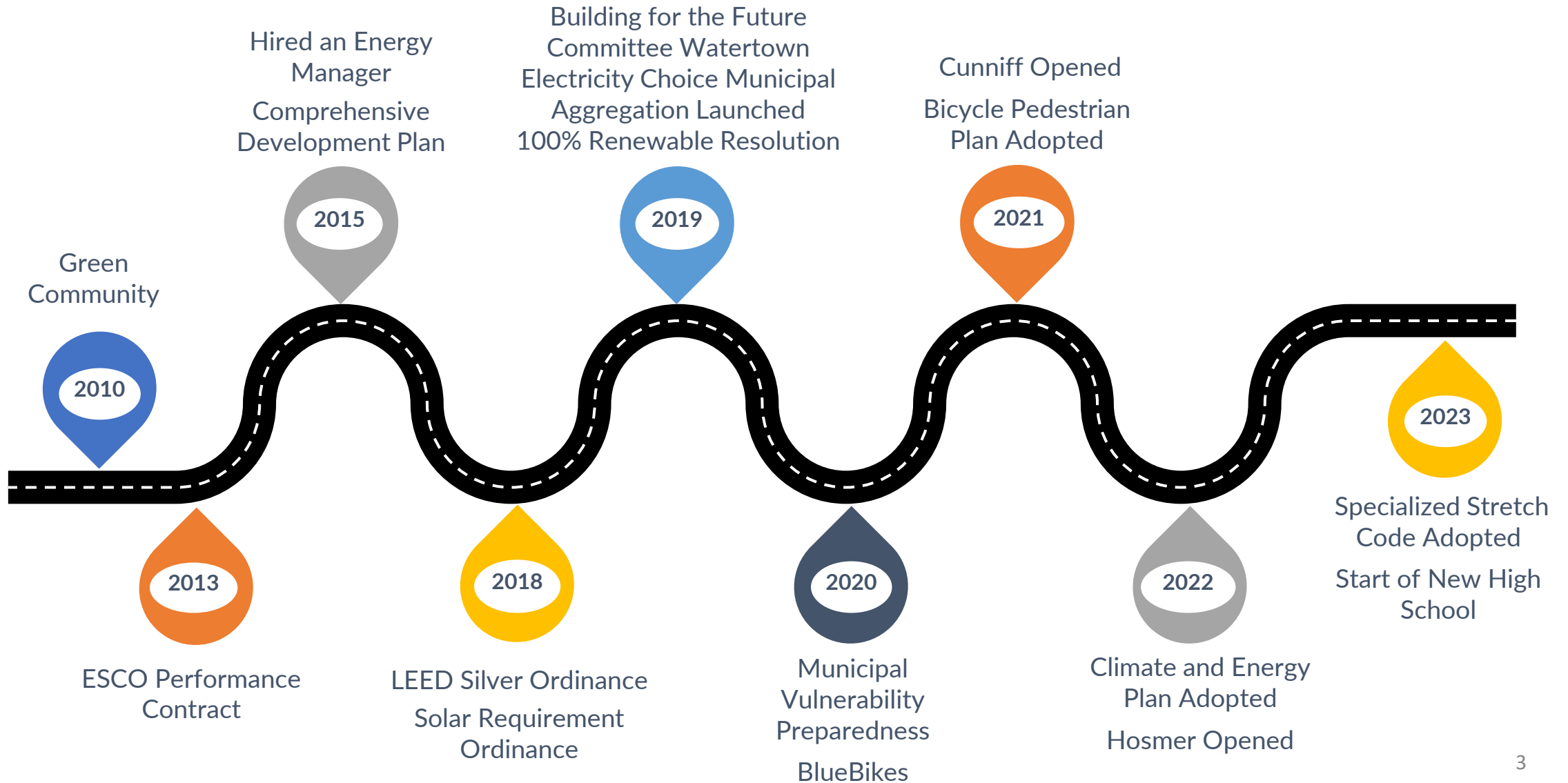


To encourage efficient use of energy and to reduce the emission of greenhouse gases (GHG), BERDO would require owners of large properties to annually measure and disclose energy usage to the City of Watertown and to achieve Greenhouse Gas Emissions reduction targets consistent with the commitments of the Watertown Climate and Energy Plan.

Furthermore, the Ordinance would authorize the City to collect energy usage data to enable more effective energy and climate protection planning and to provide information to the real estate marketplace, so that its members can make decisions that foster better energy performance.



Climate Planning in Watertown





Climate and Energy Plan



Building and Energy Goal 2

by 2050, Watertown's buildings are efficient, resilient and carbon neutral

Electrifying Our Existing Buildings

Working with the larger commercial properties allows for big win opportunities with electrical retrofits. To help get this work done, the City will take advantage of State, Federal, and other financial support. As more and more communities continue to electrify, coordination with electrical providers will also be critical.

| Year | 2025 | 2030 | 2050 |
|---|------|------|------|
| Electrification Target for Existing Buildings | 10% | 40% | 100% |

Conserving Our Energy

As we electrify our buildings and power them with 100% clean energy, it may be tempting to discount conservation efforts to reduce GHGs. The fact is that it will be extremely difficult to produce or purchase all the clean energy we need if we do not find ways to make our buildings more efficient.

| Commercial Efficiency Targets | 2025 | 2030 | 2040 | 2050 |
|-------------------------------|------|------|------|------|
| Percent Retrofitted | 10% | 40% | 80% | 100% |



Climate and Energy Plan



Strategy & Action to Achieve our Goal is:

BE 4.1 Climate and Energy Plan Strategy --- Enact a Building Energy Use Disclosure Ordinance (BEUDO)

A BERDO by any other name is just a BERDO waiting to happen

- BERDO
- BEUDO
- BEURDO

Watertown's Building Emissions Reduction and Disclosure Ordinance (BERDO) will set requirements for new and existing large buildings to reduce their greenhouse gas emissions (GHG). The goal is to reduce emissions gradually to net zero by 2050 and to understand the efficiency and GHG emissions of our citywide existing building stock.





What's the Process?



1. Review the Ordinances of surrounding communities
2. Develop a program based on the best practices of those communities through careful consideration of the ordinances and by talking to the decision makers
3. Create a list of issues and necessary decisions generated by step two
4. Create an educational presentation to highlight the underlying details found in step three
5. Create a draft ordinance working with WE3C
6. Work with the City Council and stake holders to pass and implement a Watertown BERDO



Considerations



Comparing programs from Boston, Cambridge, Newton, and Lexington

What are the surrounding communities' ordinances, processes, and experiences and how can we distill them into best practices, tailored for Watertown.

- What is a Building / Campus
- Commercial, Multi-unit Residential, and Municipal Buildings
- Timeline of Implementation, Reporting and Compliance
- What Data to Report
- Benchmarking and Goals
- Alternative Compliance Payments, PPAs, RECs, and Carbon Credits
- Penalties and Social Cost of Green House Gases
- Review Board and Administration
- 3rd Party Review / Audits
- Future Review of Ordinance
- Familiarity to Regional Building Owners
- Level of Effort
- Data Management
- Revolving Reinvestment Fund



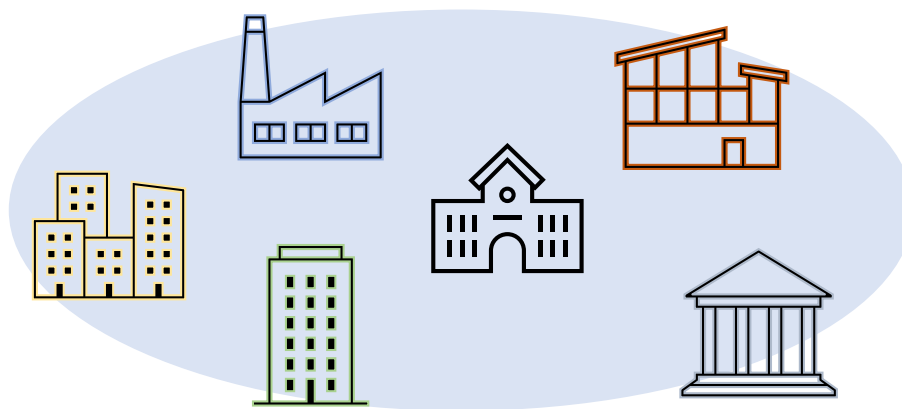
What Buildings?

Building Sizes and Types

Boston, Cambridge, Newton and Lexington all require buildings 20,000 square feet (sqft) or larger to report and or reduce

What does building size mean?

- Building Envelope
- Finished space
- Conditioned Space
- Gross Floor Area



Consider building types and what to include and exclude from the Ordinance

- Commercial
- Industrial
- Apartments
- Mixed Use
- Municipal
- Housing Authority
- Places of Worship
- Residential



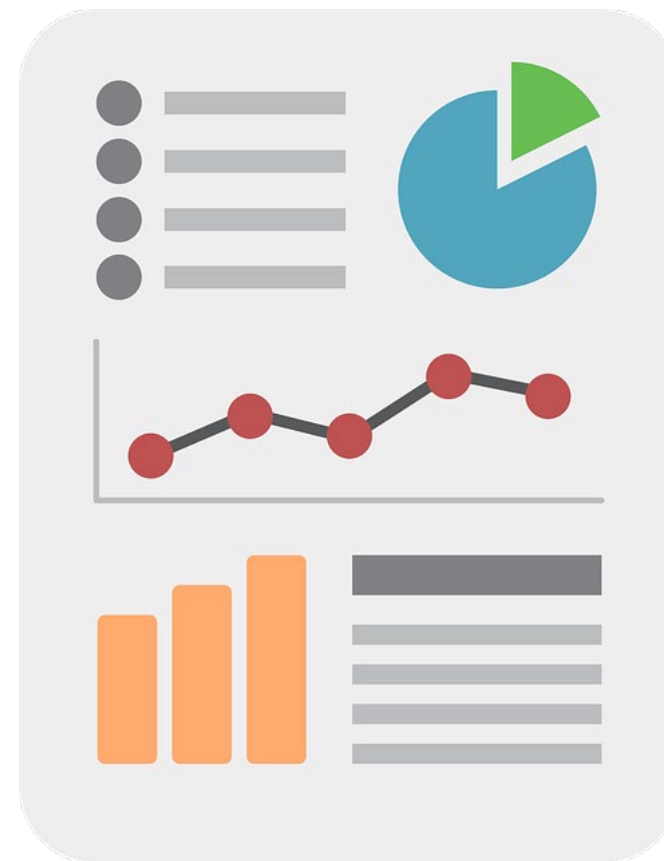
What Data to Capture?

What Other BERDOs Capture

- Electrical Use
- Gas (Methane) Use
- Oil Use
- Propane Use
- Water Use
- Address
- On site PV Production
- Building Size

Other Considerations

- EV Chargers
- Backup Generators
- Demand and Storage
- Co-generation Systems
- Thermal Systems





Portfolio Manager



Why Boston, Cambridge, Newton and Lexington all use EPA Portfolio Manager

Gathering the Data

Provides a Central Repository where data can be securely collected and shared by

- Utilities
- Building Owners
- Building Tenants
- City of Watertown

Other

- Provides an existing system with training videos and help desk
- Allows Building Owners and Tenants to track their own progress against other similar buildings throughout the country or within MA
- Allows some modification for unique data collection

Concerns with Portfolio Manager

- GHG is based on New England Regional and not MA
- Efficiency Index score used is for buildings based nationally, not MA
- Utility Authorization will have to be done every three years





Portfolio Manager



Size Definition in EPA Portfolio Manager

Portfolio Manager defines Size as the Gross Floor Area (GFA). GFA is the total “property” square footage, and a “property” might be a

- Single building
- Campus of buildings
- Part of a building (such as a single tenant space)

Depending on property type from above, the GFA is determined differently:

“Single buildings” and “campuses of buildings” measure the GFA between the outside surface of the exterior walls of the building(s).

- Include in GFA: lobbies, tenant areas, common areas, meeting rooms, break rooms, atriums, restrooms, elevator shafts, stairwells, mechanical equipment areas, basements, storage rooms.
- Do not include in GFA: exterior spaces, balconies, patios, exterior loading docks, driveways, covered walkways, outdoor play courts, parking, crawl spaces.

“Parts of a building,” such as tenant spaces, measure the GFA of the “usable square feet.” Usable square feet include the specific area the tenant occupies to do business.



Building Review



Analysis of Watertown's 2023 Building Stock

Criteria

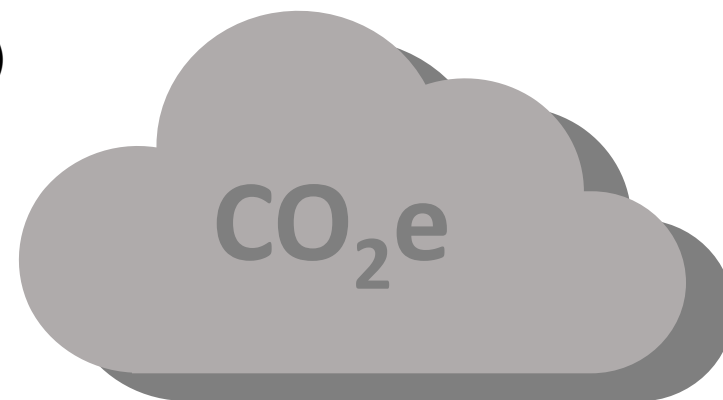
- Based on buildings 20,000 Sqft Finished Space only
- Excluding several building types (Housing Authority, Places of Worship, etc)
- Excluding common areas within a condo building

Estimated GHGs

Based on median energy use for building types in Massachusetts and then applying an estimated ratio of gas to electric. Using Massachusetts DOER GHG data to calculate the GHG Metric Tons of CO₂ equivalent (MTCO₂e)

Understanding the Units

One MTCO₂e is equivalent to driving a car 2,564 miles or 1.2 acre of forest GHG sequestration in a year





Building Review



Analysis of Watertown's 2023 Building Stock

| Buildings > 20,000 Sqft | Count | Total Sqft | MTCO2e |
|-------------------------|-------|------------|-----------|
| Commercial | 111 | 13,085,555 | |
| City Owned ★ | 24 | 904,931 | |
| Condo | 26 | 1,804,265 | |
| Total | 161 | 15,794,751 | 272,916 ★ |

| | | | |
|----------------------------|--------|------------|-----------|
| All Buildings in Watertown | 10,556 | 36,119,904 | 613,618 ★ |
|----------------------------|--------|------------|-----------|

| Result for Building > 20,000 Sqft | |
|-----------------------------------|---------|
| % Sqft of All Buildings | 43.7% |
| % MTCO2e of All Buildings | 44.5% ★ |

★ All City Owed Buildings

★ Estimated Value



Timeline of Reporting

Example Schedule

| | January - December | May | August | December |
|-------------------------------|--------------------|--------|--------|----------|
| Year 0 | | | | |
| Notification to Report | | | Year 1 | |
| Year 1 Data | | | | |
| Collect Energy Use Data | Year 1 | | | |
| Submit Energy & Emission Data | | Year 1 | | |
| City Report of Compliance | | | Year 1 | |
| City Yearly Result Report | | | | Year 1 |
| Year 2 Data | | | | |
| Notification to Report | | | Year 2 | |
| Collect Energy Use Data | Year 2 | | | |
| Submit Energy & Emission Data | | Year 2 | | |
| City Report of Compliance | | | Year 2 | |
| City Yearly Result Report | | | | Year 2 |



Benchmarking and Goals



Reduction Goals

Amount and speed of reductions to meet the 2050 goal of carbon neutral

Benchmarking reduction based on:

Stepped reduction based on building use type?

What are the building use types? And how do they matchup to Watertown Buildings?

OR

Stepped percentage reduction based against a baseline year?

What is the baseline year?

And what is the amount of effort, if each building has its own reduction plan?



Analysis of Energy Use and Emissions

- Quality of Data?
- Where should City focus to meet our goals?
- What programs and groups should City target for help?
- Are we meeting our Climate and Energy Plan goals?



Noncompliance



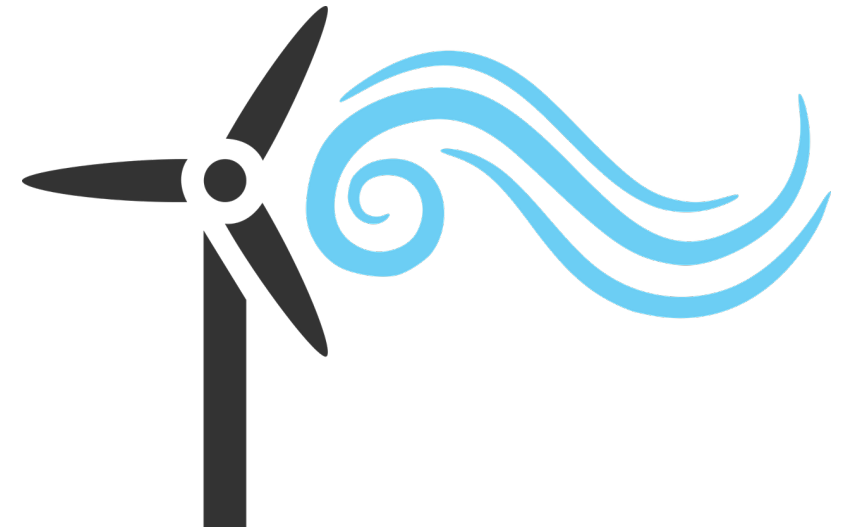
Penalties may or may not be assessed and are differentiated for:

- non-reporting,
- reporting false data,
- non-compliance with performance standards
- Penalties of \$xx per violation per day
- Penalties of \$xx per violation



Alternative Ways to meet Compliance

- Alternative Compliance Payments
Social Cost of Green House Gases - an estimate of the cost, in dollars, of the damage done by each additional ton of carbon emissions.
Boston, Cambridge, & Newton use \$234 per tCO₂e
- Carbon Credits
- Power Purchase Agreements (PPAs)
- Renewable Energy Certificates (RECs)





Administrative Staff and Review Board Tasks

**Simplicity of the Ordinance versus
the complexity of administering**

Administration of the Program

- Setting Reduction Amounts
- Notification of Reporting Requirements
- Notifications of Compliance Penalties
- Acceptance of Data from Building Owners
- Annual Compliance Report
- Annual Energy Use and GHG Report

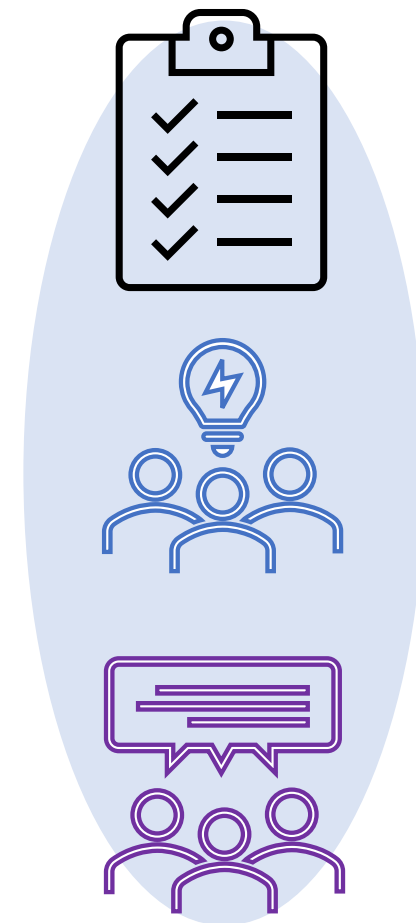
Arbitrator for Exceptions

- Compliance Exceptions
- Building Exceptions

Management of Revolving Fund

Recommend updates to the BERDO

Makeup of the Review Board





Resources



Resources Needed

Municipal Staffing Resources

- Initial Startup
- Determination of Notification Requirements
- Data Analysis of Submitted Data for Reporting
- Ongoing Public Reporting Requirements
- Education and Owner Support
- Quality of Data Analysis
- Building Owner Transitions
- Review Board Involvement
- Support for Reduction Goals



Possible Other Resources

- 3rd Party Data Quality Review
- 3rd Party Initial Setup



Questions?

To find out more about Resilient Watertown and the
Climate and Energy Plan visit
resilient.watertown-ma.gov

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