



## **Boston Climate Action Plan Update - Working Group Meeting 2**

Definition of key concepts and description of existing tools

### Buildings - Key Concepts

A **zero net carbon standard** requires that buildings be built to the highest level of insulation quality, equipment efficiency, electrification of heating systems, and renewable energy production. Combined with off-site renewable energy procurement, zero net carbon buildings can effectively obtain all the energy needed for their operations from renewable sources, thus reducing their net emissions to zero.

**Deep energy retrofits** achieve at least a 50% energy use reduction by upgrading mechanical systems, lighting systems and appliances, insulating walls, roofs and foundations, upgrading HVAC and plumbing, replacing windows, air sealing, and installing renewable energy. Electrification means converting fossil fuel systems to electric equivalents (e.g., from natural gas furnace to air source heat pump). By combining deep energy retrofits with electrification and clean energy procurement, existing buildings can become carbon-neutral.



## Buildings - Existing Tools

*This document describes some existing tools and programs that can support strategies to decarbonize buildings through ZNC standards and deep energy retrofits.*

Passed in 2007, **Article 37** of the Boston Zoning Code requires that all large new construction meet minimum sustainability standards. These standards are based on the LEED green building rating system, which rewards energy performance, connectivity to transit, indoor air quality, construction waste generation, and other environmental impacts. The Article 37 review process also includes a climate change resiliency checklist and coordination with the Boston Planning and Development Agency's Smart Utilities Policy. Article 37 demonstrated that the City can effectively incorporate sustainability standards into the zoning code.

**Stretch Energy Code** : The Stretch Code was designed to give municipalities an opt-in alternative to the Building Code that has stricter rules around energy efficiency and performance. Municipalities may choose to adopt the Stretch Code in lieu of the base building energy code. Stretch code adoption is mandatory for designation as a Green Community under the [Green Communities Act](#) passed by the Legislature and signed into law in 2008. As of November 27, 2018, 250 municipalities have adopted the Stretch Code.

The 2013 **Building Energy Reporting and Disclosure Ordinance (BERDO)** requires that all midsize to large buildings in Boston (1) track emissions from buildings larger than 35,000 square feet, and (2) mandate an energy audit, an improvement of each building's Energy Star rating, or a reduction by at least 15 percent of each building's annual energy usage or greenhouse gas emissions every 5 years. Together, BERDO buildings represent around half of Boston's community-wide emissions. BERDO has

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improved transparency and raised awareness of building energy performance in Boston, and encourages performance improvements through the energy action and assessment requirement.

To enable deep energy retrofits, **funding mechanisms** must be available and suitable for different market segments. Here are some approaches being piloted, implemented or assessed in Boston:

- **Energy performance contracting:** using future cost savings from reduced energy use, guaranteed through a contract with an energy service company, to underwrite loans for the upfront capital needed to retrofit buildings. The City already uses energy performance contracting through its **Renew Boston Trust** program. The first phase implemented conservation measures at 14 municipal buildings and renewable generation at three sites.<sup>1</sup> The second phase, which has already been authorized by the Office of Budget Management, will put another \$40 million towards improvements in municipal buildings. The Bloomberg American Cities Climate Challenge, through which the City is receiving technical assistance, will support extension of the Renew Boston Trust model to the institutional sector.
- **Mass-scale retrofits (REALIZE program):** The City is partnering with the Rocky Mountain Institute to be part of their REALIZE program, a public-private partnership model that is working towards prefabricated mass-scale retrofits.<sup>2</sup> This model has been used in Europe to retrofit 4,000 units over the past five years, with another 100,000 planned. We are planning to pilot the model in at the Eva White Apartments at Castle Square. If that goes well, REALIZE could offer another tool for reducing the costs of retrofits.
- **Boston Home Center's HomeWorks Home Equity Loan Program:** Provides a model for providing zero percent interest, deferred loans of up to \$20,000

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<sup>1</sup> Full list of sites here: <https://www.boston.gov/environment-and-energy/renew-boston-trust#projects>

<sup>2</sup> <https://www.rmi.org/our-work/buildings/realize/>

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for home repairs to owners of single- four-family homes. The program covers a variety of repairs, including heating systems and energy conservation improvements.

- **MA Property Assessed Clean Energy (PACE) program:** State mechanism to finance energy improvements on commercial and industrial properties. To finance improvements, a property owner agrees to a betterment assessment on their property, which repays the financing. This approach enables owners to undertake more comprehensive energy upgrades with longer payback periods of up to 20 years. The increase in property value tied to the energy upgrades will transfer to future owners during the term of financing.
- **BIDFA Tax-Exempt Lease-Purchase:** The Boston Industrial Development Finance Authority (BIDFA) offers financing for tax-exempt lease-purchases (TELP) to government and 501(c)(3) organizations. This product provided the basis for the energy performance contract model developed for the Renew Boston Trust.

To retrofit Boston's 86,000 buildings also requires a ready **workforce**, representing an opportunity to develop a new jobs pipeline for Bostonians. The City piloted Building Operator Certification (BOC) training to ensure municipal operators are equipped to make City-owned buildings perform at the highest level. We are receiving assistance through the Bloomberg American Cities Climate Challenge to extend BOC training to non-municipal building operators.

Steps to expand workforce development may include **but are not limited to:**

- Developing lists of vendors that have received training.
- Partnering with utility providers, trade unions, and universities to offer training, apprenticeships, and internships in deep energy retrofits, with a framework for engaging disenfranchised communities.



60% of Bostonians are renters, and half of Bostonians are rent-burdened. In inefficient housing, energy costs can exacerbate the affordability crisis. Given the large proportion of rental units in the City, resolving the tenant-landlord split incentive is key to decarbonizing a large portion of the building stock. Steps may include, but are not limited to:

- Improving transparency to prospective tenants by requiring **energy scorecards**, which give renters information about building performance on energy efficiency prior to signing their lease.
- Increasing **green leases** adoption. Green leases are rental agreements in which tenants commit to or gain incentives by participating in sustainable actions (energy conservation, waste reduction, etc.). Green leases also enable energy efficiency investments by sharing long-term cost savings between landlords and tenants.
- Assessing legal barriers and piloting **energy performance contracts** (e.g., Pay-as-You-Save system where third-party vendor recoups investment in building energy efficiency on a monthly basis through an energy service charge that is lower than the savings realized by the bill-payer).
- Introducing **energy efficiency requirements** for licensed rentals to improve quality of residential and commercial units. Models exist or are in development (e.g., Boulder, CO, New York City) to require standard long-term rental housing to meet a basic energy efficiency standard in order to retain/obtain a rental license.
- Developing framework to **prioritize improvements in environmental justice areas**, opportunity zones or in specific building portfolios.



## Transportation - Existing tools

*This document describes some existing tools and programs that can support strategies to decarbonize transportation through mode shift and electrification.*

The Mayor's **EV policy**, updated this past March 2019, requires private garages to have chargers in 25% of their spaces, and 100% wired for future capacity. This is enforced through the Transportation Access Plan Agreements that BTD signs with new large developments and through the Downtown and South Boston parking freezes administered by the **Air Pollution Control Commission (APCC)**.

The **parking freezes** set caps on the number of off-street parking spaces in Downtown and South Boston. New developments seeking to build off-street parking must apply for parking freeze permits through the Air Pollution Control Commission.

The City has set **parking minimum and maximum requirements** for new development in the Access Boston 2000-2010, our citywide transportation plan before Go Boston 2030. These requirements decrease the closer development is located to transit hubs.

In the **performance-based parking** pilot, dynamic metering rates (i.e. charging more for parking at peak times and places) in Back Bay and the Seaport have reduced the amount of time it takes to find parking in our busiest neighborhoods, while reducing idling and cruising.

Mayor Walsh's **2019 legislative package** includes An Act to Allow Regional Ballot Initiatives, An Act to Allow Parking Assessments for Infrastructure Investment, and

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An Act to Update Transportation Network Company Assessments, including by increasing the price of solo rides.

Boston's commitments under the **Bloomberg American Cities Climate Challenge** include: creating the Boston Shared Mile Partnership, a group of stakeholders that will inform policy and programs; expansion of employer-offered commuter incentives; accelerating the transition to electric vehicles; installing bike lanes, bikeshare stations, and slow streets zones; piloting TNC pick-up/drop-off zones, Mobility microHUBs, converting parking spaces to demand-pricing, and developing new guidelines for flexible curb usage.

The Boston Transportation Department is implementing the **better bike corridors and rapid bus** projects identified in Go Boston 2030, with added support from **new BTD staff**, including the newly created transit and new mobility teams.

Boston is developing a **Zero Emissions Vehicle (ZEV) Roadmap** to accelerate Boston's transition to electric and other zero emissions vehicle technologies as part of the American Cities Climate Challenge. This includes installing charging infrastructure in municipal parking lots, developing how-to guides, and EV incentive programs for residents and employer fleets.

**DriveBoston**, the City's program to dedicate public parking spaces to car share operators, is being expanded to more spaces in order to increase access to shared vehicles. The City is looking to include an **EV shared vehicle program** that will combine the environmental benefits of EVs and shared vehicle usage. A goal of Go Boston 2030 is to ensure that every home in Boston is within a 10 minute walk of car share.