



POLICY OPEN HOUSE #4

Reducing carbon emissions from existing large buildings

February 23, 2021



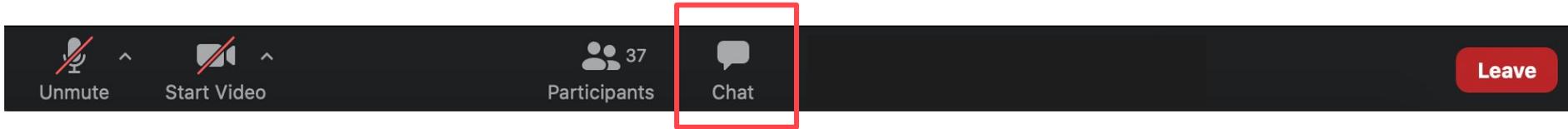
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We received a request for American Sign Language (ASL) interpretation. Meeting facilitators will “spotlight” both the ASL interpreters’ and presenters’ video feeds.

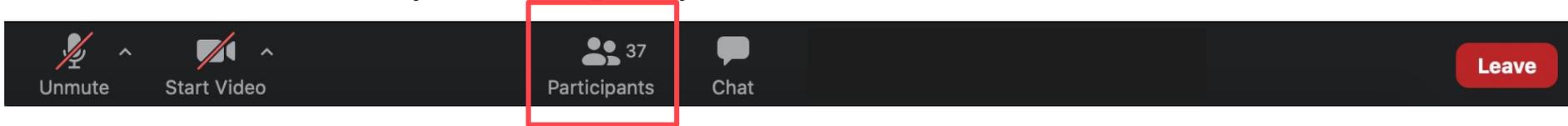
**Interpretation services
provided by Elita Hill
and Elizabeth Platt.**



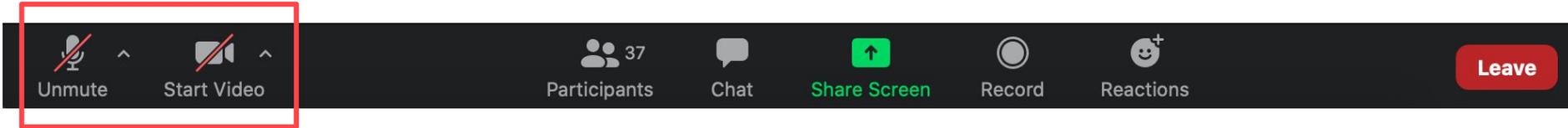
- Presentation followed by breakout discussions and comments.
- During the presentation, all microphones will be muted.
- If you are experiencing technical issues or have a clarifying question about something in the presentation, please let us know using the chat function.



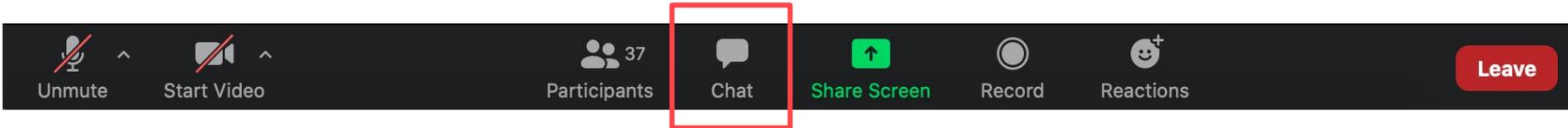
- You can also let us know you're having an issue or ask a question by “raising your hand”. Click on “Participants” then “Raise Your Hand” in the pop-up window, either by hovering on your name or at the bottom of the window.



We are recording this meeting. The recording will include the presentation and any comments shared. If you do not wish to be recorded during the meeting, please turn off your video.



If you do not feel comfortable participating in the discussion, you can share comments or questions in the chat.



6:00-6:10: Welcome & introductions

6:10-6:40: Group presentation

6:40-7:25: Comments and feedback

7:25-7:30: Wrap-up



KAT ESHEL
she/her

*Carbon Neutrality
Program Manager*

EQUITABLE CLIMATE ACTION THAT SUPPORTS GREEN JOB OPPORTUNITIES



CARL SPECTOR

Commissioner, Environment Department



TRINH NGUYEN

*Director, Office of Workforce Development
and Office of Financial Empowerment*



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PRESENTATION

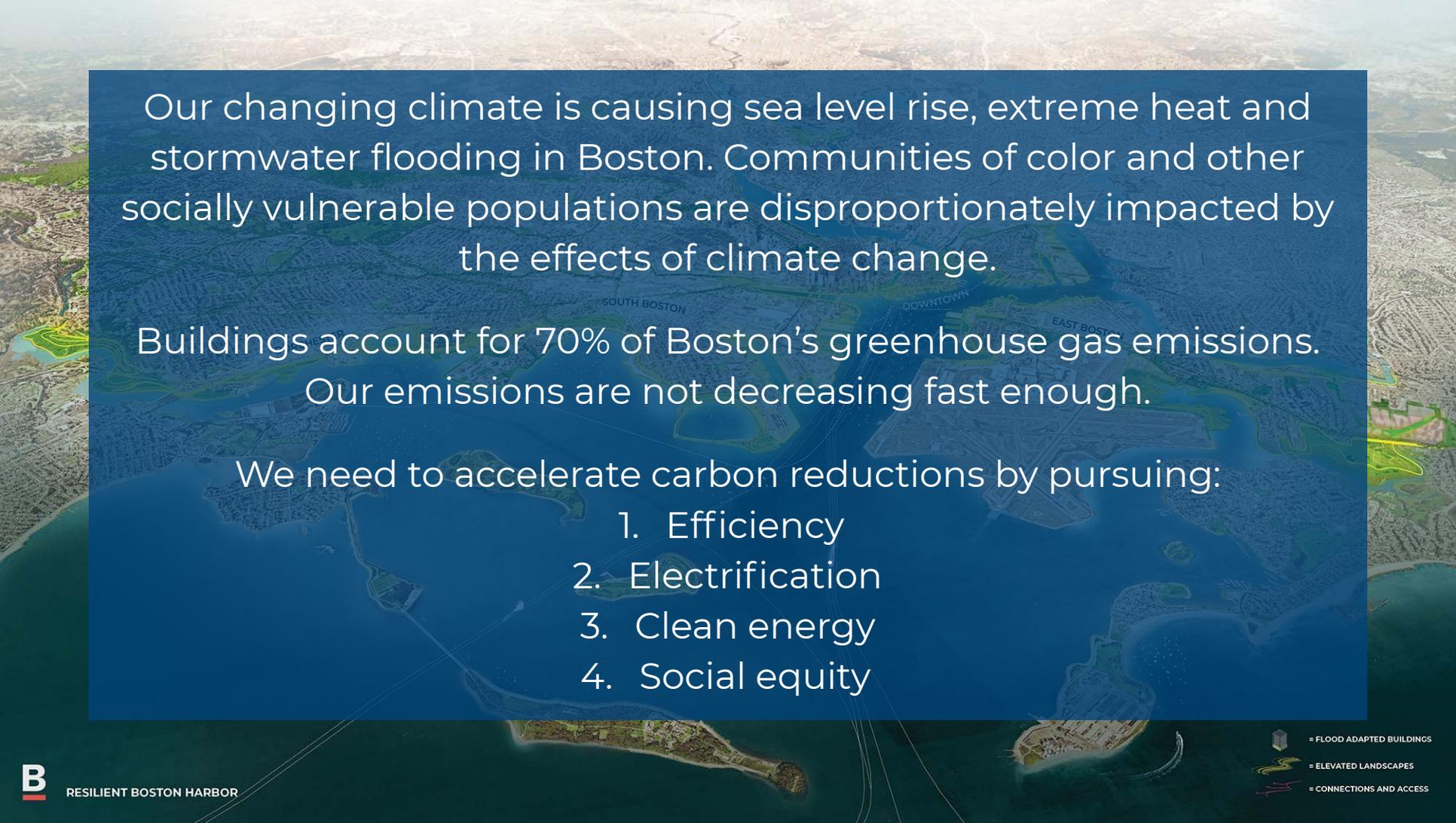
- **Recap of our goals and process**
- **Presentation of the draft policy**
- **Next steps and how to stay involved**
- **Comments and discussion**



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EQUITABLE CLIMATE ACTION

Mayor Martin J. Walsh



Our changing climate is causing sea level rise, extreme heat and stormwater flooding in Boston. Communities of color and other socially vulnerable populations are disproportionately impacted by the effects of climate change.

Buildings account for 70% of Boston's greenhouse gas emissions. Our emissions are not decreasing fast enough.

We need to accelerate carbon reductions by pursuing:

1. Efficiency
2. Electrification
3. Clean energy
4. Social equity

BUILDING RETROFITS ARE A TRIPLE WIN FOR...



BETTER BUILDINGS FOR RESIDENTS

Building rehabs can improve comfort levels and indoor air quality, help lower energy use and bills, and support resilience.



QUALITY JOBS FOR WORKERS

Retrofitting Boston's buildings will create high-quality construction, energy efficiency and clean energy job opportunities for workers.



HEALTHIER CLIMATE FOR EVERYONE

By making Boston's buildings carbon neutral, we will reduce our largest contribution to global climate change and make our city more resilient.

- Community oversight
- Funding for emissions reduction projects in environmental justice populations in Boston
- Support for economic inclusion
- Transparency and accountability
- Connecting residents and building owners to resources

In collaboration with a community working group with over 65 participating organizations, the 2019 Climate Action Plan Update:

- Accelerated the rate of carbon emission reductions in Boston;
- Identified opportunities for equitable action within each strategy;
- Mapped implementation of high-priority next steps through 2024.

One of the high-priority strategies was to →

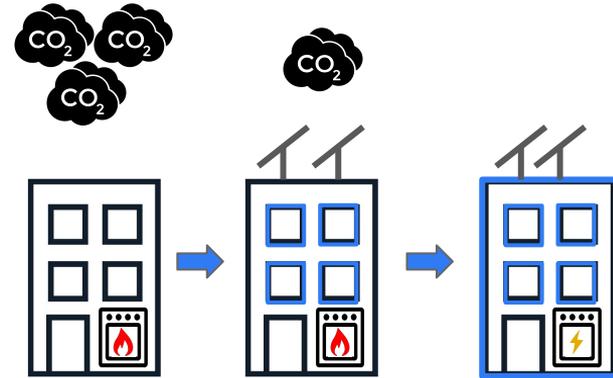


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DEVELOP A CARBON EMISSIONS PERFORMANCE STANDARD TO DECARBONIZE EXISTING LARGE BUILDINGS

WHAT IS A BUILDING PERFORMANCE STANDARD?

A building performance standard sets carbon targets for existing large buildings that decrease over time.



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DEVELOP A CARBON EMISSIONS PERFORMANCE STANDARD TO DECARBONIZE EXISTING LARGE BUILDINGS

The City of Boston will develop and introduce a performance standard to reduce carbon emissions from Boston's existing large buildings. Just 2,200 of Boston's largest buildings represent about 34 percent of Boston's total floorpace and approximately half of our total emissions.

The standard will require that all buildings larger than a certain threshold meet fixed carbon targets that decrease over time. Performance standards specific to different building typologies will ensure that buildings make steady progress on emissions reductions, while allowing building owners to develop solutions that are cost-effective and appropriate for the building's use. The new standard will build on the reporting requirement of the Building Energy Reporting and Disclosure Ordinance (BERDO), and replace the current energy action and assessment requirement.

The City will work with partners to develop case studies and foster best practices throughout the Boston region. This includes sharing lessons from demonstrations of deep energy retrofits and thermal electrification in different building types. The City will also collaborate with neighboring municipalities and other partners to improve technical and financial assistance for building owners.

DESIGNING FOR EQUITY

Explore ways to enable affordable housing to reduce emissions, while avoiding passing on retrofit costs to tenants. Include affordable housing, small business, environmental justice organizations, and community groups in the policy advisory group

Develop mechanisms to support affordable housing and small business upgrades

44 2019 Boston CAP Update | Buildings

EXPECTED BENEFITS

- ✓ Avoided carbon emissions
- 💰 Energy savings due to enhanced building efficiency
- 🌿 Increased thermal comfort and indoor air quality for building occupants

RETROFITTING HISTORIC BUILDINGS

More than half of Boston's buildings were built before 1950. These older and historic structures are located throughout the city, and many are integral to Boston's character and vibrancy.

Retrofitting historic buildings reduces material consumption and emits less carbon than demolishing buildings and constructing new ones, even if the new structure is Zero Net Carbon (ZNC). Historic buildings have embodied carbon in them that is lost if a building or its components are demolished. They are often relatively energy efficient, with passive heating, cooling and lighting systems.

The City will develop pathways and guidelines for property owners to decarbonize and prepare their older buildings for the effects of climate change, while preserving the historic character of the structures.

2019 Boston CAP Update | Buildings 45

46 2019 Boston CAP Update | Buildings

Our commitment in the 2019 Climate Action Plan:

- Develop carbon targets that decrease over time and reduce annual carbon emissions 100% by 2050
- Evaluate lowering the threshold from 35,000 square feet
- Include multiple pathways, including on-site retrofits and electrification, renewable energy purchases, alternative compliance payment
- Evaluate development of a fund that can be used to support affordable housing retrofits or community energy projects
- Introduce amendment to BERDO by 2021

Building Energy Reporting and Disclosure Ordinance (BERDO)

1. Buildings over 35,000 square feet or 35 units are required to report their annual energy and water usage to the City each year. The City then publishes energy, water and emissions data.
2. After five years of being covered under the policy, buildings must complete an energy action or assessment.

The new policy would maintain the annual reporting requirement, and shift from energy action or assessment to an emissions performance standard.



POLICY DEVELOPMENT PROCESS

Mayor Martin J. Walsh

To develop a building emissions performance standard that minimizes harm and maximizes benefits and opportunities for impacted residents, while achieving carbon neutrality in covered buildings by 2050.



POLICY DEVELOPMENT PROCESS

CITY of BOSTON

Project team



Technical Advisory Group

Carbon targets
Building pathways
Cost analysis

Resident Advisory Group

Policy principles
Maximize opportunities
Health outcomes

Advise & Inform

Building Owners

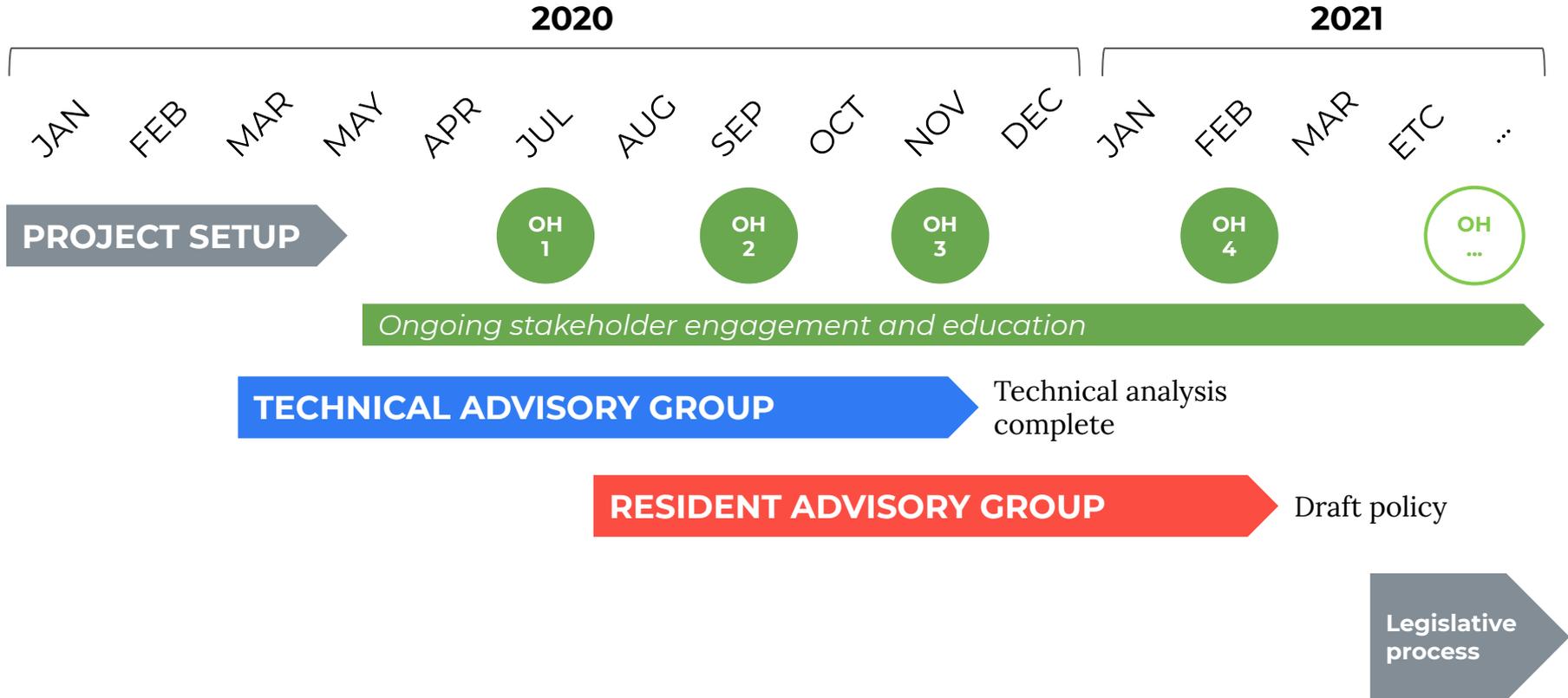
Commercial Tenants

Labor

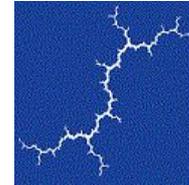
etc.

Community Open Houses

POLICY DEVELOPMENT PROCESS



- The City convened a Technical Advisory Group (TAG) of Boston area experts in building science, architecture, engineering, construction, operations, energy policy, renewable energy, and sustainability.
- The TAG was tasked with providing expertise on carbon targets, retrofit strategies and costs, clean energy purchases, and case studies.
- The TAG met 12 times (6 times as a full group plus 6 focus group meetings) and concluded in October.



Synapse
Energy Economics, Inc.

For more detail on the technical analysis, we encourage you to look at the meeting recording and materials from the September open house.



Goal: Develop a building emissions standard that minimizes harm and maximizes benefits and opportunities for Boston's frontline populations most affected by the proposed policy

Approach:

- *Receive community expertise and feedback*
- *Raise awareness of potential impacts and opportunities*
- *Collaborate with and center communities that will be impacted by the policy*

The resident advisory group has met twice; its third meeting takes place next week.

What did we hear that residents want?

Carbon reduction in Boston that:



Improves
air quality
for residents



Reduces
renter
energy bills



Does not
contribute to
displacement



Improves
heating +
cooling in
homes



Creates
jobs for
residents



Is good
for the
environment

In July, we discussed the policy concept and you shared questions about the impact on residents, financing, building decarbonization, and technical and policy-specific questions.

OPPORTUNITIES YOU SAW

- Lower threshold (more efficient buildings benefiting more Bostonians)
- Buildings in need of efficiency
- Regional collaboration
- Education and training opportunities
- Job opportunities

CONCERNS YOU SHARED

- Potential impact on residents
- Strength of enforcement
- Building managers in smaller buildings may have limited capacity
- Confidence in building technology
- Transparency and accountability
- Limited City capacity

WHAT WE HEARD IN THE OPEN HOUSES



In September, we presented preliminary results from the technical analysis and broke out into small groups to discuss questions you raised in July:

Designing for equity: support for workforce development, need for comprehensive weatherization programs that include health and safety priorities, need more support for solar and storage in low- and mid-income communities and for improved Mass Save incentives

How to decarbonize a building: importance of net-zero tenants and green tenant engagement, European models being tested in Massachusetts, importance of financing options and of on-site efficiency to counter uncertain future energy prices

Financing retrofits: need for guidance on how to take advantage of funding opportunities, limitations of Mass Save due to the cost-effectiveness test, gas projected to become more expensive than electricity in 5 years

In November, we shared different policy design elements we were considering and sought your feedback. Comments included:

- Funds should be used for affordable housing, with a health lens. Neighborhoods with poor air quality should be prioritized.
- We should prioritize efficiency and onsite renewables over off-site renewables.
- Some buildings like churches have unique concerns due to their architecture.
- Interest in seeing energy storage considered in addition to emergency generators
- Potential role of offshore wind, green hydrogen and geothermal



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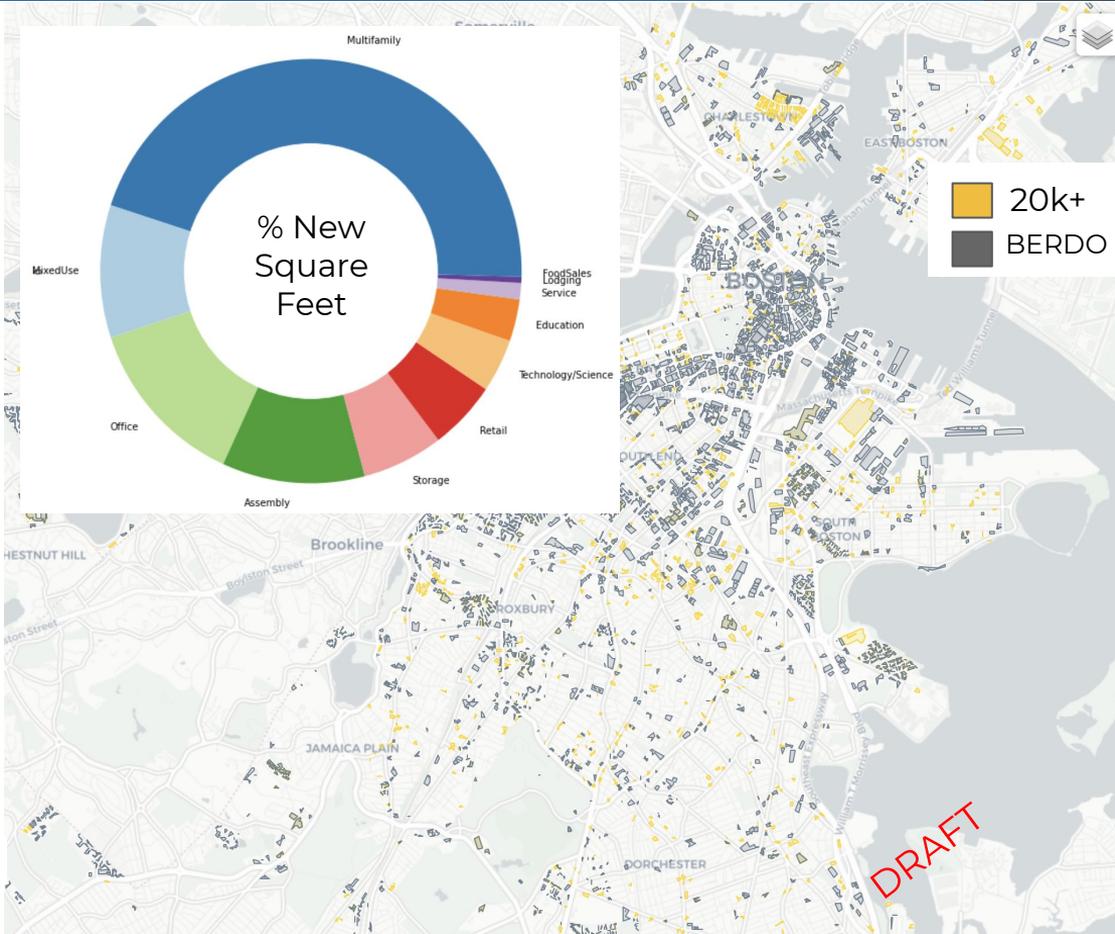
DRAFT POLICY

Mayor Martin J. Walsh

- **Covered buildings**
- **Reporting and disclosure**
 - *Building metrics*
 - *Community-based indicators*
- **Review board**
- **Emissions targets**
- **Flexibility measures**
 - *Portfolios*
 - *Individual compliance schedules*
 - *Hardship compliance plans*
- **Compliance pathways**
 - *Building retrofits and fuel switching*
 - *Clean electricity purchases*
 - *Alternative compliance payment*
- **Investment fund**
- **Compliance**
- + **Supportive measures**

SIZE THRESHOLD

- **Existing:** 35,000+ square feet or 35+ units
- **Proposed:** 20,000+ square feet or 15+ units
 - *First annual report due in 2022*
 - *Subject to emissions targets starting in 2030, and reported in 2031*



Existing data points:

- Energy use (required)
- Water use (required)
- Waste
- Occupancy
- Building uses by square feet



Additional proposed:

- Clean energy purchases
- Custom emissions factors (e.g., for district heating systems)
- EV charging energy use
- Emergency backup generators
- Energy storage
- Voluntary tenant surveys

- Energy, water and emissions information reporting on website in multiple languages by October 1 of every year
 - *Buildings have at least 30 days to review for accuracy*
- Regular public reports to the review board on air quality, energy cost burdens, fair housing, and other metrics related to environmental justice populations and equitable implementation
 - *Metrics to support periodic evaluation of the policy's success and inform any necessary regulations updates*
- Regular public reports on expenditure of funds generated by the policy, included projects supported and their anticipated impact

Two-thirds of board members to be nominated by the community and community-based organizations, with missions prioritizing environmental justice populations.

Members to be appointed by the Mayor, with nominations to be solicited from the community and local organizations for expertise:

- Environmental justice
- Affordable housing
- Labor and workforce development
- Building engineering and energy
- Public health
- Environmental protection and climate change
- Real estate development and management
- Historic preservation

Stipends would be available (amount and rules to be further detailed in regulations).

Responsibilities:

- Oversight and enforcement
- Program review & regulation update recommendations
- Review of alternative pathways*
- Allocation of grants from the investment fund*

* The review board set additional criteria as appropriate related to prevention of displacement, air quality, energy cost-sharing, economic inclusion and transparency.

Note: The Air Pollution Control Commission would continue to oversee the ordinance and approve regulations changes, with the addition of the Commissioner of the Environment (ex officio) and a member with expertise in building design and energy systems.

EMISSIONS TARGETS



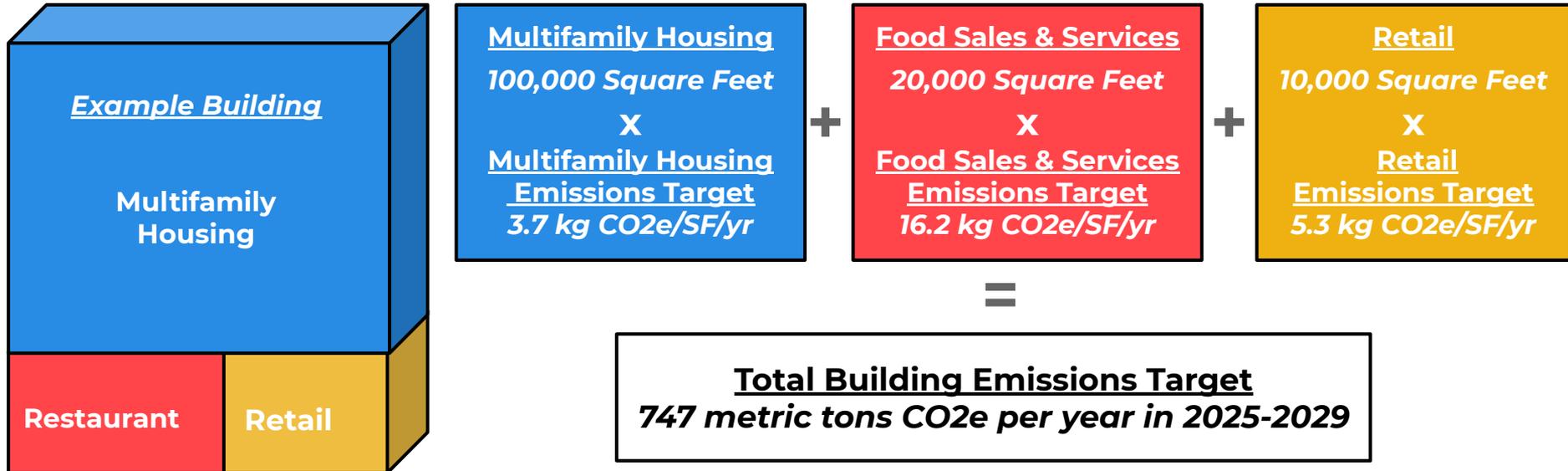
- Developed through the technical analysis process
- Aligned with citywide goals
- May be updated periodically to ensure the City is achieving its emissions reduction goals
- Limited exemptions (e.g. EV charging)
- Buildings with multiple use-types can adopt a blended target

Building use	Emissions standard (kgCO ₂ e/SF/yr.)					
	2025-2029	2030-2034	2035-2039	2040-2044	2045-2049	2050-
Assembly	7.8	4.6	3.3	2.1	1.1	0
College/ University	10.2	5.3	3.8	2.5	1.2	0
Education	3.9	2.4	1.8	1.2	0.6	0
Food Sales & Service	17.4	10.9	8.0	5.4	2.7	0
Healthcare	15.4	10.0	7.4	4.9	2.4	0
Lodging	5.8	3.7	2.7	1.8	0.9	0
Manufacturing/ Industrial	23.9	15.3	10.9	6.7	3.2	0
Multifamily housing	4.1	2.4	1.8	1.1	0.6	0
Office	5.3	3.2	2.4	1.6	0.8	0
Retail	7.1	3.4	2.4	1.5	0.7	0
Services	7.5	4.5	3.3	2.2	1.1	0
Storage	5.4	2.8	1.8	1.0	0.4	0
Technology/Science	19.2	11.1	7.8	5.1	2.5	0

Developed by Synapse Energy Economics for the City of Boston.

EXAMPLE OF BLENDED TARGETS

The graphic below represents a sample calculation of the blended 2025-2029 emissions target for a mixed-use building with 100,000 square feet of multifamily housing, 20,000 square feet of foods sales & services, and 10,000 square feet of retail.

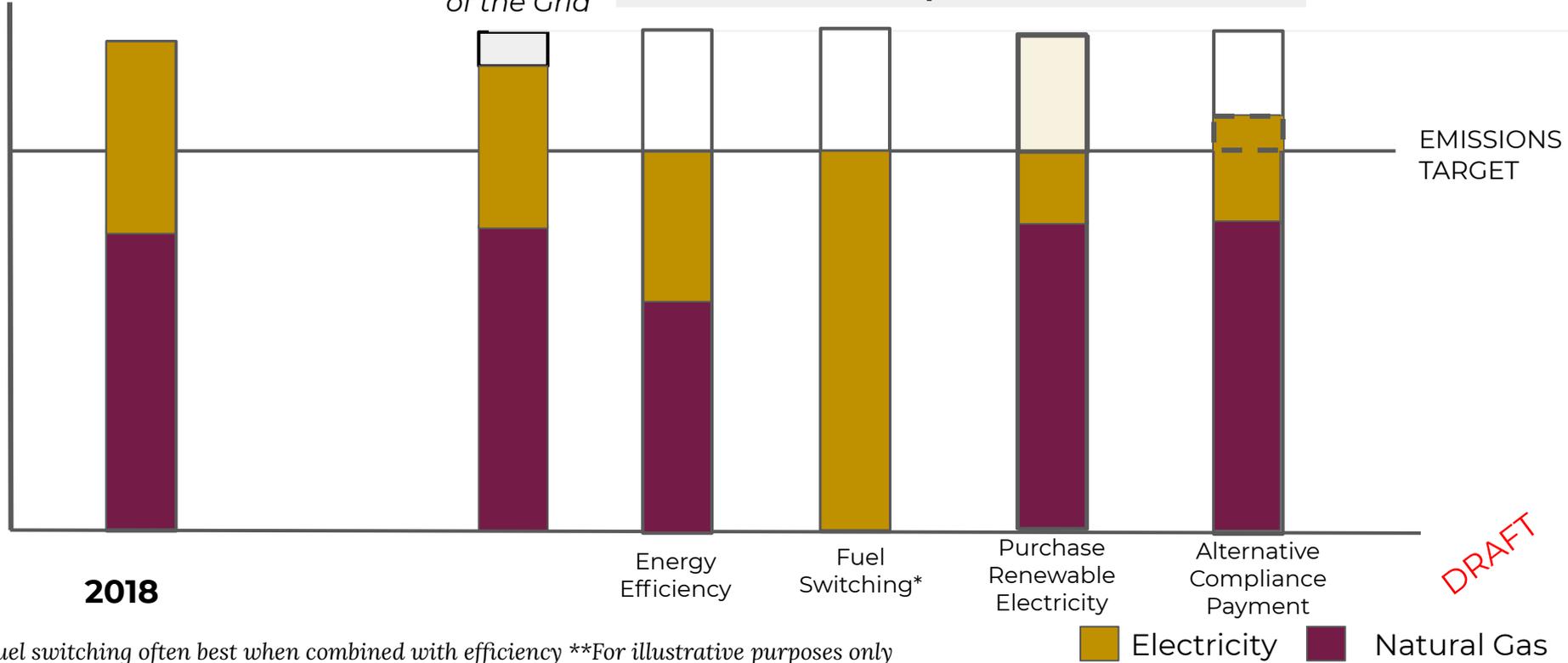


- **Portfolios:** owners with more than one covered building may apply to comply across their portfolio.
- **Individual compliance schedules:** buildings or portfolios may submit their own individual compliance plan for approval, which must be aligned with citywide emissions goals.
- **Hardship compliance plans:** buildings or portfolios with unique building characteristics or circumstances that present a hardship in complying with the standard (e.g., affordable housing refinancing timelines, historic designation, financial hardship, existing long-term energy contracts) would be eligible to apply for a hardship compliance plan.

COMPLIANCE MECHANISMS

"Greening of the Grid"

Options



EMISSIONS TARGET

DRAFT

* Fuel switching often best when combined with efficiency **For illustrative purposes only

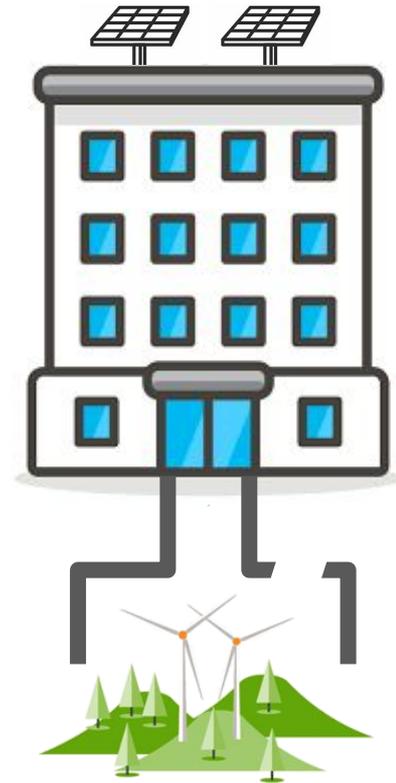
Electricity Natural Gas



- Building owners may undertake measures to improve energy performance and reduce fossil fuel consumption within the building
 - *Envelope improvements*
 - *Appliance upgrades and switches (heat pumps, solar, geothermal)*
 - *Building operations and controls*
- The City is developing a resource hub to connect building owners with appropriate technical assistance and financial resources.

To abate carbon from electricity, building owners can:

1. Deploy renewable energy onsite;
2. Purchase renewable electricity that is generated offsite.
 - Community choice electricity: provide safe access to affordable and clean energy for residents → launched in February 2021
 - Renewable Energy Certificates: MA Class I RECs from non-emitting sources, generated and retired for the same period as the emissions they're mitigating
 - Power purchase agreements: RECs from non-emitting sources, generated and retired for the same period as the emissions they're mitigating



- Additional option to meet carbon targets
- Tied to average retrofit cost per metric ton of CO₂e, estimated at \$234/mtCO₂e
 - *Estimate to be reviewed at least every 5 years and updated as needed*
- Paid into a new fund



New fund dedicated to emissions reduction projects that prioritize environmental justice populations and benefits including:

- Affordable housing preservation and rent stabilization
- Air quality improvements
- Training and access to green jobs for residents, women and people of color
- Clean energy deployment

Funds to be allocated by the newly created Review Board.

Data quality:

- *Self-certification with annual data submission*
- *Third-party verification every 5 years*
- *Spot audits with penalty for false reports*

Non-compliance:

- *Penalty for failure to comply with reporting requirements (\$150-\$300 per day depending on building size)*
- *Penalty for failure to comply with emissions standards (\$300-\$1,000 per day depending on building size)*
- *Note: the Review Board may reduce or waive penalties through a process to be further detailed in the regulations.*

Building retrofit resource hub:

The City is developing a one-stop support program for building owners and residents:

- Connect building owners with appropriate financing mechanisms and provide one-on-one support
- Educate and support residents seeking to improve building health
- Deeper integration across City programs like Boston Public Health Commission, Boston Home Center, Office of Fair Housing
- Guidance & case studies (e.g., historic)

State advocacy:

- Just cause eviction
- Right to counsel
- Stronger Mass Save incentives

Anti-displacement strategies:

- Right of first refusal, right to stay for condo conversions, mandatory notice of rights
- Continued investment in housing
- Office of Housing Stability

Note: federal COVID-19 eviction moratorium extended through March.

- **Covered buildings**
- **Reporting and disclosure**
 - *Building metrics*
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- **Compliance**
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- **Emissions reduction equitable investment fund:**
 - Support for local emission reduction projects that prioritize environmental justice populations and community benefits, including clean air, lower energy burdens, housing stabilization, increased economic inclusion and access to green jobs
- **Create new emissions review board:**
 - At least $\frac{2}{3}$ community representation
 - Work in partnership with City of Boston and experts
 - Oversight and approval of investment funds, community-based indicators, alternative compliance plans (hardship, individual, portfolios), and enforcement
- **Develop workforce opportunities:**
 - Support for expanding training programs and development of retrofit and clean energy jobs pipeline
- **Transparency and accountability:**
 - Reporting on community-based metrics, including indicators of energy cost burden, displacement, indoor and outdoor air quality, worker standards and economic inclusion
- **Building Retrofit Resource Hub:**
 - Single entry point for tenants, workers and owners for financial and technical resources, training opportunities, fair housing resources, and ongoing education and engagement



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NEXT STEPS

Mayor Martin J. Walsh

You may continue to weigh in on the policy:

- A. By sharing your feedback with us during and after this meeting;
- B. During the legislative process in City Council, once it is introduced, and
- C. During the regulations development process, if passed.

CITY COUNCIL PROCESS

1. An ordinance is introduced to City Council.



2. The City Council chair sends the ordinance to a committee for review.



3. The committee chair can hold one or more hearings on the issue.



**Hearing(s)
with public
testimony**



4. The committee sends its recommendation to Council (Ought to Pass, Ought Not to Pass, File, Reject).



5. If the committee recommends “Ought to Pass”, the Council votes on the docket.
Note: The public can provide additional testimony.



6. If a majority of Council votes “yes”, the Mayor approves the item and it becomes law.

**MAYOR'S
OFFICE**

CITY COUNCIL

COMMITTEE

- If an ordinance is passed, regulations are then developed. This process includes public engagement and consultation.
- The regulations would lay out in greater detail the rules and processes for the ordinance's implementation, for example:
 - *Review Board composition and selection, threshold for quorum, meeting frequency, public notice and meeting processes*
 - *Standard emissions factors to be applied to emissions calculations*
 - *Procedures, criteria and conditions for elements like Hardship Compliance Plans, fund allocation (e.g., rent stabilization, Living Wage Ordinance...)*
 - *Step-by-step enforcement procedures*
- Any final proposed regulations would be discussed publicly within regular proceedings of the Air Pollution Control Commission.

COMMENTS AND FEEDBACK



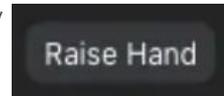
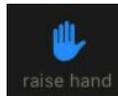
To share feedback please:

Type and enter in the chat box.



OR

“Raise” your hand to ask a question by clicking on “Participants” at the bottom of your screen then on “Raise Hand” at the bottom of the pop-up window.



- Thank you for your participation in this series of open houses during this policy's development.
- Comments, feedback and up-to-date public materials will continue to be posted on our project page.
- Sign up for the Greenovate mailing list and follow us on Twitter @BostonEnviro to receive updates on our work.



Wednesday, February 25

6:00pm-8:00pm

WINTER CYCLING CHAT

Chat with others about how to feel comfortable, confident, and motivated to get on your bike.

Transportation Event

**Online registration at
boston.gov/events**

Wednesday, March 10

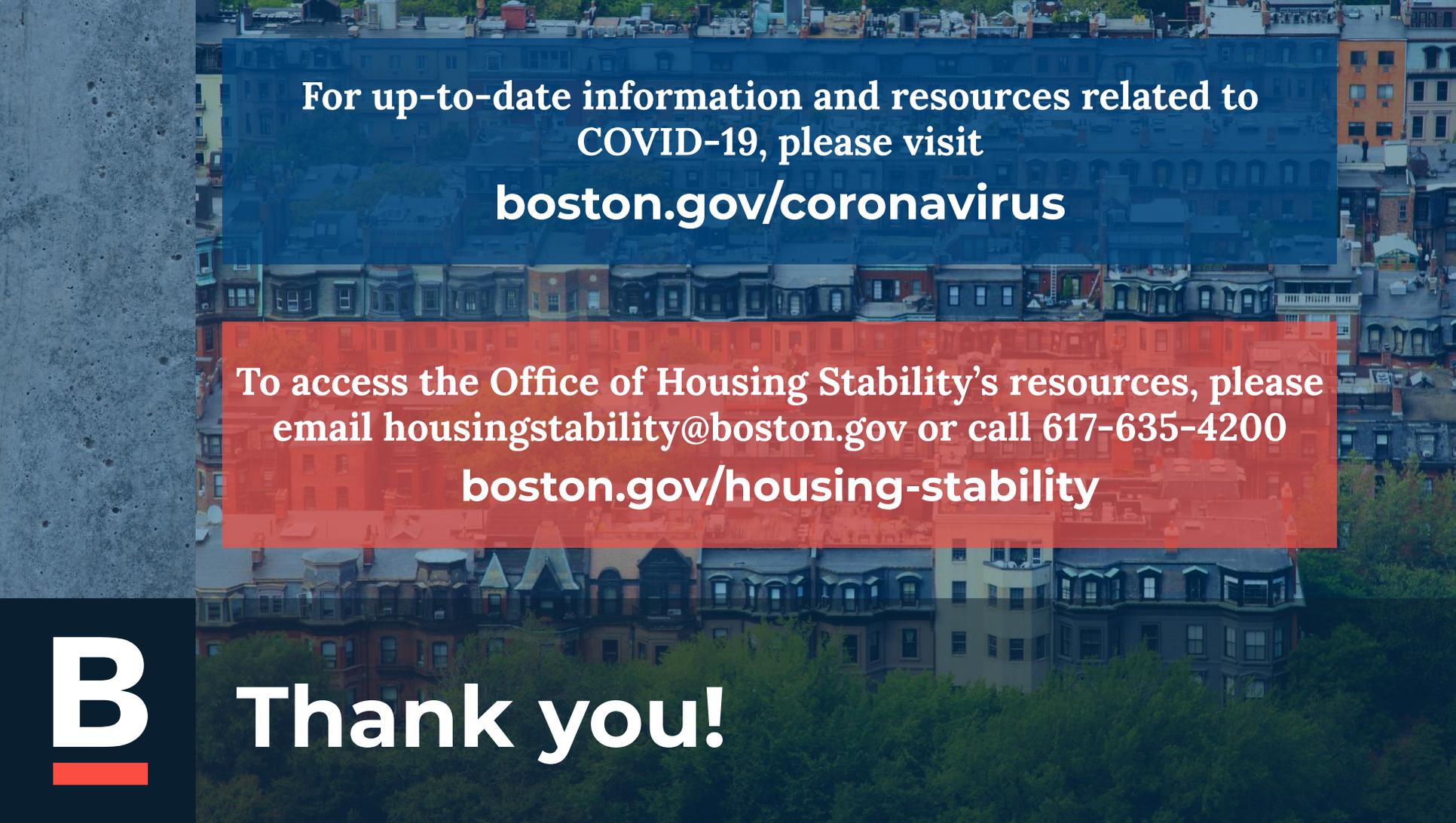
4:30pm-8:30pm

ZONING 101 WORKSHOP

Overview of the Boston Zoning Code, permitting, and the community process.

Inspectional Services Event

**Register online:
boston.gov/events**



For up-to-date information and resources related to
COVID-19, please visit
boston.gov/coronavirus

To access the Office of Housing Stability's resources, please
email housingstability@boston.gov or call 617-635-4200
boston.gov/housing-stability



Thank you!