February 3rd, 2020

ZNC - Low Carbon Building TAG Meeting #3

Boston Planning & Development Agency

boston planning & development agency

BRA

Thornton Tomasetti

Zoom Meeting Guidance

The BPDA will record this meeting and post it on BPDA's Zero Net Carbon Building Zoning webpage. The recording will include the presentations, discussions and a transcript of Q&A / Chat comments.

It is possible that participants may be recording this meeting as well.
If you prefer not to be recorded during the meeting, please turn off your microphone and camera.

Zoom Meeting Guidance

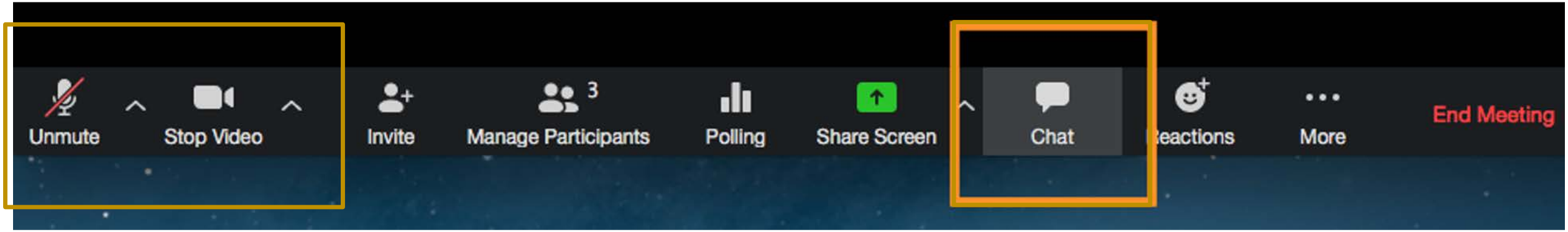
- Help us ensure that this conversation is a pleasant experience for all.
- Please mute your mics during the presentation to avoid background noise.
- It's great to see you! Participant video can be on during the meeting.
- **Use the Chat** feature for questions and comments during the presentation.
- Use the Raise Hand feature during the discussion segment.
- Please be respectful of each other's time.

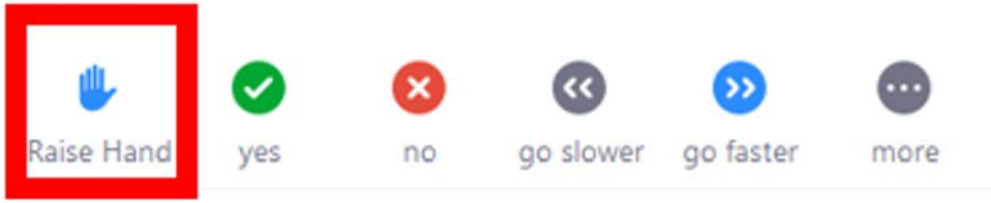
- As always please feel free to reach out to me directly!
  John Dalzell, AIA, LEED Fellow at John.Dalzell@Boston.gov

Zoom Tips

Your controls should be available at the bottom of the screen.

Clicking on these symbols activates different features:





boston planning & development agency

Thornton T

COVID-19 Resources

Stay up-to-date with COVID-19 related announcements, City of Boston reopening plans, and resources for you and your community at:

boston.gov/coronavirus

boston planning & development agency Thornton Tomasetti BRA

AGENDA

1. Introductions (5 min)
2. Process (5 min)
3. Progress Summary (5 min)
4. Pathway and Target Setting (15 min)
5. LEED Requirements (5 min)
6. Discussion (50 min)
7. Next Steps (5 min)

AGENDA

1. Introductions
2. Process
3. Progress Summary
4. Pathway and Target Setting
5. LEED Requirements
6. Discussion
7. Next Steps

INTRODUCTIONS

CONSULTING AND CITY TEAM

Alejandra Menchaca, Ph.D., LEED AP, WELL AP
Vice President, Thornton Tomasetti

Colin Schless, CPHC, LEED AP BD+C
Vice President, Thornton Tomasetti

Jacob Knowles
Associate Principal, BR+A Consulting Engineers

Vincent Martinez
Chief Operating Officer, Architecture 2030

Debra Perry
Senior Associate, Cadmus Group

John Dalzell, AIA, LEED Fellow
Sr. Architect Sustainable Development, BPDA

Richard McGuinness
Deputy Director, BPDA

Chris Busch, AICP
Assist Deputy Director, BPDA

Kathleen Pedersen
Sr. Land Use Planner / Sustainability Specialist, BPDA

Alison Brizius
Director of Climate and Environmental Planning
City of Boston

AGENDA

1. Introductions
2. Process
3. Progress Summary
4. Pathway and Target Setting
5. LEED Requirements
6. Discussion
7. Next Steps

ZNC BUILDING ZONING UPDATE

Boston Carbon Neutral 2050 – Climate Action Plan

"Strengthen Article 37 Green Building Zoning requirements to a zero net carbon standard"

Policy Framework

Zero = Bldg Emissions – On-site and Procured Renewable Energy

Low Carbon Buildings (this TAG)

Establish Emission Targets and Pathways

On-site Renewable Energy

On-site Energy Generation Standard

Renewable Energy Procurement

Determine Options & Reporting

ZNC BUILDING ZONING UPDATE

PUBLIC PROCESS AND SCHEDULE - 2020 - 2021

- Outreach – August and September
- Public Meeting #1 – September 30th
- Stakeholder and Public Engagement – October and onward
- Technical Advisory Groups – October and onward
- Public Meeting #2 – late winter / early spring
- Public Regulatory Meetings – spring 2021

TEAM

- Thornton Tomasetti / BR+A
- Cadmus Group / SolSmart
- Architecture 2030
- City / BPDA Staff

TAG GOALS

Low Carbon Building TAG

Establish Emission Targets and Pathways:

- Establishing means for prioritizing low carbon building performance
- Identify pathways for small (20,000sf+) and large buildings and all use typologies
- Reward innovation and high performance

Key Considerations

- Focus on carbon and emissions reduction – Carbon Emission Intensity (CEI)
- Align with industry best practices, utility incentives, and market drivers
- Compliance process efficiency (leverage familiar third-party frameworks)
- Compatible with upcoming BERDO v2 emissions performance standards

PROCESS

TAG Meetings

- **Meeting 1** - Framework and Pathways
- **Meeting 2** - Emissions Targets
- **Meeting 3** - Compliance Pathways and Thresholds
- **Meeting 4** - Finalizing Recommendations

Today's Meeting Outcomes:

- **Review final compliance pathway**
- **Proposed Carbon Emission Intensity Targets**
- **LEED Credit Requirements**

PROCESS

TAGs and Additional Policy Development

Cross TAG and General Policies

- Compliance Threshold - Reduce to include Small Project Review (Buildings > 20k sf)
- LEED Outcome - Increase to Gold or Platinum (presently Certified")
- LEED Credits - Identify specific ZNC supportive credit requirements
- Carbon Neutral - Add ZNC framework
- Embodied Carbon - Investigate potential strategies
- Compliance - Update project submission and review procedures

Regulatory Process

Reflecting the final recommendations and guidance of the ZNC Building Zoning process the City / BPDA will develop specific zoning standards that will be shared and made available for public response and feedback prior to proposing to BPDA Board and the Boston Zoning Commission.

AGENDA

1. Introductions
2. Process
3. Progress Summary
4. Pathway and Target Setting
5. LEED Requirements
6. Discussion
7. Next Steps

TAG #2 RECAP

- Three possible pathways outlined
    1. Percent Carbon Reduction + Carbon Performance Targets
    2. ZNC Prescriptive Guidelines
    3. Incentives for exceptional third party performance certification

- Grid Emission Factors
- Meeting discussion and feedback, and survey responses gathered

FEEDBACK FROM TAG Meeting 2

1. Percent Carbon Reduction + CEI Target
   - % reduction applicable to all typologies
   - Set target CEIs for all typologies, including labs
   - Consider creating and utilizing a performance and strategies library
   - Plan for “modeled vs actual” performance discrepancies
   - Require modeling credentials
   - Challenges: How to tackle low occupancy? How to address large tenants and major renovations?

2. ZNC prescriptive guidelines
   - Small group of buildings where modeling not needed.
   - Use heating / cooling demand as metric (how is that compatible with CEIs?)

3. Exceptional Performance
   - Consider ILFI Zero Carbon
   - Consider rewarding with more buildable space or expediency through the process
   - Reward 100% on-site generation

4. Grid Emission Factors
   - Utilize 2035 for emission modeling - align with BERDO factors.
   - Support for using date of occupancy for grid emissions for “near term performance analysis

AGENDA

1. Introductions
2. Process
3. Progress Summary
4. Pathway and Target Setting
5. LEED Requirements
6. Discussion
7. Next Steps

PROPOSED PATHWAY

Percent Carbon Reduction + CEI Targets

1. **40% Percent carbon emissions reduction** compared to ASHRAE 90.1-2013* baseline for all building typologies:**
   a. Use predicted 2035 grid emissions for design / engineering solution evaluation.
   b. Use predicted date-of-occupancy grid emissions for reporting and evaluation.
   c. Include envelope UA values for reporting and evaluation.

1. **"Best-in-class" CEI performance targets** for most common building typologies
   b. Utilize recent projects (practice library) for annual CEI target updates.
   c. Projects with unique conditions will have an opportunity to make a case for an adjusted value

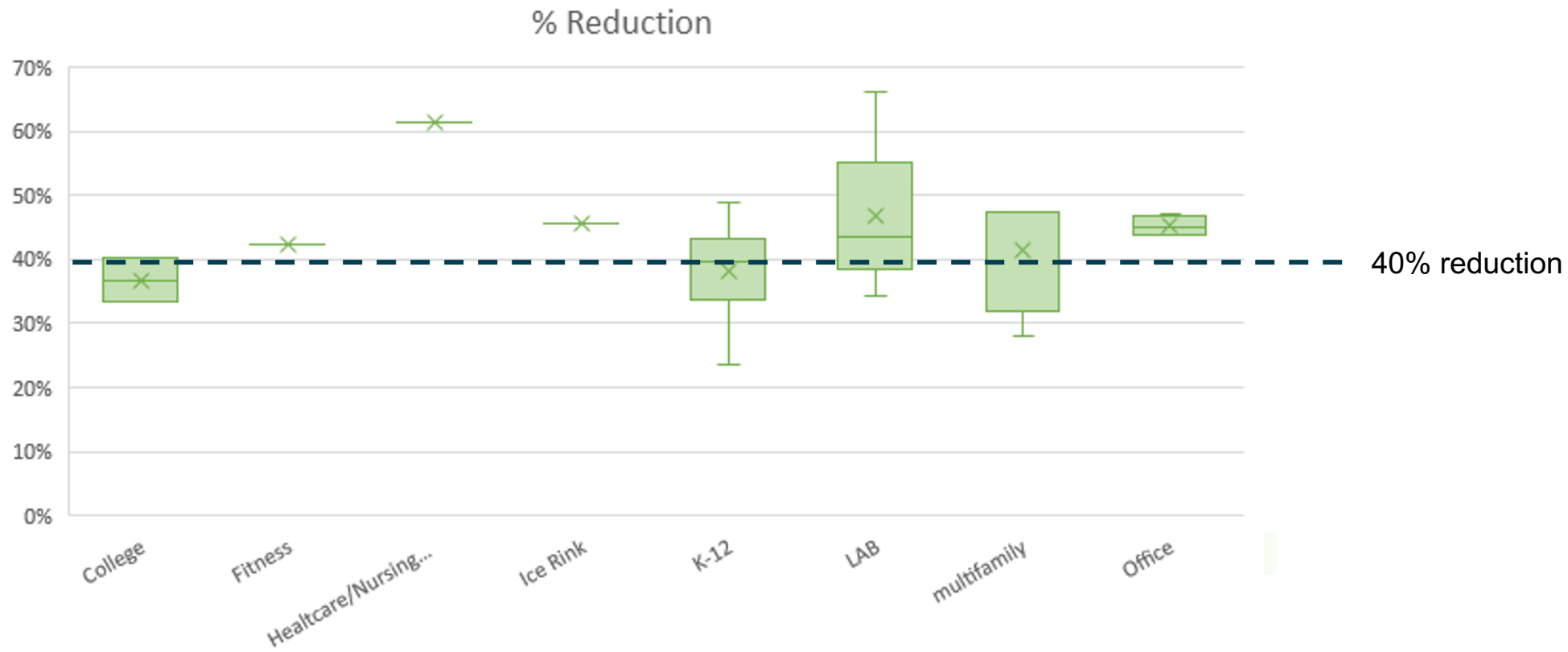
1. Model results / report must be signed-off by a PE, Certified Energy Modeler, Certified Energy Manager, or BEMP

* With no additional efficiency packages (AEPs) per stretch code, because AEPs complicate apples-to-apples comparison.

** Projects pursuing Passive House exempt from this requirement.

% REDUCTION

Data and Trends (Thank you!)



CEI TARGET DEVELOPMENT

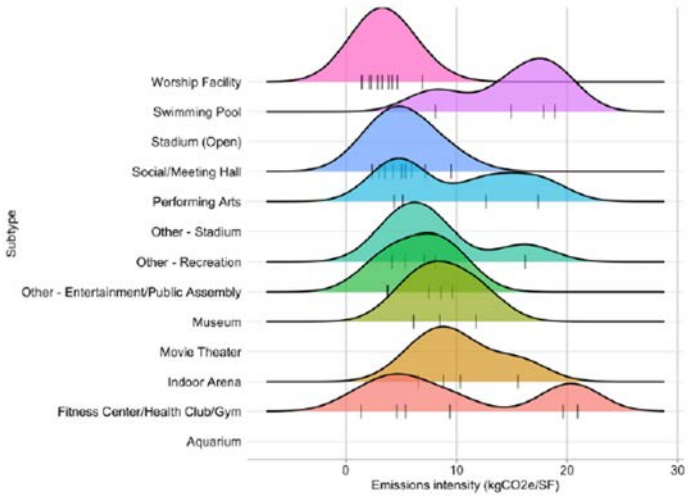
BERDO Goals / Categories Existing Buildings

Building use	Emissions standards ($kgCO_2e/SF/yr.$)					
	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

Assembly

- Aquarium
- Bar/Nightclub
- Bowling Alley
- Casino
- Fitness Center/Health Club/Gym
- Ice/Curling Rink
- Indoor Arena
- Movie Theater
- Museum
- Other - Entertainment/Public Assembly
- Other - Recreation
- Other - Stadium
- Performing Arts
- Racetrack
- Roller Rink
- Social/Meeting Hall
- Stadium (Closed)
- Stadium (Open)
- Swimming Pool
- Worship Facility
- Zoo

Assembly buildings: Emissions intensity by subtype, 2018



Source: Synapse model

CEI TARGET DEVELOPMENT

BERDO Goals / Categories Existing Buildings

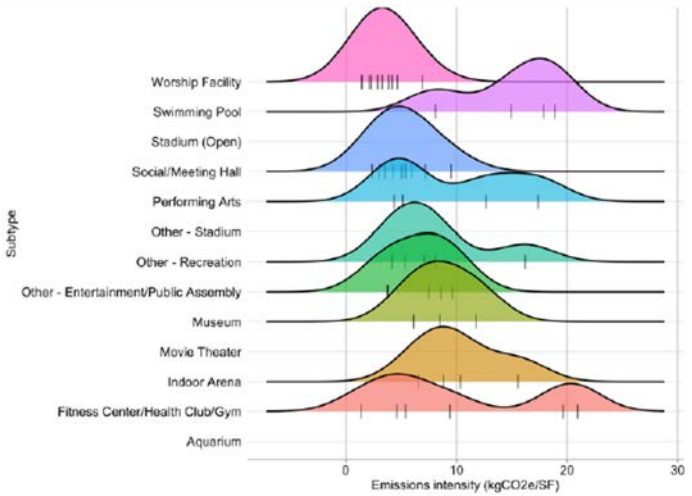
Building use	Emissions standards ($kgCO_2e/SF/yr.$)					
	2025-2029	2030-2034	2035-2039	2040-2044	2045-2049	2050-
Assembly	7.8	4.6	3.3	2.1	1.1	0
College/ University	10.2	5.3	3.8	2.5	1.2	0
Education	3.9	2.4	1.8	1.2	0.6	0
Food Sales & Service	17.4	10.9	8.0	5.4	2.7	0
Healthcare	15.4	10.0	7.4	4.9	2.4	0
Lodging	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

↑
ZNC window

Assembly

- Aquarium
- Bar/Nightclub
- Bowling Alley
- Casino
- Fitness Center/Health Club/Gym
- Ice/Curling Rink
- Indoor Arena
- Movie Theater
- Museum
- Other - Entertainment/Public Assembly
- Other - Recreation
- Other - Stadium
- Performing Arts
- Racetrack
- Roller Rink
- Social/Meeting Hall
- Stadium (Closed)
- Stadium (Open)
- Swimming Pool
- Worship Facility
- Zoo

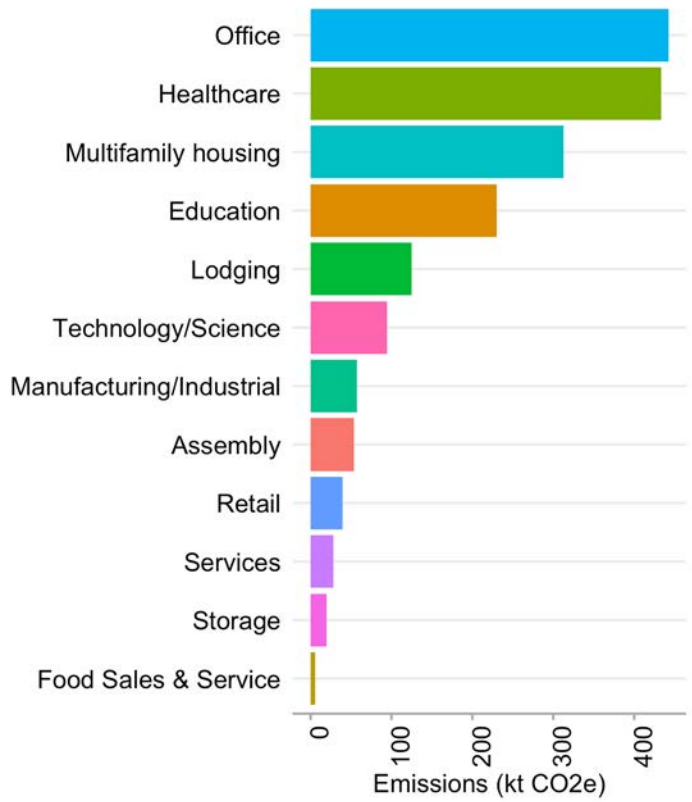
Assembly buildings: Emissions intensity by subtype, 2018



Source: Synapse model

CEI TARGET DEVELOPMENT

BERDO Goals for Most Impactful Building Typologies



	All electric site EUI		CEI [kg CO2e/sf]	
Building Typology	BERDO 2035 equiv	BERDO 2040 equiv	BERDO 2035 Threshold	BERDO 2040 Threshold
Office	45	30	2.4	1.6
K-12 Schools	34	23	1.8	1.2
Hotel	51	34	2.7	1.8
College / University Office	71	47	3.8	2.5
Residence Hall	51	34	2.7	1.8
Low Density Multifamily	34	21	1.8	1.1
High Density Multifamily	34	21	1.8	1.1
Dry Lab*	146	96	7.8	5.1
Wet Lab*	146	96	7.8	5.1
Hospital*	139	92	7.4	4.9

** Typology highly dependent on program*
EUI back-estimated using 2035 emission factors.

CEI TARGET DEVELOPMENT

Proposed CEI Targets (for discussion later)

	All electric site EUI			CEI [kg CO2e/sf]		
Building Typology	Recommended	BERDO 2035 equiv	BERDO 2040 equiv	Recommended	BERDO 2035 Threshold	BERDO 2040 Threshold
Office	30	45	30	1.6	2.4	1.6
College / University Office	30	71	47	1.6	3.8	2.5
K-12 Schools	25	34	23	1.3	1.8	1.2
Hotel	30	51	34	1.6	2.7	1.8
Residence Hall	30	51	34	1.6	2.7	1.8
Low Density Multifamily	20	34	21	1.1	1.8	1.1
High Density Multifamily	30	34	21	1.6	1.8	1.1
Dry Lab*	80	146	96	4.3	7.8	5.1
Wet Lab*	120	146	96	6.4	7.8	5.1
Hospital*	139	139	92	7.4	7.4	4.9

** Typology highly dependent on program*
EUI back-estimated using 2035 emission factors.

CEI TARGETS - EXPANDED CATEGORIES?

Potential Expansion the Dataset with 3rd Party Benchmarking

ZERO TOOL™

Score 100 = AIA Baseline (filtered by typology, and location)
Score 30 = 70% Reduction wrt/ AIA Baseline *(Benchmarking not including PV*)

CEI TARGETS - EXPANDED CATEGORIES?

Potential Expansion the Dataset with 3rd Party Benchmarking

ZERO TOOL™

Score 100 = AIA Baseline (filtered by typology, and location)
Score 30 = 70% Reduction wrt/ AIA Baseline *(Benchmarking not including PV)*

EUI for illustration - Thresholds will be in kg CO2e/sf

Building Typology	Recommended	ZERO Score = 30	ZERO Score = 25	ZERO Tool notes
Office	30	32	27	
College / University Office	30	50	42	College / University only, no office breakdown
K-12 Schools	25	26	22	
Hotel	30	30	25	
Residence Hall	30	32	27	
Low Density Multifamily	20	17	14	Multifamily 833 sf/unit
High Density Multifamily	30			

For later discussion: Mass Save - 25 EUI requirement. Reduce some of these to 25?

CEI TARGETS - EXPANDED CATEGORIES?

Potential Expansion the Dataset with 3rd Party Benchmarking

ZERO TOOL™

Score 100 = AIA Baseline (filtered by typology, and location)
Score 30 = 70% Reduction wrt/ AIA Baseline *(Benchmarking not including PV)*

EUI for illustration - Thresholds will be in kg CO2e/sf

Building Typology	Recommended	ZERO Score = 30	ZERO Score = 25	ZERO Tool notes
Office	30	32	27	
College / University Office	30	50	42	College / University only, no office breakdown
K-12 Schools	25	26	22	
Hotel	30	30	25	
Residence Hall	30	32	27	
Low Density Multifamily	20	17	14	Multifamily 833 sf/unit
High Density Multifamily	30			

Building Typology
Adult Education
Ambulatory Surgical Center
Aquarium
Automobile Dealership
Bank Branch
Bar
Barracks
Bowling Alley
Casino
Convenience Store wo Gas Static
Convenience Store with Gas Stat
Convention Center
Courthouse
Distribution Center
Enclosed Mall
Energy / Power Station
Fast Food Restaurant
Financial Office
Fire Station
Fitness Center
Food Sales
Food Service
Hospital
Hotel - no food prep
Hotel - with food prep

INCENTIVE FOR EXCEPTIONAL PERFORMANCE

POTENTIAL INCENTIVES:

- Expedited review
- Increased FAR and height allowance
- Others?

REQUIREMENTS:

- All-electric projects that commit to *outstanding levels* of 3rd party certification (*this is in addition to compliance with all other zoning requirements*)
- Maximizing on-site renewables (set a goal? 50% / 75% / 100%?)
- For instance:
  - Passive House
  - ILFI Zero Energy
  - LEED Zero Carbon
- Examples that are not sufficient to comply:
  - ILFI Zero Carbon
  - LEED Zero Energy

https://support.living-future.org/article/196-zero-energy-requirements-clarifications-faqs#OffsiteRenewables

ILFI - addresses situations where due to scale, high energy intensity, or grid issues, buildings are physically incapable of achieving net zero energy performance through on-site renewables, even after applying all available design and technology considerations.

AGENDA

1. Introductions
2. Process
3. Progress Summary
4. Pathway and Target Setting
5. LEED Requirements
6. Discussion
7. Next Steps

LEED CREDIT REQUIREMENTS

Required Certifiability level: LEED Platinum
(Consider LEED Gold for 20,000 - 50,000 sf, major renovations)

Required:

- Integrative Process
- Enhanced and monitoring-based Commissioning
- Envelope Commissioning
- Building Life-Cycle Impact Reduction

Under further consideration

- Enhanced Refrigerant Management (would preclude VRFs)
- Optimize energy performance using alternative compliance path (source and carbon)

Addressed by other TAGs

- On-site Renewable Energy Production (geothermal, solar PV)
- Renewable Energy Procurement (green power, RECs, carbon offsets)

AGENDA

1. Introductions
2. Process
3. Precedents
4. Pathway and Target Setting
5. LEED Requirements
6. Discussion
7. Next Steps

DISCUSSION - COMPLIANCE PATH

1. 40% Percent Carbon Reduction - any particular concerns / anticipated challenges?

- How to avoid adding a 4th baseline (stretch code, LEED, utility incentive, and carbon neutral zoning)? Options:
  - Allow teams to use LEED or stretch code baseline, but if using LEED: require using 90.1-2013 path.
  - Or use 90.1-2016.
  - Less versions easier for owners / developers.
- Consider MA emissions vs. ISO-NE.
- Can labs and healthcare achieve these targets? Yes, the target was set based on data from labs and healthcare. Labs and healthcare are typically easier to achieve 40% reduction than other types, based on our data.
- Lab % savings may be different if using 90.1-2016 baseline

- Focus on regulating carbon
- Aligned with utility incentive and industry practice process, market-friendly
- Simple to review (ideally rely on third party frameworks)
- Compatible with upcoming BERDO emissions performance standard

DISCUSSION - COMPLIANCE PATH

1. High Performance CEI Targets - any particular concerns / anticipated challenges?

- For CEI values that align with EUI between 25 and 30, consider adjusting to 25 EUI to align with Tier 1 for Mass Save incentive program?
- Carbon emissions - look at MA values as opposed to ISO NE? (ISO NE currently used for BERDO)
- Can you use a pro-rated CEI, based on multiple use types in a building? (Answer: Yes)
- Hotel value at an equivalent EUI of 30 seems low. Will the pro-rated value for fitness/pool/kitchen adjust sufficiently for this?
- Reminder: CEI values based on 2035 emissions factors for compliance. Date-of-occupancy emissions is also required for submission, but likely not compliance.
- Compare to Zero Code ASHRAE 90.1-2019 values http://zero-code.org/energy-calculator/
- College / University is a large category - how to deal with it? Agreed. Recommended: follow other categories that aren't "College / University"
- Schools funding mechanisms for charter schools may make achieving the EUI of 25 more challenging than others. Otherwise achievable.

- Focus on regulating carbon
- Aligned with utility incentive and industry practice process, market-friendly
- Simple to review (ideally rely on third party frameworks)
- Compatible with upcoming BERDO emissions performance standard

DISCUSSION - INCENTIVES

1. Thoughts on incentives that would be most valuable
2. Requirement for on-site renewable - “maximize” or specific % requirement?

- [Developer perspective] Height allowance highly valued. Unsure about expediency. Projects are all unique so different incentives may be better fit for certain projects.

- Focus on regulating carbon
- Aligned with utility incentive and industry practice process, market-friendly
- Simple to review (ideally rely on third party frameworks)
- Compatible with upcoming BERDO emissions performance standard

DISCUSSION - LEED REQUIREMENTS

1. LEED Platinum for some, Gold for others - thoughts?
2. Suggestions on additional credit requirements?
3. Thoughts on Enhanced Refrigerant Management? Alternative path for energy performance?

- Recommendation: Maxing out 4 points for regional priority. EA, Water, LCA, etc.
- IDP - how critical to make mandatory since preliminary analysis is already being asked for. City believes that project not going after them sometimes didn't "do any analysis" (but could it be that they've done too many times?)
- {post call convo - look into green leases as requirement}

- Focus on regulating carbon
- Aligned with utility incentive and industry practice process, market-friendly
- Simple to review (ideally rely on third party frameworks)
- Compatible with upcoming BERDO emissions performance standard

AGENDA

1. Introductions
2. Process
3. Precedents
4. Pathway and Target Setting
5. LEED Requirements
6. Discussion
7. Next Steps

NEXT STEPS

- Finalizing Recommendations

ZNC ZONING MATERIALS AND CONTACTS

For information, materials, updates and submitting comments, please visit the "Zero Net Carbon Building Zoning Initiative" webpage: bostonplans.org/ZNCBuildingZoning

- Comments may be submitted directly from project webpage or emailed to John.Dalzell@Boston.gov
- Meeting presentations and recording will be uploaded to the project webpage in the next two days.

THANK YOU

CALL CHAT

John Dalzell: Please use the Chat feature for questions and comments during the presentation. We will use the Raise Hand feature during the discuss phase.

Norm Lamonde: Not sure if this was brought up before. Evaluation should consider Off Hours and Weekend building operations in leases.

John Dalzell: Thanks Norm; good comment.

Chris Schaffner: Does this mean we have to model a separate baseline for the city, in addition to Stretch Code requirements. Plus you require LEED, so now you have three baselines to model.

Rebecca Hatchadorian Arup: That's what it sounds like ...

Claire McKenna: I'm trying to think about how the 40% emissions reductions would align with the S.9 net zero stretch code - would love to discuss this with the group.

John Dalzell: Thanks Chris, Rebecca - we modeling will be same as Code except for the CEI calculation that will reflect date of occupancy and 2035 electric grid emission factors.

Chris Schaffner: Just need to get the state to use the common baseline approach…and stop adding optional items to baselines.

Rebecca Hatchadorian Arup: How big is this sample size?

Claire McKenna: can you give us a quick level-set for these emissions standard and EUI?

CALL CHAT

Claire McKenna: ex. 10 = kg CO2 = 35 EUI?

Colin Schless TT (he/him): next slide should cover that

Vincent's iPhone: Architecture 2030 created and manages Zero Tool. Please let me know if you have questions about it.

Yve Torrie, A Better City: what about health care?

Chris Schaffner: Why LEED Zero Carbon, but not LEED Zero Energy?

Colin Schless TT (he/him): Hospitals were covered on slide 24 a few slides back. The BERDO data we reviewed did not distinguish inpatient v. outpatient etc. Certainly something to cover in the discussion section

Rebecca Hatchadorian Arup: Yes, please explain why ILFI Zero Carbon + LEED Zero Energy were excluded

Julie Janiski, Buro Happold: The 100% on-site option means this is off the table for high-intensity and/or large-scale projects. Perhaps more applicable to achieve X% of available roof area as a proxy for maximized installation?

Julie Janiski, Buro Happold: Alt compliance path is great re LEED, would recommend.

Chris Schaffner: Have we actually looked at the LEED Integrative process credit - it's kind of a light lift, and any Net Zero analysis required by the city would be far more stringent.

CALL CHAT

Lauren Baumann: Please remember that many rehabilitation projects do not fit nicely into the LEED rating systems, and consider what pathway they will need to follow if they are triggering these requirements.

Andrea Love: I would recommend including I2SL/Labs21 Benchmark tool for labs to compliment the Zero Tool, which doesn't have as good of benchmark data for labs

Kristen Fritsch: I assume the same for residence Hall, if it had dining, we could exclude that?

Norm Lamonde: Would be good to review the Pros/Cons of aligning Bldg Types with BERDO. Alignment between them seems to be a better approach if possible. Sounds like mixed uses becomes a challenge.

Joelle Jahn, WSP: For the CEI compliance path, would projects be using today's or future emission rates? Would the CEI targets get more stringent over time?

John Dalzell: At Joelle - the proposal is to use future emission rates that are based on expected occupancy and system life service (eg 2035).

Rebecca Hatchadorian Arup: The 40% reduction + CEI is an AND not OR. Why both? Especially with all the exceptions that CEI with few generic use types will raise? It seems like it will lead to negotiation by most buildings (since most have a mixed use component)

John Dalzell: Let make sure we spend time on the other questons.

Vincent Martinez, Architecture 2030, COO (he/him/his): If you want an estimate of the performance of the upcoming 2021 IECC you can use the Zero Code Energy Calculator: http://zero-code.org/energy-calculator/

BOURGOS: I think we could do better with wet labs...

CALL CHAT

Vincent Martinez, Architecture 2030, COO (he/him/his): Sorry, it is not the performance of 2021 IECC, it is the performance of ASHRAE 90.1-2019 or ASHRAE 90.1-2016

Vincent Martinez, Architecture 2030, COO (he/him/his): It reflects the prototype models performed by Pacific Northwest National Labs.

Vincent Martinez, Architecture 2030, COO (he/him/his): Zero Tool is based on CBECS 2003 data, not ASHRAE 90.1

Kate Bubriski: I think Gold with specific credits/thresholds required

Matthew Fickett: I second Blake's comment!

Amy Barad: regarding VRF, one manufacturer is coming out with a "hybrid" system that uses refrigerant from outdoor unit to branch box, then water for the distribution system around the building. This would limit the volume of refrigerant needed.

Rebecca Hatchadorian Arup: Agree with Kate. I'd veer away from too many additional prescriptive requirements.

Kristen Fritsch: Appreciate the push for LEED Platinum - and the specific credit requirements. Though we have seen that envelope commissioning per LEED is an expensive add for projects of a certain size.

Kristen Fritsch: Yes - agree w/ Ben on renewables issue.

Rebecca Hatchadorian Arup: And yes! have had limitations from Eversource on PV too.