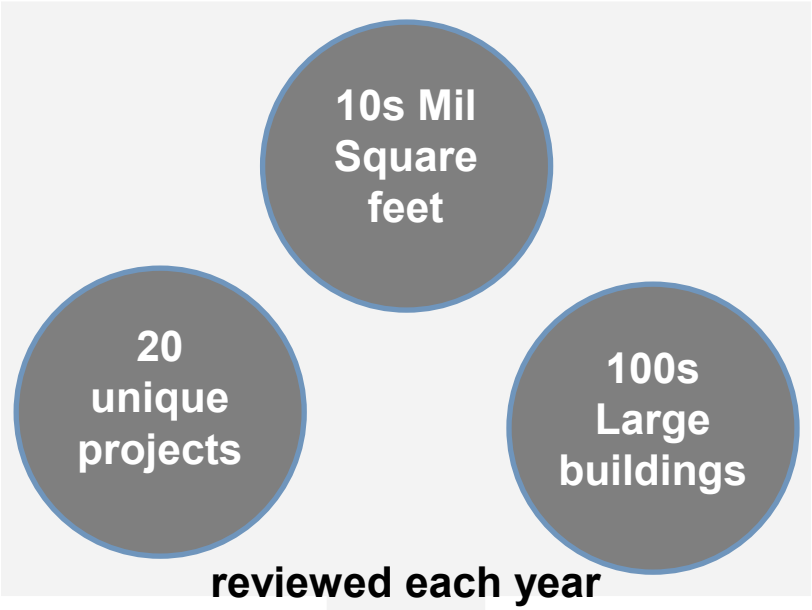
DOER
Massachusetts Department of Energy Resources

MEPA Project Reviews

Building Energy Efficiency

Recent MEPA GHG Reviews

The Department of Energy Resources (DOER) has provided technical review on MEPA projects since 2010. MEPA reviews have incentivized GHG reduction strategies for new buildings.



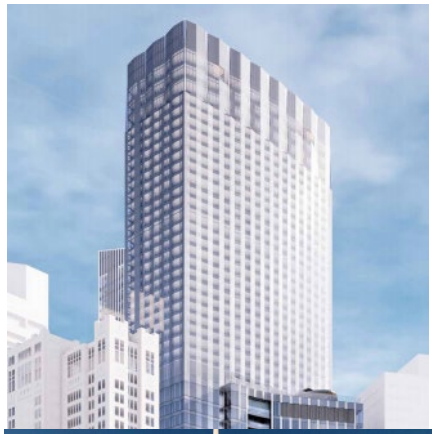
MEPA outcomes in 2020-23

- About 90% residential electrified
- About 70% office electrified
- About 90% office-lab hybrid electrified
- 1000's of Passivehouse units
- New attention to envelope, air infiltration, and heat recovery – the key components needed for electrification and decarbonization

Significant ripple effect across industry

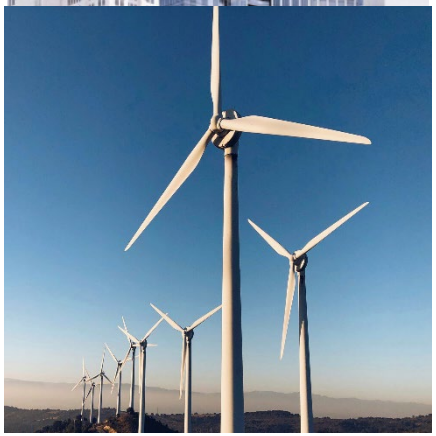
Recent MEPA GHG Reviews

MEPA reviews have sought to encourage energy efficiency strategies that have the most impact in reducing GHG emissions.



Envelope and air infiltration

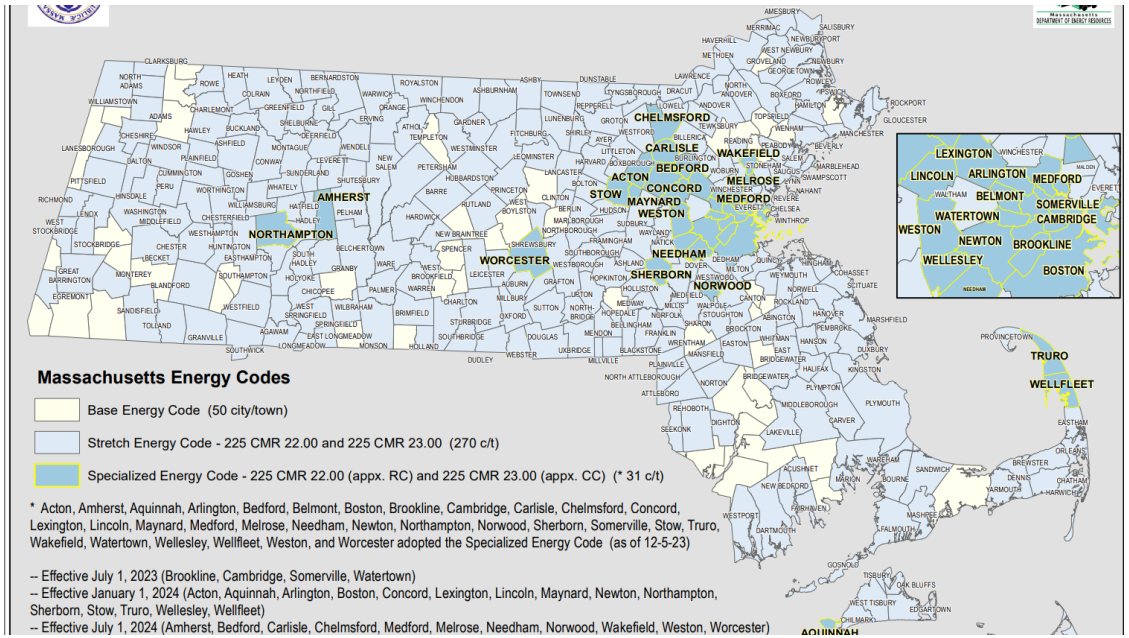
Passivehouse and energy recovery



Space and water electrification

Solar and EV readiness

2023 Changes to Building Energy Code



Base Code (9% pop)

- IECC 2021+ minor amendment

Stretch Code (66% pop)

- IECC 2021 + significant amendment

Specialized Code (25% pop)

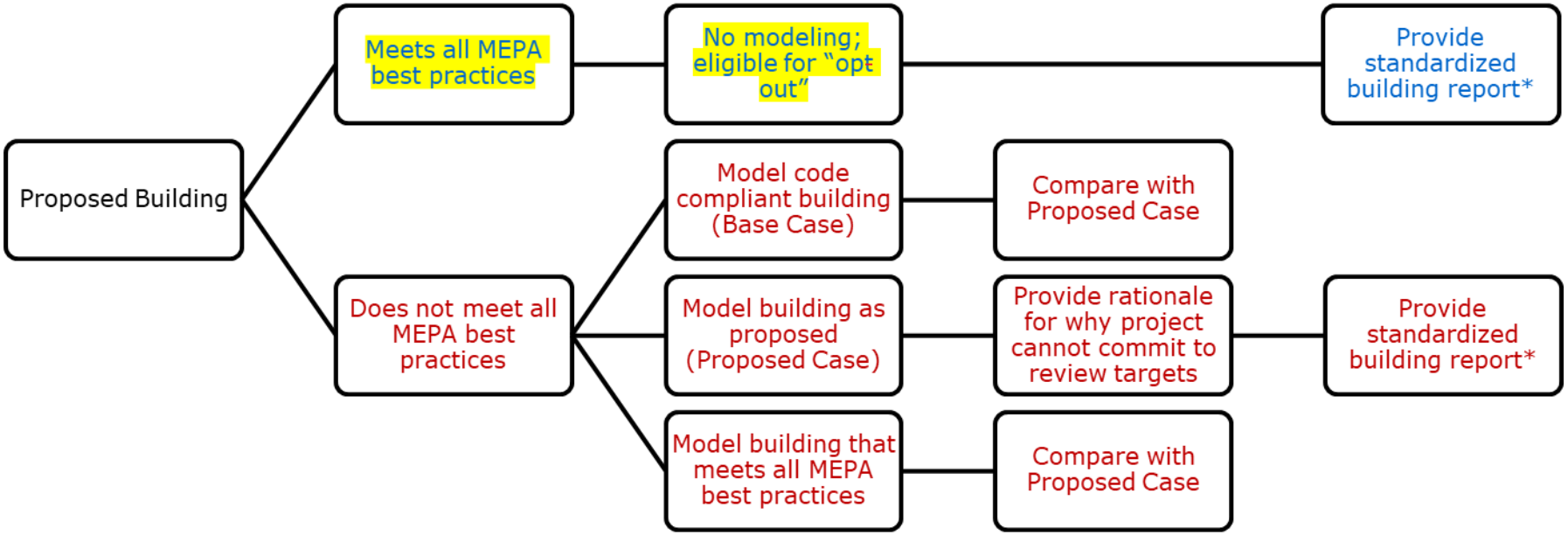
- Stretch + Passivehouse for large residential multifamily
  - Efficient electrification

  OR

  - Efficient electrification readiness + PV

MEPA GHG Policy: Potential Updates

Update #1: Simplify MEPA Process by Creating "Opt-Outs" if Project Commits to Best Practices; Standardize Analysis for Other Projects



DOER
Massachusetts Department of Energy Resources

MEPA GHG Policy: Potential Updates

Update #1 (*cont.*): MEPA Best Practices Would Align with GHG Reduction Strategies in 2023 Stretch/Specialized Opt-In Code

	Thermal Limits	Envelop, air infiltration, energy recovery	Electrification	Passivehouse and Reduced HERS	PV and EV
					
2023 Stretch and Specialized "Opt-in" Code	• Sets maximum allowable heating and cooling demand limits (applicable to certain commercial buildings)	• Envelope backstops, better energy recovery and air infiltration	• Hybrid electrification mandatory for lab/offices • Electrification readiness for other bldgs.	• HERS 45 for small residential • Passivehouse mandatory for multi-family as of 2024	• PV readiness • PV required if gas heated bldgs in specialized • EV readiness
MEPA Best Practices	• Same	• Same + enhanced roof insulation for select buildings (warehouses)	• Full electrification strategy (except certain building types)	• Same + Lower HERS for certain buildings	• Same

MEPA GHG Policy: Potential Updates

Update #2 (Technical): Revise How Mitigation Commitments are Expressed.

- **Current: Commitments are expressed as "% better" than Base Case.**
  - **Issue:** All improvements are treated the same, with strategies such as improvements to envelope and reduction in peak load (which achieve better GHG reductions) given equal footing as other strategies.

- **Proposed: Revise "% better" measure to be calculated from legally mandated code in the community. Develop metrics to show building performance improvements.**
  - Electrification of space heating
  - Electrification of water heating
  - Heating and cooling load reduction (TEDI)
  - Envelope and air infiltration
  - Rooftop solar readiness / installation
  - EV readiness / installation
  - Peak load reduction
  - Passivehouse

MEPA GHG Policy: Potential Updates

Update #3 (Technical): Revise Modeling Methodology to Consider Reductions in Overall Grid Emissions by 2050.

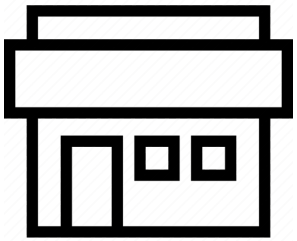
- **Current: Energy modeling evaluates building improvements as of a single year.**
  - **Issue:** Modeling does not consider improvements to grid emissions, thereby understating benefits of electrification over time. In addition, single year is measured as of time of MEPA review, so code updates at time of construction are not considered.

- **Proposed: Move to 30 year look ahead to fully capture GHG reduction benefits of building improvements.**
  - Apply grid emissions rate as of 2050 when evaluating the anticipated emissions benefits of energy efficiency strategies.
  - Allow consideration of cost feasibility, with greater justification for dismissal of strategies that provide clear GHG benefits.

Appendix

(Proposed) MEPA Best Practices for "Opt-Outs"

Non-residential commercial <= 20,000-sf (except warehouse, restaurant, high ventilation)



Follow all-electric pathway of Specialized Code <u>and</u>:

- **Use Option 8 (lower air infiltration) as one of the mandatory C406 measures**
- **Service water heating with heat pump (or solar thermal + electric resistance)**

Non-residential commercial > 20,000-sf (except warehouse, restaurant, high ventilation)

Follow all-electric pathway of Specialized Code and:

- **Use Option 8 (lower air infiltration) as one of the mandatory C406 measures**
- **Max 50% glazed wall systems**
- **Service water heating with heat pump (or solar thermal + electric resistance)**

High ventilation buildings

Follow all-electric OR mixed fuel pathway of Specialized Code and:

- Use Option 8 (lower air infiltration) as one of the mandatory C406 measures
- Max 50% glazed wall systems
- Service water heating with heat pump (or solar thermal + electric resistance)

Warehouse

Follow all electric OR mixed fuel pathway of Specialized Code <u>and</u>:

- **25% of peak load heat pump space heating**
- **Service water heating with heat pump (or solar thermal + electric resistance)**
- **R-40 roof**

Restaurant

Follow all electric pathway of Specialized Code <u>and</u>:

- **Use Option 8 (lower air infiltration) as one of the mandatory C406 measures**
- **Service water heating with heat pump (or solar thermal + electric resistance)**

Residential 3 stories or less

Follow all-electric pathway of Specialized Code <u>and</u>:

- **Less than 5 dwelling units: HERS 40 (or Passivehouse)**
- **5 or more dwelling units: Passivehouse**
- **If single family or townhouse: service water heating with heat pump OR solar thermal + electric resistance**

Residential more than 3 stories

Follow all-electric pathway of Specialized Code <u>and</u>:

- **Passivehouse**
- **If more than 50 units: service water heating with heat pump**