Maryland
Department of
the Environment

Maryland Building Energy Performance Standards (BEPS)

March 2023
MDE Status Update
Air Quality Control Advisory Council

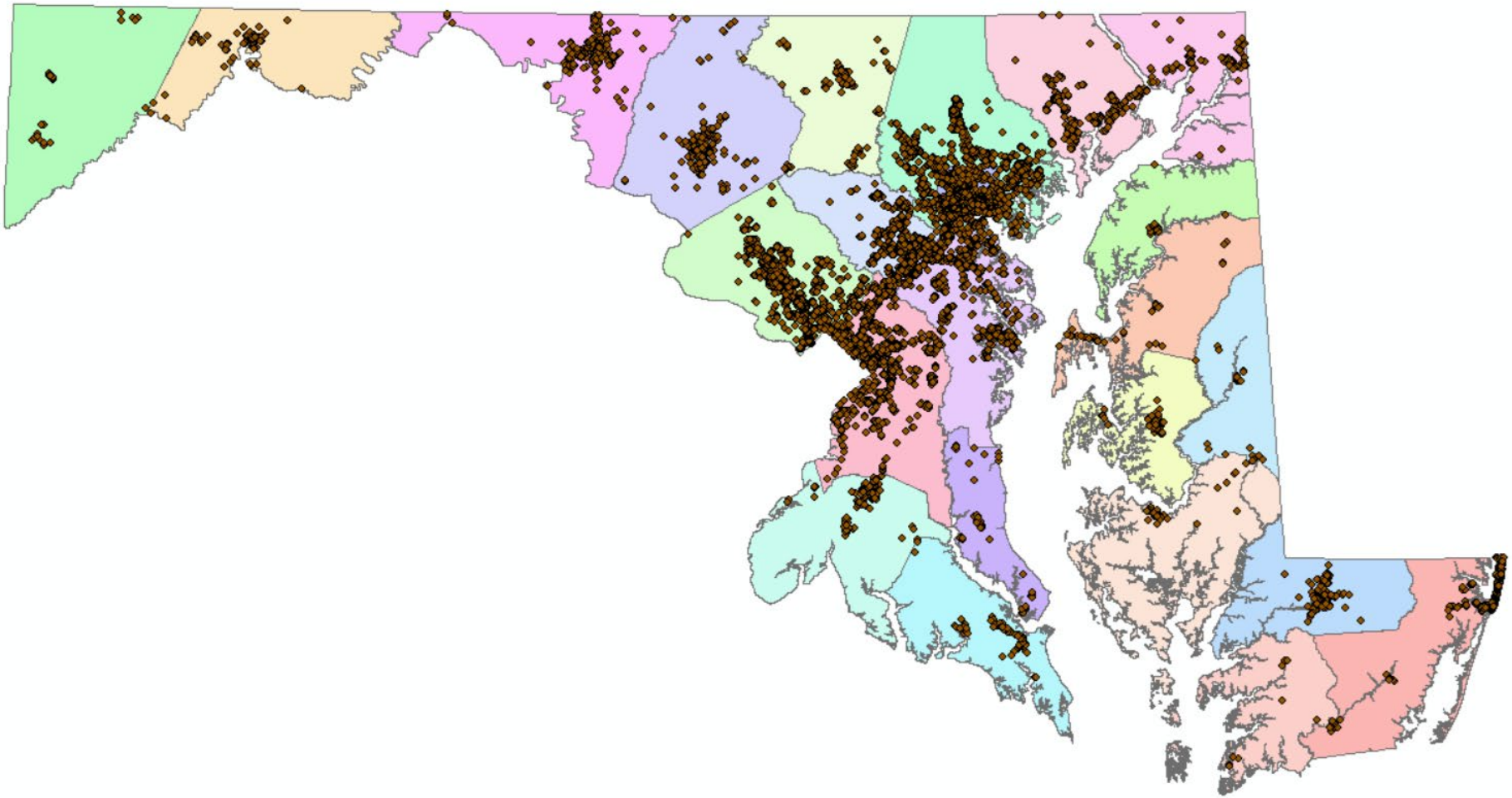
Today's Briefing

- Recap of Previous Briefing
- Location and Distribution of Covered Buildings
- Process for Building Owners
- Emissions and Energy Impacts
- Summary of Fall Stakeholder Meetings
- Schedule

Recap of December Presentation to AQCAC

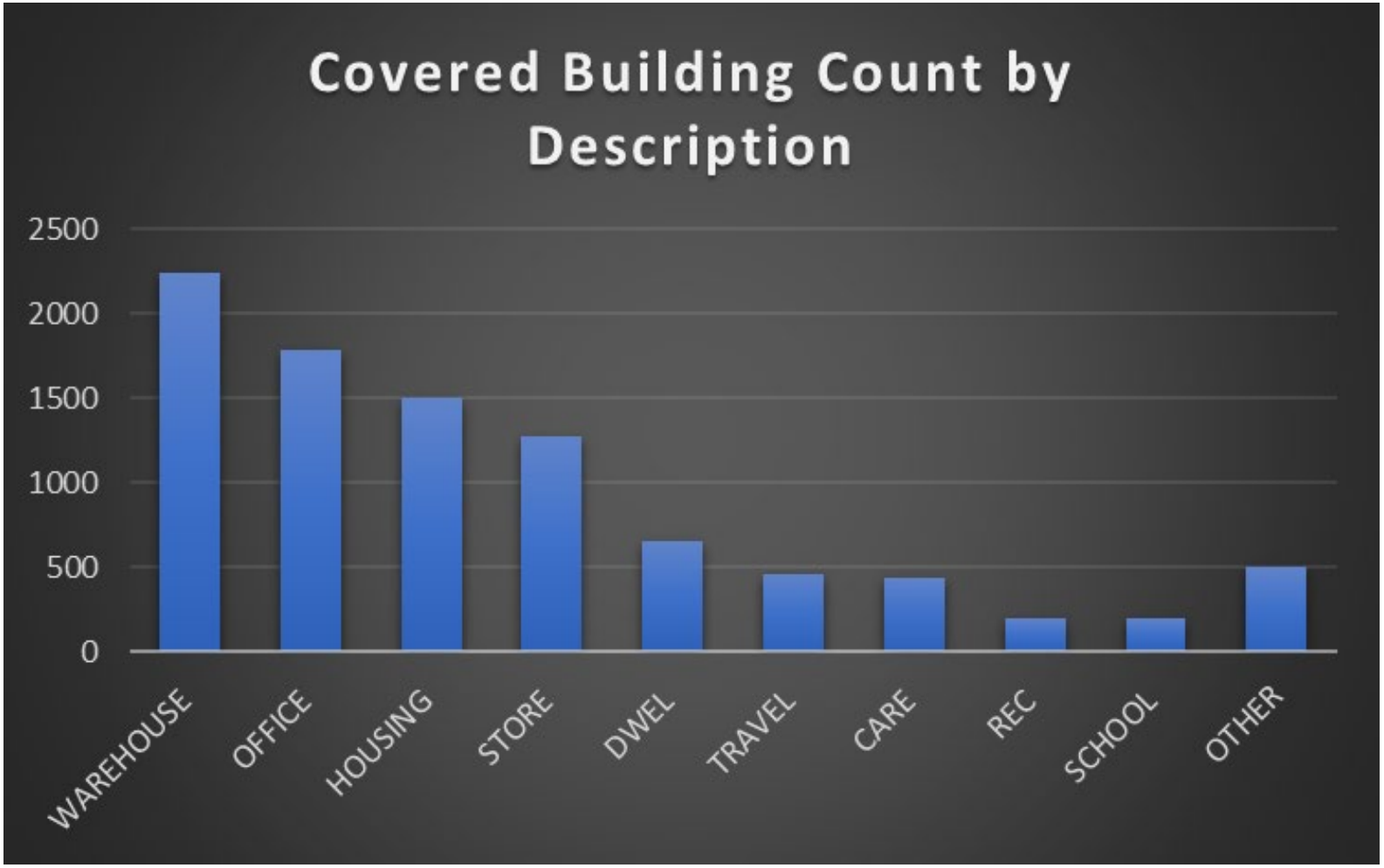
- A covered building is a building in Maryland that has a gross floor area of 35,000 square feet or more excluding the parking garage area
- Approximately 9,000 covered buildings (pending further analysis)
- Two targets:
  - Net direct greenhouse gas emissions
    - 20% reduction by 2030
    - Net-zero direct emissions by 2040
  - Site energy use intensity
    - Targets to be set through rulemaking
- MDE is working with U.S. DOE, U.S. EPA, LBNL, PNNL, IMT, and NEEP to develop the regulation

Location of Covered Buildings



Preliminary analysis

Distribution of Covered Building Types



Preliminary analysis

Process for a Covered Building Owner

Alternative Compliance

Benchmark → Assess → Achieve Standards

Annually beginning in 2025

Use an online benchmarking tool (EPA's ENERGY STAR Portfolio Manager) to track annual energy use and greenhouse gas emissions.

Annually beginning in 2025

Determine if changes are needed to improve site energy use intensity and/or reduce net direct greenhouse gas emissions to achieve the standards.

Annually beginning in 2030

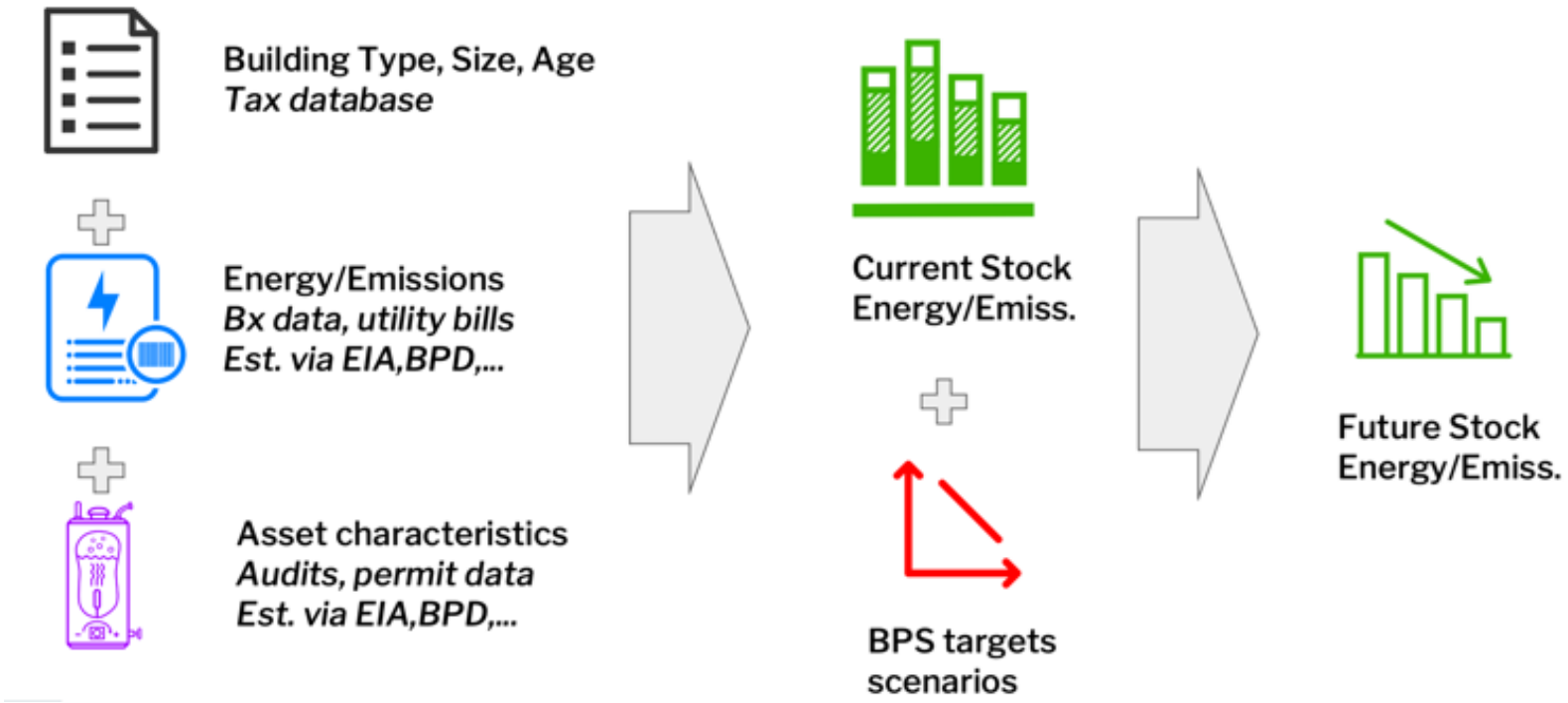
Achieve specified levels of site energy use intensity and net direct greenhouse gas emissions. If the building does not achieve the standards, then the owner will pay a fee or penalty to come into compliance.

Emissions and Energy Impacts

The following slides are from Lawrence Berkeley National Laboratory

Overview of Building Stock Analysis

- Characterize the building stock (size, type, and energy use for each bldg)
- Scenarios for potential BPS policies (metrics, targets, timing)
- Predict energy reductions under each scenario



Data Sources and Modeling Methodology

- Data Sources
  - Building types and sizes from Maryland Covered Building List (CBL) (~8500 bldgs >35k sqft)
  - Site EUI and electric/site ratio from EPA dataset
  - Ratio of fuel used for space and water heating from Com/ResStock
  - Projected grid emissions factors from Maryland analysis
  - Site EUI targets from Montgomery County (MoCo) potential targets

- Model: Reduce energy use to meet EUI targets
  - 3 cycles of 5 years (ending in 2030, 2035, 2040) – actual compliance cycle TBD by MDE
  - First: Try to meet direct emissions target with efficiency
  - Next: Electrify space heating, water heating, other uses, until direct emissions target met
  - Last: Reduce electric use until site EUI target met

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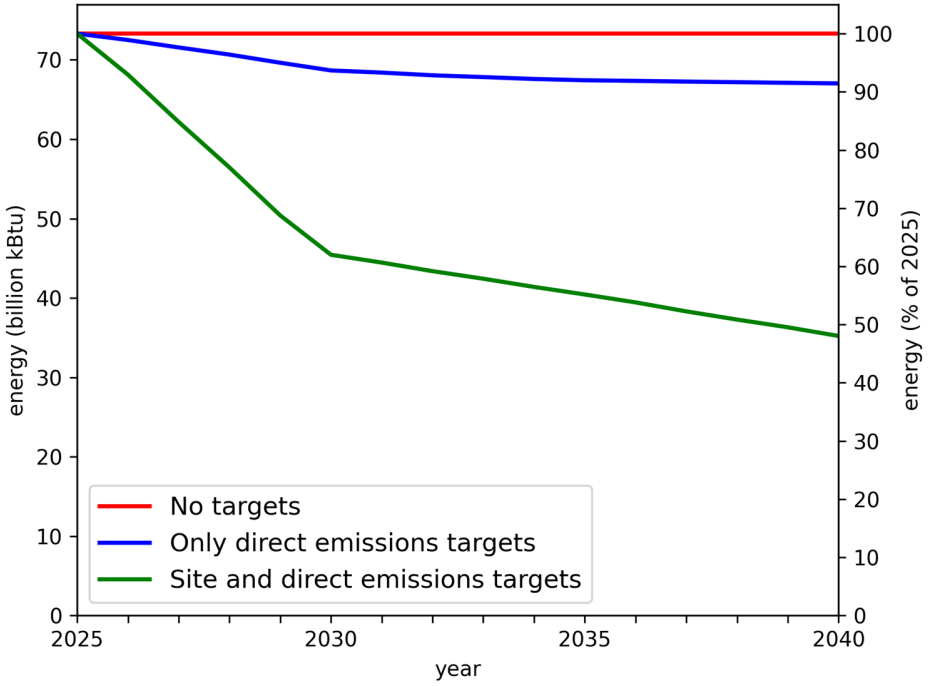
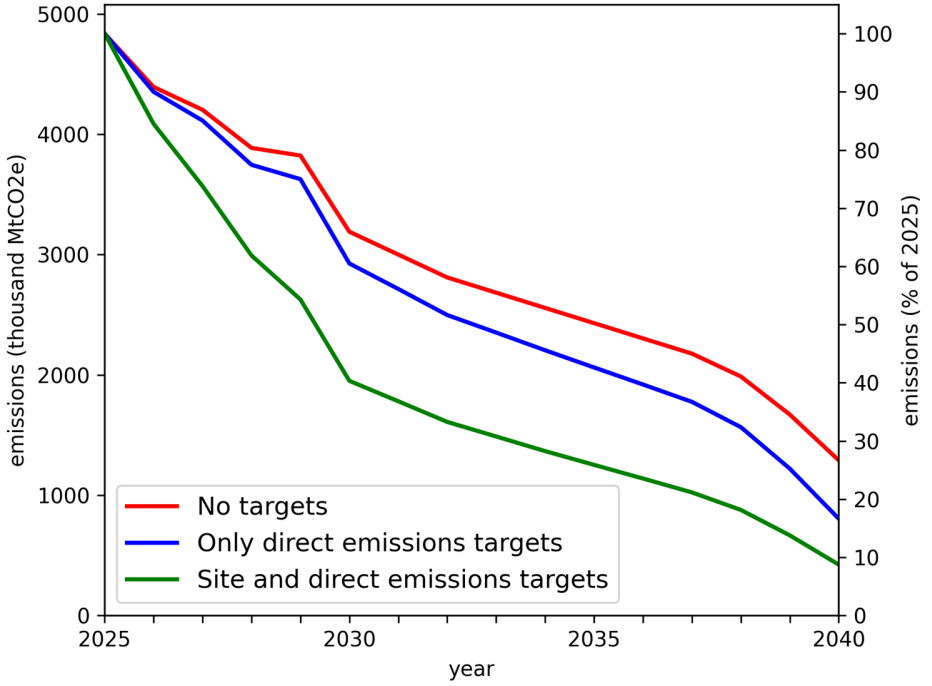
Energy and Emissions Reductions

- Majority of emissions savings due to cleaner grid
- Site vs. direct emissions targets: more electric energy savings than emissions

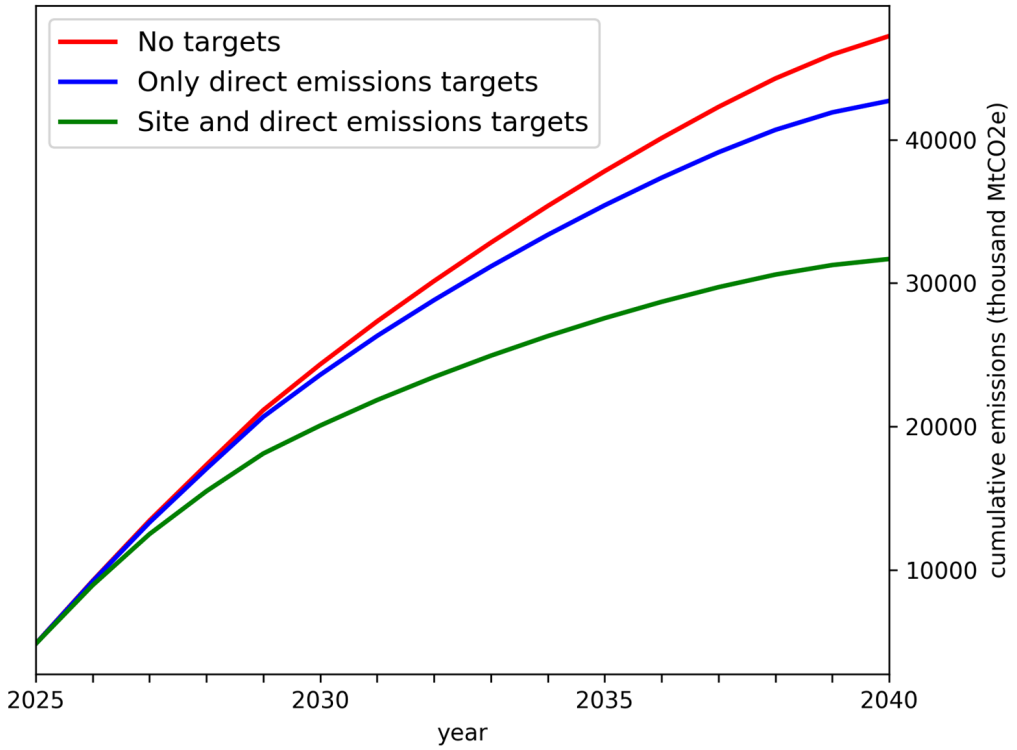




Preliminary results

Cumulative Emissions

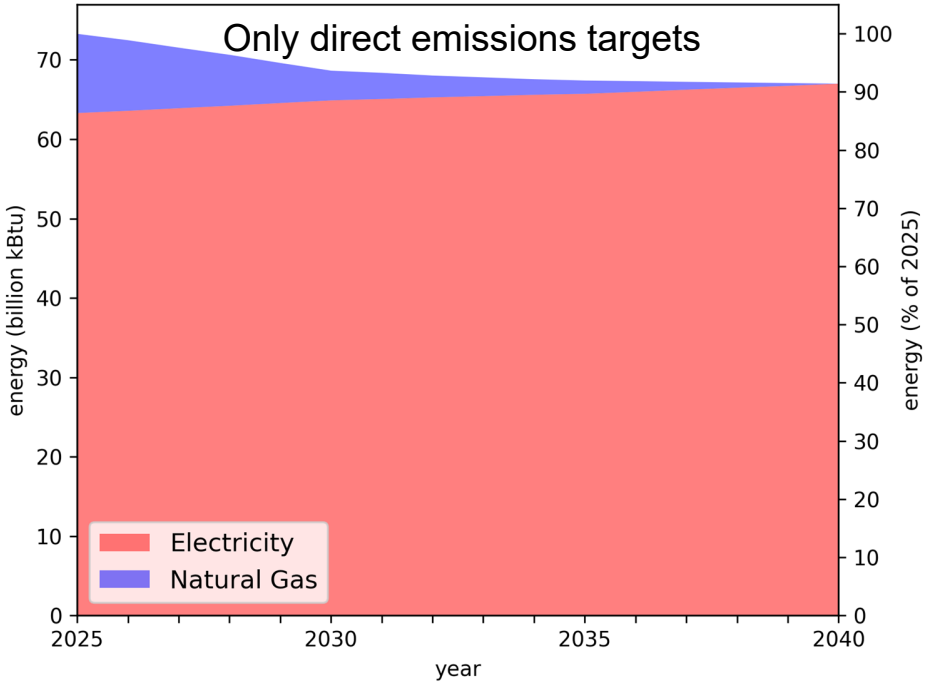
- Only direct emissions targets vs. no targets: 9.6% decrease
- Site and direct emissions targets vs. no targets: 33% decrease

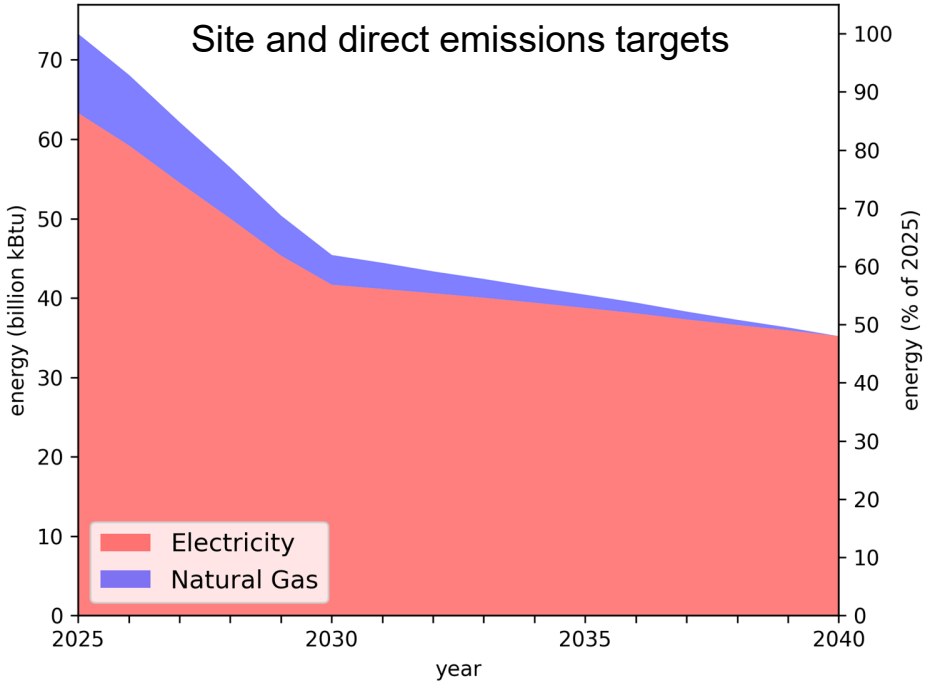


Preliminary results

Electricity and Gas Energy Reductions

- With only direct emissions targets: electricity use increases 5.8%
- With site and direct emissions EUI targets: electricity use decreases 44%





Preliminary results

Model Sensitivity Analyses

- Parameter variations:
  - Direct emissions targets over time (20,40,40% vs. 20,30,50%)
  - Site targets over time (33,33,33% vs. 20,40,40%)
  - Final site targets (MoCo EE vs. ZNC)
  - Max fuel space heating savings by efficiency (10% vs. 20% vs. 30%)
  - Max fuel water heating savings by efficiency (5% vs. 10% vs. 15%)
  - COP when electrifying space heating (2.5 vs. 3.0)
  - COP when electrifying water heating (2.2 vs. 3.0)

- Bottom line: Modeling results are minimally/not sensitive to parameter variations

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Outreach to Stakeholders

In November and December 2022, MDE and IMT hosted 14 stakeholder engagement meetings with representatives from different sectors.

- Colleges and Universities
- State-Owned Buildings
- District Energy Providers
- Utilities and Fuel Distributors
- Environmental NGOs
- Hospitals
- Warehouses
- Laboratories
- Nursing Facilities
- Restaurants
- Offices
- Retail
- Hospitality
- Multifamily
- Affordable Housing
- Light Industrial
- Life Sciences
- Assisted Living
- Food Service Facilities
- Local Governments

Stakeholder Meeting Participants

Sample of Organizations Represented:

- Johns Hopkins University
- Vicinity Energy
- Baltimore City and County Governments
- Interfaith Power & Light
- Equity Residential
- Community Housing Partners
- Maryland Clean Energy Center
- BOMA
- Cushman & Wakefield
- NAIOP Maryland
- Prince George's County Government
- Avalon Energy Services
- Maryland Chamber of Commerce
- National Housing Trust
- Howard County Government
- Fidelity Engineering Corp
- Hill Management Services
- Montgomery County Government
- University of Maryland
- Loyola University Maryland
- Baltimore Gas and Electric
- Maryland League of Conservation Voters

Stakeholder Input

Stakeholders want clarity on:	**Stakeholders want flexibility on:**	**Stakeholders recommended:**
• Net Direct Emissions vs Site EUI • Setting Baselines and Targets • Covered Building Definitions • Portfolio Management • District Energy • Unique Ownership Structures • Tenant Issues	• Backup Power • Electric Vehicle Charging • Renewable Generation • Carbon Offsets • Historic Buildings • Project Timing • Hospitals • Laboratories	• State/Local Government Coordination • Ensure Easy Access to Utility Data • Provide Help Desk Assistance • Provide Case Studies and Best Practices

Target Schedule

Mar. 2023 - Update AQCAC on the status of the rulemaking

Jun. 2023 - Present the proposed regulation to AQCAC

Jul. 2023 - Submit the Notice of Proposed Action (NPA) to the Joint Committee on Administrative, Executive, and Legislative Review (AELR)

Sep. 2023 - Publish the NPA in the MD Register

Oct./Nov. 2023 - Public hearings

Dec. 2023 - Adopt the regulation

Contact

MDE BEPS website:

https://mde.maryland.gov/programs/air/ClimateChange/Pages/BEPS.aspx

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