Maryland
Department of the Environment

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TECHNICAL SUPPORT DOCUMENT

FOR

COMAR 26.28 – Building Energy Performance Standards

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I. INTRODUCTION

This Technical Support Document has been created to support the new regulatory requirements for the Maryland Building Energy Performance Standards.

II. PURPOSE OF REGULATORY ACTION

The purpose of this action is to create the Maryland Building Energy Performance Standards (BEPS) as required by the Climate Solutions Now Act (CSNA) of 2022. See, in relevant part, Title 2, Subtitle 16 of the Environment Article, Annotated Code of Maryland. The goal is to reduce direct greenhouse gas (GHG) emissions and improve overall energy efficiency from Maryland's building sector for certain buildings that are 35,000 square feet or larger. The regulation requires covered building owners to measure and report data to the Maryland Department of the Environment (MDE). The regulation further requires that covered building owners meet specific net direct GHG emissions. The regulation also contains record keeping and reporting requirements for electric and gas companies and district energy providers.

Additional regulatory actions on BEPS will be taken at a later date. Per language in the Budget Bill (Fiscal Year 2025), SB 360/Chp. 716 of 2024, MDE plans to adopt energy use intensity (EUI) standards in 2027 following the submission of a report to the General Assembly and calculation of EUI standards based on data reported to MDE in 2026. EUI standards are important for promoting efficient electrification to enable Maryland's clean energy transition, minimize electricity grid impacts, and achieve Maryland's goal of net-zero GHG emissions by 2045.

III. BACKGROUND

In 2022, the Maryland General Assembly passed the CSNA that modified Maryland's GHG emissions reduction goals in response to the latest science indicating that more stringent goals are necessary to combat climate change. CSNA set new goals to reduce statewide GHG emissions by 60% below 2006 levels by 2031 and achieve net-zero emissions by 2045. Among the requirements outlined in the new law is that Maryland implement BEPS. CSNA requires MDE to develop BEPS for covered buildings that: achieve a 20% reduction in net direct GHG emissions on or before January 1, 2030, as compared with 2025 levels for average buildings of similar construction; attain net-zero direct GHG emissions on or before January 1, 2040; and include EUI targets by building type.

Covered buildings will be required to benchmark energy use utilizing the United States Environmental Protection Agency's (EPA) ENERGY STAR Portfolio Manager tool, which is a free, interactive resource management tool that enables the benchmarking of energy use of any type of building. Covered buildings are subject to interim performance standards beginning in 2030 and running through 2039, and to a final performance standard that must be achieved on an annual basis in 2040 and beyond. Covered buildings are those defined in the regulation and further elaborated in TM 24-01 A.1.2. Building owners who believe their buildings are exempt must follow the procedure for exemption laid out in TM 24-01 A.1.2.2.

In July 2023, Maryland joined the White House National Building Performance Standards Coalition, which is a nationwide group of state and local governments that have committed to inclusively design and implement building performance policies and programs in their jurisdictions. Maryland's development of BEPS has been supported by federal agencies, labor, and non-governmental

organizations that provided resources for workforce engagement, technical analysis, equity strategies, policy design, and stakeholder engagement.

IV. SOURCES AFFECTED AND LOCATION

The proposed regulation applies to buildings in Maryland that are 35,000 square feet or larger (excluding the parking garage area). Historic buildings, public and nonpublic elementary and secondary schools, manufacturing buildings, agricultural buildings, and federal buildings are exempt. There are approximately 9,000 covered buildings in Maryland located across all counties. Electric and gas companies and, in limited cases, tenants in covered buildings are required to maintain and provide energy consumption data for covered buildings.

V. REQUIREMENTS

This regulation requires covered building owners to report data to MDE through the EPA ENERGY STAR Portfolio Manager tool. Benchmarking will begin in 2025 and compliance with direct GHG emissions will begin in 2030. Covered building owners may need to make improvements to their buildings to meet the net direct GHG emissions standards. Covered buildings must meet interim standards in 2030 through 2039 and final standards in 2040 and beyond or pay an alternative compliance fee. Interim and final standards are set in the regulation. Electric companies and gas companies are required to maintain and provide energy consumption data for all covered buildings and provide to the building owner accurate and timely information on the actual amount of electricity, gas, or fuel delivered to a covered building. District energy companies are required to provide information on the emissions intensity of their district energy system to their customers.

A tenant of a covered building is required to provide requested benchmarking information to a covered building owner that cannot otherwise be acquired from other sources.

VI. PROJECTED EMISSIONS REDUCTIONS

According to Maryland's GHG Emissions Inventory, direct fuel use in buildings produced nearly 14 million metric tons of carbon dioxide equivalent (MMTCO2e) in 2020. Electricity consumption, almost all of which was consumed in buildings, generated approximately 18 MMTCO2e in 2020. Through their direct fuel use and electricity consumption combined, Maryland's buildings accounted for roughly a third of all statewide GHG emissions. Buildings covered by BEPS accounted for approximately 5 MMTCO2e in 2020. In combination with state and federal policies to achieve 100% clean power generation, BEPS is modeled to reduce emissions by approximately 8.8 MMTCO2e between 2025 and 2050 based on a 2024 study by the U.S. Department of Energy's Lawrence Berkeley and Pacific Northwest National Laboratories. According to a 2023 study by the U.S. Department of Energy's Lawrence Berkeley and Pacific Northwest National Laboratories, the inclusion of future site EUI standards are modeled to further reduce emissions by approximately an additional 10 MMTCO2e.

VII. ECONOMIC IMPACT

Between 2025 and 2040, building owners whose buildings do not already meet the BEPS standards will be required to implement energy efficiency measures and/or electrification measures or pay alternative compliance fees in order to comply with BEPS. A BEPS regulation including EUI standards would lead to significant energy savings and returns on investment for building owners. MDE advises building owners that analysis has shown implementing energy efficiency measures will reduce energy costs. The current BEPS regulation, which establishes emissions standards but does not yet establish EUI standards, may lead to weaker returns on investment if electrification measures are pursued without consideration of reducing EUI as well.

Results from a 2024 study by the U.S. Department of Energy's Lawrence Berkeley and Pacific Northwest National Laboratories demonstrate that during BEPS implementation (2025-2040), under the current regulation that includes emissions standards but does not yet include EUI standards, all covered buildings combined will spend more on efficiency measures ($205 million) and electrification measures ($5.53B) than the energy cost savings accrued in this period ($1.2B). On a longer time horizon (2025-2050), energy cost savings increase to $4.6B. On average, over the 2025-2050 time horizon, covered buildings spend $0.65 per square foot. However, there is significant variation with 25% of covered buildings modeled to save more than $0.06 per square foot and 25% of covered buildings modeled to spend more than $2.65 per square foot.

Modeling from the National Labs shows that future site EUI standards will lead most owners to cost savings. During BEPS implementation (2025-2040), under a future regulation that includes emissions and EUI standards, all covered buildings combined will spend more on efficiency measures ($8.8B) and electrification measures ($6.4B) than the energy cost savings accrued in this period ($8.96B). However, on a longer time horizon (2025-2050), energy cost savings increase to $22.3B, indicating a net savings for Maryland's covered buildings. On average, over the 2025-2050 time horizon, covered buildings save $4.47 per square foot. However, there is significant variation with 25% of covered buildings modeled to save more than $9.29 per square foot and 25% of covered buildings modeled to spend more than $4.43 per square foot.

The Building Energy Transition Task Force, created by the CSNA, delivered a report to the Governor and the General Assembly in January 2024. The report included recommendations relating to funding the retrofit of covered buildings to comply with BEPS. Additionally, through the efforts of various state agencies, significant funding from the federal Bipartisan Infrastructure Law and Inflation Reduction Act is expected to reduce costs of compliance with BEPS for Maryland's affected sources and speed their return on investments. For example, the federal Energy Efficient Commercial Building Deduction provides up to $5 per square foot for projects that reduce energy use intensity, including electrification projects.

According to the Lawrence Berkeley National Lab study on peak demand impacts from BEPS, the GHG emissions standard alone will increase peak demand. This would require additional grid improvements paid for by electric ratepayers. With the future incorporation of site EUI standards, the public in Maryland could see economic benefits through reduced electricity rates due to the impact of BEPS on reducing strain on the electricity grid.

A. Economic Impact on Small Businesses

As described above, on average, over the 2025-2050 time horizon, covered buildings spend $0.65 per square foot. With the inclusion of future site EUI standards, covered buildings save $4.47 per square

foot over that same timeframe. The savings and costs identified in the 2024 study from the U.S. Department of Energy's Lawrence Berkeley and Pacific Northwest National Laboratories will impact small businesses that are covered building owners and may also impact small businesses that are tenants in buildings covered by BEPS.

The Building Energy Transition Task Force report included recommendations for funding the retrofit of covered buildings to comply with BEPS. Additionally, significant funding from the federal Bipartisan Infrastructure Law and Inflation Reduction Act are expected to reduce costs of compliance with BEPS for Maryland's affected sources and small businesses.

VIII. CORRESPONDING FEDERAL STANDARD

In December 2022, the U.S. Council on Environmental Quality (CEQ) issued a Federal Building Performance Standard (BPS). The Federal BPS was issued according to the requirements set by Executive Order (E.O.) 14057, *Catalyzing Clean Energy Industries and Jobs Through Federal Sustainability*. The Federal Government is considered the single largest energy consumer in the country, and the Federal BPS includes facilities owned by the Federal Government or covered facilities according to section 432 of EISA (42 U.S.C. § 8253(f)(2)(B)). The Federal BPS will deliver a net-zero emissions building portfolio by 2045, including a 50 percent GHG emissions reduction by 2032, prioritizing energy efficiency and electrification. To achieve these goals, section 205(b) of E.O. 14057 provides that agencies should use the Federal BPS to prioritize reductions in scope 1 GHG emissions. Scope 1 emissions cover standard building operational needs, including direct emissions from space heating and cooling, water heating, cooking, backup generators, and laundry.

IX. DOCUMENTS TO BE INCORPORATED BY REFERENCE

Maryland Department of the Environment Technical Memorandum 24-01, "Technical Guidance and Calculation Methodologies to Comply with Building Energy Performance Standards," July 2024.

X. STAKEHOLDER OUTREACH

Between November 14 and December 8, 2022, MDE hosted 12 stakeholder engagement meetings regarding the BEPS draft regulations. These meetings were convened in partnership with the Institute for Market Transformation (IMT) and Northeast Energy Efficiency Partnerships (NEEP). The purpose of these meetings was to garner preliminary questions and concerns about the BEPS policy that can help inform the initial drafting of regulations while informing stakeholders of the impacts of the policy.

The meetings were organized by targeting specific stakeholder cohorts and groups including colleges, state-owned buildings, district energy providers, utilities, fuel distributors, environmental non-governmental organizations, hospitals, offices, retail, hospitality, multifamily, affordable housing, light industrial, warehouses, laboratories, life sciences, assisted living, nursing facilities, restaurants, food service facilities, and local governments. Attendance in meetings ranged from 25 to 110 with a total of 419 individuals across 329 organizations

participating in one or more meetings.

MDE released a draft version of the BEPS regulations for comment in June 2023 and received 60 submissions from various stakeholders. The comments addressed various areas of the proposed regulations, including but not limited to:

- Technical Memorandum 23-01, Technical Guidance and Calculation Methodologies to Comply with Building Energy Performance Standards.
    - Requests to review the document.
    - Requests for specific processes / methods to be included in the document.
- Requests for clarification and addition of certain definitions.
- Stakeholder role clarifications.
    - Question regarding roles of building owners, utilities, and tenants.
    - Clarification for the utility reporting requirements.
    - Input from District Energy Providers and customers.
- Requests for methodology and analyses underlying the Standards.
- Feedback regarding specific Standards by property type.
- Questions about inclusion of the Standards prior to the 2025 baseline data submission.
- Inquiries about Site EUI Standards.
- Questions about the Alternative Compliance Fees.
- Requests for additional exemptions.
- Requests for added flexibility for affordable housing providers.
- Questions about third party verification.
- Concern over undue burdens on buyers or sellers of real estate property.
- Questions about methods for campus level compliance.

Scheduled outreach for summer and fall 2024

- Small Business Impact posting
- Outreach sessions scheduled for August 2024
- Local Government Maryland BEPS Cohort 2024-2025
- Working Group sessions meeting from June - October 2024
    - Electric and Gas Company Reporting Requirements
    - District Energy Systems
    - Benchmarking and Report Submission
    - Campus Compliance
    - Additional to be scheduled in late 2024 and in 2025

XI. RESOURCES

The following resources were utilized in developing the proposed regulations:

- Steven Winters Associates, Inc. Report Prepared for Montgomery County:
  - https://mgaleg.maryland.gov/cmte_testimony/2022/ehe/1MGttMwqKG-GBSxIqZ4val4x7BARbZ_H4.pdf

- 2023 Lawrence Berkeley National Labs Methodology for 2023 BEPS (Appendix C from 2023 BEPS technical support document)
  - https://mde.maryland.gov/programs/regulations/air/Documents/BEPS/BEPS%20TSD%20PACKAGE%20FINAL%20%2812-5-2023%29.pdf

- United States Environmental Protection Agency Overview of Building Energy Performance Standards:
  - https://www.energystar.gov/buildings/resources_audience/policymakers

- United States Environmental Protection Agency Benchmarking and Building Performance Standards Policy Toolkit:
  - https://www.epa.gov/statelocalenergy/benchmarking-and-buildingperformance-standards-policy-toolkit

- United States Department of Energy Building Performance Standards Tools:
  - https://buildingdata.energy.gov/#/

- Institute for Market Transformation Building Performance Standards Guides:
  - https://www.imt.org/public-policy/building-performance-policycenter/implementation/

- Federal Building Performance Standards:
  - https://www.sustainability.gov/federalbuildingstandard.html#:~:text=The%20Federal%20Building%20Performance%20Standard,by%20square%20footage%20by%202030

XII. PROPOSED REGULATIONS

26.28.01 Definitions and Documents Incorporated by Reference

Authority: Environment Article, §§1-404, 2-301, 2-302, 2-1205, 2-1602, Annotated Code of Maryland

.01 Purpose.

The purpose of this chapter is to define the terms used in this subtitle and identify the documents that are incorporated by reference.

.02 Definitions.

A. In this subtitle, the following terms have the meanings indicated.

B. Terms Defined.

(1)"Affordable housing providers" means the owner of a covered building that primarily provides housing to limited income households, where a minimum of 51 percent of households living within the building are at or below 80 percent of the area median income, as defined in the Housing and Community Development Article, §4–1801, Annotated Code of Maryland, or a covered building that is restricted under the Low-Income Housing Tax Credit (LIHTC) program.

(2) Agricultural Building.

(a) "Agricultural building" means a structure that is used primarily to cultivate, manufacture, process, or produce agricultural crops, raw materials, products, livestock, or commodities.

(b) "Agricultural building" includes a greenhouse.

(3) "Alternative compliance fee" means a fee paid by the building owner to come into compliance with applicable net direct emissions standards, as specified in COMAR 26.28.04.01A.

(4) "Area-weighted standard" means an interim or final performance standard that is calculated based on the floor area proportion of the property types within a covered building.

(5) Authorized Occupant.

(a) "Authorized occupant" means a person that is approved by a building owner to be within a covered building.

(b) "Authorized occupant" does not include:

(i) Security guards;

(ii) Janitors;

(iii) Construction workers;

(iv) Landscapers; and

(v) Other maintenance personnel.

(6) "Baseline performance" means the weather-normalized numeric values of net direct greenhouse gas emissions and site EUI of a covered building for the covered building's baseline year.

(7) "Baseline year" means either calendar year 2025 for a covered building that was constructed and occupied prior to calendar year 2025 or the first full calendar year in which a newly constructed covered building was occupied.

(8) "Benchmark" means to track and input a building's energy consumption data and other relevant building information on a monthly basis for at least 12 consecutive months, as required by the benchmarking tool, to quantify the building's energy use and greenhouse gas emissions.

(9) Benchmarking Information.

(a) "Benchmarking information" means descriptive information about a building, its operating characteristics, and information generated by the benchmarking tool regarding the building's energy consumption, efficiency, and performance.

(b) "Benchmarking information" includes but is not limited to the building identification number, address, gross floor area, and separate energy consumption totals for each fuel type.

(10) "Benchmarking tool" means the website-based software, commonly known as ENERGY STAR Portfolio Manager, or any successor system, approved by the United States Environmental Protection Agency.

(11) "Building" has the meaning set forth in the International Building Code, which is incorporated by reference under COMAR 09.12.51.04A and as modified in COMAR 09.12.51.04B.

(12) "Building owner" means an individual or legal entity possessing title to a building including but not limited to a board of the owners' association, master association, board of directors, community association, cooperative housing corporation, or condominium.

(13) "Campus" means a collection of two or more buildings, of any building type or size, that act as a single cohesive property with a single shared primary function and are owned and operated by the same party, such as, but not limited to, higher education or hospital campuses, as determined by the Department.

(14) "Commercial building" means a commercial building as defined and subject to the commercial provisions of the International Energy Conservation Code, which is incorporated by reference in COMAR 09.12.51.04A and as modified in COMAR 09.12.51.04D, regardless of the nature of the entity or government that owns the building.

(15) Covered Building.

(a) "Covered building" means a building that is a commercial or multifamily residential building in the State of Maryland or is owned by the State of Maryland and has a gross floor area of 35,000 square feet or more, excluding the parking garage area, and is:

(i) A single building;

(ii) One or more buildings held in the condominium form of ownership with a combined gross floor area of 35,000 square feet or more, excluding the parking garage area, and governed by a single board of managers; or

(iii) Two or more buildings with a combined gross floor area of 35,000 square feet or more, excluding the parking garage area, that are served in whole or in part by the same electric or gas meter or are served by the same heating or cooling system or systems, which is not a district energy system.

(b) "Covered building" includes a building that meets the criteria for a covered building as described in this section and is located in a historic district but where the building is not individually designated as a historic property under federal, state, or local law.

(c) "Covered building" does not include:

(i) A building, or space within a building, individually designated as a historic property under federal, State, or local law, separate and apart from a building's inclusion in a historic district;

(ii) A public or nonpublic elementary or secondary school building;

(iii) A manufacturing building;

(iv) An agricultural building; or

(v) A building owned by the federal government;

(16) "Department" means the Maryland Department of the Environment.

(17) "Direct greenhouse gas emissions or direct emissions" means greenhouse gas emissions produced on-site by covered buildings, as calculated by the benchmarking tool unless otherwise specified by the Department.

(18) "District energy system" means a system in which thermal energy generated at one or more central facilities provides heating or cooling through a network of insulated underground pipes to provide hot water, steam, space heating, air conditioning, or chilled water to nearby buildings.

(19) "District energy provider" means an entity that provides thermal energy to customers through a district energy system.

(20) "Electric company" has the meaning stated in Public Utilities Article, §1-101, Annotated Code of Maryland.

(21) "Final performance standard or final standard" means the numeric values of net direct greenhouse gas emissions that each covered building shall ultimately achieve on an annual basis in 2040 and beyond.

(22) "Financial distress" means:

(a) A property that is the subject of a tax lien sale or public auction due to property tax arrearages;

(b) A property that is controlled by a court appointed receiver; or

(c) A property that was acquired by a deed in lieu of foreclosure in the last calendar year.

(23) "Food service facility" has the meaning stated in COMAR 10.15.03.02B.

(24) Full-Time-Equivalent Employee.

(a) "Full-time-equivalent employee" means a person that occupies a covered building for no less than 40 hours per week throughout a calendar year.

(b) "Full-time-equivalent employee" excludes:

(i) Security guards;

(ii) Janitors;

(iii) Construction workers;

(iv) Landscapers; and

(v) Other maintenance personnel.

(25) "Gas company" has the meaning stated in Public Utilities Article, §1-101, Annotated Code of Maryland.

(26) "Greenhouse gas emissions or emissions" means gasses released into the atmosphere that contribute to climate change, including but not limited to carbon dioxide (CO2), as calculated by the benchmarking tool unless otherwise specified by the Department.

(27) Gross Floor Area.

(a) "Gross floor area" means the total building square footage measured between the principal exterior surfaces of the enclosing fixed walls of a building.

(b) "Gross floor area" consists of all areas inside the building, including but not limited to lobbies, tenant areas, common areas, meeting rooms, break rooms, the base level of atriums, restrooms, elevator shafts, stairwells, mechanical equipment areas, basements, and storage rooms.

(c) "Gross floor area" does not include exterior spaces, balconies, bays, patios, exterior loading docks, driveways, covered walkways, outdoor play courts (e.g., tennis, basketball), parking, the interstitial space between floors, which house pipes and ventilation, and crawl spaces.

(d) "Gross floor area" is not the same as rentable space, but rather includes all areas inside the building or buildings.

(28) "Interim performance standard or interim standard" means the weather-normalized numeric values of net direct greenhouse gas emissions which covered buildings shall achieve by a specified calendar year that is prior to 2040.

(29) "Manufacturing building" means a building involved in the process of substantially transforming, or a substantial step in the process of substantially transforming, tangible personal property into a new and different article of tangible personal property by the use of labor or machinery, or otherwise designated as a manufacturing building by the Department.

(30) "Mixed-use building" means a building that contains two or more property types.

(31) Net Direct Greenhouse Gas Emissions or net direct emissions.

(a) "Net direct greenhouse gas emissions or net direct emissions" means:

(i) The sum of all direct greenhouse gas emissions from a covered building; or

(ii) For a covered building connected to a district energy system, direct greenhouse gas emissions plus the greenhouse gas emissions attributable to thermal energy inputs from the district energy system used by the covered building, as calculated using the methodology provided in this regulation.

(b) "Net direct greenhouse gas emissions or net direct emissions" does not include direct greenhouse gas emissions from a food service facility located within a covered building.

(32) "Newly constructed covered building" means a covered building that was constructed after 2024 and occupied by at least one full-time-equivalent employee or authorized occupant.

(33) "Occupied" means a covered building with at least one full-time equivalent employee or authorized occupant.

(34) "Property type" means the primary use of a building space as specified in ENERGY STAR Portfolio Manager.

(35) Site Energy Use.

(a) "Site energy use" means all energy used on-site by a covered building to meet the energy loads of the building.

(b) "Site energy use" includes electricity delivered to the building through the electric grid and/or generated on-site with renewable sources; thermal energy delivered to the building through a district energy system; and natural gas, diesel, propane, fuel oil, wood, coal, and other fuels used on-site.

(c) "Site energy use" excludes electricity used for charging vehicles, a food service facility located within a covered building, and other electricity uses excluded from site energy use by the benchmarking tool.

(36) "Site energy use intensity or site EUI" is calculated by the benchmarking tool by dividing the total energy consumed in one calendar year by the gross floor area of the building and reported as a value of a thousand British thermal units (kBTU) per square foot per year.

(37) "Tenant" means a person or entity occupying or holding possession of a building, part of a building, or premises pursuant to a rental or lease agreement.

(38) "Weather-normalized" means a method for modifying the measured building energy use in a specific calendar year to estimate energy use under normal weather conditions as calculated by the benchmarking tool.

(39) Web services application programming interface (API) or web services API.

(a) "Web services API" means the free application for use by organizations to exchange building energy and other data between their own systems and the benchmarking tool.

(b) "Web services API" may include the entry of data into the tool and/or the calculation and extraction of metrics and other information from the tool.

(40) "Whole building energy consumption data" means energy data that has been summed for an entire building, which may include a single occupant or a group of separately metered tenants, representing the cumulative total of energy used in the covered building.

.03 Incorporation by Reference.

In this subtitle, the Maryland Department of the Environment Technical Memorandum (TM) 24-01, "Technical Guidance and Calculation Methodologies to Comply with Building Energy Performance Standards", July 2024 is incorporated by reference.

26.28.02 Benchmarking and Reporting

Authority: Environment Article, §§1-404, 2-301, 2-302, 2-1205, 2-1602, Annotated Code of Maryland

.01 Purpose.

The purpose of this chapter is to establish reporting requirements for building owners, tenants, electric and gas companies, and district energy providers.

.02 Reporting Requirements of Building Owners.

A. Data Collection.

(1) Each calendar year beginning in 2025 or in the first calendar year after which a newly constructed covered building is occupied, the covered building owner shall collect and enter all required benchmarking information for the previous calendar year into the benchmarking tool.

(2) Nothing in this regulation shall be construed to permit a building owner to use tenant energy usage data for purposes other than evaluation of the performance of the building.

(3) A building owner shall follow the exemption procedures under the TM 24-01, "Technical Guidance and Calculation Methodologies to Comply with Building Energy Performance Standards."

B. Benchmarking Report.

(1) A building owner shall submit a benchmarking report to the Department by June 1st of each year, beginning in 2025, using the benchmarking tool.

(2) Following the first full calendar year that energy data can be collected and the building was occupied, the owner of any newly constructed covered building shall benchmark the building and report to the Department no later than June 1st of the following year, and every June 1st thereafter.

(3) The annual benchmarking report shall include, at a minimum, the benchmarking information spanning January 1st to December 31st of the previous calendar year.

(4) The building owner shall enter data into the benchmarking tool such that the benchmarking report shall be based on an assessment of the energy consumed by the building for the entire calendar year being reported and demonstrate the net direct emissions and site EUI for the entire calendar year being reported.

(5) The building owner shall exclude from the benchmarking report submetered and separately metered energy consumption data for:

(a) Food service facilities that engage in commercial cooking and water heating;

(b) Electric vehicle charging;

(c) Other electricity uses excluded from site energy use by the benchmarking tool; and

(d) Emissions from required combustion equipment under the following conditions:

(i) Emissions from generators shall be excluded from the net direct emissions requirements if a federal or State regulation requires a covered building including a health care facility, laboratory, assisted living and nursing facility, military building, critical infrastructure, and a building used in life sciences to use a backup generator or other equipment that shall run on combustible fuels.

(ii) A covered building is required to include emissions from a combustion generator/equipment if the relevant federal or State regulation is updated to allow battery storage and/or other types of systems that do not produce direct emissions.

(6) Energy consumption for food service facilities can be excluded using a standard deduction formula in accordance with the Department's TM 24-01 "Technical Guidance and Calculation Methodologies to Comply with Building Energy Performance Standards," which is incorporated by reference in COMAR 26.28.01.03 when such energy consumption cannot be excluded using submetered or separately metered data.

(7) Before submitting a benchmarking report, the building owner shall run all automated data quality checker functions available within the benchmarking tool and shall confirm that all data has been accurately entered into the tool. The building owner shall correct all missing or incorrect information as identified by the data quality checker prior to submitting the benchmarking report to the Department.

(8) If a building owner is notified of an inaccuracy by the Department or other third party, then the building owner shall amend the information reported within the benchmarking tool, and shall provide the Department with an updated benchmarking submission within 30 days of learning of the inaccuracy.

(9) The building owner of a mixed-use covered building shall use the benchmarking tool to report the gross floor area for all property types in the building.

(10) The building owners of a covered building that is connected to district energy systems shall submit additional information to supplement the annual benchmarking report in accordance with the Department's TM 24-01,"Technical Guidance and Calculation Methodologies to Comply with Building Energy Performance Standards", which is incorporated by reference in COMAR 26.28.01.03.

C. Third Party Verification of Benchmarking Reports.

(1) The building owner shall have a third party verify the accuracy of benchmarking reports for calendar years:

(a) 2025 (benchmarking report due in 2026);

(b) 2030 (benchmarking report due in 2031);

(c) 2035 (benchmarking report due in 2036);

(d) 2040 (benchmarking report due in 2041); and

(e) Every 5 years thereafter.

(2) The building owner of a newly constructed covered building shall have a third party verify the first required benchmarking report and then comply with the schedule in this chapter for verification of subsequent reports.

(3) The building owner shall provide to the third party verifier all utility bills, delivered fuel receipts, and other documentation needed by the verifier for the calendar year covered by the benchmarking report.

(4) The building owner shall submit a copy of a third party verification to the Department when submitting the associated benchmarking report in accordance with the Department's TM 24-01 "Technical Guidance and Calculation

Methodologies to Comply with Building Energy Performance Standards", which is incorporated by reference in COMAR 26.28.01.03.

D. Maintenance of Historical Data.

(1) The building owner shall maintain adequate records demonstrating compliance with this chapter, including but not limited to, energy bills, reports, forms, and records received from tenants or utilities and records.

(2) Such records shall be preserved for a period no less than 5 years.

(3) At the request of the Department, such records shall be made available for inspection and audit by the Department.

.03 Reporting Requirements of Tenants.

A tenant of a covered building shall, within 30 days of a request by the building owner, provide all requested benchmarking information that cannot otherwise be acquired by the building owner from other sources.

.04 Reporting Requirements of Electric and Gas Companies and District Energy Providers.

A. Electric and Gas Companies.

(1) Electric and gas companies delivering energy to a covered building shall maintain whole-building energy consumption data for all buildings, for at least the most recent 5 years in an electronic format capable of being uploaded to the benchmarking tool.

(2) On and after January 1, 2025, upon the request and authorization of a building owner an electric or gas company shall provide the building owner with at least the most recent 12 consecutive months of whole building energy consumption data by fuel type for the specified building for all the fuel types provided by the company.

(a) The electric or gas company shall provide data to the requestor as follows:

(i) Data shall include whole building energy consumption, aggregating all utility meters that measure energy consumption at the building;

(ii) Data shall be provided to the requestor within 90 days of receiving a data request in 2025;

(iii) Data shall be provided to the requestor within 30 days of receiving a data request in 2026 or later; and

(iv) Whole building energy consumption data shall be provided to the requestor in monthly intervals.

(b) An electric or gas company may be exempt from §A(2)(a) of this regulation in accordance with §A(7) of this regulation.

(3) Investor-owned electric and gas companies serving 40,000 or more customers shall use the benchmarking tool's web services API to deliver data to requesters on an ongoing basis.

(4) Investor-owned electric and gas companies serving fewer than 40,000 customers, municipal electric and gas companies, or cooperatively owned electric and gas companies shall provide data in the spreadsheet template specified by the benchmarking tool, or through the benchmarking tool's web services API to requesters on an ongoing basis.

(5) Electric and gas companies shall develop and maintain a process to identify and confirm with the building owner the list of meters that will be used to calculate the aggregated total as follows:

(a) Electric and gas companies shall provide to the building owner a listing of all meters included in the whole building energy consumption data for verification purposes; and

(b) If any correction or update takes place at a meter that is included in the whole building energy consumption data, then the affected value or values shall be proactively updated by the electric or gas company through the benchmarking tool's web services API or through an updated spreadsheet template with a notification provided to the building owner/data requestor.

(6) For covered buildings with five or more tenants, electric and gas companies shall deliver to requestors the monthly whole building energy consumption data capturing total consumption by fuel type of all relevant fuel or fuels across all meters at the building.

(a) The whole building energy consumption data shall not be deemed confidential information by the electric and gas companies for purposes of delivery to the building owner.

(b) Electric and gas companies will not be required to acquire explicit authorization for data release by the individual tenants.

(7) For covered buildings with fewer than five tenants, electric and gas companies shall deliver whole building energy consumption data to the building owner if the building tenants provide written or electronic consent for the delivery of the tenant's energy data to the building owner.

(a) The building tenant's consent may be provided in a lease agreement provision.

(b) The building tenant's consent is not required if an electric or gas company customer vacates the covered building before explicitly denying consent for the delivery of the tenant's energy data to the building owner.

(8) When providing whole-building consumption data to a property with onsite generation of renewable electricity (for example, solar or wind energy), electric and gas companies shall ensure that the consumption values delivered to the building owner capture total gross grid electricity consumption as metered by the electric or gas company, rather than net, or net-metered, consumption of grid electricity.

B. District Energy Providers.

(1) Starting no later than January 1, 2025, district energy providers shall maintain all records that are necessary to comply with this regulation for a period of not less than 5 years. At the request of the Department, such records shall be made available for inspection and audit by the Department.

(2) District energy providers shall provide greenhouse gas emissions factors per unit of district energy input (steam, hot water, chilled water, etc.) to the owners of covered buildings and to the Department for benchmarking and compliance purposes.

(3) Emissions factors and a full and detailed accounting of their calculation shall be provided by the district energy provider by March 1st of each calendar year and cover the previous calendar year based on actual fuel consumption and system performance data. The Department may require a third party review of such calculations paid for by the district energy provider.

(4) District energy providers shall use methodology for allocating emissions that will be based on the "Efficiency Method" in the World Resources Institute's "Calculation tool for direct emissions from stationary combustion: Allocation of GHG Emissions from a Combined Heat and Power (CHP) Plant."

.05 Disclosure of Covered Building Benchmarking and Performance Standards Information.

A. Before a buyer signs a contract for the purchase of a covered building, the building owner selling the covered building shall:

(1) Disclose to the prospective buyer that the building is subject to requirements under this subtitle;

(2) Transfer the following records to the prospective buyer:

(a) A copy of the complete benchmarking record from the benchmarking tool;

(b) Documentation of data verification;

(c) Documentation of any alternative compliance fee made to the Department; and

(d) Any other records relevant to maintain compliance under this subtitle; and

(3) Provide to the prospective buyer the following information:

(a) Performance baseline; and

(b) Interim and final performance standards.

26.28.03 Performance Standards and Compliance Demonstration

Authority: Environment Article, §§1-404, 2-301, 2-302, 2-1205, 2-1602, Annotated Code of Maryland

.01 Purpose.

The purpose of this chapter is to establish performance standards for covered buildings.

.02 Performance Standards.

A. Interim and final net direct emissions standards are:

Table 1. Performance Standards.

	Net Direct Emissions Standards *Kg CO2e per square foot*		
Property Type	***Interim Standard for 2030-2034***	***Interim Standard for 2035-2039***	***Final Standard for 2040 and beyond***
Adult Education	*2.34*	*1.17*	*0*
Ambulatory Surgical Center	*1.76*	*0.88*	*0*
Aquarium	*1.99*	*1.00*	*0*
Bank Branch	*1.01*	*0.50*	*0*
Bar/Nightclub	*1.70*	*0.85*	*0*
Barracks	*0.57*	*0.29*	*0*
Bowling Alley	*2.07*	*1.03*	*0*
Casino	*1.03*	*0.52*	*0*
College/University	*2.43*	*1.21*	*0*
Convenience Store with Gas Station	*2.25*	*1.13*	*0*
Convenience Store without Gas Station	*2.25*	*1.13*	*0*
Convention Center	*0.39*	*0.19*	*0*
Courthouse	*1.14*	*0.57*	*0*
Data Center	*1.26*	*0.63*	*0*
Distribution Center	*0.58*	*0.29*	*0*
Drinking Water Treatment & Distribution	*exempt*	*exempt*	*exempt*

Enclosed Mall	*0.24*	*0.12*	*0*
Energy/Power Station	*exempt*	*exempt*	*exempt*
Fast Food Restaurant	*exempt*	*exempt*	*exempt*
Financial Office	*0.32*	*0.16*	*0*
Fire Station	*1.70*	*0.85*	*0*
Fitness Center/Health Club/Gym	*2.87*	*1.43*	*0*
Food Sales	*2.25*	*1.13*	*0*
Food Service	*exempt*	*exempt*	*exempt*
Heated Swimming Pool	*2.07*	*1.03*	*0*
Hospital (General Medical and Surgical)	*6.10*	*3.05*	*0*
Hotel	*1.47*	*0.74*	*0*
Ice/Curling Rink	*2.07*	*1.03*	*0*
Indoor Arena	*1.03*	*0.52*	*0*
K-12 School	*exempt*	*exempt*	*exempt*
Laboratory	*5.35*	*2.68*	*0*
Library	*1.92*	*0.96*	*0*
Lifestyle Center	*0.91*	*0.46*	*0*
Mailing Center/Post Office	*0.92*	*0.46*	*0*
Medical Office	*0.18*	*0.09*	*0*
Movie Theater	*0.78*	*0.39*	*0*
Multifamily Housing	*0.82*	*0.41*	*0*
Museum	*0.75*	*0.38*	*0*
Non-Refrigerated Warehouse	*0.09*	*0.05*	*0*
Office	*0.22*	*0.11*	*0*
Other — Education	*1.59*	*0.80*	*0*
Other — Entertainment/Public Assembly	*0.54*	*0.27*	*0*
Other — Lodging/Residential	*0.002*	*0.001*	*0*
Other — Mall	*1.40*	*0.70*	*0*
Other — Other	*1.60*	*0.80*	*0*
Other — Public Services	*2.12*	*1.06*	*0*
Other — Recreation	*0.70*	*0.35*	*0*
Other — Restaurant/Bar	*exempt*	*exempt*	*exempt*
Other — Services	*2.63*	*1.31*	*0*
Other — Specialty Hospital	*6.10*	*3.05*	*0*
Other — Stadium	*0.31*	*0.16*	*0*
Other — Technology/Science	*0.001*	*0.001*	*0*
Other — Utility	*exempt*	*exempt*	*exempt*
Outpatient Rehabilitation/Physical Therapy	*1.76*	*0.88*	*0*
Parking	*exempt*	*exempt*	*exempt*
Performing Arts	*2.38*	*1.19*	*0*
Personal Services (Health/Beauty, Dry Cleaning, etc)	*2.17*	*1.09*	*0*
Police Station	*1.52*	*0.76*	*0*
Pre-school/Daycare	*2.45*	*1.23*	*0*
Prison/Incarceration	*0.57*	*0.29*	*0*
Race Track	*1.03*	*0.52*	*0*
Refrigerated Warehouse	*1.37*	*0.69*	*0*

Repair Services (Vehicle, Shoe, Locksmith, etc)	*2.16*	*1.08*	*0*
Residence Hall/Dormitory	*0.70*	*0.35*	*0*
Residential Care Facility	*1.43*	*0.72*	*0*
Restaurant	*exempt*	*exempt*	*exempt*
Retail Store	*0.60*	*0.30*	*0*
Roller Rink	*2.07*	*1.03*	*0*
Self-Storage Facility	*0.19*	*0.10*	*0*
Senior Living Community	*1.43*	*0.72*	*0*
Social/Meeting Hall	*1.53*	*0.76*	*0*
Stadium (Closed)	*0.31*	*0.16*	*0*
Stadium (Open)	*0.32*	*0.16*	*0*
Strip Mall	*1.90*	*0.95*	*0*
Supermarket/Grocery Store	*2.25*	*1.13*	*0*
Transportation Terminal/Station	*2.22*	*1.11*	*0*
Urgent Care/Clinic/Other Outpatient	*1.76*	*0.88*	*0*
Vehicle Dealership	*2.23*	*1.12*	*0*
Veterinary Office	*1.76*	*0.88*	*0*
Vocational School	*2.34*	*1.17*	*0*
Wastewater Treatment Plant	*exempt*	*exempt*	*exempt*
Wholesale Club/Supercenter	*0.60*	*0.30*	*0*
Worship Facility	*0.87*	*0.44*	*0*
Zoo	*1.03*	*0.52*	*0*

B. Reserved.

C. Interim and Final Standards for Mixed-Use Covered Buildings. Area-weighted standards for net direct emissions for mixed-use buildings will be set by the compliance tool as specified in the Department's TM 24-01, "Technical Guidance and Calculation Methodologies to Comply with Building Energy Performance Standards", which is incorporated by reference in COMAR 26.28.01.03.

D. Achieving and Maintaining the Standards.

(1) Each covered building shall not exceed the net direct emissions standards for 2030—2034 in each calendar year including 2030, 2031, 2032, 2033, and 2034, as determined on a yearly basis.

(2) Each covered building shall not exceed the net direct emissions standards for 2035—2039 in each calendar year including 2035, 2036, 2037, 2038, and 2039, as determined on a yearly basis.

(3) Each covered building shall not exceed the net direct emissions standards in calendar year 2040 and each calendar year thereafter, as determined on a yearly basis.

26.28.04 Alternative Compliance and Special Provisions

Authority: Environment Article, §§1-404, 2-301, 2-302, 2-1205, 2-1602, Annotated Code of Maryland

.01 Alternative Compliance Pathway.

A. Alternative Compliance Pathway for Net Direct Emissions Standards.

(1) In lieu of meeting the net direct emissions standards in COMAR 26.28.03, the building owner shall come into compliance with the net direct emissions standards by paying an alternative compliance fee for the greenhouse gas emissions in excess of the net direct emissions standards.

(2) An alternative compliance fee shall be paid for every metric ton of net direct emissions in excess of the net direct emissions standard in a given calendar year. The fee shall be:

(a) $230 per metric ton of excess CO_2e in 2020 dollars, adjusted for inflation, for 2030;

(b) $234 per metric ton of excess CO_2e in 2020 dollars, adjusted for inflation, for 2031;

(c) $238 per metric ton of excess CO_2e in 2020 dollars, adjusted for inflation, for 2032;

(d) $242 per metric ton of excess CO_2e in 2020 dollars, adjusted for inflation, for 2033;
(e) $246 per metric ton of excess CO_2e in 2020 dollars, adjusted for inflation, for 2034;
(f) $250 per metric ton of excess CO_2e in 2020 dollars, adjusted for inflation, for 2035;
(g) $254 per metric ton of excess CO_2e in 2020 dollars, adjusted for inflation, for 2036;
(h) $258 per metric ton of excess CO_2e in 2020 dollars, adjusted for inflation, for 2037;
(i) $262 per metric ton of excess CO_2e in 2020 dollars, adjusted for inflation, for 2038;
(j) $266 per metric ton of excess CO_2e in 2020 dollars, adjusted for inflation, for 2039;
(k) $270 per metric ton of excess CO_2e in 2020 dollars, adjusted for inflation, for 2040; and
(l) The fee rate increases by $4 per metric ton of CO2e per calendar year in 2020 dollars, adjusted for inflation, in each calendar year following 2040.

(3) The annual fee rate set forth in this chapter shall be increased each calendar year by the percentage, if any, by which the Consumer Price Index-U (All Urban Consumers) for the most recent calendar year exceeds the Consumer Price Index-U (All Urban Consumers) for the previous calendar year.

B. Other Provisions. If covered building ownership changes in 2030 or any calendar year thereafter, then the owner of the building on December 31st is responsible for compliance with this regulation and paying alternative compliance fees or penalties for the calendar year ending on December 31st and every calendar year thereafter until that person is no longer the owner of the covered building.

.02 Exemptions.

A. Exemptions from Benchmarking and Performance Standard Requirements. A building owner may apply for an exemption from the requirements of this regulation for one calendar year when the building owner can provide documentation showing that one of the following conditions are met:
(1) Financial distress;
(2) The covered building was not occupied for the entirety of the calendar year being reported; or
(3) The covered building was demolished during the calendar year for which benchmarking is required.

B. Exemption from Establishing Baseline Performance.

(1) The Department may, in its sole discretion, grant an exemption from the requirement to establish baseline performance when, during the baseline year, less than 50 percent of the floor area of the covered building was occupied for at least 180 days and where the building owner applies for such exemption.

(2) A covered building may not receive an exemption from the requirement to establish baseline performance for more than 3 years.

C. Exemptions for Affordable Housing Providers.

(1) The Department may grant the application of reduced alternative compliance fees to an affordable housing provider when the building owner submits in writing such request by June 1st of each calendar year, beginning in 2031 which demonstrates to the Department that it has made a good faith effort, as demonstrated under §C(2) of this regulation.

(2) A good faith effort may be demonstrated to the Department by submitting a copy of the application to a federal or Maryland administered program that would make the building or buildings more energy efficient and/or reduce greenhouse gas emissions. The submission shall also include the benchmark report, intended scope of work, and estimated greenhouse gas reductions expected from the intended scope of work to achieve at least the applicable interim or final standard.

(3) An alternative compliance fee granted by the Department under §C(1) of this regulation is good for one calendar year.

(4) A project that has applied to a program under §C(2) of this regulation but has not yet completed the improvements, can submit a confirmation received from the program administrator to the Department, verifying the project's active participation status to satisfy the good faith effort for another year.

(5) An alternative compliance fee granted by the Department under §C(1) of this regulation does not exempt the owner from complying with the benchmarking and reporting requirements in COMAR 26.28.02.

(6) An affordable housing provider may apply for the alternative compliance fee annually.

.03 Option for Campus-Level Compliance.

A. The owner of a covered building may choose to meet net direct emissions standards, as specified under this regulation, at the campus level instead of the individual building level when two or more covered buildings are:
(1) Connected to a district energy system;
(2) Served by the same electric or gas meter; or
(3) Served by the same heating or cooling system or systems, which is not a district energy system.

B. Campus-level reporting shall include energy consumption and greenhouse gas emissions for all buildings and stationary equipment located on the campus, including all central plants, except as provided in §B(1) of this regulation.

(1) Campus-level reporting does not include energy consumption and greenhouse gas emissions from activities/sources that are excluded from the benchmarking report requirements in COMAR 26.28.02.

(2) The owner of a campus shall report to the Department annually by June 1st:

(a) Any permits to build new buildings or change the footprint or usage of existing buildings on the campus; and

(b) Any buildings that have received new certificates of occupancy.

(3) The Department shall, in consultation with the principal owner of a campus, determine whether the affected buildings will be included in campus-level compliance following the rules established in this chapter and whether and how to adjust the campus' interim and final performance standards.

C. Performance Standards for Campus-Level Compliance.

(1) For a campus that consists of one property type, the interim and final net direct emissions standards are those that correspond with that property type.

(2) For a campus that consists of more than one property type, the interim and final net direct emissions standards are based on area-weighted standards as specified in the Department's TM 24-01 "Technical Guidance and Calculation Methodologies to Comply with Building Energy Performance Standards", which is incorporated by reference in COMAR 26.28.01.03.

(3) Reserved.

(4) Achieving and Maintaining the Standards.

(a) Campus-level energy use shall not exceed the net direct emissions standards for 2030—2034 in each calendar year including 2030, 2031, 2032, 2033, and 2034, as determined on a yearly basis.

(b) Campus-level energy use shall not exceed the net direct emissions standards for 2035—2039 in each calendar year including 2035, 2036, 2037, 2038, and 2039, as determined on a yearly basis.

(c) Campus-level energy use shall not exceed the final net direct emissions standards in calendar year 2040 and each calendar year thereafter, as determined on a yearly basis.

APPENDICES

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Appendix A – TM 24-01 – Technical Guidance and Calculation Methodologies to Comply with Building Energy Performance Standards, July 2024

TM 24-01 Technical Guidance and Calculation Methodologies to Comply with Building Energy Performance Standards, July 2024

Maryland Department of the Environment
July 2024

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Appendix A: Introduction

Appendix A: Technical Guidance and Calculation Methodologies to Comply with Building Energy Performance Standards has been developed to serve as the Maryland Department of the Environment's (the Department) initial Implementation Guidelines for covered building owners. The information provided offers background, clarification, and details to support the requirements outlined in the Maryland Building Energy Performance Standards (BEPS) and addresses stakeholder comments and questions received in June 2023 in response to the initial draft regulation shared for stakeholder feedback and in January 2024. The information presented here was developed in consultation with the following technical assistance partners:

U.S. Department of Energy
U.S. Environmental Protection Agency
Lawrence Berkeley National Laboratory
Pacific Northwest National Laboratory
Institute for Market Transformation
Northeast Energy Efficiency Partnerships

The Department will continue to add additional resources and guidance documents to support covered buildings in their compliance with BEPS via the Department's dedicated webpage: https://mde.maryland.gov/programs/air/ClimateChange/Pages/BEPS.aspx and updates to this Technical Memorandum as needed. The contents in this Technical Memorandum will be continuously reviewed, improved, and updated as the Department works closely with covered building owners, gas and electric companies, district energy providers, technical experts, local governments, other State agencies, and other stakeholders on Maryland's BEPS implementation.

Throughout 2024, the Department has and will continue to convene a series of working groups to further refine and develop processes discussed in this *Technical Guidance and Calculation Methodologies to Comply with Building Energy Performance Standards.* As an outcome of these working group processes, the Department will publish subsequent supplemental resources, white papers, and instructional tools to support BEPS implementation and the guidelines presented here. Topics to be included in the 2024 working group processes may include:

- Benchmarking and report submission
- Third party verification
- Electric and gas company reporting requirements
- District energy systems
- Campus compliance
- Affordable housing providers
- Exemption request process

Throughout 2024 and 2025, the Department will conduct stakeholder outreach and education to reach covered building owners and provide training and support to assist them in meeting the

first benchmarking requirement for their covered buildings. Building owners are required to submit their Initial Benchmarking Report by June 1, 2025 with data from January 1, 2024 - December 31, 2024. The Initial Benchmarking Report will establish the building's participation in BEPS and confirm key reporting details about the building such as property type, gross floor area, and more. The Baseline Benchmarking Report will be due to the Department by June 1, 2026 with data from January 1, 2025 - December 31, 2025. The Baseline Benchmarking Report will establish the baseline metrics for covered buildings to inform BEPS standards and compliance into the future.

Interim and final BEPS standards are set in the regulation. MDE will conduct an updated analysis after the 2025 Baseline Benchmarking Report data are submitted in 2026 to determine if the interim standards need to be modified based on actual 2025 benchmarked building energy performance. The Department may convene an additional series of working groups in 2026 to address sector-specific issues associated with compliance for the 2030-2034 and 2035-2039 interim standards.

A. Benchmarking and Reporting

A. 1 Benchmarking Background

Benchmarking refers to the process of measuring and reporting energy usage data. The reporting will be done through a software platform called ENERGY STAR Portfolio Manager. Maryland's gas and electric companies are required to provide whole building energy consumption data to building owners through either the ENERGY STAR Portfolio Manager web services application programming interface (API) or through a spreadsheet based on the number of customers they serve. To check the status of a gas or electric company's ability to automate the benchmarking process, refer to the EPA's list of utilities[1] that provide benchmarking data to ENERGY STAR Portfolio Manager.

Building owners are required to input data into ENERGY STAR Portfolio Manager and review the data prior to the annual reporting deadline beginning in 2025. Benchmarking reports are due to the Department on June 1st every year and must contain all energy usage data from the previous calendar year. For example, the deadline to report data for calendar year 2025 is June 1, 2026. Benchmarking requirements are discussed in more detail in the Benchmarking Requirements section.

Building owners are required to submit their Initial Benchmarking Report by June 1, 2025 with data from January 1, 2024 - December 31, 2024. The Initial Benchmarking Report will establish the building's participation in BEPS and confirm key reporting details about the building such as property type, gross floor area, and energy use data. The Baseline Benchmarking Report will be due to the Department by June 1, 2026 with data from January 1, 2025 - December 31, 2025. The Baseline Benchmarking Report will establish the baseline metrics for covered buildings to inform BEPS standards and compliance into the future.

A. 1.1 Reporting Responsibility - Who is Responsible for Collecting and Reporting Data?

It is the responsibility of the owner of a covered building to collect and report the energy usage data into ENERGY STAR Portfolio Manager.[2] A building owner may designate an authorized representative to submit data on their behalf. Any representation, action, inaction, or submission by the alternate representative shall be deemed to be a representation, action, inaction, or submission by the building owner.

[1] https://www.energystar.gov/buildings/tools-and-resources/utilities_increase_access_energy_data_help_commercial_customers_benchmark.
[2] https://www.energystar.gov/buildings/benchmark.

A. 1.2 Covered Buildings - Who Needs to Benchmark?

A “Covered building” is a building that:

(a) Is a commercial or multifamily residential building in the State of Maryland or is owned by the State of Maryland; and has a gross floor area of 35,000 square feet or more, excluding the parking garage area; and is:

(i) A single building;

(ii) One or more buildings held in the condominium form of ownership with a combined gross floor areas of 35,000 square feet or more (excluding the parking garage area) and governed by a single board of managers; or

(iii) Two or more buildings with a combined gross floor area of 35,000 square feet or more (excluding the parking garage area) that are served in whole or in part by the same electric or gas meter or are served by the same heating or cooling system(s), which is not a district energy system.

(b) A building that meets the criteria for a covered building as described in this section and is located in a historic district but where the building is not individually designated as a historic property under federal, state, or local law is a covered building.

(c) A “Covered building” does not include:

(i) A building, or space within a building, individually designated as a historic property under federal, state, or local law, separate and apart from a building’s inclusion in a historic district;
(ii) A public or nonpublic elementary or secondary school building;
(iii) A manufacturing building;
(iv) An agricultural building; or
(v) A building owned by the Federal government.

The exemption of these buildings from the regulation is discussed in A.1.2.2.

NOTE: Owners of multiple covered buildings that are located on a campus have the option to benchmark and comply with the performance standards at the campus level instead of the individual building level. For more information see section D. 2 about campus level compliance.

A. 1.2.1 Notification by the Department.

The Department will try to assist owners with compliance by updating and publicly sharing a list of potentially covered buildings or a covered buildings list based on known gross floor area. The list will be found on the Department’s BEPS website.

The Department will try to assist owners with compliance by notifying covered building owners via direct mail, electronically via email, or through a public posting on a web site of their obligation to benchmark.

NOTE: Failure of the Department to notify any owner shall not affect the obligation of such owner to comply with this regulation.

Failure of the Department to list a building on the covered building list shall not affect the obligation of the owner to comply with this regulation

Contact MDE if you do not see your building listed and you believe it is a covered building. See the section below if you believe your building is exempt.

A. 1.2.2 Exemptions - Which buildings do not need to comply?

If your building falls into one of the following categories then you may apply for exemption status. To apply for an exemption, a building owner must submit an exemption request form to the Department along with supporting documentation. The Department will thoroughly evaluate each exemption request. Resubmissions for exemption status may be required by the Department. The form to apply for exemption will be listed on the Department's BEPS website.[3]

1. A building, or space within a building, individually designated as a historic property under federal, state, or local law, separate and apart from a building's inclusion in a historic district;
2. A public or nonpublic elementary or secondary school building;
3. A manufacturing building;
4. An agricultural building; or
5. A building owned by the Federal government.

Buildings that have been individually designated as historic buildings under federal, state, or local law are exempt from the requirements of this regulation. If a building meets the criteria of a covered building and has not been individually designated as a historic building, then it must comply with the regulations, even if it resides in a historic district.

A. 2 Benchmarking Requirements

For more information about benchmarking at the campus level see Section D. 2.

A. 2.1 Data Collection

Data must be collected annually. Each year by June 1st, the previous year of data must be collected, reviewed, and submitted to the Department. Data should be collected using the benchmarking tool: ENERGY STAR Portfolio Manager.[4]

[3] https://mde.maryland.gov/programs/air/ClimateChange/Pages/BEPS.aspx.
[4] https://www.energystar.gov/buildings/benchmark.

NOTE: If a building is newly constructed it will be required to begin reporting after the first full calendar year of occupancy. See the example in section A 3.1.

There are a few methods a building owner can use to obtain the data:

1. Obtain data from all electric and gas companies, fuel distributors, and district energy providers that provide service to the building;
2. Read meters that serve the building; or
3. Collect data from tenants.

NOTE: Electric and gas companies are required to provide data in a method that follows guidelines from EPA ENERGY STAR Portfolio Manager. See the EPA list for details on the status of electric and gas companies integrating with ENERGY STAR Portfolio Manager.

Delivered fuel oil, propane, diesel, and any other delivered fuels must be reported. Retain all bills and use your delivery bills to record the volume and dates of fuel deliveries made during the calendar year within ENERGY STAR Portfolio Manager.

If asked, tenants are required to provide the necessary information within 30 days of the request. Benchmarking in no way permits a building owner to use the energy usage data for purposes other than the evaluation of the performance of the building.

A. 2.1.1 Entering Data into ENERGY STAR Portfolio Manager

If you are new to ENERGY STAR Portfolio Manager, follow this quickstart guide[5] to creating an account and setting up your buildings. This guide[6] has more detailed instructions for adding buildings to your account. Follow EPA's guide on entering data into ENERGY STAR Portfolio Manager.[7] For other useful information on ENERGY STAR Portfolio Manager visit the training page.[8]

There are three ways to enter data for your property or portfolio:

1. Work with third-party providers that exchange data directly with Portfolio Manager via web services. A list of these providers can be found here.[9]

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5 https://www.energystar.gov/sites/default/files/tools/Portfolio%20Manager%20Quick%20Start%20Guide_May%202022_final_508.pdf.

6 https://www.energystar.gov/buildings/tools-and-resources/how_set_your_property_portfolio_manager.

7 https://www.energystar.gov/sites/default/files/tools/HowtoGetUtilityDataIntoPortfolioManager_May%202022_Final_508.pdf.

8 https://www.energystar.gov/buildings/training/how_to_guides.

9 https://www.energystar.gov/buildings/benchmark/get_started/service_providers_exchange_data.

2. Connect your ENERGY STAR Portfolio Manager account directly to a participating electric or gas company that can upload energy data directly to your account. See this map[10] to identify the available services.
3. Enter data manually (create/update one meter at a time).
4. Upload data using spreadsheet templates (create/update multiple meters at once).

To check if your electric or gas company is able to automatically upload benchmarking data for your building or portfolio directly into ENERGY STAR Portfolio Manager, see this list.[11]

A. 2.1.2 What Data Is Collected?

The following data is required for all covered buildings.

- Unique Building Identifier (UBID), as provided by the Department to all covered buildings on the covered building list or at the request of a building owner through a "UBID request form,"
- Property Name;
- Property Address including ZIP code;
- Property Use Type(s);
- Total Gross Floor Area of Property;
  - If the building has multiple uses, for example a financial building with retail stores, offices, and restaurants, follow the instructions within the Quick Start Guide[12] to report the square footage for each of these uses.
  - If one or more of the building uses are for a food service facility(ies), refer to Section A. 2.1.4 on energy exclusions.
- Year Built;
- Occupancy;
- Number of Buildings;
- 12 months of energy data from January 1 - December 31 of the year being benchmarked;
  - Energy data includes: electricity, natural gas, delivered fuels such as fuel oil or propane, onsite- solar generation, steam, any other energy source including energy for backup generation.

NOTE: The information collected above will be used to generate the net direct emissions and site energy use intensity for the property. It will also be used to set your building's interim and final performance standards. The methodology for these calculations are outlined throughout this document.

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10 https://www.energystar.gov/buildings/owners_and_managers/existing_buildings/use_portfolio_manager/find_utilities_provide_data_benchmarking.

11 https://www.energystar.gov/buildings/tools-and-resources/utilities_increase_access_energy_data_help_commercial_customers_benchmark.

12 https://www.energystar.gov/buildings/tools-and-resources/portfolio-manager-quick-start-guide.

A. 2.1.3 Data Usage

Some data that is collected as required by the BEPS regulation will be publicly available on the BEPS website.[13] No personally identifiable information will be included in these data sets. The Department may publish basic building information and energy performance metrics annually for all buildings reporting that year, including but not limited to the following fields:

- Property name;
- Address;
- Property type(s);
- Gross Floor Area;
- Year Built;
- Site EUI;
- Net direct greenhouse gas emissions;
- An indication if the building is or is not in compliance with BEPS.

A. 2.1.4 Energy and Emission Exclusions

Some energy uses can be excluded from a building's total energy consumption and greenhouse gas emissions reporting. If these energy uses are separately metered, these meters can be excluded from reporting. See the list below for energy uses that can be subtracted.

1. Food service facilities;
2. Electric vehicle charging;
3. Other electricity uses excluded by the benchmarking tool:
    a. Cell towers;
    b. Parking garages;
    c. Outdoor heated pools;
    d. A large billboard or projection screen on a building or its parking lot when the sign is not related to the use of the building. A sign displaying the company's name or anything related to the building itself MUST be counted);
    e. Trash compactors;
    f. Well pumps;
    g. Aeration Fountains in retention ponds (used to prevent algae growth); and
4. Emissions from required combustion equipment under the following conditions:
    a. A backup generator if federal or state regulation requires a covered building to use a backup generator or other equipment that must run on combustible fuels.

A. 2.1.4.1 Food Service Facilities

Buildings that contain food service facilities, as defined in COMAR 10.15.03.02B,[14] such as restaurants and cafeterias, can exclude the energy use and emissions associated with these spaces, by taking the following steps:

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

[14] https://dsd.maryland.gov/regulations/Pages/10.15.03.02.aspx.

1. From the property's Details tab in ENERGY STAR Portfolio Manager, enter a property use of "Restaurant" for the food service facility(ies) at the property, specifying the associated gross floor area.
2. From the property's Energy tab, enter a meter for each fuel/energy type used in the building's food service facility(ies). For each meter, enter consumption values based on either:
    a. actual metered consumption (in at least monthly intervals); or
    b. calculated consumption (divided by twelve and entered in monthly intervals), per the formulas below.

    In order for ENERGY STAR Portfolio Manager to calculate weather-normalized values, all meters must cover periods no longer than 65 days, hence the requirement for monthly data. All consumption values should be marked with a (-) so that the meter(s) function **as negative meters**. The meter(s) should be labeled as "Food Service Excluded Energy." This will subtract the food service facility energy use—and resulting ENERGY STAR Portfolio Manager emissions calculations—from the building's total.

    NOTE: If the consumption values are estimated using the formulas below, mark the values as "Estimated" when entering them in ENERGY STAR Portfolio Manager.

All-Electric Food Service facilities should use the following equation:

$$Meter\ for\ Monthly\ Excluded\ Food\ Service\ Facility\ Electricity\ Consumption = -(ED \times GFA)/12$$

Key: ED = Electricity Deduction = **67.2 kWh/sqft**
GFA = Gross Floor Area of the Food Service Facility

Example:
A 40,000 square feet (ft^2) building has a 3,000 ft^2 food service facility without submetering in it. The total electricity consumption for the utility bill will be modified by entering a negative meter into ENERGY STAR Portfolio Manager for the food service facility exclusion. Since the food service facility is not submetered, the monthly negative meter value is calculated using the standard electricity deduction of 67.2 kWh/sqft. The modified monthly electricity consumption is:

$-(67.2\ \text{kWh/ft}^2 \times 3{,}000\ \text{ft}^2)/12$
(Electricity Deduction x GFA of the Food Service Facility)/12 months
201,600 kWh / 12 months
= 16,800 kWh/month

Mixed-Fuel Food Service Facilities should use the following two equations:

$$Meter\ for\ Monthly\ Excluded\ Food\ Service\ Facility\ Natural\ Gas\ Consumption = -(GD \times GFA)/12$$

Key: GD = Natural Gas Deduction = **0.376 therms/sqft**
GFA = Gross Floor Area of the Food Service Facility

$$Meter\ for\ Monthly\ Excluded\ Food\ Service\ Facility\ Electricity\ Consumption = -(ED \times GFA)/12$$

Key: ED = Electricity Deduction = **70 kWh/sqft**
GFA = Gross Floor Area of the Food Service Facility

A. 2.1.4.2 Electric Vehicle Charging

Energy use from Electric Vehicle Charging Stations can be excluded. If the Electric Vehicle Charging Stations are separately metered (not submetered), then it can be left out of the data entered into Portfolio Manager. Otherwise, it can be excluded following the steps below:

1. Enter the number of chargers by type, by adding the Electric Vehicle Charging Station property use from the property's Details tab in Portfolio Manager:
    a. Number of Level 1 EV Charging Stations;
    b. Number of Level 2 EV Charging Stations; and
    c. Number of DC Fast EV Charging Stations.
2. Create an electric meter for the EV charger energy use. Enter consumption values for the EV charging station(s), based on:
    a. metered consumption (in at least monthly intervals); or
    b. calculation consumption (divided by twelve and entered in monthly intervals), following a forthcoming methodology to be developed by EPA.

    In order for ENERGY STAR Portfolio Manager to calculate weather-normalized values, all meters must cover periods no longer than 65 days, hence the requirement for monthly data. All consumption values should be marked with a (-) so that the meter(s) function as negative meters. The meter(s) should be labeled as "Electric Vehicle Charging Station Excluded Energy." If the consumption values are calculated using the EPA methodology, mark the values as "Estimated" when entering them in Portfolio Manager.

A. 2.1.4.3 Emissions From Required Combustion Equipment

If federal or state regulation requires a covered building to use a backup generator or other equipment that must run on combustible fuels, these can be excluded. Energy usage from backup generators or other combustion equipment that are not required by federal or state regulation must be included.

1. If the combustion equipment is on the main meter but there is a submeter, then this submeter should be entered as an additional meter with negative entries (More information here).[15]
2. If the combustion equipment is from delivered fuels or separately metered (not submetered), then it can be left out of the data entered into Portfolio Manager.
3. If the combustion equipment is on the main meter and not submetered, then contact the Department regarding how to quantify emissions and energy usage from the equipment.

A. 3 Reporting

A. 3.1 Reporting Deadline

Once the data has been collected, the building owner must ensure it has been correctly entered into ENERGY STAR Portfolio Manager by June 1st beginning in 2025. By June 1st, building owners must report data from the previous calendar year which is defined as January 1 to December 31. The Department will determine compliance based on the data shared as of this deadline.

Owners of newly constructed buildings will be required to begin reporting after the first full year of occupancy of the newly constructed building.

Example:
A building that is newly constructed and occupied beginning on March 1, 2025 would be required to comply with the June 1, 2027 deadline with data from January 1 - December 31 of 2026. This is because 2026 is the first full calendar year of building occupancy.

Reporting Deadline: June 1st

What: Data from January 1 - December 31 of previous year

A. 3.1.1 Sharing Benchmarking Data via ENERGY STAR Web Services

The Department uses ENERGY STAR Portfolio Manager's Web Services capabilities to facilitate automatic annual benchmarking. This process only needs to be set up once and allows the Department to read data in your ENERGY STAR Portfolio Manager account and run basic

[15] https://energystar-mesa.force.com/PortfolioManager/s/article/Can-I-add-a-negative-meter-to-subtract-parking-cell-towers-EV-charging-stations-etc-1600088527076.

data checks. Once your ENERGY STAR Portfolio Manager account has been created and you have added properties there are five basic steps to sharing your data with the Department.

1. Add the Maryland Department of the Environment as a contact.
2. Send the Department a connection request.
3. Select the properties for which you want to share data.
4. Allow the Exchange of Data READ ONLY Access.
5. View shared properties from the “Sharing” tab.

For a more detailed explanation of this process, see the EPA Guide.[16] The Department will create a specific Maryland Data Exchange Guide for this process prior to the first benchmarking period.

A. 3.2 Verification

Prior to the June 1 benchmarking deadline, a building owner must check their benchmarking data. ENERGY STAR Portfolio Manager has built-in data quality tools that must be used annually. Every five years, a building owner must have their data verified by a third party.

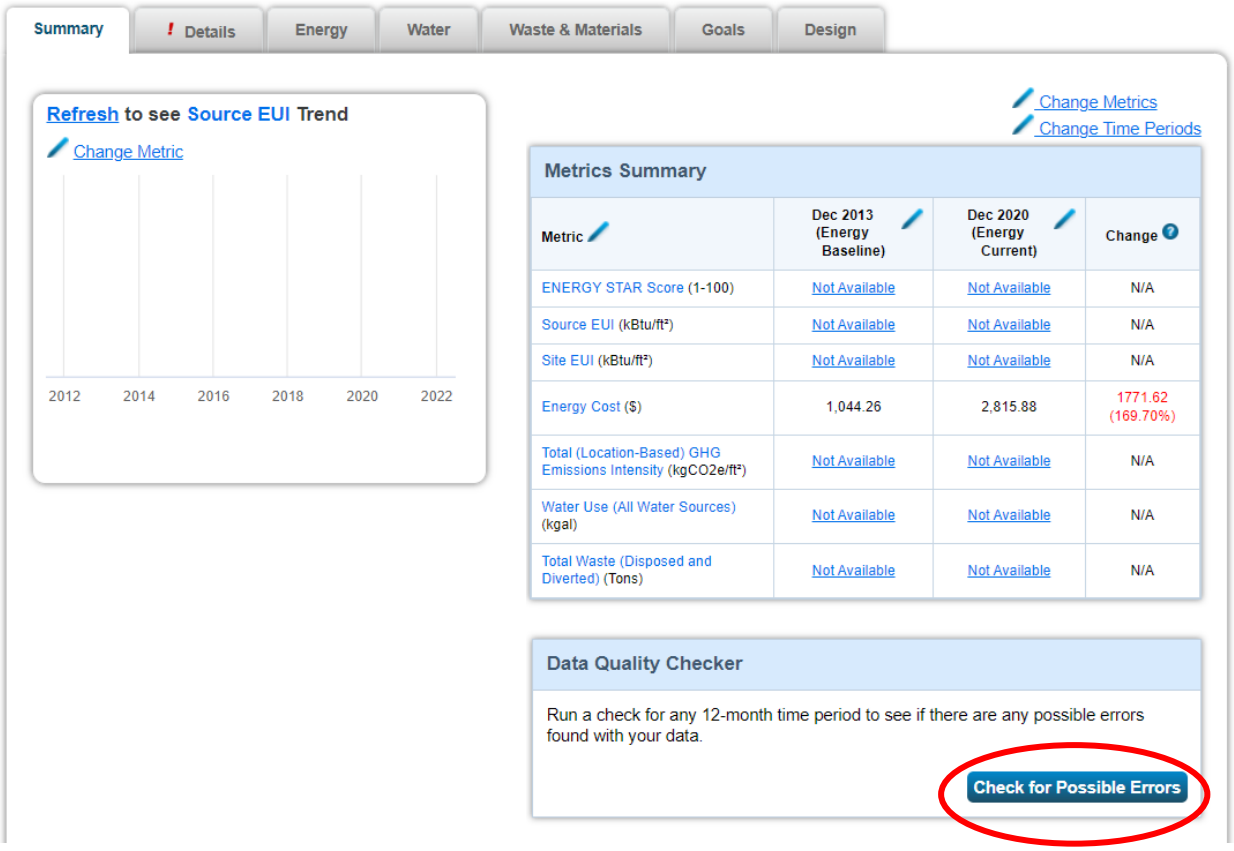
A. 3.2.1 Data Quality Check

Prior to the June 1 benchmarking deadline each year, the building owner must check the accuracy of the data using the data quality checker built into ENERGY STAR Portfolio Manager. These checks will identify errors in the data such as missing information. If data is missing or inaccurate, then the building owner is required to fix it prior to the reporting deadline. If the building owner is notified of an error by the Department, then the building owner must correct the error within 30 days.

The data quality check can be run from the summary page of an individual building within ENERGY STAR Portfolio Manager. See the screenshot below. See this list[17] of possible alert messages.

[16] https://portfoliomanager.energystar.gov/pdf/reference/Connection_and_Sharing_for_Data_Exchange_en_US.pdf.

[17] https://www.energystar.gov/buildings/tools-and-resources/list_portfolio_manager_alerts.



A. 3.2.2 Third Party Verification

To ensure quality of data, building owners must also have their data verified by a third party every five years. Third party verification will begin in 2026 with the benchmarking submission which covers calendar year 2025. The following is a schedule of third party verification dates.

Calendar Year Data Being Verified	**Verification deadline MDE**
2025	June 1, 2026
2030	June 1, 2031
2035	June 1, 2036
2040	June 1, 2041
Every 5 years following this pattern	

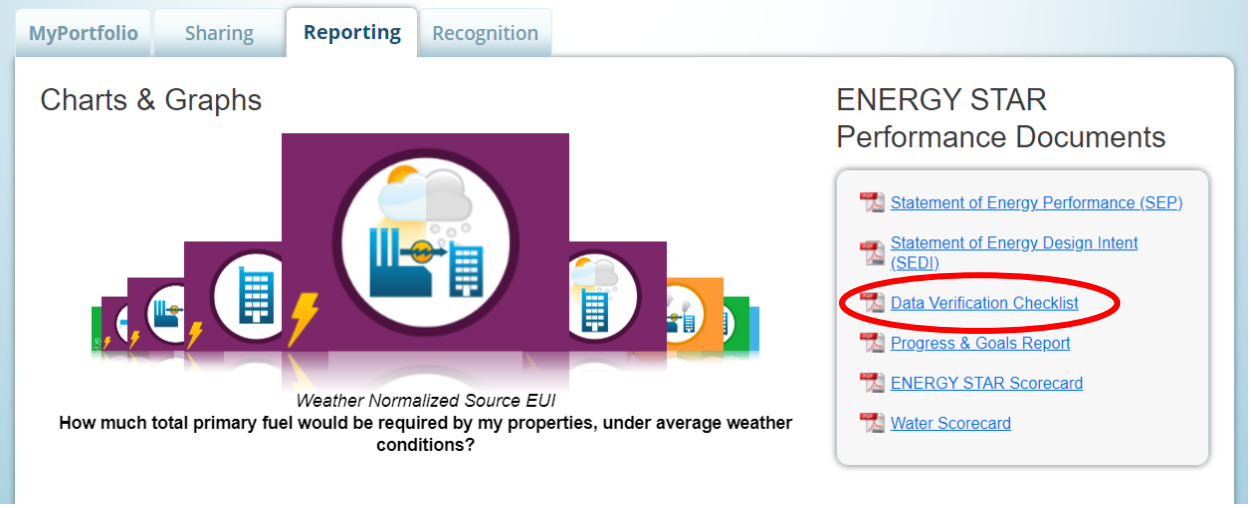
The third party verifier must have access to the building data to accurately verify the information. To accomplish this, follow the guide on sharing Portfolio Manager Properties.[18] It is the

18 https://www.energystar.gov/sites/default/files/tools/How%20to%20Share%20Properties%20with%20Other%20Portfolio%20Manager

responsibility of the certified third party verifier to: generate, review and sign an ENERGY STAR Data Verification Checklist. The Department will develop and publish a verification guide for instructions on how to complete a third party verification. At a minimum, the following information will be required as part of the third-party verification process:

1. Basic Property Information
    a. All
2. Review of Property Use Details
    a. Accurate Gross Floor Area and allocation to appropriate property types
    b. Building Occupancy
3. Review of Energy Consumption
    a. Total Energy Use
    b. Additional Fuels
    c. Total Energy Consumption meters
4. Signature of Verifier
    a. Name
    b. Verifier Title
    c. Verifier Organization
    d. Signature
    e. Date

A Data Verification Checklist can be created from the Reports tab within ENERGY STAR Portfolio Manager. View a sample report here.[19]



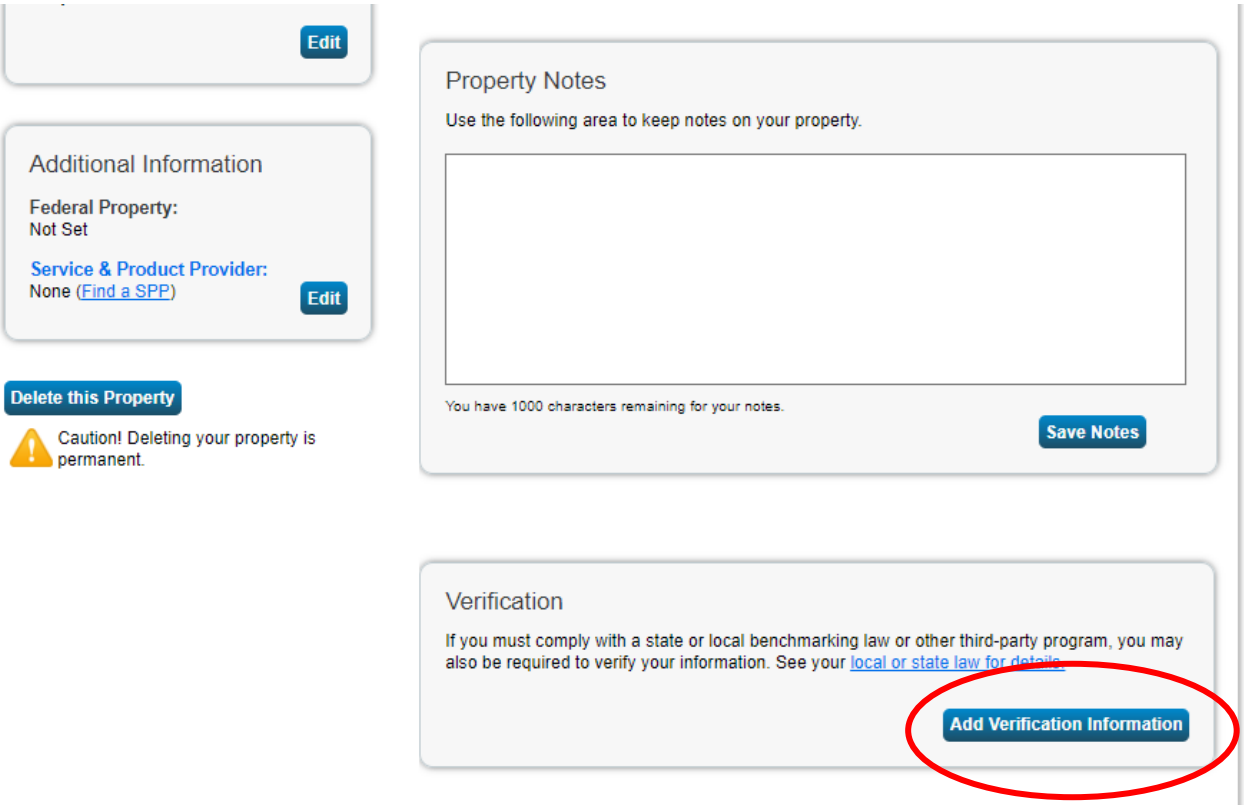
Once the verifier is finished, they should email a digital copy of the report to the building owner who must save it and keep it in their records. To complete the verification process, the verifier

%20Users_May%202021_FINAL.pdf#:~:text=To%20start%20sharing%2C%20go%20to%20the%20Sharing%20tab.,select%20properties by%20using%20filters%20by%20primary%20function%20orstate%2Fprovince.

[19] https://www.energystar.gov/buildings/tools-and-resources/sample_energy_star_data_verification_checklist.

must navigate to the property details of the building and mark the building as verified in the following steps:

1. While viewing the Property navigate to the “Details” tab.
2. Click “add verification information” located at the bottom right.
3. The form will ask for the year for which the data was verified, the date of verification, the name of the verifier, and their professional designation.



Below are the qualifications for a third party verifier.

1. Professional Engineer (PE) issued within the United States;
2. Licensed Architect issued within the United States;
3. Certified Energy Manager (CEM);
4. Building Energy Assessment Professional;
5. Any other additional data verifier license or training program credentials recognized by the Department and posted to the website.

B. Performance Standards and Compliance Demonstration

B. 1 Building Energy Performance Standards Background

Building Energy Performance Standards (BEPS) are mandatory performance standards that a covered building must achieve over time. The Climate Solutions Now Act of 2022 required Maryland BEPS to include two metrics to evaluate the performance of a building: net direct greenhouse gas emissions and site energy use intensity (Site EUI). The net direct greenhouse gas emissions standards were promulgated in the accompanying regulation. MDE will analyze benchmarking data and set Site EUI standards in the future. The standards become more stringent every five years until 2040. See below for the compliance timeline.

Compliance with the standards will be determined based on data submitted during the benchmarking process.

Compliance year	Deadline to Input Verified Data into ENERGY STAR Portfolio Manager
2025	June 1, 2026
2030	June 1, 2031
2035	June 1, 2036
2040	June 1, 2041

B. 1.1 Metrics

Maryland BEPS uses net direct greenhouse gas emissions to measure building energy performance. Net direct greenhouse gas emissions are measured in kilograms of CO2 equivalent per square foot.

B. 1.1.1 Net Direct Greenhouse Gas Emissions (kg/CO2e/ Sq Ft)

Net direct greenhouse gas emissions or net direct emissions are the sum of all direct greenhouse gas emissions. For a covered building connected to a district energy system, direct greenhouse gas emissions plus the greenhouse gas emissions attributable to thermal energy inputs from the district energy system used by the covered building, as calculated using the methodology provided in this regulation. Net direct emissions does not include direct emissions

from a food service facility located within a covered building. See Section A. .2.1.4 on Energy and Emission Exclusions.

B. 1.1 Reserved

B. 1.2 Compliance Responsibility - Who is Responsible for Achieving Compliance?

The building owner is responsible for making the necessary improvements to the building to comply with the building energy performance standards. Annual benchmarking will help the building owner track performance.

B. 1.3 Covered Buildings - Who Needs to Comply with the Building Energy Performance Standards?

The same buildings that are required to submit benchmarking data are also required to comply with the performance standards. Buildings that are exempt from benchmarking are also exempt from the building energy performance standards. See Section A. 1.2 on Covered Buildings.

B. 2 Determining Interim and Final Standards

The information below pertains both to individual buildings and campuses. Each building or campus will need to comply with a **final standard** that must be achieved by 2040 and **interim standards** in 2030 through 2039. The Department will assess interim and final standards for each covered building based on the weather-normalized benchmarking data submitted through ENERGY STAR Portfolio Manager. ENERGY STAR Portfolio Manager weather-normalizes the submitted energy data. Methodology on how the Department will compute the standards per building can be found in the sections below.

B. 2.1 Final Net Direct Emissions Standard

The final net direct emissions standard is the same for every covered building or campus: 0 (zero) kg CO2e per square foot. See below for more information about determining the Interim Standards.

B. 2.2 Reserved

B. 2.3 Interim Net Direct Emissions Standards

Interim net direct emissions standards are listed in the regulation by property type in kg CO2e per square foot.

If a covered building or campus produces net direct emissions and is a mixed-use building or campus, then its interim net direct emissions standard in 2030 and 2035 will be calculated by the Department using an area-weighted approach. In this situation, the following formula can be used to calculate the area-weighted maximum net direct emissions in 2030 and 2035.

$$GHG_{AW} = \left(\left(\frac{GSF_A}{GSF_S}\right) \times GHG_A\right) + \left(\left(\frac{GSF_B}{GSF_S}\right) \times GHG_B\right) + \left(\left(\frac{GSF_C}{GSF_S}\right) \times GHG_C\right) + etc.$$

Key: GHG_{AW} is the area-weighted maximum net direct emissions standard for 2030
GSF_A is the gross square footage of one property type within the covered building
GSF_B is the gross square footage of a second property type within the covered building
GSF_C is the gross square footage of a third property type within the covered building
GSF_S is the sum of the gross square footage of a GSF_A , GSF_B , and GSF_C
GHG_A is the 2030 emissions standard for the property type group corresponding to GSF_A
GHG_B is the 2030 emissions standard for the property type group corresponding to GSF_B
GHG_C is the 2030 emissions standard for the property type group corresponding to GSF_C

If a covered building includes more than three property types, then the formula above can be modified to replace “etc.” with “((GSF_D / GSF_S) x GHG_D)” and so to include additional property types.

Submetered area within a covered building that is a parking garage or a food service facility can be excluded from area-weighted calculations.

Example:
A 45,000 square foot mixed use building where 20,000 square feet are used for Office space, 15,000 square feet are used for retail and 10,000 square feet are used for restaurants.

At the time of this writing, the 2030 interim net direct emissions standards for these property types are: 0.22 kgCO2e/sf for offices, 0.60 kgCO2e/sf for retail stores, and restaurants are exempt. The 10,000 square feet of restaurant space should be removed from this equation so the “total building area” in the case of determining the interim net direct emissions standard is 35,000 square feet. The calculation to find the mixed 2030 interim net direct emissions standard is as follows:

$$0.38\frac{kgCO2e}{sf} = \left(\left(\frac{20{,}000}{45{,}000 - 10{,}000}\right) \times 0.22\ kgCO2e/sf\right) + \left(\left(\frac{15000}{45{,}000 - 10{,}000}\right) \times 0.60\ kgCO2e/sf\right)$$

Office Space Retail Space

B. 2.4 Reserved

C. Alternative Compliance

C. 1 Alternative Compliance Pathway

If a building owner chooses to meet the net direct emissions standard via the alternative compliance pathway for one or more of their buildings, the building owner shall pay an alternative compliance fee for each metric ton of carbon dioxide equivalent (CO2e) that is emitted over the standard.

The alternative compliance pathway fee can be determined by:

1. Identifying the building's interim or final net direct emissions intensity standard from the regulation's "Performance Standards and Compliance Demonstration" (26.28.03.03) Table 1 (in kg of CO2e per square foot)
2. Multiplying this standard by the building's square footage to get the net direct emissions interim or final standard (in kg of CO2e)
3. Dividing this value by 1,000 to get the building's net direct emissions standard in Metric Tons of CO2e
4. Subtracting the building's net direct emissions reported by ENERGY STAR Portfolio Manager (in Metric Tons of CO2e) from this calculated interim or final net direct emissions standard (Metric Tons of CO2e)
5. Multiplying this difference by the cost per metric ton of CO2e for the given year. If the number is positive, then this is the alternative compliance fee. If the number is negative, then the building is complying through the standard pathway.

The alternative compliance fee will begin in 2030 at $230 per metric ton in 2020 dollars, adjusted for inflation and will increase $4 in 2020 dollars, adjusted for inflation, every year as written in Chapter 04 Alternative Compliance and Special Provisions of the regulation.

Example:
If, for calendar year 2030, a covered building's interim standard multiplied by the building's square footage is 200 metric tons of CO2e, but it emits 100 metric tons of CO2e, then its owner can be in compliance with the standard by taking the alternative compliance pathway and paying the fee for the 100 metric tons of CO2e in excess of the 2030 net direct emissions standard. Therefore, the owner of the covered building would pay the alternative compliance fee of: 100 metric tons x $230 per metric ton = $23,000 (in 2020 dollars, adjusted for inflation to 2030).

Building owners choosing to take the alternative compliance pathway will indicate this in their annual reporting submission. Using the calculation described above, the Department will invoice the building owner at the address listed as the primary contact and the email listed as the primary contact. Upon receipt of the invoice, a building owner has 30 days to pay and fulfill their requirement to meet the standards under the alternative compliance pathway.

Failure to pay in a timely manner will bring the building(s) out of compliance with the standard and may result in referral to the central collections unit of the Department of Budget and Management, in which case a 17% collection fee will be added.

The alternative compliance fee can be paid in two ways:

1. A check for the compliance fee can be written to “Maryland Department of the Environment/Clean Air Fund” and directed to P.O. Box 2037, Baltimore, MD 21203-2037; or
2. An online portal www.egov.maryland.gov/mde/invoice can be used to make credit card payments. A processing fee is added.

C. 2 Exemptions

There are some instances where the owner of a building that would otherwise be required to comply with the performance standard can apply to be exempt for one or more calendar years.

C. 2.1 Exemption From Benchmarking and Performance Standard Requirements

A building owner may apply for their building to be exempt from complying with the building energy performance standard for the following reasons:

1. Financial distress;
2. The covered building was not occupied during the calendar year being reported; or
3. The covered building was demolished during the calendar year for which benchmarking is required

To apply for an exemption, a building owner must submit an exemption request form to MDE and provide any documentation to substantiate the request. A building owner may request an exemption at any point prior to the reporting deadline of June 1 of each year for the previous year of reporting. Any exemption approved by MDE will be limited to the benchmarking and performance standard year for which the request was made and shall not extend to past or future submissions.

C. 2.2 Exemption From Establishing Baseline Performance

A building owner may apply for an exemption from the requirement to establish baseline performance when, during the year that would have been the baseline year, less than 50% of the covered building was occupied for at least 180 days. A covered building may not receive an exemption from the requirement to establish baseline performance for more than three years.

To apply for an exemption, a building owner must submit an exemption request form to MDE and provide any documentation to substantiate the request. A building owner may request an exemption at any point prior to the reporting deadline of June 1 of each year for the previous year of reporting. Any exemption approved by MDE shall be limited to the benchmarking and performance standard data for the year for which the request was made and shall not extend to past or future years.

C. 2.3 Exemptions for Affordable Housing Providers

An affordable housing provider may apply for reduced alternative compliance fees to meet the standard via the alternative compliance pathway when the building owner submits in writing such a request by June 1st of each calendar year, beginning in 2031.

To apply, an affordable housing provider must submit an exemption request to MDE and submit a copy of the application to a Federal or Maryland administered program that would make the building(s) more energy efficient and/or reduces greenhouse gas emissions. The submission must also include the benchmark report, intended scope of work, and estimated greenhouse gas reductions expected from the intended scope of work to achieve at least the applicable Interim or Final Standard.

Any exemption approved by MDE shall be limited to the alternative compliance fee for the year for which the request was made and shall not extend to past or future years. A project that has applied to a program but has not yet completed the improvements, can submit a confirmation received from the program administrator to the Department with their exemption request, verifying the project's active participation status to satisfy the good faith effort for another year.

D. Special Provisions

D. 1 Additional Reporting Requirements for Covered Buildings Connected to District Energy Systems

Emissions from district energy systems are included within the definition of net direct emissions. When assessing a building’s compliance with the standards, the Department will use a system-specific emission factor for the district energy system, instead of national default factors or customer-specific factors.

D 1.1 Reporting District Energy Emissions

District energy providers and building owners of covered buildings that are connected to district energy systems have reporting requirements to comply with Maryland BEPS.

D 1.1.1 Reporting Responsibilities of District Energy Providers

To the Department:
By March 1st of each calendar year, district energy providers must provide the Department with emissions factors and a full and detailed accounting of their calculation using the "Efficiency Method" in the World Resources Institute's "Calculation tool for direct emissions from stationary combustion: Allocation of greenhouse gas emissions from a Combined Heat and Power (CHP) Plant." A description of this method, with details specific to its application to systems in Maryland, can be found in Section D. 1.2 Efficiency Method below.

To the Building Owner:
District Energy Providers must provide covered building owners the greenhouse gas emissions factors per unit of district energy input (steam, hot water, chilled water, etc.). As ENERGY STAR Portfolio Manager does not support the addition of custom emission factors at this time, these data must be provided separately to the customer.

For the purpose of BEPS compliance, emission factors must be consistent for all products of the same district energy system. The individual purchase of "green" credits for district energy by a customer does not impact their emissions for the purpose of BEPS compliance.

D.1.1.2 Reporting Responsibilities of the Building Owner

Building owners must report all district energy use to the Department via the ENERGY STAR Portfolio Manager tool. The Department will develop and publish additional guidance on how to enter district energy use data into the ENERGY STAR Portfolio Manager tool.

Building owners must annually fill out a form, provided by the Department, to submit their system-specific emissions to the Department incorporating emissions factors provided by the building owner's district energy provider. These factors and data reported via ENERGY STAR Portfolio Manager will be used to determine final compliance with the posted standards.

D 1.2 Efficiency Method

If the district energy system has only one output, such as steam, and has only on-site combustion inputs, then the emissions intensity shall be defined as the carbon emissions of all combustion inputs divided by the total energy output.

If the district energy system has two or more inputs (e.g., natural gas and recovered waste heat), or two or more outputs (e.g., steam and electricity), then emissions shall be assigned to the respective energy sources based on the "efficiency method" defined for co-generation systems by the World Resources Institute GHG Protocol.[20] The efficiency method uses plant-

[20] Gillenwater, M., Woodfield, M., Simmons, T., McCormick, M., Camobreco, V., Hockstad, L. and Upton, B. 2006. Calculation tool for direct emissions from stationary combustion: Allocation of GHG Emissions from a Combined Heat and Power (CHP) Plant. World Resources Institute. Available at: https://ghgprotocol.org/sites/default/files/CHP_guidance_v1.0.pdf.

specific values for heat and power production efficiency, if available, or generic values when plant-specific information is missing. The following sections describe the steps to the Efficiency Method.

D 1.2.1 Step 1: Calculate the Total Direct Greenhouse Gas Emissions for All Combustion Sources Used in the Co-generation

Include all relevant greenhouse gases: carbon dioxide, methane, and nitrous oxide. Use emissions factors appropriate to each fuel consumed by the district energy plant. Sum the total for all greenhouse gases using the same emissions factors used in ENERGY STAR Portfolio Manager.[21]

D 1.2.2 Step 2: Calculate the Additional Energy and Emissions for Any Other Inputs Into the District Energy Network

If the district energy system receives additional energy inputs such as waste heat, emissions associated with those inputs must also be accounted for, as applicable. These inputs would add to both total emissions and total heat energy content of the system. Input sources may be considered to be emissions-free if no greenhouse gas emissions were used in the generation of the resource.

Examples of energy inputs into a district plant that are not emissions-free include: waste heat from industrial processes that use combustion and waste heat from electricity plants including those that burn solid waste.

Examples of non-fuel energy inputs into a district plant that can be considered to be emissions-free include: sewer/wastewater heat recovery; geothermal energy; ground-source, air-source or water-source energy; and electricity.

If the facility that produced the additional heat energy is itself a cogeneration facility, then the efficiency method must be applied a second time for that facility to calculate the emissions intensity of the heat input. For example, if a waste-to-energy incinerator or an industrial facility provides heat to a district energy plant, the efficiency method would be applied first at the incinerator to allocate its emissions between the power generation and the heat generation, and the emissions attributed to the exported heat would be added to the total emissions for the district energy system.

D 1.2.3 Step 3: Calculate the Energy Content of Each Output Stream for the District Energy System

Include each output stream of thermal energy (e.g., water/steam at various temperatures and pressures), electricity, and chilled water, if applicable. Convert all outputs to consistent units,

[21] ENERGY STAR. 2022. “Portfolio Manager Technical Reference: Greenhouse Gas Emissions.” U.S. Environmental Protection Agency. Available at: https://www.energystar.gov/buildings/tools-and-resources/portfolio-manager-technical-reference-greenhouse-gas-emissions.

such as MMBtu. Use enthalpy tables to determine the energy content (enthalpy) of water/steam at different temperatures and pressures.

D 1.2.4 Step 4: Identify the Efficiencies of Production of Each Output Stream From the District Energy System

The efficiencies determine the amount of fuel, and therefore the associated emissions, required to generate a unit of energy stream output. The calculations should use plant-specific efficiency factors if available. In absence of plant-specific data, default values can be used. EPA recommends default efficiency values of 0.80 for steam production and 0.35 for electricity production using natural gas or fuel oil, and 3.2 for chilled water production. The use of alternative input fuels, such as wood or solid waste, may result in different efficiencies; plant-specific factors will be needed in those cases. Delivered waste heat, after it leaves the generation source, should be assumed to subsequently have an efficiency of 1.0 at delivery into the district system.

D 1.2.5 Step 5: Allocate Total Emissions to Output Streams

Use the following formulas to allocate across multiple output streams, followed by the formula key. The example provided uses heat energy (steam), electricity, and chilled water, but the formulas can be generalized to any two or more output streams.

To calculate the emissions allocated to heat outputs such as steam or hot water (stream 1), use the following equation. Note that the total emissions (ET) and heat energy content (H) must include both energy generated onsite as well as any imported source, subject to the guidance in Section D. 1.2.2:

$$E_H = E_T * \frac{\frac{H}{e_H}}{\frac{H}{e_H} + \frac{P}{e_P} + \left(\frac{C}{e_C}\right)}$$

To calculate the emissions allocated to output electricity from a cogeneration facility (stream 2), use the following equation:

$$E_P = E_T * \frac{\frac{P}{e_P}}{\frac{H}{e_H} + \frac{P}{e_P} + \left(\frac{C}{e_C}\right)}$$

For trigeneration facilities that also generate chilled water, use the following formula to calculate the emissions attributable to the chilled water (stream 3). For separate generation of chilled water, see section D. 1.3.

$$E_C = E_T * \frac{\frac{C}{e_C}}{\frac{H}{e_H} + \frac{P}{e_P} + \frac{C}{e_C}}$$

Key: E_T = total district energy system greenhouse gas emissions from all energy inputs, including waste heat inputs

E_H = emissions allocated to steam or hot water production, in metric tons CO_2e

E_P = emissions allocated to electricity generation, in metric tons CO_2e

E_C = emissions allocated to chilled water production, in metric tons CO_2e, if applicable

H = energy content of steam or hot water outputs in MMBtu

P = delivered electricity generation in MMBtu

C = chilled water output in MMBtu, if applicable

e_H = assumed efficiency of the steam/hot water production

e_P = assumed efficiency of electricity generation

e_C = assumed efficiency of chilled water production, if applicable

D 1.2.5 Step 6: Calculate Emission Factors for Each Output Stream

Divide the total emissions from each output stream by the total quantity of that output stream. To the extent possible, divide by the total energy sales or total energy delivered to customers, as opposed to total output at the central plant. This approach is appropriate for building-level emission factors, and effectively assigns a pro-rata share of system-level transport and thermal losses to the buildings.

D 1.2.6 Further Guidance on the Use of the Efficiency Method

For further guidance on the use of the efficiency method, consult:

- Gillenwater, M., Woodfield, M., Simmons, T., McCormick, M., Camobreco, V., Hockstad, L. and Upton, B. 2006. “Calculation tool for direct emissions from stationary combustion: Allocation of GHG Emissions from a Combined Heat and Power (CHP) Plant.” *World Resources Institute*. https://ghgprotocol.org/sites/default/files/CHP_guidance_v1.0.pdf
- Eash-Gates, P. 2022. “Allocation of Emissions from District Energy Systems with Multiple Outputs - Building Performance Standards.” *Synapse Energy Economics.* https://www.synapse-energy.com/emissionsfactors

D 1.3 Calculation of Emissions for Chilled Water

When chilled water is generated from electricity in a building, it is exempt from the emissions standards of Maryland’s BEPS (though not from the EUI targets). However, especially in a district energy context, chilled water is not always purely generated from electricity, and may also have emissions associated with it:

- Chilled water loops that are powered by grid electricity can be treated as having no net direct emissions.
- Chilled water loops that use trigeneration should have an emissions factor based on the application of the efficiency method for that output, as laid out in Section D. 1.2.

- Chilled water loops that use gas-fired absorption chillers or gas-fired engine-driven chillers should have an emissions factor that accounts for the amount of gas burned in the chillers. If this data is not available, the EPA factors may be used, with absorption chillers having an emissions intensity of 73.89 kg/MBtu, and engine-driven chillers having an emissions intensity of 49.31 kg/MBtu.

D. 2 Campus-Level Compliance

The owner of a campus may choose to meet the net direct emissions standard, as specified in the regulation, at the campus level instead of the individual building level when two or more covered buildings are:

1. Connected to a district energy system;
2. Served by the same electric or gas meter; or
3. Served by the same heating or cooling system(s), which is not a district energy system.

The following buildings shall be excluded from campus-level calculations:

1. a building designated as a historic property under federal, state, or local law;
2. a public or nonpublic elementary or secondary school building;
3. a manufacturing building;
4. an agricultural building; or
5. a building owned by the Federal government.

If the owner of a campus chooses to meet the standards at the campus level as opposed to the individual building level, then the owner must notify the Department by completing the “Campus-Level Compliance Pathway Selection Form” and include a list and map of buildings. Completing this form will initiate a process to identify the covered buildings on the campus and develop campus-level BEPS standards. See Section D. 2.3 for more information.

Multifamily housing campuses and hospital campuses (as well as some hotel and senior living properties with multiple buildings) are customarily benchmarked in ENERGY STAR Portfolio Manager as single “properties,” where the property is already assumed to represent a campus by default. If such properties are not listed on the covered building list as a single property already, then the owner may submit a form requesting to benchmark and report as a campus. If the covered building list already lists them as single properties, then the form is not needed.

D. 2.1 Required Data: What Data Should be Included in a Campus-level Benchmarking Report?

If an owner chooses to report and comply at the campus level instead of at the individual building level, then the following data should be reported:

1. energy consumption and fuel use for all buildings;
2. energy consumption and fuel use for all stationary equipment including all central plants and district energy plants, even if those plants are combined heat and power facilities.

Campus-level reporting does not include energy consumption and fuel use from activities/sources that are excluded from the benchmarking report requirements in Chapter 2 of the regulation. See more in Section A. 2.1.4. These activities/sources are:

1. Food service facilities;
2. Electric vehicle charging;
3. Other electricity uses excluded by the benchmarking tool; and
4. Emissions from required combustion equipment if federal or state regulation requires a covered building to use a backup generator or other equipment that must run on combustible fuels.

By June 1 of each year, the owner of a campus must report changes to building footprint, usage, and occupancy. Reporting this information should be done through the “Changes to Campus Buildings Reporting Form.” Within the form, list each new building, change of building footprint, or change in the usage of a building and upload the permits that were issued for the changes. Changes to occupancy should be reported and the certificate of occupancy should be uploaded to the same “Changes to Campus Buildings Reporting Form.”

D. 2.1.1 Buildings on a Campus That Are Not Owned by the Principal Campus Owner

Buildings that are not owned by the principal campus owner can report and comply with the building energy performance standard as an individual building instead of being aggregated into the campus-level report. The principal owner of the campus should indicate this occurrence when submitting the “Campus-Level Compliance Pathway Selection Form.”

The Department may direct that:

1. Buildings located within a campus that are not owned by the principal owner of the campus may be excluded from campus-level calculations.
2. If such a building is a covered building, then the owner of such covered building must comply with this regulation.
3. If the owner of such a covered building located on a campus and the principal campus owner agree to include such building in campus-level compliance, then the owners may submit a written request to the Department to approve that arrangement.

D. 2.2 Reporting Data as a Campus

Campuses have the same reporting and compliance deadlines as described above. Benchmarking data must be input and verified into ENERGY STAR Portfolio Manager by June 1st every year. The report should have all data from the previous calendar year (January 1-December 31).

Campus owners will still report data through ENERGY STAR Portfolio Manager. Refer to the EPA's guidance on using ENERGY STAR to benchmark a campus.[22]

See Section A. 3.1.1 for information on how to set up automatic annual data exchange with the Department via ENERGY STAR Portfolio Manager's Web Services functionality.

D. 2.3 Performance Standards for Campus-Level Compliance

The Department shall, in consultation with the principal owner of a campus, determine whether the affected buildings will be included in campus-level compliance following the rules established in the regulation and whether and how to adjust the campus' interim and final performance standards. To initiate this process, the campus owner must first submit the "Campus-Level Compliance Pathway Selection Form" and the "Changes to Campus Buildings Reporting Form."

The process to determine the final and interim performance standards is the same for campus-level compliance as it is for individual buildings. Refer to B. 2 Determining Interim and Final Standards for detailed instructions.

D. 2.3.1 Additional Forms Required for Campus-Level Compliance

1. Campus-Level Compliance Pathway Selection Form
    a. Including a list and map of buildings
2. Changes to Campus Buildings Reporting Form
    a. Including a list and map of buildings
    b. Including permits for new buildings, changes in footprint to existing buildings, and changes of building usage
    c. Including certificates of occupancy

22 https://www.energystar.gov/sites/default/files/tools/How%20to%20Benchmark%20a%20Campus%20in%20Portfolio%20Manager_May%202022_Final_508.pdf.

Appendix B – Identification of Potentially Covered Buildings

Appendix B

Identification of buildings in Maryland potentially covered by Building Energy Performance Standards (BEPS)

Introduction

To support the emissions impact and economic impact analyses MDE explored available state data from the Maryland Department of Assessments and Taxation (SDAT) and Maryland Department of Planning (MDP). This data is available for download from the MDP website (https://planning.maryland.gov/Pages/OurProducts/DownloadFiles.aspx).

Methodology

Data Sources

The primary dataset used is the Maryland Computer Assisted Mass Appraisal (CAMA) Detailed Building Characteristics shapefile, from the third quarter of 2022. The pertinent information provided is building floorspace (in square feet) and building use type.

A secondary dataset used is Maryland Property View Parcel Points from the Maryland Parcel geodatabase, of October 2022. The key information utilized from this dataset is building address (for residential buildings) and tax exemption and land use descriptions.

Aggregation

The CAMA dataset tracks building data at a sub-building level such that multiple use types within a single building (e.g., shopping center) and multiple units within a single building (e.g., condominium) are recorded as individual records.

Commercial buildings were aggregated based on a trim of the CAMA Building Number which, for roughly 90% of records, follows a consistent numbering system to identify separate buildings on a single parcel and multiple uses within a single building. The building square footage was summed across individual buildings (i.e., aggregating multiple uses within a single building).

For residential buildings the CAMA Building Number is not reliable in identifying multiple units within a single building. Residential buildings were instead aggregated based on building address information from Parcel Points. Parcel Polygons were not used because this dataset has a single representative record for residential condominiums whereas Parcel Points has records per individual tax account. The building square footage was summed across individual buildings (i.e., aggregating multiple units within a single building).

Exclusions

From there the 35,000 square foot threshold was applied and properties potentially excluded were identified. Schools were identified by CAMA Building Type Description and Parcel Tax Exemption Class Description. Parcel Tax Exemption Class Description was used to identify Historical properties. The

CAMA Building Type Description of Industry was equated to manufacturing. And Parcel Land Use Description was used to identify Agricultural properties.

Parking was excluded prior to square footage aggregation using CAMA Building Type Description for commercial buildings and CAMA Building Style Description for residential buildings.

Improvements

This initial exploration of available state will be enhanced to verify aggregation of multiple uses and units, associate building records with street addresses (particularly in cases of multiple buildings on a single parcel), associate building records spatially with buildings footprints, and check for missing buildings.

Results

Results from this analysis of buildings potentially covered by BEPS are provided in the tables and figures that follow. Figure 1 displays a map of the location of parcels with potentially covered buildings. Tables 1 and 2 provide a summary of building counts and building floorspace by building type and county. Figures 2 and 3 offer a summary of building counts and building floorspace by broader building type categories. A full spreadsheet of the buildings identified in this analysis as potentially covered by BEPS is available for download on the MDE Website (http://mde.maryland.gov/programs/Regulations/air/Pages/reqcomments.aspx). The spreadsheet also provides county level building type summaries.

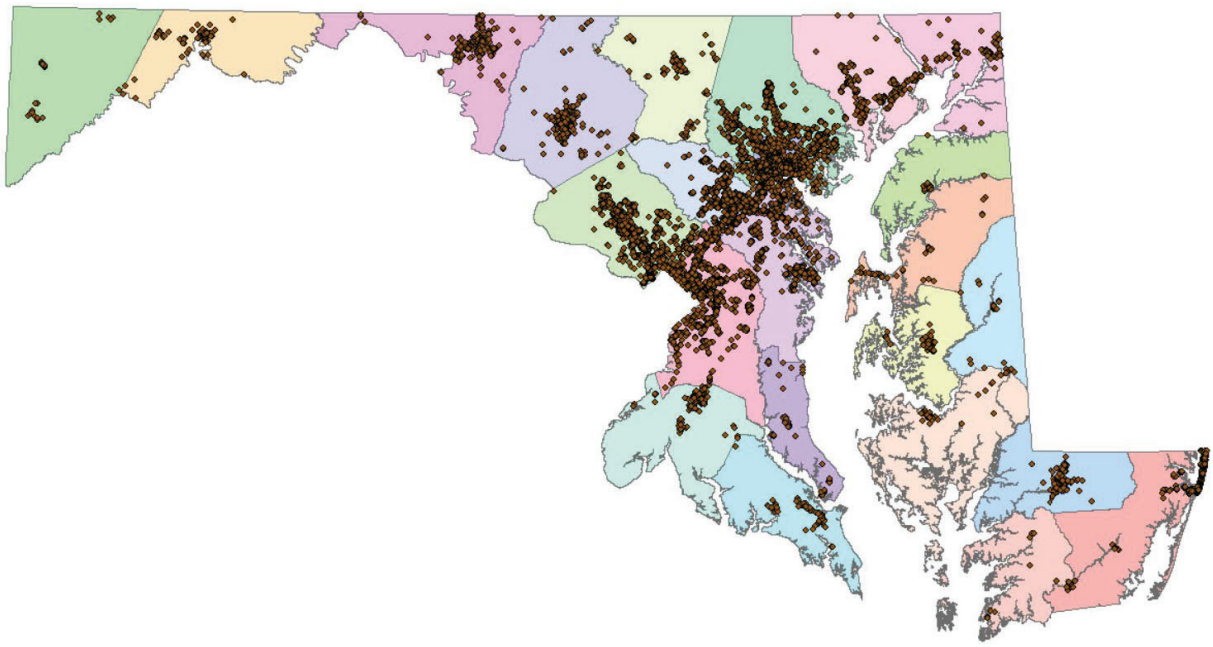


Figure 1: Location of buildings identified as potentially covered by BEPS

Table 1: Summary of buildings identified as potentially covered by BEPS, by building type

Building Type Description	Building Count	Total Floorspace (sq. ft.)
AUTO Auto Center	20	1,052,084
AUTO Auto Showroom	8	384,374
AUTO Complete Automobile Dealership	20	1,002,051
AUTO Service Garage	68	4,166,332
AUTO Storage Garage	4	302,424
BANK Branch Bank	1	210,026
BANK Main Bank	4	339,022
BURIAL Mortuary	1	36,548
CARE Convalescent Hospital	173	10,953,971
CARE Day Care Center	4	217,891
CARE General Hospital	64	18,818,701
CARE Group Home	9	786,718
CARE Home for the Elderly	176	15,910,092
CARE Surgical Center	7	509,945
COMMUNITY Branch Post Office	3	127,589
COMMUNITY Church	103	6,186,216
COMMUNITY Library	43	2,722,475
COMMUNITY Main Post Office	8	1,486,480
COMMUNITY Rectory	3	476,032
DWEL Boat Slip	1	88,980
DWEL Center Unit	4	225,069
DWEL Condo Garden	314	19,007,217
DWEL Condo Hi Rise	243	37,082,625
DWEL Condo Studio	36	2,259,623
DWEL Condo Townhouse	26	4,543,438
DWEL End Unit	5	253,460
DWEL Mobile Home	4	553,469
DWEL Parking Space	1	70,686
DWEL Penthouse	15	2,222,572
DWEL Standard Unit	10	437,982
HOUSING Apartment	1,084	139,313,765
HOUSING Mixed Residential / Retail	4	185,764
HOUSING Multiple Residence	409	32,575,755
HOUSING Residential Apartment Units	4	542,953
OFFICE Medical Office Building	186	13,610,261
OFFICE Office Building	1,586	173,801,697
OFFICE Office Condominium	10	726,667
OTHER Building Per Square Foot	8	2,225,493
OTHER Building Per Unit	13	1,056,353
OTHER Condo	1	66,594
OTHER Special Use	1	205,752
PUBLIC Government Building	124	27,549,926
REC Auditorium	24	4,005,983
REC Banquet Hall	1	45,046
REC Bowling Alley	15	610,035
REC Cinema	25	1,621,149
REC City Club	3	191,164
REC Club House	22	1,342,563

REC Country Club	10	669,064
REC Fraternal Building	7	320,484
REC Gymnasium	28	2,013,186
REC Handball / Racquetball Courts	2	112,808
REC Health Club	36	2,413,946
REC Indoor Tennis Facility	9	584,491
REC Skating Rink	10	739,463
REC Theater	9	677,001
RESTAURANT Restaurant	12	620,082
RESTAURANT Tavern	2	91,490
SAFETY Armory	6	328,583
SAFETY Fire Station	7	670,196
SAFETY Jail	29	4,570,714
SAFETY Volunteer Fire Station	2	101,988
SCHOOL Classroom	55	4,508,469
SCHOOL Computer Center	9	885,454
SCHOOL Dormitory	59	4,733,524
SCHOOL Fraternity House	1	79,648
SCHOOL Laboratory Building	31	4,689,250
SCHOOL Manual Arts Building	4	215,161
SCHOOL Multi-Purpose School Building	39	3,710,748
STORE Department Store	91	11,175,191
STORE Discount Store	230	23,667,065
STORE Finish Neighborhood Shopping Center	1	75,100
STORE Mall - Covered	1	40,429
STORE Mall - Enclosed	13	2,629,526
STORE Mall - Open	2	136,912
STORE Market	273	15,836,860
STORE Retail Condominium	3	410,925
STORE Retail Store	138	8,578,263
STORE Shell Community Shopping Center	2	187,560
STORE Shell Neighborhood Shopping Center	2	84,288
STORE Shell Regional Shopping Center	2	158,049
STORE Shopping Center / Community	265	23,455,364
STORE Shopping Center / Neighborhood	174	12,357,590
STORE Shopping Center/ Regional	75	17,393,902
TRANSPORT Hangar	12	650,582
TRANSPORT Storage Hangar	1	125,633
TRANSPORT T Hangar	2	120,650
TRAVEL Hotel	385	38,991,857
TRAVEL Motel	80	3,999,418
WAREHOUSE Cold Storage Facility	26	4,709,685
WAREHOUSE Discount Warehouse	87	10,079,482
WAREHOUSE Distribution Warehouse	688	71,361,527
WAREHOUSE Mega Warehouse	118	56,459,193
WAREHOUSE Mini Storage Warehouse	248	19,010,844
WAREHOUSE Storage Warehouse	1,002	94,655,237
WAREHOUSE Transit Warehouse	25	2,194,818
WAREHOUSE Warehouse Condominium	5	920,565
WAREHOUSE Warehouse Mini Storage Multi Story	43	4,132,899
TOTAL	**9,259**	**988,446,176**

Table 2: Summary of buildings identified as potentially covered by BEPS, by county

County	Building Count	Total Floorspace (sq. ft.)
Montgomery	1,577	205,743,888
Prince George's	1,214	121,641,532
Baltimore County	1,197	119,219,491
Baltimore City	1,174	149,390,965
Anne Arundel	883	88,354,017
Howard	824	79,100,972
Frederick	415	35,673,582
Harford	318	41,655,939
Washington	271	32,029,617
Worcester	269	20,885,126
Charles	185	14,174,057
Wicomico	169	12,435,913
Carroll	153	13,892,301
St. Mary's	117	7,418,906
Allegany	104	9,061,980
Cecil	104	18,257,641
Calvert	65	4,198,953
Queen Anne's	48	3,095,326
Talbot	47	2,748,566
Dorchester	43	3,658,617
Caroline	25	1,835,485
Kent	23	1,650,008
Garrett	21	1,384,435
Somerset	13	938,859
TOTAL	**9,259**	**988,446,176**

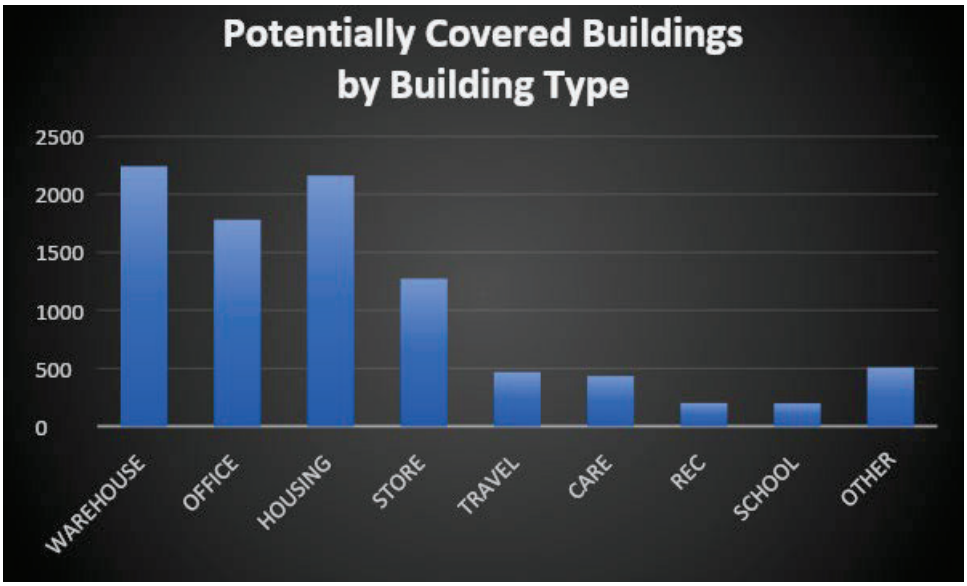


Figure 2: Building count potentially covered by BEPS, by building type category

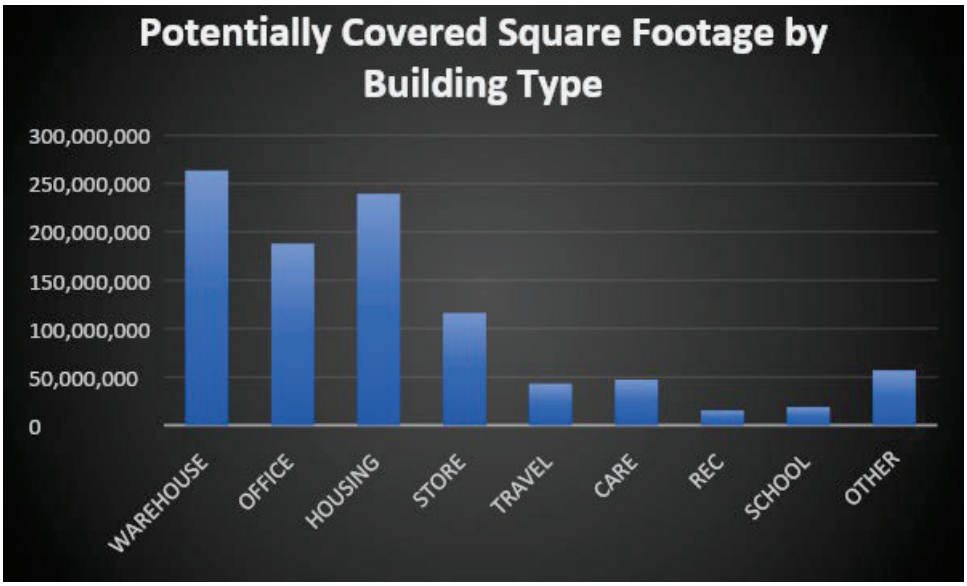


Figure 3: Total floorspace potentially covered by BEPS, by building type category

Appendix C – 2024 Maryland BEPS Impact Analysis Update

July 2024

Maryland Department of the Environment

2024 Maryland BEPS Impact Analysis Update

This document summarizes the updated emissions and economic modeling for the 2024 proposed Building Energy Performance Standards (BEPS) based on the 2023 Maryland BEPS Impact Analysis (8/21/2023) from the Lawrence Berkeley National Lab (LBNL).

Using the data from the 2023 Maryland BEPS Impact Analysis, LBNL analyzed modified scenarios that reflect the 2024 Maryland BEPS proposed regulation. LBNL modeled three scenarios in 2024 – baseline, full compliance, and finance-driven:

2024 Updated Baseline Scenario

In the baseline scenario, buildings are not subject to any BEPS targets. Buildings replace their space heating and water heating system once during the analysis period. Space and water heating systems are replaced like-for-like, so gas consumption decreases, but electricity consumption does not change. Since there are no targets, buildings do not pay alternative compliance fees.

2024 Updated Full Compliance Scenario

In the full compliance scenario, buildings are subject to direct emissions intensity standards. During each five-year compliance cycle, each building first tries to meet its direct emissions standard through gas efficiency (up to 20% reduction for space heating). If gas efficiency savings are not sufficient to meet the standard, it then electrifies space heating, water heating, and other end uses until the emissions standard is met. The logic applied to prioritize electrification of end-uses was developed to minimize project size for each compliance cycle. First – a building considers if either space heating, water heating, or a combination of both can satisfy the standard, electing to electrify the minimum amount needed for compliance. Second – if space heating and water heating are already electrified, ‘other’ end-uses are electrified at a lower assumed efficiency. All buildings comply with the standards, regardless of cost, so no buildings pay alternative compliance fees.

2024 Updated Finance-Driven Scenario

In the finance-driven compliance scenario, buildings are subject to the same standards as the full compliance schedule, and use the same reduction strategy to meet the standards, except that they only make reductions if they are cost effective. At each modeling step (i.e., gas efficiency, gas electrification, electric efficiency), a building compares the cost of implementing the reduction and the cost savings due to purchasing energy to possible alternative compliance fees. The building uses a

10-year outlook when considering implementing efficiency measures and a 30-year outlook when considering electrification. If possible alternative compliance fees are less expensive, the building chooses not to make any energy reductions and pays the alternative compliance fees instead.

LBNL modeled estimated energy impacts, emissions impacts, and costs from 2025-2050. The results are summarized in the table below.

Table. 2024 MD BEPS Statewide Impact Analysis Model Results Summary for 2025-2050.

	Energy Use (billion kBtu)	*Emissions (billion kgCO2)*	*Total Cost (billion $)*
Baseline Scenario	*1,833*	*58.9*	*69.84*
Full Compliance	*1,717*	*49.6*	*72.35*
Financial-Driven Compliance	*1,723*	*50.1*	*70.26*
Savings - Full Compliance	*116*	*9.3*	*-$2.51*
Savings - Financial Driven Compliance	*110*	*8.8*	*-$0.42*

In the finance-driven compliance scenario, natural gas consumption decreases 94% by 2040, and electricity consumption increases 8%. Overall energy consumption decreases 9%.

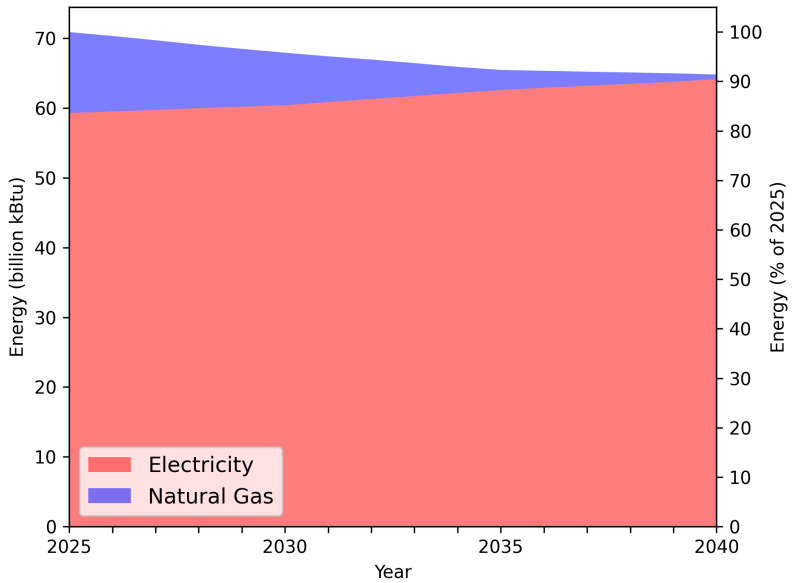


Figure 1: Finance-Driven Compliance Scenario – Projected State-wide Covered Building Energy Consumption

Similarly, emissions from natural gas decrease by 94% by 2040 and emissions from electricity decrease 81%, largely due to the electric grid getting cleaner. In the baseline scenario, electricity consumption does not decrease, but emissions from electricity decrease 82%.

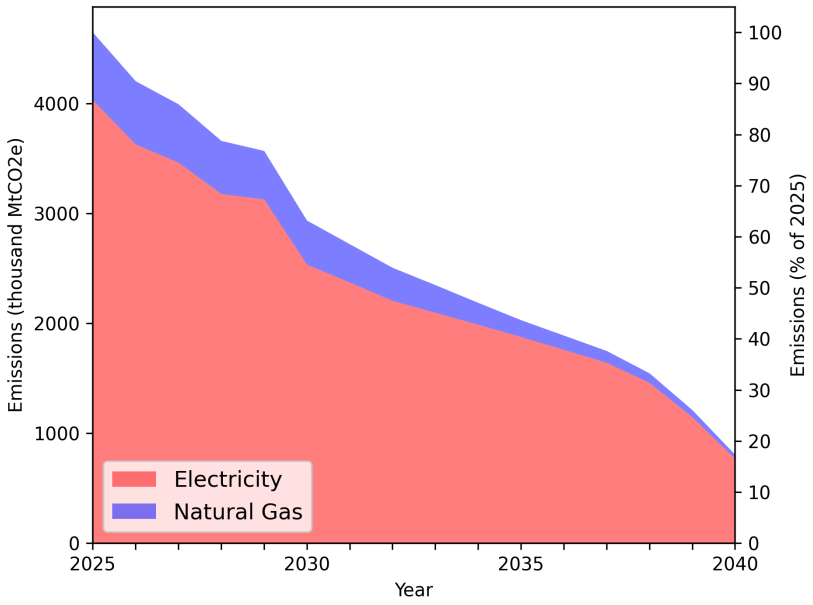


Figure 2: Finance-Driven Compliance Scenario – Projected State-wide Covered Building Emissions

The most likely outcome for buildings complying with Maryland's BEPS policy would be a finance-driven compliance scenario. According to the model, during BEPS implementation (2025-2040), under a regulation that includes emissions standards but does not yet include EUI standards, all covered buildings combined will spend more on efficiency measures ($205 million) and electrification measures ($5.53B) than the energy cost savings accrued in this period ($1.20B).On a longer time horizon (2025-2050), energy cost savings increase to $4.56B.

While these previous numbers are all statewide costs and savings, the model can also be used to understand the impacts for the average covered building owner in Maryland. For the average building owner, over the 2025-2050 time horizon, they will spend $0.65 per square foot for their building to comply with the regulation. However, there is significant variation with 25% of covered buildings modeled to save more than $0.06 per square foot and 25% of covered buildings modeled to spend more than $2.65 per square foot.

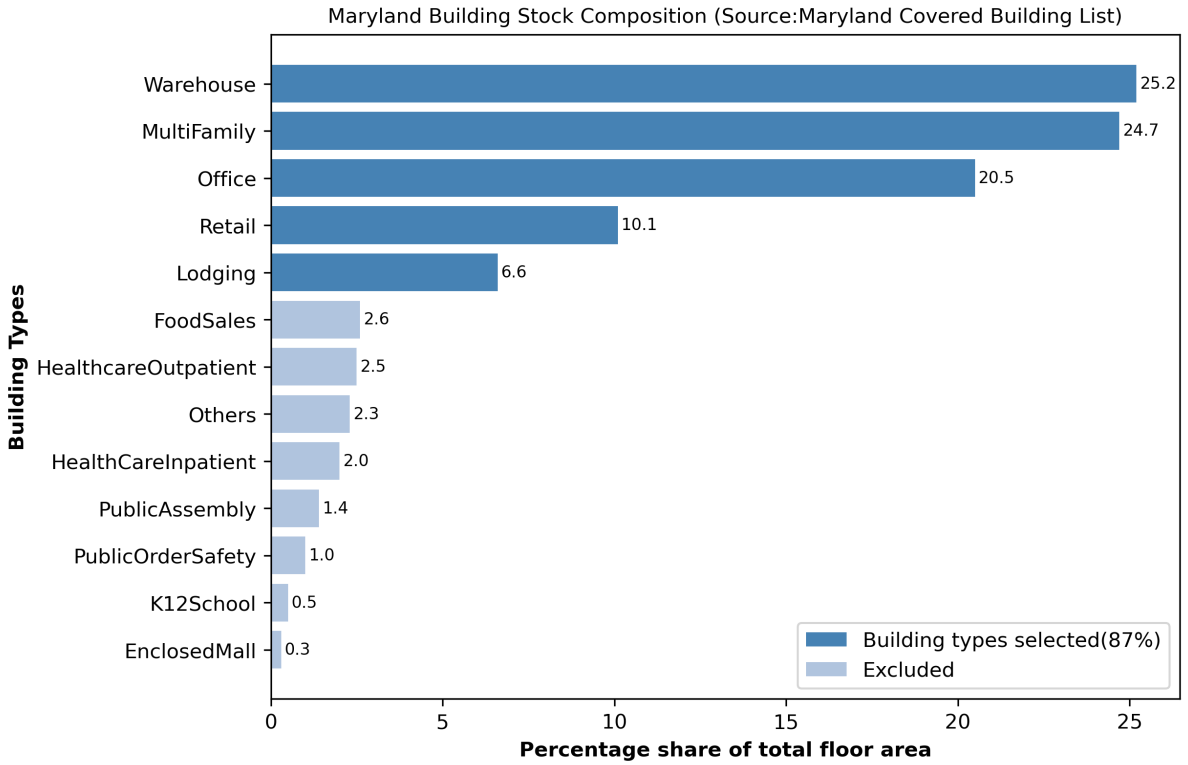
In this finance-driven compliance scenario, many building owners choose to make some amount of alternative compliance payments instead of fully meeting the standard. In 2030, 7% of all covered buildings choose to make an alternative compliance payment. Of those that choose to make a payment, the median cost for the year is $1,010. In 2040, 39% of covered buildings choose to make some alternative compliance payments, with the median payment equaling $600.

Appendix D – Impact of Maryland's BEPS Targets on Peak Loads

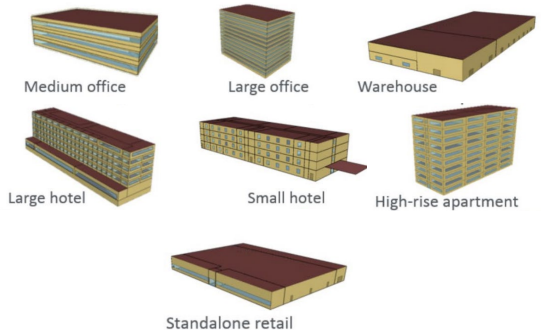
Impact of Maryland's BEPS Targets on Peak Loads

Overview of Peak Loads Analysis

- Develop representative physics-based models for building stock (typology, sizes, energy use, electric-to-site use ratios)
- Policy scenarios (electrification targets, electrification and energy efficiency targets)
- Estimate peak load impacts using building energy simulation under each scenario

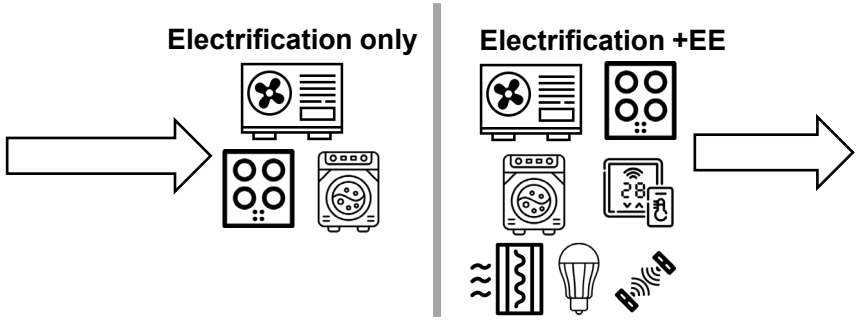


Methodology

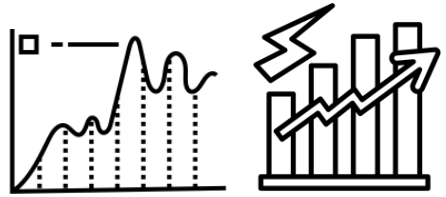


Generating baseline models
16 calibrated DOE prototype building models of different typologies and vintages [1]

Representative building stock
Baseline models scaled to match total square footage from CBL data



Applying scenario packages
Two policy scenarios considered- Electrification only & Electrification combined with EE [2]



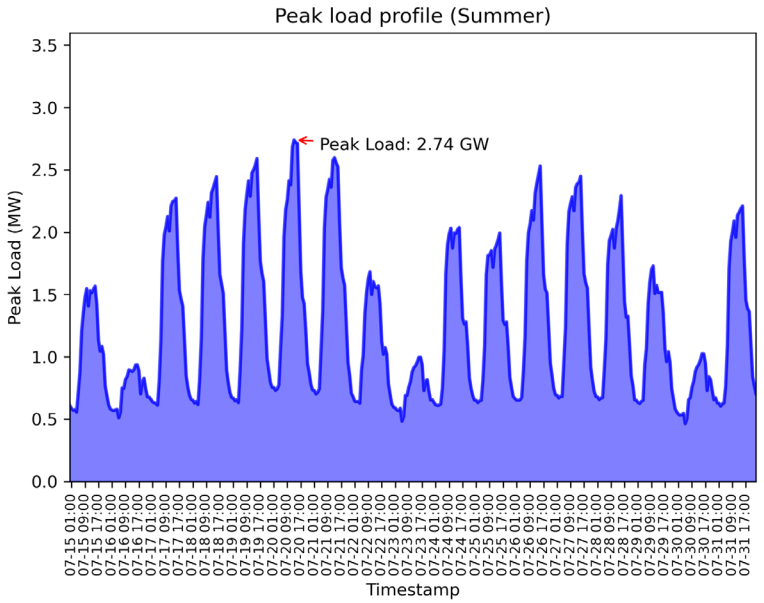
Estimating peak load impacts
Magnitude, temporal/seasonal shifts under each scenario

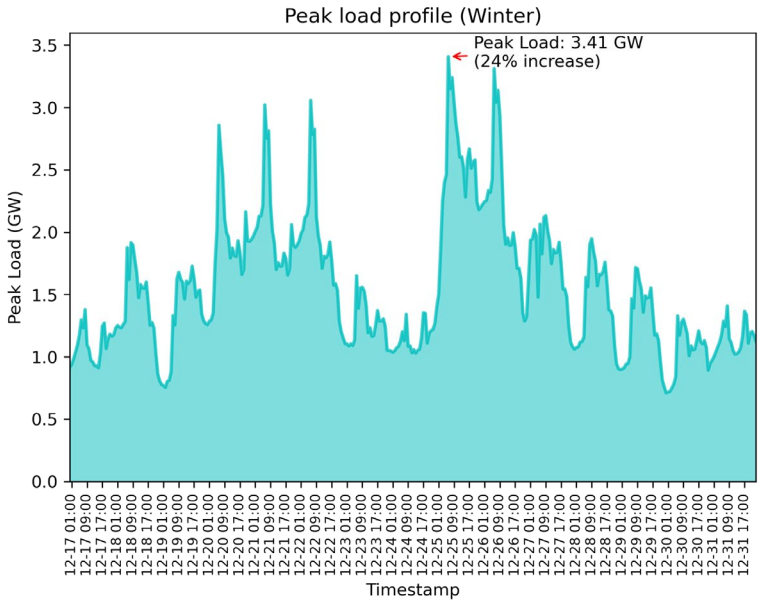
[1] *Site EUI and electric/site ratios of building models calibrated from the EPA dataset.*

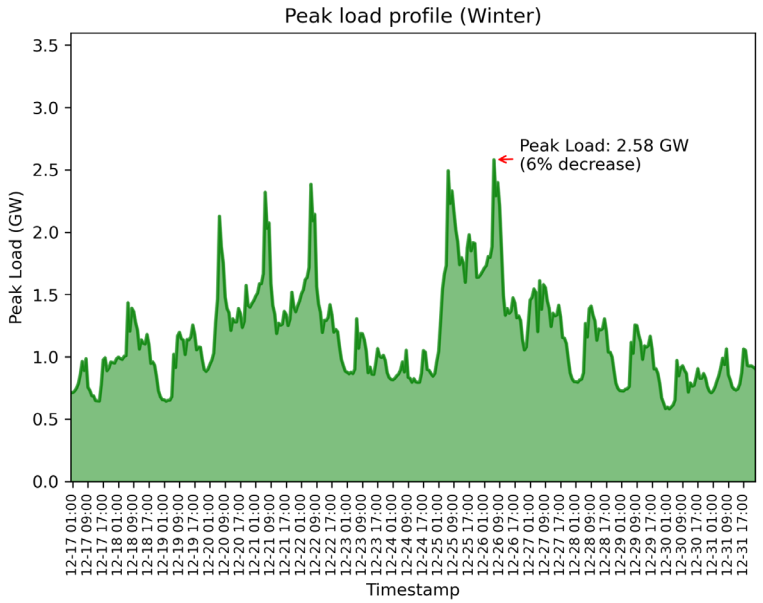
[2] *EUI targets and electrification targets considered from Maryland's BEPS .*

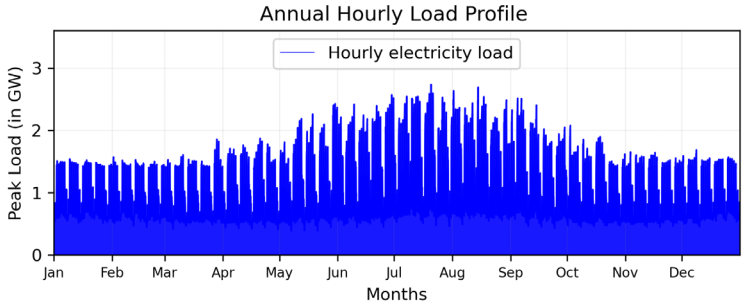
Peak load impacts

- Peak loads: Shift from summer to winter peaks and increase in magnitude for both scenarios.
- EE targets can not only mitigate electrification-induced peak loads but also marginally reduce existing peaks.

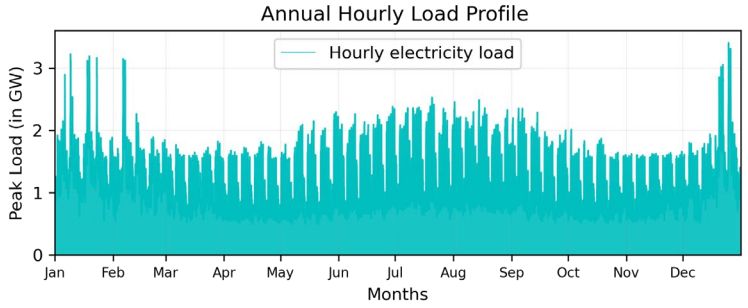




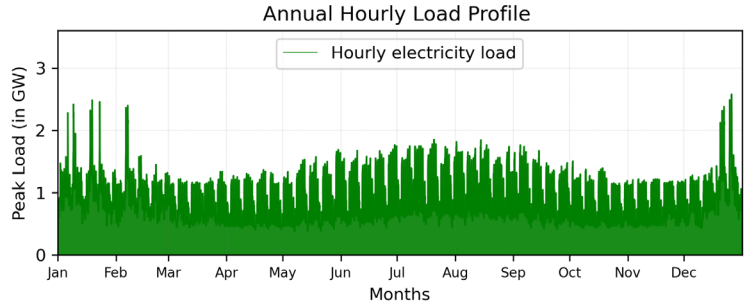




Baseline 2025



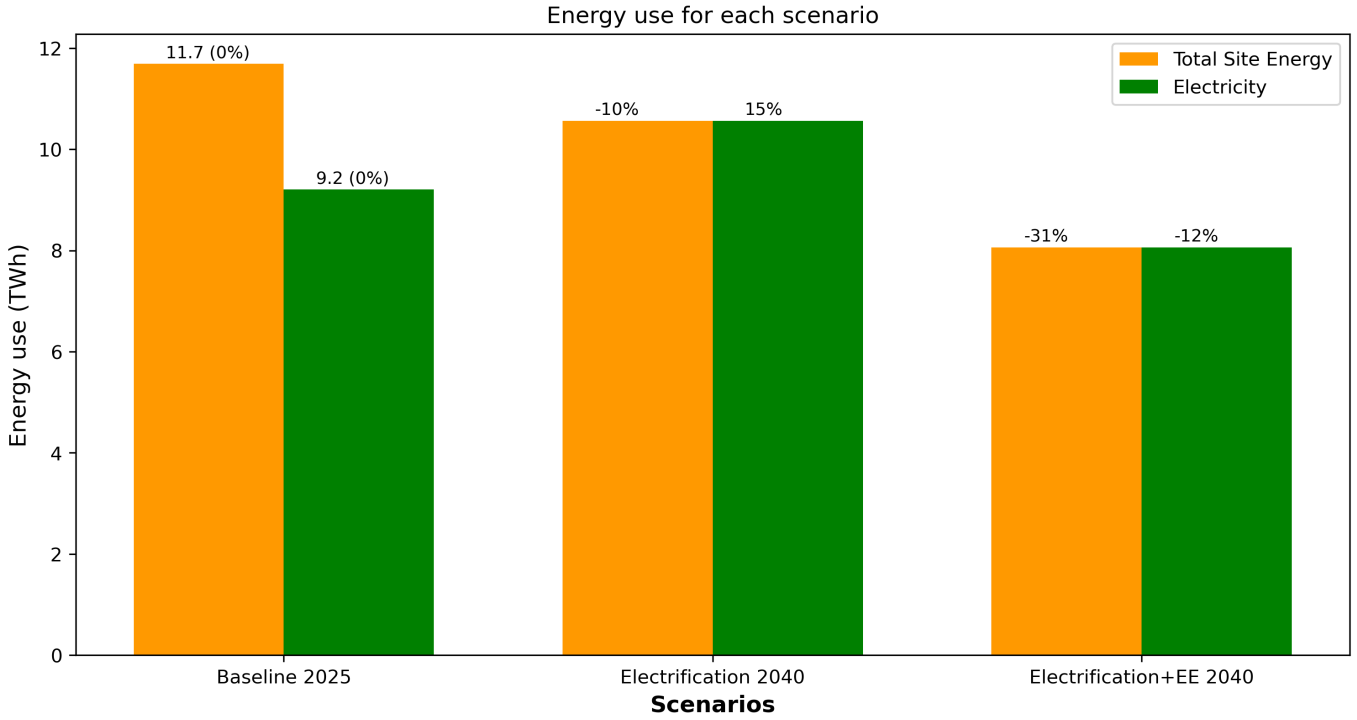
Electrification 2040



Electrification +EE 2040

Energy use impacts

- Site energy use: Implementing EE targets alongside electrification targets can result in a threefold reduction in site energy use compared to electrification-only targets.
- Electricity Use: Parallel EE targets can lead to a 31% decrease in annual site energy and 12% electricity use compared to the 2025 baseline scenario.



Assumptions and boundaries

- Absolute values of the results may vary from ground truth data due to sampling and upscaling errors.
- Impacts of changing climate and extreme weather events have not been accounted for.
- Typical energy efficiency packages considered. The analysis is sensitive to assumptions related to Heat Pump COPs, lighting, and system upgrades.

Appendix E - Two Birds, One Stone - BEPS Overview at Montgomery County Energy Summit – April 15, 2024

Disclaimer: The Maryland Department of the Environment, "the Department", withdrew the December 2023 proposed BEPS regulation and advanced a new draft BEPS regulation in 2024. The Energy Use Intensity (EUI) Standard mentioned in Appendix E was withdrawn from the statewide 2024 draft BEPS regulation. In 2027, the Department intends to adopt the EUI standards proposed in 2023.

Brought to you by:

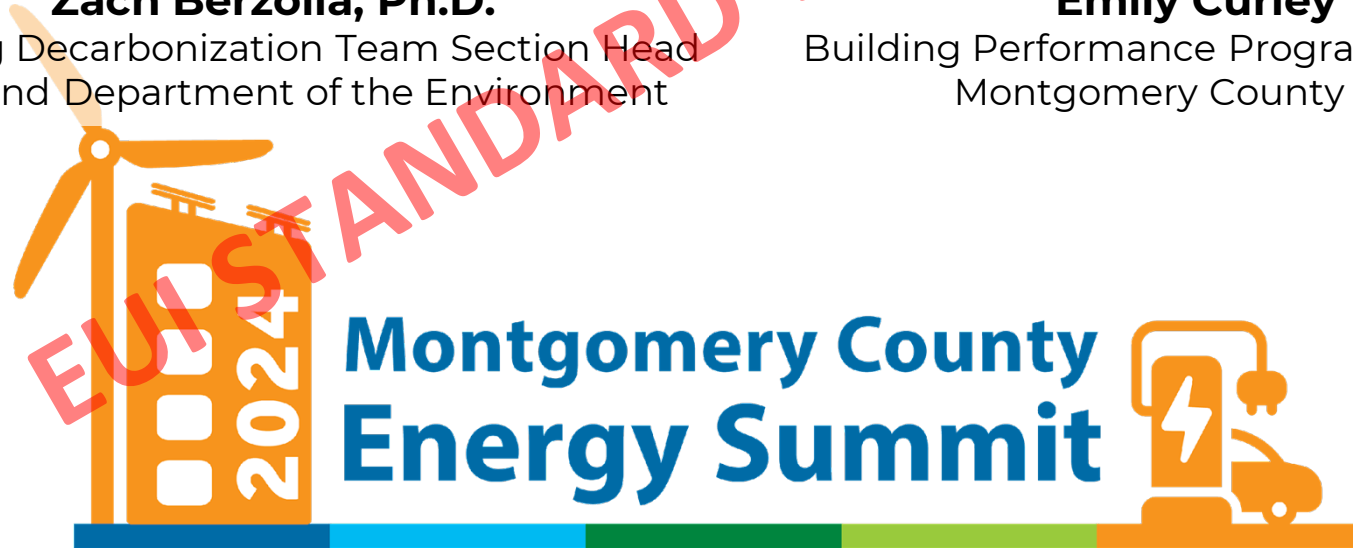
DEPARTMENT OF ENVIRONMENTAL PROTECTION

Two Birds, One Stone: Compliance Strategies for Meeting Building Performance Standards in Montgomery County and Maryland

Presented By:

Zach Berzolla, Ph.D.
Building Decarbonization Team Section Head
Maryland Department of the Environment

Emily Curley
Building Performance Programs Manager
Montgomery County DEP



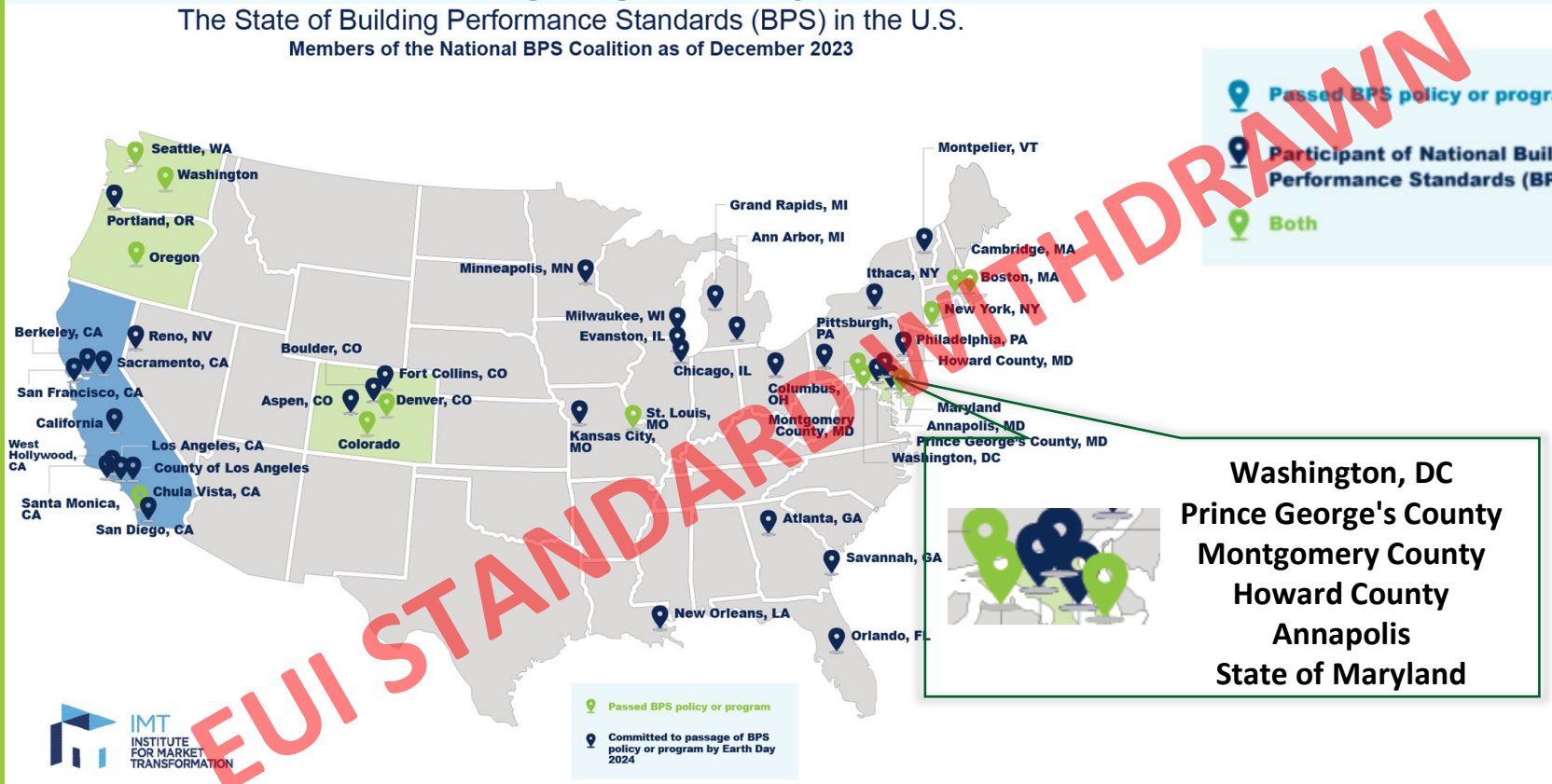
BEPS Background

- Building Energy Performance Standards (BEPS) are emerging in cities, counties, and states across the nation
- The typical goal of a BEPS is to guide large buildings to higher levels of energy efficiency and/or lower levels of greenhouse gas emissions
- Building owners report their metered energy data to the specific jurisdiction generally through Energy Star Portfolio Manager (ESPM)
- Decarbonizing large buildings is an important step toward achieving local, state, national, and global greenhouse gas reduction goals

Agenda

- What are Building Energy Performance Standards (BEPS)
- Who's covered
- Where you are: Benchmarking
- Where you need to go: BEPS Compliance
- What you may need to do:
    - Audits
    - Energy Efficiency
    - Electrification

BEPS Is an Emerging Policy Nationwide



EUI STANDARD WITHDRAWN

Washington, DC
Prince George's County
Montgomery County
Howard County
Annapolis
State of Maryland

MD joined the White House National Building Performance Standards (BPS) Coalition in July 2023

State of MD BEPS Background

- The Climate Solutions Now Act of 2022 (CSNA) requires the Maryland Department of the Environment (MDE) to develop BEPS regulations that cover most large buildings in the state

- BEPS is a key part of achieving Maryland's CSNA required greenhouse gas reduction goals of 60% by 2031, and net-zero economywide by 2045 (compared to 2006 levels)

Relevant BEPS Metrics

Net Direct GHG Emissions

- Measures the sum of all direct greenhouse gas emissions from a covered building
- Units: Kg carbon dioxide equivalent (CO2e) per square foot

Site Energy Use Intensity (EUI)

- Measures the total on-site energy use within a covered building
- Units: Thousand British Thermal Units (kBtu) per square foot

Covered Buildings

A “covered building” exceeds the square footage threshold, excluding parking garage area:

MoCo: **25,000** ft^2, excluding buildings where 50% of the total gross floor area is used for:

- Public assembly in a building without walls
- Industrial uses where the majority of energy is consumed for manufacturing, the generation of electric power or district thermal energy to be consumed offsite, or for other process loads
- Transportation, communications, or utility infrastructure

State of MD: **35,000** ft^2, excluding:

- Historic buildings (individually designated as historic property under law)
- Public or nonpublic elementary and secondary school buildings
- Manufacturing buildings
- Agricultural buildings
- Federal buildings

Montgomery County BEPS Background

- The Building Energy Benchmarking Use Benchmarking and Performance Standards law was passed in 2022

- Requires DEP to develop executive BEPS regulations that “increase the energy efficiency of existing covered buildings and expedite the reduction of greenhouse gas emissions from the building sector”

- Decarbonizing large buildings is an important step toward achieving Montgomery County’s greenhouse gas reduction goals

You Own a Large Building In MoCo, Maryland– What Now?

1. Determine if your building is covered under either regulation by calculating your square footage or evaluating exemption status
    - Your Building < 25,000 ft^2- No compliance necessary with any BEPS
    - 25,000 ft^2 < Your Building > < 35,000 ft^2- Compliance with MoCo BEPS only
    - Your Building > 35,000 ft^2- Compliance with State and MoCo BEPS
2. No matter which category: **start benchmarking!**
3. See where you stand!
4. Identify available funding sources for any retrofits

Available Support

EmPOWER MARYLAND

EmPOWER MD

Utility incentives: staff O&M training, building tune ups, equipment

MARYLAND CLEAN ENERGY CENTER

Montgomery County GreenBank
Your partner for clean energy™

Financing and technical assistance offered by Montgomery County Green Bank and MD Clean Energy Center

MONTGOMERY COUNTY 17 76 MARYLAND

County Tax Incentives

Energy performance property tax credit for new and existing buildings

Maryland Energy Administration

Grants, financing, CHP, EV charging, solar, resiliency hubs

Federal Incentives

Tax credits/ deductions (179-D, ITC, etc.)

MD PACE
Property Assessed Clean Energy Loans

Proposed Requirements for Building Owners

State of Maryland

Annually beginning in 2025

Use EPA's ENERGY STAR Portfolio Manager to track annual energy use and greenhouse gas emissions.

Benchmark

MoCo

Annually by June 1

Use EPA's ENERGY STAR Portfolio Manager to track annual energy use and greenhouse gas emissions.

EUI STANDARD WITHDRAWN

Proposed Requirements for Building Owners

State of Maryland

Annually beginning in 2025

Use EPA's ENERGY STAR Portfolio Manager to track annual energy use and greenhouse gas emissions.

Annually beginning in 2025

Assess net direct GHG emissions and site EUI.

Benchmark | Assess

MoCo

Annually by June 1

Use EPA's ENERGY STAR Portfolio Manager to track annual energy use and greenhouse gas emissions.

Annually following the building's baseline

Determine if changes are needed to reduce EUI to achieve the standards.

EUI STANDARD WITHDRAWN

Proposed Requirements for Building Owners

State of Maryland

Annually beginning in 2025

Use EPA's ENERGY STAR Portfolio Manager to track annual energy use and greenhouse gas emissions.

Annually beginning in 2025

Assess net direct GHG emissions and site EUI.

Annually beginning in 2030

Achieve site EUI. Meet net direct GHG emissions or pay an alternative compliance fee

Alternative Compliance

Benchmark | Assess | Achieve Standards

EUI STANDARD WITHDRAWN

MoCo

Annually by June 1

Use EPA's ENERGY STAR Portfolio Manager to track annual energy use and greenhouse gas emissions.

Annually following the building's baseline

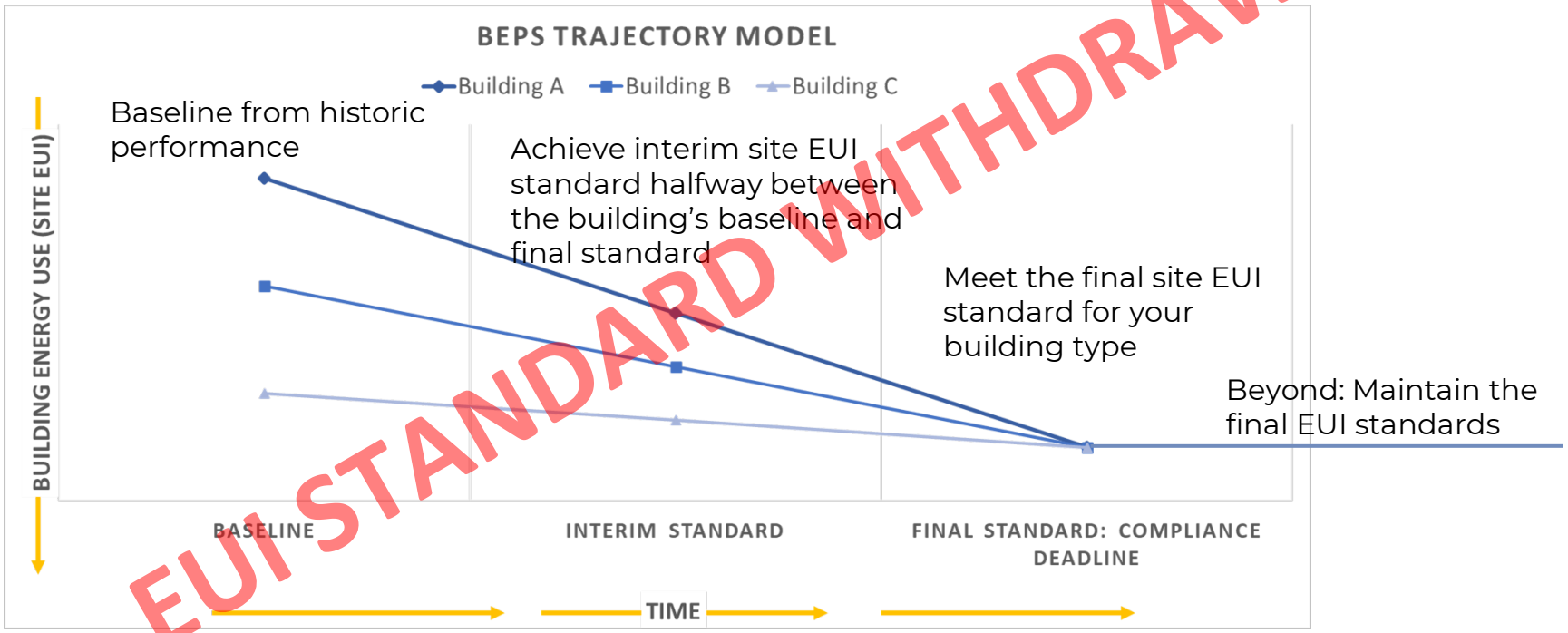
Determine if changes are needed to reduce EUI to achieve the standards.

Interim & Final Standards

Achieve specified levels of site EUI or file a building performance improvement plan. Class A Violation for non-compliance.

County's Performance Standards

Site Energy Use Intensity Standards ("site EUI standards")



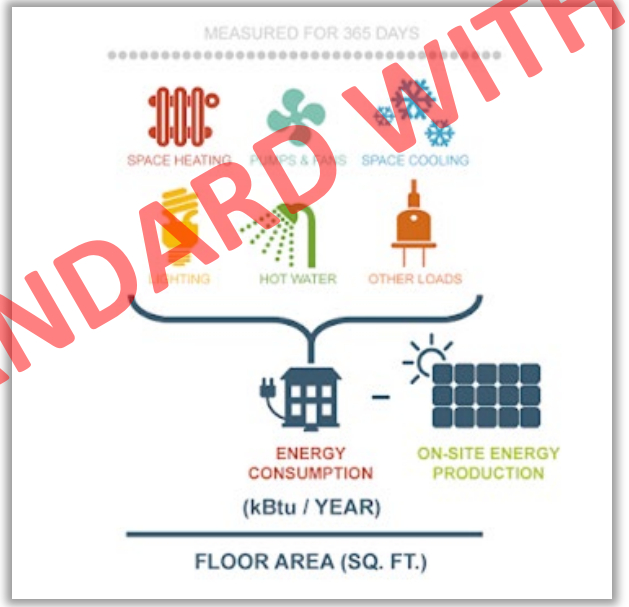
EUI STANDARD WITHDRAWN

Approximately 1 in 3 covered buildings report site EUI at or below the proposed final site EUI standards

County's Performance Standards

Performance Metric: Net Normalized Site EUI

- Building performance for County BEPS measured in "net normalized site EUI." Allows for onsite renewable energy generation to be deducted from the building's site energy use.



Energy Use Intensity (EUI) in Simple Terms. Daniel Overbay. (2017, August 17). https://danieloverbey.blogspot.com/2017/08/energy-use-intensity-eui-in-simple-terms.html

County's Performance Standards

Alternative Compliance Path: Building Performance Improvement Plan

Buildings for which the EUI standards are technically or economically infeasible can file a Building Performance Improvement Plan in lieu of meeting the site EUI target

- ASHRAE Level 2 audit
- Retrofit plan
- Annual reporting on implemented projects, per the plan

County's Performance Deadlines

Building Group	First Benchmarking Deadline	Baseline Years	Interim Standard	Final Standard
County County-owned buildings 50k+	June 1, 2015	2018-2022	12/31/28	12/31/33
Group 1: Non-Residential >250k gsf	June 1, 2016	2018-2022	12/31/28	12/31/33
Group 2: Non-Residential 50-250k gsf	June 1, 2017	2018-2022	12/31/28	12/31/33
Group 3: Non-Residential 25 – 50k	June 1, 2023	2022-2024	12/31/30	12/31/35
Group 4: Residential >250k gsf	June 1, 2023	2022-2024	12/31/30	12/31/35
Group 5: Residential 25-250k gsf	June 1, 2024	2023-2025	12/31/31	12/31/36

EUI STANDARD WITHDRAWN

17

Dual Compliance: Retrofit Strategies

- Reduce your Site Energy Use Intensity (EUI)!
- Benchmarking
- Energy Audits
- Energy Efficiency Retrofits
- Electrification Measures

EUI STANDARD WITHDRAWN

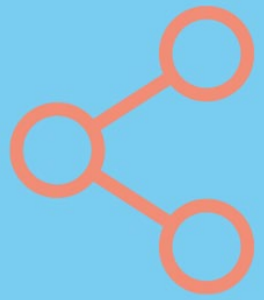
Dual Compliance: Benchmarking

CREATE AN ESPM ACCOUNT AND TAKE FREE TRAININGS

Energy Star Portfolio Manager is the chosen energy benchmarking tool for compliance with Maryland's BEPS. Make a free account and start familiarizing yourself with the tool and its available trainings

LINK YOUR BUILDING WITH YOUR UTILITY

The majority of your energy data will be provided by a utility. In addition to creating your ESPM account, research your utility providers' data sharing process to make sure the data you receive is timely and accurate



DETERMINE YOUR BUILDING CHARACTERISTICS

Set yourself up for benchmarking success by ensuring your building square footage and utility meter information is accurate

PLAN AHEAD

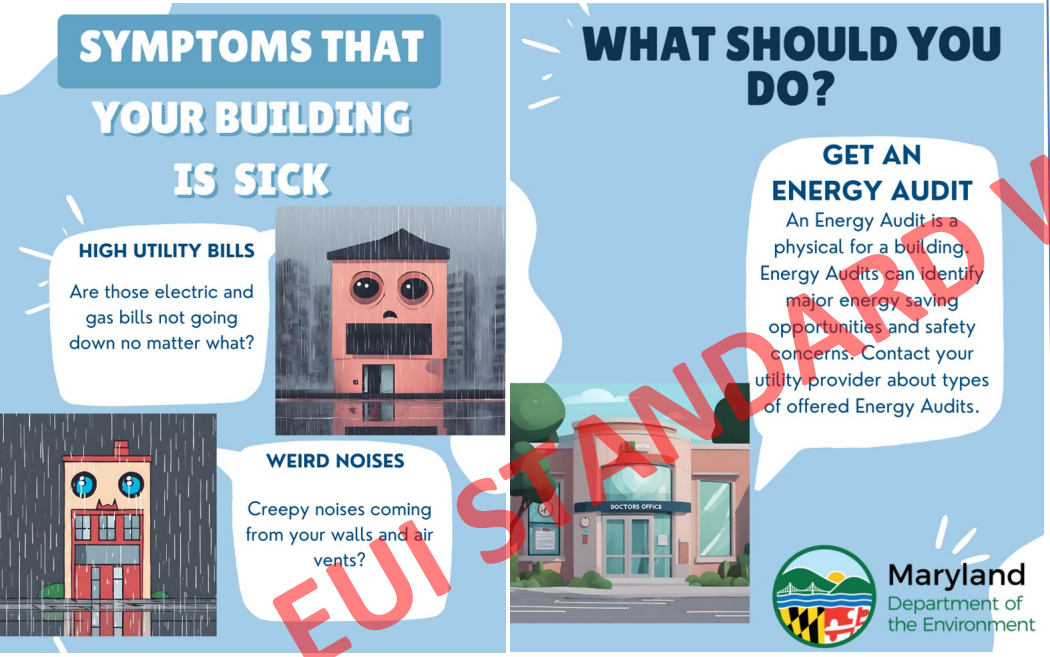
Once you have access to your data in ESPM, determine how your building needs to perform to comply with BEPS and make a plan to get there

Exempted Consumption

- **Both MoCo and State**: EV charging is excluded
- **State Only**: Energy use associated with food service facilities is excluded

EUI STANDARD WITHDRAWN

Dual Compliance: Energy Audits



Most utility providers, like the ones below, offer ratepayer funded energy audits to customers. Research your options today and get your building back to health!

pepco℠
AN EXELON COMPANY

bge℠
AN EXELON COMPANY

SMECO℠
Southern Maryland Electric Cooperative

PotomacEdison™
A FirstEnergy Company

County Benchmarking/BEPS Resources

Montgomery County Green Bank Technical Assistance

- Connection with contractor
- Subsidy to offset cost of benchmarking services
  - Benchmarking
  - Gross floor area assessment
  - Data verification

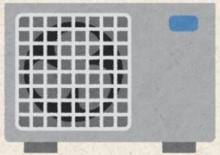
- Subsidy to offset cost of building studies
  - Energy audits
  - Electrification feasibility
  - Renewable energy feasibility
  - EV infrastructure feasibility

Dual Compliance: Energy Efficiency

LIGHTING

Upgrade all lighting to LED's

Reduce lighting power density



HVAC

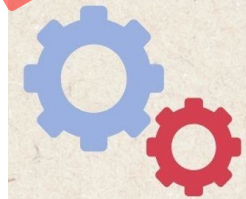
Install residential controls

Adjust HVAC schedules

BUILDING ENVELOPE

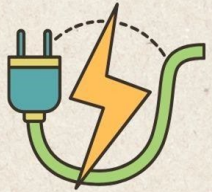
Reduce envelope leakage

Improve Insulation



RETRO - COMMISSIONING

Conduct stage 1, 2, and 3 commissioning



PLUG LOAD CONTROL

Smart plug load management tools

Dual Compliance: Electrification

1 MULTIFAMILY

- Air to Water, Ground Source, Packaged Terminal or Air Source Heat Pump, and VRF
- 240V or Central Heat Pump Water Heater
- Heat Pump or Condenser Dryer
- Induction Range or Hob

EUI STANDARD WITHDRAWN

The building Electrification Technology Roadmap. New Buildings Institute. (2023, April 20). https://newbuildings.org/resource/the-building-electrification-technology-roadmap/

Dual Compliance: Electrification

2 SMALL COMMERCIAL

Heat Pump (Air to Water, Ground Source, Packaged Terminal, Air Source) and VRF

Point of Use, Distributed Tankless

CO_2 Laundry System

Induction Range or Hob,
Electric Oven/Fryer,
Combo Oven, or Chain Broiler

The building Electrification Technology Roadmap. New Buildings Institute. (2023, April 20). https://newbuildings.org/resource/the-building-electrification-technology-roadmap/

Dual Compliance: Electrification

3 LARGE COMMERCIAL

Heat Pump (Air to Water, Ground Source, Air Source), VRF, and HRC

Point of Use, Distributed Tankless

CO2 Laundry System

Induction Range or Hob, Electric Oven/Fryer, Combo Oven, or Chain Broiler

The building Electrification Technology Roadmap. New Buildings Institute. (2023, April 20). https://newbuildings.org/resource/the-building-electrification-technology-roadmap/

Dual Compliance: Electrification

4 HIGHER EDUCATION

Heat Pumps (Air to Water, Ground Source, Packaged Terminal, Air Source), VRF, and HRC

240V or Central Heat Pump Water Heater, and Point of Use Distributed Tankless

CO2 Laundry System

Induction Range or Hob, Electric Oven/Fryer, Combo Oven, or Chain Broiler

The building Electrification Technology Roadmap. New Buildings Institute. (2023, April 20). https://newbuildings.org/resource/the-building-electrification-technology-roadmap/

Planned Stakeholder Support

- 2024 planned stakeholder working groups to develop additional BEPS implementation support materials:
  - Benchmarking and report submission
  - Third party verification
  - Campus compliance
  - Affordable housing providers
  - Unique building types
- MDE will conduct outreach to covered building owners and provide training materials to assist them in meeting the first benchmarking requirement

County DEP Resources

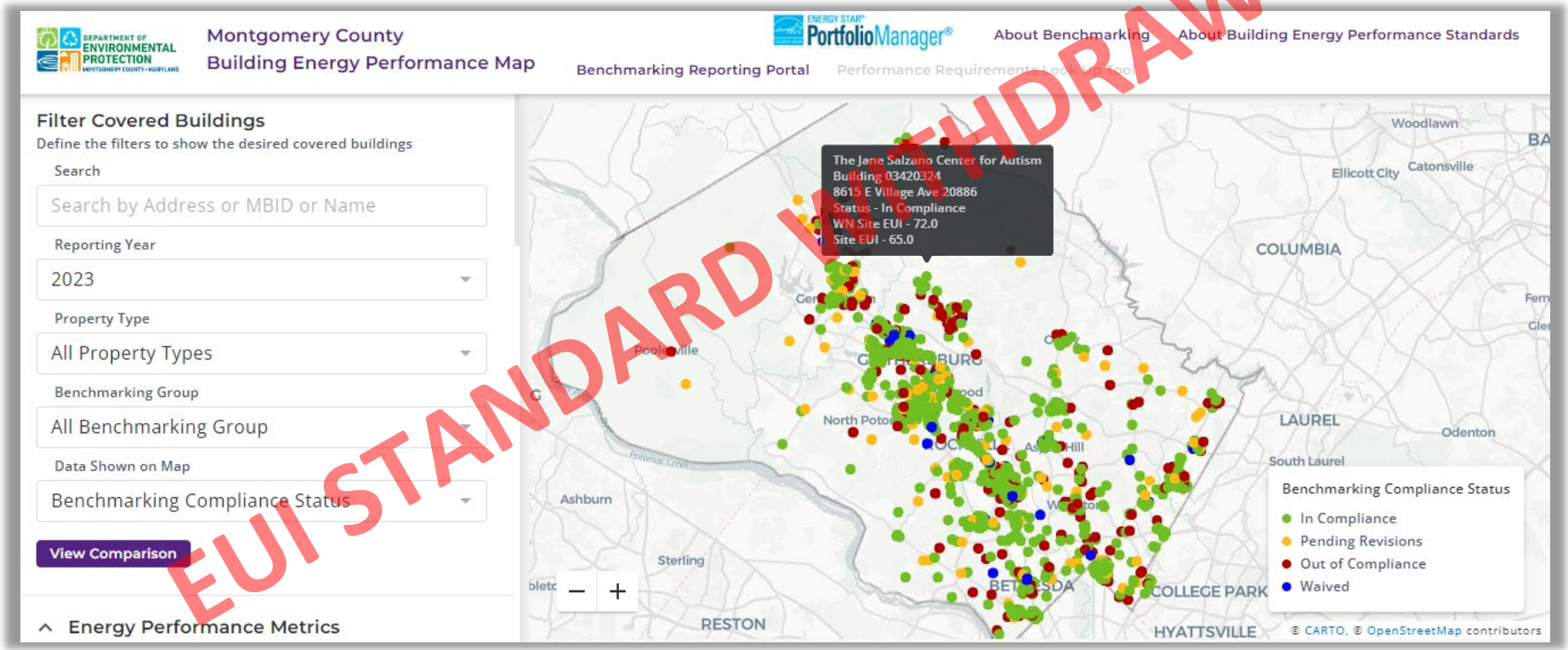
Energy Benchmarking Reports Due June 3, 2024

- Commercial and multifamily buildings 25,000+ gross square feet
- DEP Helpdesk
- Green Bank Technical Assistance (benchmarking, data verification, gross floor area verification, energy audits and other building studies)

New Public Data Access Tools in Development

- Benchmarking Map
- Target Look-Up Tool

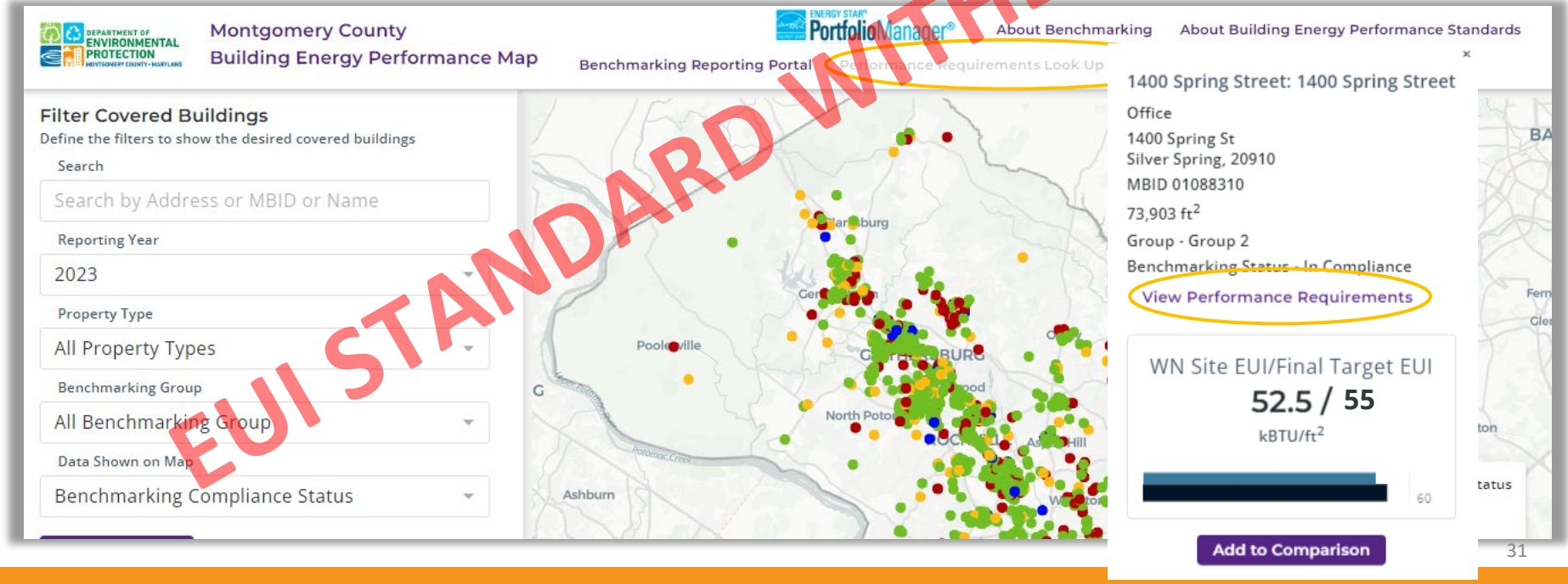
Coming soon! Energy Benchmarking Map



EUI STANDARD WITHDRAWN

Coming soon! Target Look-Up Tool

- Site EUI standards still pending Council approval of BEPS regulations
- Will provide baselines, latest performance (including onsite renewable energy credit), and "projected" interim and final site EUI standards based on proposed regulations



EUI STANDARD WITHDRAWN

Questions?

Maryland Department of the Environment
Building Decarb Team

beps.mde@maryland.gov
410-537-3183

MDE BEPS Website

MDE BEPS Email List

Montgomery County Department of Environmental Protection

Energy@MontgomeryCountyMD.gov
240-777-7707

Benchmarking Site

BEPS Site

Appendix F - Electric and Gas Company Reporting Requirements Working Group Session 1 – June 3, 2024 (MDE slide deck)

Maryland
Department of
the Environment

MD Building Energy Performance Standards (BEPS)

Electric and Gas Company Reporting Requirements Working Group

Session 1 of 3 - 6/3/2024 @ 1pm

Zach Berzolla, Ph.D.
MDE *Building Decarbonization Section Head*

Session 1 Agenda

- Welcome & Introductions
- BEPS Background and Status Update
  - Building Owner Requirements
  - Electric & Gas Company Reporting Requirements
  - Reporting Timeline
- U.S. Environmental Protection Agency (EPA) ENERGY STAR Portfolio Manager Best Practices
- Review BEPS Requirements Checklist
- Next Steps and Discussion
- Feedback and Q&A

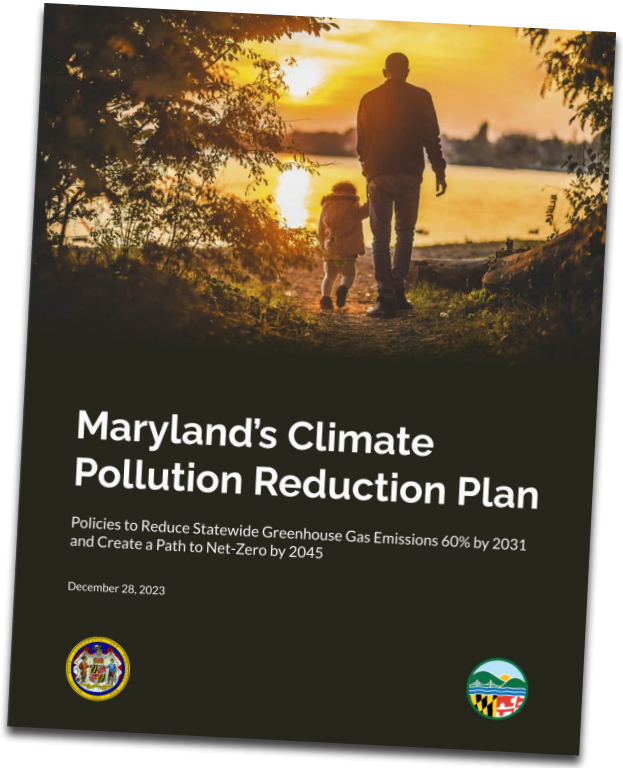
BEPS Working Group Purpose

- Review and prepare for the Maryland Building Energy Performance Standards (BEPS) Reporting Requirements of Electric and Gas Companies, as required by the Climate Solutions Now Act (CSNA) of 2022

- Inform and refine processes in the technical memorandum, “Technical Guidance and Calculation Methodologies to Comply with Building Energy Performance Standards;” develop supplemental resources such as white papers and instructional tools to support BEPS implementation and guidelines

BEPS Policy in Maryland

- The Climate Solutions Now Act of 2022 (CSNA) requires the Maryland Department of the Environment (MDE) to develop BEPS regulations that cover most large buildings in the state
- BEPS is a key part of fulfilling Maryland's CSNA required greenhouse gas reduction goals and subsequent Climate Pollution Reduction Plan
- **GOALS:** 60% statewide ghg reduction by 2031, and net-zero by 2045 (compared to 2006 levels)



Read the plan @ **mde.maryland.gov**

BEPS Current Status

MDE intends to adopt a Building Energy Performance Standards (BEPS) regulation in 2024. Building owners should prepare to report benchmarking data to MDE by **June 1, 2025**. After using the benchmarking tool, building owners should determine if their buildings already achieve the proposed standards or if work is needed to achieve the proposed standards.

BEPS Covered Buildings

- 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

- Exempt buildings:
  - Historic buildings (individually designated as historic property under law);
  - Public or nonpublic elementary and secondary school buildings;
  - Manufacturing buildings;
  - Agricultural buildings; and
  - Federally-owned buildings

Building Owner Reporting Requirements

- Starting in 2025, annually collect previous calendar year whole building energy data for owned, covered building(s) and submit to MDE through Energy Star Portfolio Manager (ESPM) by June 1st

- Data must be submitted to MDE sorted by month and fuel type. Building owners will exclude energy consumption for certain end uses

- Use ESPM's data quality checker prior to submission and in certain years, have the data verified by a third party verifier

- Retain 5 years of historical data

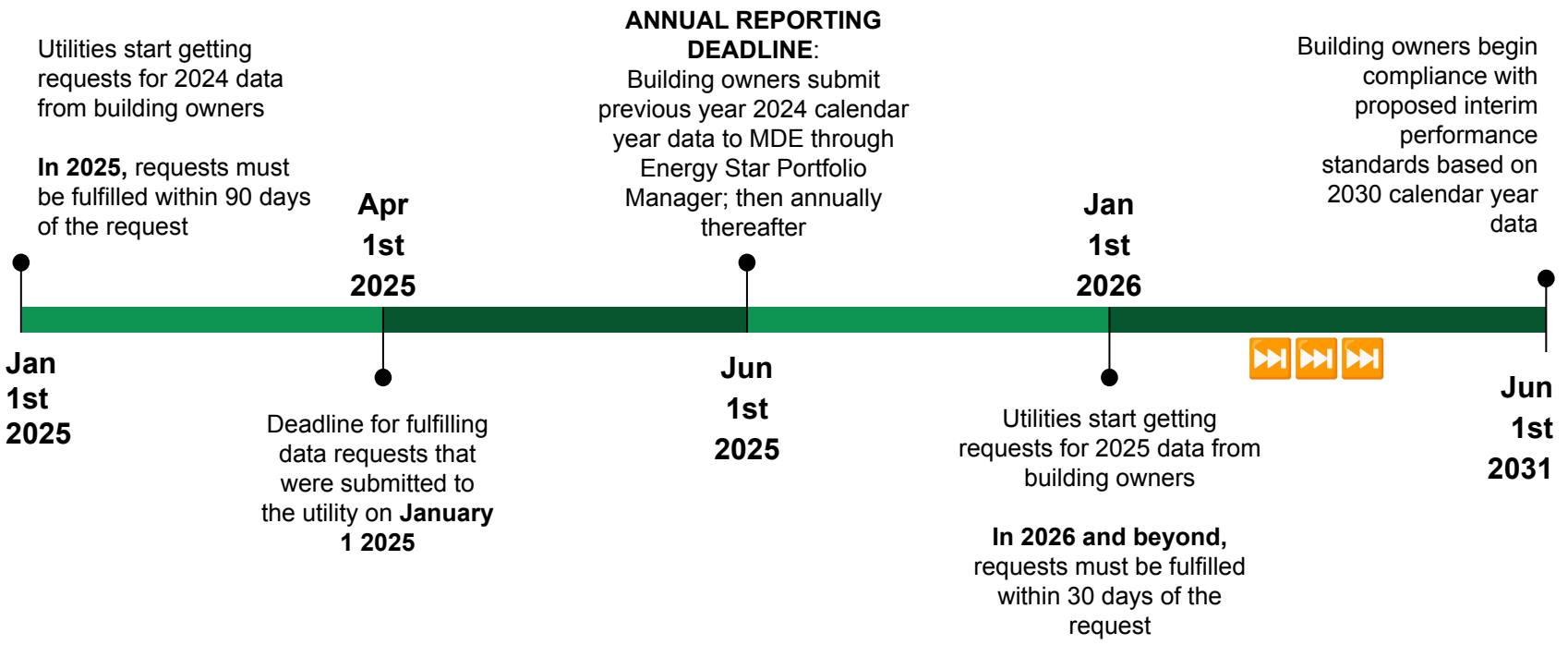
Procedures for Building Owners

- Notification
  - Mailed
  - Unique building identifier for each building
- Exemption Requests
  - Individually evaluated
- Create a Portfolio Manager Account
  - Add all covered properties and their characteristics
- Request Utility Data
- Receive Aggregated Data
- Review Data
- Share Properties with MDE via Web Services

Electric & Gas Company Reporting Requirements Effective January 1, 2025

- **Data Retention**
  - Maintain whole building energy data for no less than 5 years
- **Data Provision**
  - Provide annual whole building energy data (gross), aggregated on a monthly basis and by fuel type
  - On request within 90 days in 2025 and 30 days in 2026 and beyond
- **Aggregation Threshold**
  - ≥ 5 tenants: no authorization needed
  - < 5 tenants: written or electronic consent from each tenant (can be in lease)
- **Data Completeness and Accuracy**
  - Ensure all meters are aggregated and process is developed to confirm meters with building owner
  - Any meter/data errors must be proactively updated in delivery mechanism
- **Mechanism for Data Delivery**
  - Investor owned: > 40k customers must provide data through ESPM Web Services
  - All others: provide data via ESPM Web Services or a pre-defined spreadsheet format

Electric & Gas Co. Reporting Timeline



Resources for Building Owners

- BEPS Website
  - Background
  - Quick facts
  - Potentially covered buildings list

- BEPS Management System (under development)
  - Deadline reminders
  - Training
  - Exemption applications
  - Non-compliance notices

- MEA Clean Buildings Hub (under development)
  - One-stop shop for resources
  - Leverage existing resources + programs

U.S. Environmental Protection Agency (EPA)
ENERGY STAR Team

MDE Requirements Checklist

PROCESS	BEPS REQUIREMENTS	ENERGY STAR BEST PRACTICES	CURRENT STATUS
Data Retention			
Data Provision			
Aggregation Threshold			Submit responses to MDE by July 1
Data Completeness & Accuracy			
Mechanism for Data Delivery			

Next Steps and Discussion

- Fill out the checklist
- Contact Energy Star with technical questions: statelocal@energystar.gov
- Mark your calendars: next session on July 11th @ 2pm

Questions?

Building Decarbonization Team

beps.mde@maryland.gov

410-537-3183

BEPS Website

BEPS Email List

Appendix G - Electric and Gas Company Reporting Requirements Working Group Session 1 – June 3, 2024 (ENERGY STAR slide deck)

Best Practices for Utility Data Access Solutions

Presentation for Maryland Utilities

June 3, 2024

United States Environmental Protection Agency

Agenda

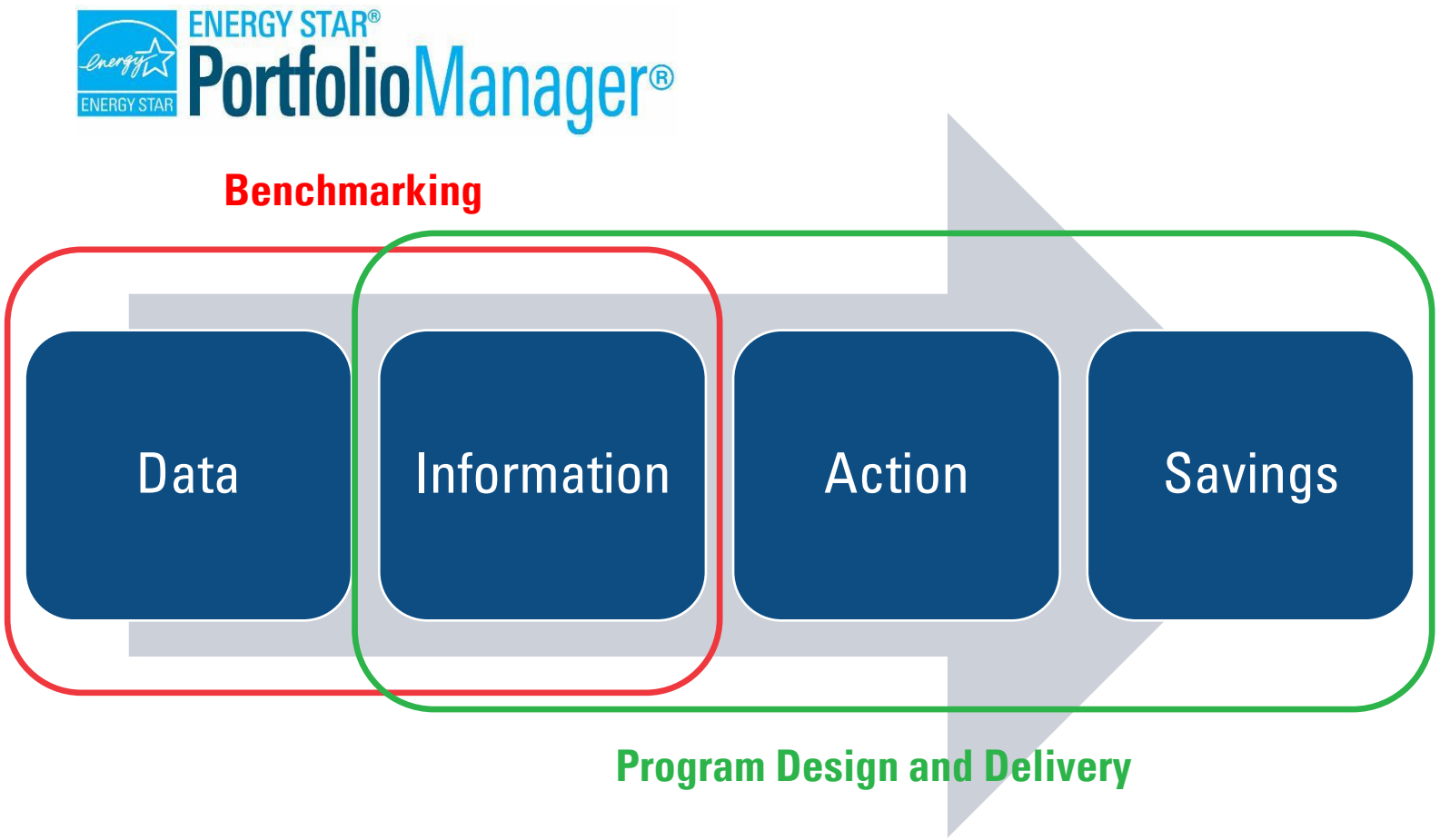
1. Introductions
2. Utility Data Access Solutions and Benchmarking
3. Review of ENERGY STAR Guidance and Best Practices
4. Wrap-up and Q&A (time permitting)

On Today's Call

- Brendan Hall, EPA, ENERGY STAR Buildings Branch
- Katy Hatcher, EPA, ENERGY STAR Buildings Branch
- Tracy Narel, EPA, ENERGY STAR Commercial & Industrial Branch
- Andrew Schulte, ICF (working in support of ENERGY STAR)

Utility Data Access Solutions and Benchmarking

Benchmarking is a Foundational Activity



What is Portfolio Manager?

Management Tool

- Assess whole building energy and water consumption
- Track green power purchase
- Share/report data with others
- Track changes in energy, water, greenhouse gas emissions, and cost over time
- Create custom reports
- Apply for ENERGY STAR certification

What is Portfolio Manager? (cont'd.)

Hundreds of metrics, including:

Energy use
Source, site, weather normalized, demand

Water use
Water use intensity, Water Score (for Multifamily)

Waste & Materials
Waste intensity, diversion rate

1-100 ENERGY STAR score

GHG emissions
Indirect, direct, total, avoided

What Do Building Owners Need to Benchmark?

Property use details	• Specific details differ by property type • Includes information such as square footage, number of operating hours, number of occupants • **Typically information that can be gathered by the property owner/manager**
Whole-building energy consumption data	• Minimum of 12 complete, consecutive months of data for each fuel type consumed to operate the property • Can be entered meter-by-meter, or as an aggregate sum by fuel type • **May be directly accessible by property owner/manager, but not always**

Building Owners May Not Have Complete Access to Energy Data

- Most common in **multi-tenant buildings.**
  - Office buildings
  - Multifamily properties
  - Warehouses
  - Certain Retail configurations

- Owner/manager may only receive bills for common areas.

- Need complete energy consumption data (tenant-paid and owner-paid) to benchmark.

Why Is This An Issue?

- Building owner/manager is typically the party that is benchmarking
  - In the case of state/local mandates, the owner is the entity required to comply.

- Without whole-building consumption data, a building owner may:
  - Risk non-compliance with a state or local benchmarking ordinance;
  - Miss the opportunity to understand and improve the energy performance of their property (including participation in utility DSM offerings);
  - Miss the opportunity to participate in voluntary programs that require benchmarking (e.g., energy reduction competitions); and/or
  - Have a harder time compiling the information required to access federal incentives (e.g., home energy rebates for multifamily owners under IRA).

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The Most Common Solution: Aggregate Whole-Building Data

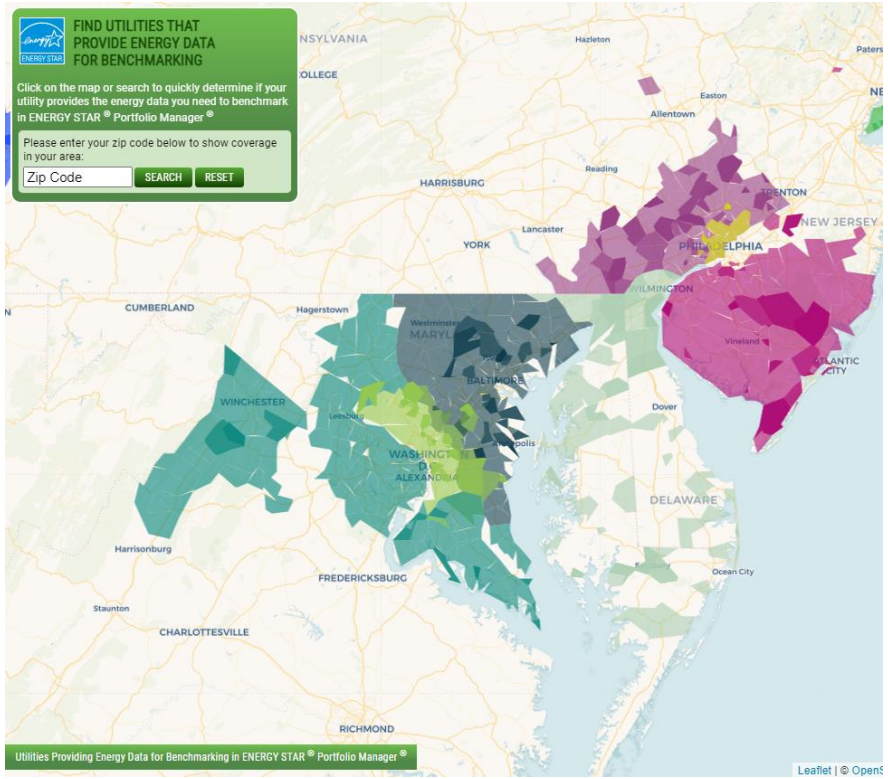
- Many utilities (and their regulators) have determined that "aggregate data" (above a certain minimum number of tenants/accounts) is no longer sensitive customer information.
- Therefore, for properties that meet the aggregation threshold, aggregate data can be provided directly to the building owner/manager upon request, without the need for tenant-level authorization.
- Taking this approach introduces a new technical challenge: meter-to-building "mapping."
  - Most utilities do not have a specified database element for "properties," so creative approaches may be needed.

Key Process Steps for Aggregating Data

- Understand the physical location and boundaries of the property for which energy consumption data is being requested.
- Identify all the meter/service points associated with that location.
- Confirm the accuracy and completeness of this meter list with the data requestor.
- Establish an association in the utility data system between the multiple "real-world" meter/service points and the "virtual" record being used to capture aggregate data.
- Maintain accurate meter-to-building mapping over time, to ensure that the aggregate consumption value reflects all the meters that track energy consumption during a given period.

Current Status of Utility Data Access in Maryland

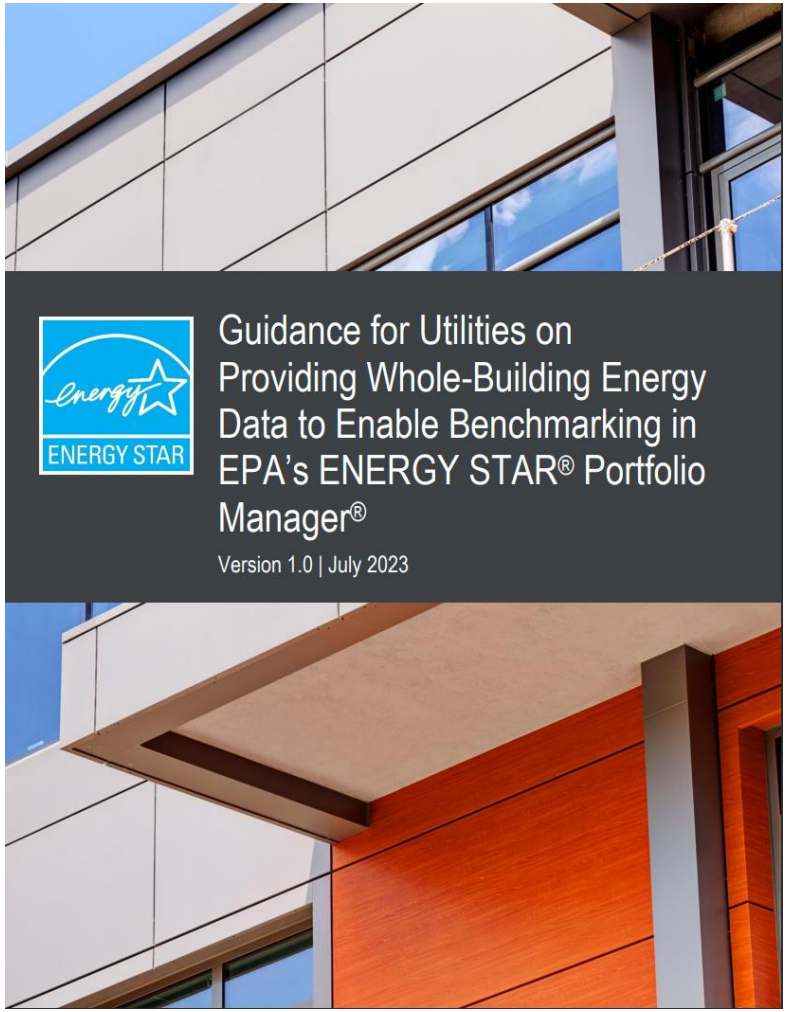
State	Utility Name	Aggregate Whole-Building Data? [1]	Multifamily Included?	Format	Contact Information
MD	Baltimore Gas & Electric	Yes (5)	Yes	Spreadsheet	BGE Project Coordinator, (410) 290-1202 Click here for more information
MD	Delmarva Power	Yes (5)	Yes	Web Services	support@exelonenergyusagedata.com Click here for more information
MD	Pepco	Yes (5)	Yes	Web Services	support@exelonenergyusagedata.com Click here for more information
MD	Washington Gas	Yes (5)	Yes	Web Services	aggregateddata@washgas.com Click here for more information

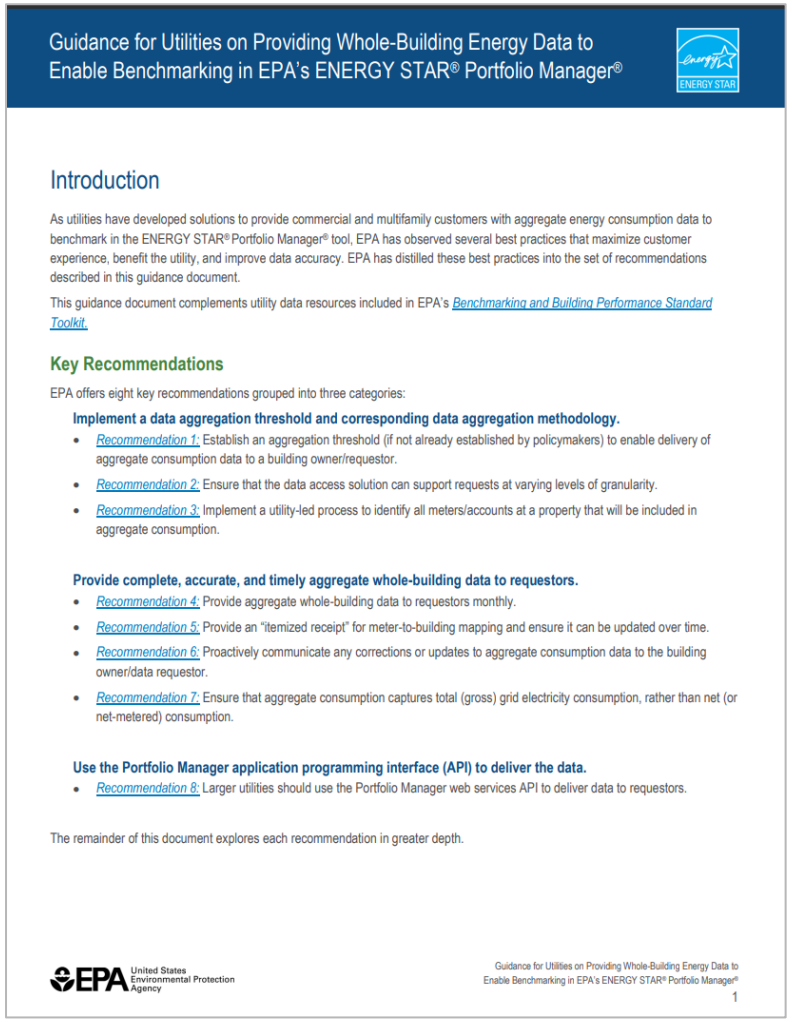


Map and fact sheet available at: **energystar.gov/utilitydata**

Best Practices for Utility Data Access Solutions

ENERGY STAR Guidance





Guidance for Utilities on Providing Whole-Building Energy Data to Enable Benchmarking in EPA's ENERGY STAR® Portfolio Manager®

ENERGY STAR

Introduction

As utilities have developed solutions to provide commercial and multifamily customers with aggregate energy consumption data to benchmark in the ENERGY STAR® Portfolio Manager® tool, EPA has observed several best practices that maximize customer experience, benefit the utility, and improve data accuracy. EPA has distilled these best practices into the set of recommendations described in this guidance document.

This guidance document complements utility data resources included in EPA's *Benchmarking and Building Performance Standard Toolkit.*

Key Recommendations

EPA offers eight key recommendations grouped into three categories:

Implement a data aggregation threshold and corresponding data aggregation methodology.

- *Recommendation 1:* Establish an aggregation threshold (if not already established by policymakers) to enable delivery of aggregate consumption data to a building owner/requestor.
- *Recommendation 2:* Ensure that the data access solution can support requests at varying levels of granularity.
- *Recommendation 3:* Implement a utility-led process to identify all meters/accounts at a property that will be included in aggregate consumption.

Provide complete, accurate, and timely aggregate whole-building data to requestors.

- *Recommendation 4:* Provide aggregate whole-building data to requestors monthly.
- *Recommendation 5:* Provide an "itemized receipt" for meter-to-building mapping and ensure it can be updated over time.
- *Recommendation 6:* Proactively communicate any corrections or updates to aggregate consumption data to the building owner/data requestor.
- *Recommendation 7:* Ensure that aggregate consumption captures total (gross) grid electricity consumption, rather than net (or net-metered) consumption.

Use the Portfolio Manager application programming interface (API) to deliver the data.

- *Recommendation 8:* Larger utilities should use the Portfolio Manager web services API to deliver data to requestors.

The remainder of this document explores each recommendation in greater depth.

EPA United States Environmental Protection Agency

[Guidance for Utilities on Providing Whole-Building Energy Data to Enable Benchmarking in ENERGY STAR Portfolio Manager®]

Overview of Recommendations

Implement a data aggregation threshold and corresponding data aggregation methodology

1. Establish an aggregation threshold.
2. Ensure that the data access solution can support requests at varying levels of granularity.
3. Implement a utility-led process to identify all meters/accounts at the property that will be included in aggregate consumption.

Overview of Recommendations (cont'd.)

Provide complete, accurate, and timely aggregate whole-building data to requestors

4. Provide aggregate whole-building data to requestors monthly.
5. Provide an "itemized receipt" for meter-to-building mapping and ensure it can be updated over time.
6. Proactively communicate any corrections or updates to aggregate consumption data.
7. Ensure that aggregate consumption captures total (gross) grid electricity consumption.

Overview of Recommendations (cont'd.)

Use the Portfolio Manager application programming interface (API) to deliver the data

8. Larger utilities should use the Portfolio Manager web services API to deliver data to requestors.

1.) Establish an Aggregation Threshold

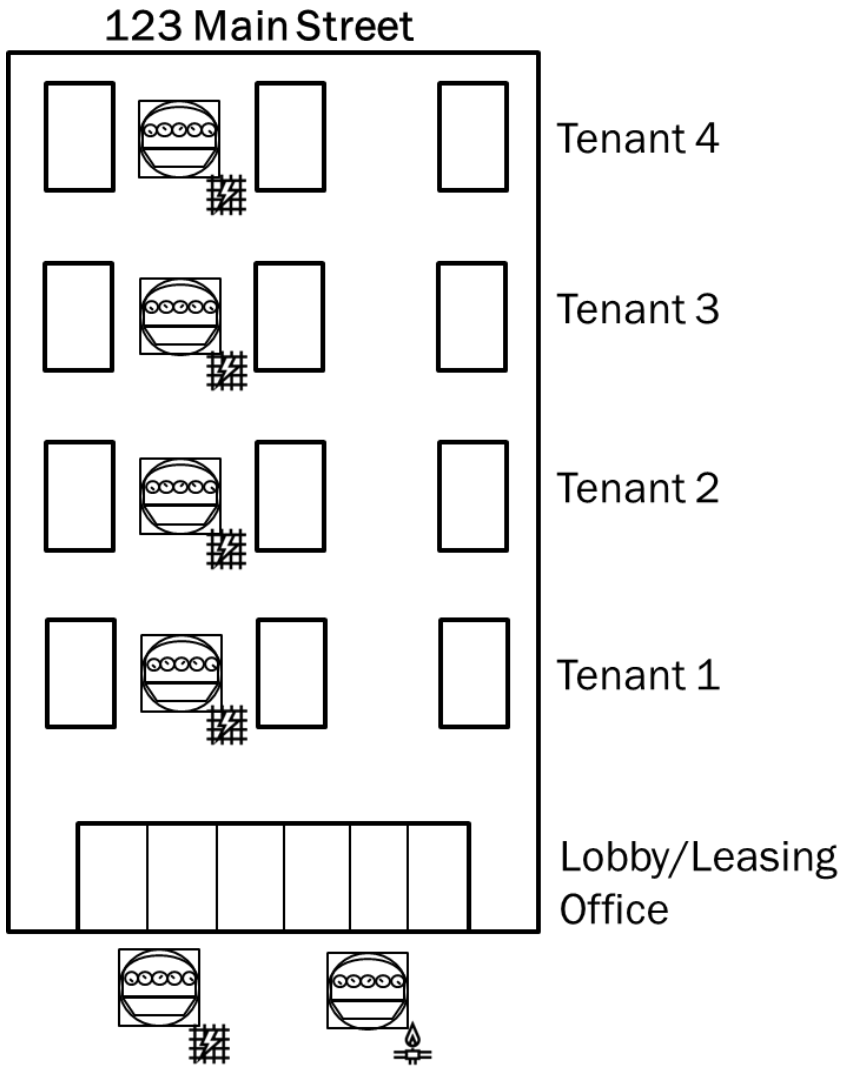
- Already specified!
  - Per MD BEPS, the aggregation threshold is “five or more tenants.”
  - Includes language pertaining to tenant authorization when the aggregation is not met (4 tenants or fewer).
- Additional best practices
  - Consider a streamlined request process for properties at which the building owner/manager is the only customer/tenant.
  - Consider supporting additional options for building owners to request and receive individual tenant-level consumption data when tenant-level authorization is already in place (e.g., via lease language).

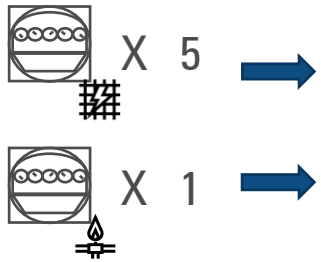
2.) Support Requests at Varying Levels of Granularity

- Some property types are generally benchmarked at the single-building level (e.g., offices).
- Other property types can be benchmarked at the property level, even when they consist of multiple "child" buildings (e.g., multifamily, K-12 schools, hospitals, hotels, senior care facilities).
- Additional best practice
  - Have a process for responding to requests for whole-building data in two aggregate "bins" – one for owner-paid consumption, and one for tenant-paid consumption.
  - Likely to be more common as building owners seek to account for "Scope 3" emissions.

ENERGY STAR

Data Request for a Single-Building Property





Meters - Used to Compute Metrics (2)

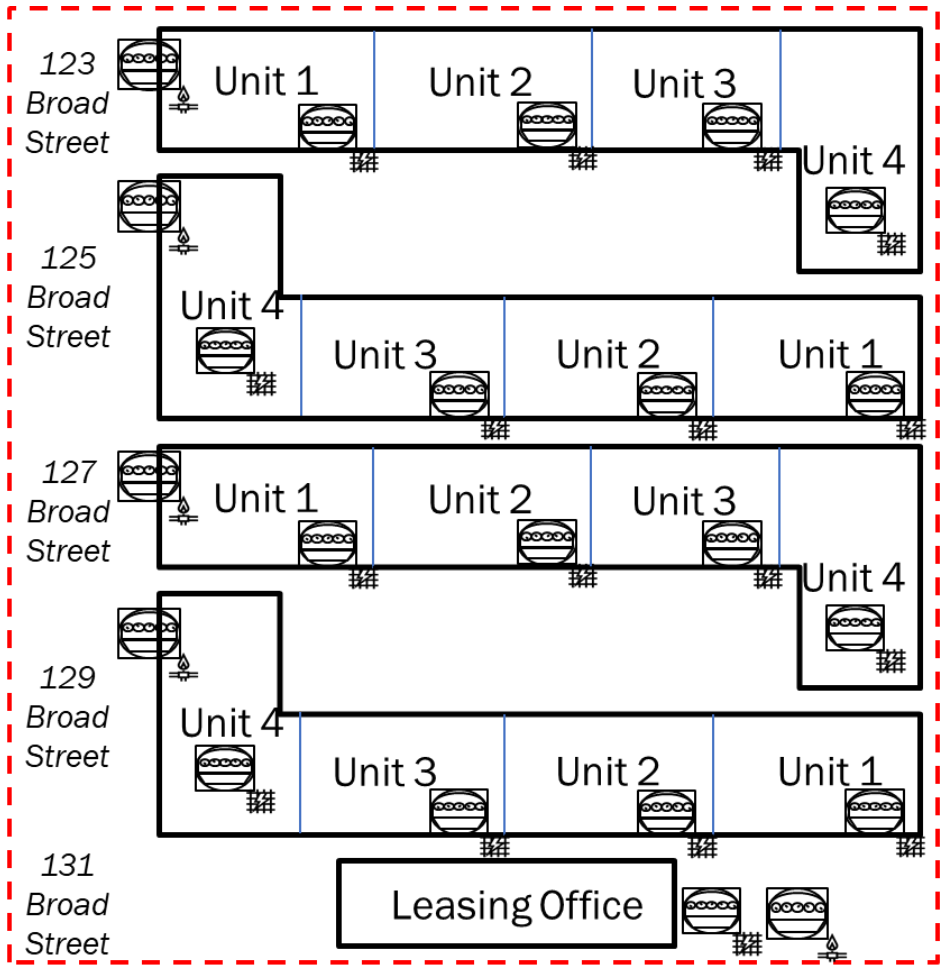
Add A Meter

Change Meter Selections

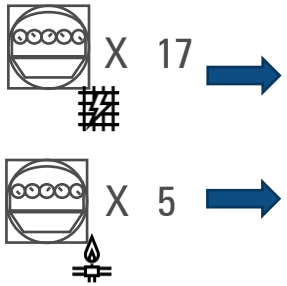
View as a Diagram

Name Meter ID	Energy Type	Most Recent Bill Date	In Use? (Inactive Date)
Grid Electric - Whole Building 103881631	Electric - Grid	10/31/2022	Yes
Natural Gas - Whole Building 103881630	Natural Gas	10/31/2022	Yes

Data Request for a Multi-Building Property



"Broad Street Gardens"



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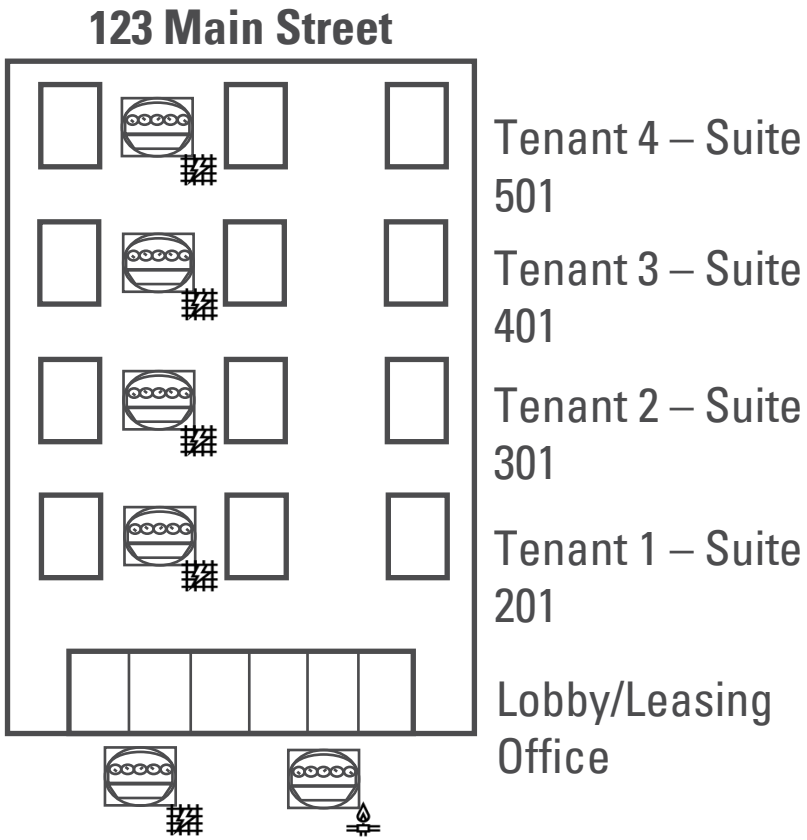
Name Meter ID	Energy Type	Most Recent Bill Date	In Use? (Inactive Date)
Grid Electric - Whole Building 103881631	Electric - Grid	10/31/2022	Yes
Natural Gas - Whole Building 103881630	Natural Gas	10/31/2022	Yes

3.) Implement a Utility-Led Solution for "Meter-to-Building Mapping"

- Utility should initiate the identification of all relevant meters/accounts using a limited number of required inputs from the requestor, such as:
  - Primary building address
  - Any secondary addresses associated with the property
  - Account ID for any building owner/manager-paid account
- Utility should present requestor with a list of the identified meters/accounts (or a list of the associated tenant names) that will be rolled up into aggregate whole-building data.
  - With this list, the data requestor can review the meters/accounts identified by the utility and can provide feedback regarding any missing or extraneous elements.

Example Implementation of Utility-Led Mapping



Based on the addresses you provided, we've found the following meters/accounts at your property.

Please confirm which accounts should be associated with your property for purposes of providing whole-building aggregated data. If an account has been returned in error, please deselect. If you do not see an account associated with a tenant at your property, click "I don't see a tenant."

	Name and Address Associated with Account
X	Realty Partners, d.b.a. 123 Main Street, LLC 123 Main Street, Suite 101
X	ABC Consulting, Inc. 123 Main Street, Suite 201
X	Jones Accounting, LLC 123 Main Street, Suite 301
X	Gutierrez Advisors 123 Main Street, Suite 401
X	Smith Associates 123 Main Street, Suite 501
	ABC Associates 124 Broad Street, Suite 801

I don't see a tenant | Confirm associations

4.) Provide Data to Requestors Monthly

- Offer ongoing, monthly delivery of new data following fulfillment of initial request for aggregate historical data.
  - Preferable to a single "push" of 12 aggregate consumption records 1x per year.
  - Easiest when the Portfolio Manager API is being used (see recommendation 8).
  - Utilities providing data via spreadsheet should also consider how this can be achieved.
- Additional best practices
  - Use time-weighted calendarization when the individual consumption records to be aggregated do not have the same start/end dates.

5.) Provide an "Itemized Receipt" for Meter-to-Building Mapping

- Meter-to-building mapping should be transparent – not a "black box."
- Critical for any scenario in which future review and validation of benchmarking data may be needed.
- Should be available to the building owner/data requestor "on demand."
- Mapping details should be updated as necessary to ensure that the "aggregate" consumption quantity reflects all meters/accounts measuring use during any given period.
- There is already an "aggregate meter" functionality where these details can be captured/stored in Portfolio Manager.

Example of an "Itemized Receipt" Using Portfolio Manager Functionality

Individual Meters Included in Electric Grid Meter

Use the table below to keep track of individual meters that are included in the usage of this aggregate meter.

Total Active Individual Meters = 3

		*Individual Meter Custom ID Name	*Individual Meter Custom ID	*Service Address for Meter	Meter is Active	*Date Meter Became Inactive
1	☐	Service Point	123456	123 Main St., Suite 201	☑	
2	☐	Service Point	345678	123 Main St., Suite 101	☑	
3	☐	Service Point	012345	123 Main St., Suite 302	☐	04/30/2021
4	☐	Service Point	234567	123 Main St., Suite 301	☑	

First Previous Page 1 of 1 Next Last 10

Add Another Entry
Delete Selected Entries
Delete ****ALL**** Meter data for this meter

Download to Excel

6.) Proactively Communicate Any Corrections or Updates to Aggregate Consumption Data

- Already specified in MD BEPS.
- If there are revisions to historical consumption data for any of the meters/accounts that "roll up" to the aggregate total, the utility should:
  - Identify that a revision has taken place and alert building owner.
  - Use revised data to recalculate aggregate consumption for all impacted billing periods.
  - Proactively communicate the revised consumption values to the data requestor (could entail a direct edit to Portfolio Manager data via API, or the provision of updated aggregate consumption data via spreadsheet).
  - Pay special attention to edits that alter consumption values by more than a certain percentage, compared to the original value.

7.) Ensure that Aggregate Data Captures Gross Grid Electricity Consumption

- Already specified in MD BEPS
- Applicable in cases where properties generate and consume onsite renewable electricity and sell excess generation back to the grid.
- Using only "net-metered" consumption prevents Portfolio Manager from differentiating between the amount of grid electricity vs. onsite renewable electricity that was used in the operation of the property.
- If the utility's billing system only reports net-metered consumption, then the amount of electricity sold back to the grid should be added back in when calculating aggregate consumption data (or should be provided to the data requestor separately so that they can make the necessary updates manually in Portfolio Manager).
- If installed metering technology cannot support the calculation of "gross" electricity consumption, the utility should make the data requestor aware.

8.) Deliver Data Using the Portfolio Manager API

- Utility size threshold and corresponding data delivery requirements are already established in the MD BEPS.
- Utilities with the option to use the API or spreadsheets for data delivery should consider benefits of the API pathway:
  - Automate the ongoing delivery of monthly data.
  - Ensure that any consumption/billing revisions are reflected directly in Portfolio Manager.
  - Enable the programmatic use of benchmarking data to design, promote, and assess utility efficiency programs.

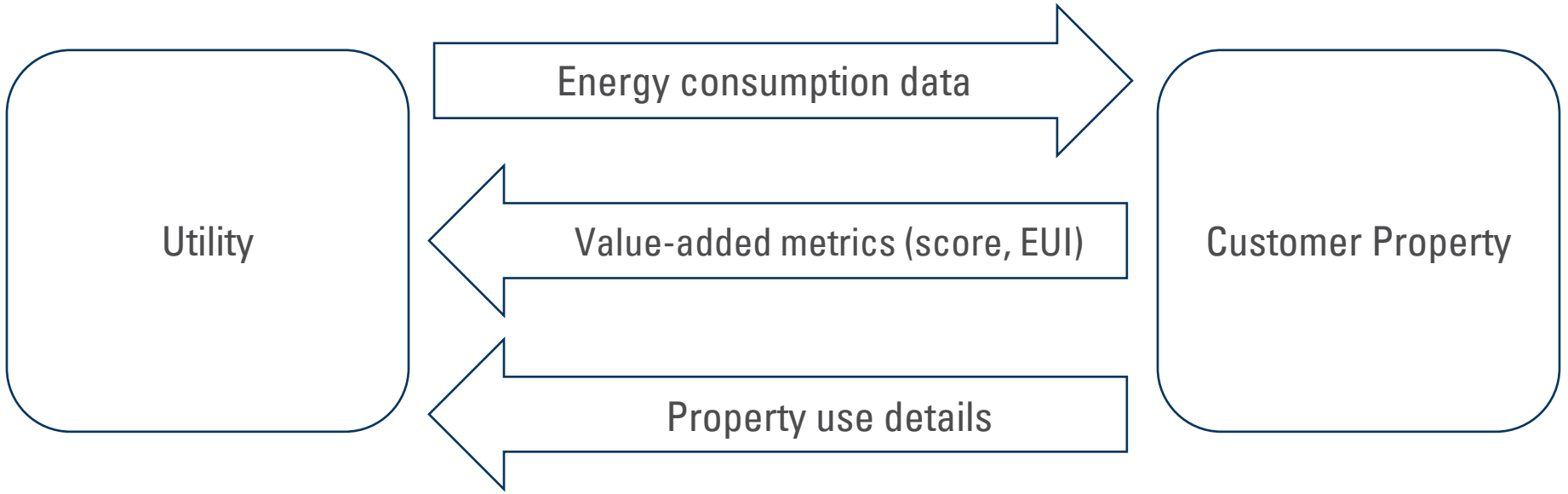
8.) Deliver Data Using the Portfolio Manager API (cont'd.)

- Data format for spreadsheet-based solutions can be straightforward (start date, end date, consumption quantity).
- However, these solutions still need to consider/address ongoing delivery of monthly data, documentation of meter-to-building mapping, and management of billing corrections/revisions.
  - The ENERGY STAR team has prepared a sample annotated spreadsheet, which may help utilities to better understand the information required.

	A	B	C	D	E	F	G
1	Start Date (Required)	End Date (Required)	Usage (Required)	Cost (Optional)	Estimation (Optional)	Demand (Optional)	Demand Cost (Optional)
2							
3							
4							
5							
6							
7							
8							
9							
10							
11							
12							
13							

The API May Provide the Most Benefits for Both Utility and Customer

- Goes beyond basic access to data.
- Streamlines process for both utility and customer.
- Facilitates regular, monthly updates.
- Allows two-way exchange of data to inform program design & delivery.



Online Resources Available, Including Full Technical Documentation

ENERGY STAR® PortfolioManager®

Language: English | Français

Exchanging Data: Resources to Help you Get Started

EPA offers a suite of RESTful web services that allow you to exchange data with Portfolio Manager. You can use these services to benchmark your own buildings, enter data on behalf of your customers, and receive ENERGY STAR metrics to incorporate in your own energy information software and services.

Getting Started

- Introduction to Exchanging Data
- Testing Web Services
- Connection and Sharing

Other Resources

- Offering data exchange services to your customers
- ENERGY STAR Training
- Subscribe to the Web Services Mailing List
- RESTClient for Mozilla Firefox EXIT
- Advanced REST client Application for Google Chrome EXIT
- Full List of Reporting Metrics
- Full List of Portfolio Manager Alerts

The Application Programming Interface (API)

- Comprehensive Resource Documentation
  - Live Environment -- Running Version 15.0
  - Test Environment -- Running Version 16.0
- Error Codes
- Known Issues
- Release Notes
- Frequently Asked Questions

Important Dates

- **Web Services 16.0 Beta Released on December 7th, 2020 (Update Info)**
- **Web Services 16.0 Live Scheduled for February 22nd, 2021 (Update Info)**
- **Standard Weekly Maintenance**
  - **Sunday from 8PM EDT to midnight EDT**
  - **Monday through Thursday from 10PM EDT to 11PM EDT**

    Regular procedures must be performed on EPA's ENERGY STAR systems to ensure they are properly maintained. Many of these maintenance procedures require interruption of services for the duration of the procedure. During the scheduled maintenance window you may experience anything from slow response, limited access, or no connectivity, or you may experience no interruption. *Scheduled use of the system should be avoided during these windows.*

http://portfoliomanager.energystar.gov/webservices

- APIs for Live and Test environments
- XML schemas
- Example requests and responses for each web service
- Release notes
- Guidance documents
- Maintenance and update schedules

Wrap-up and Q&A

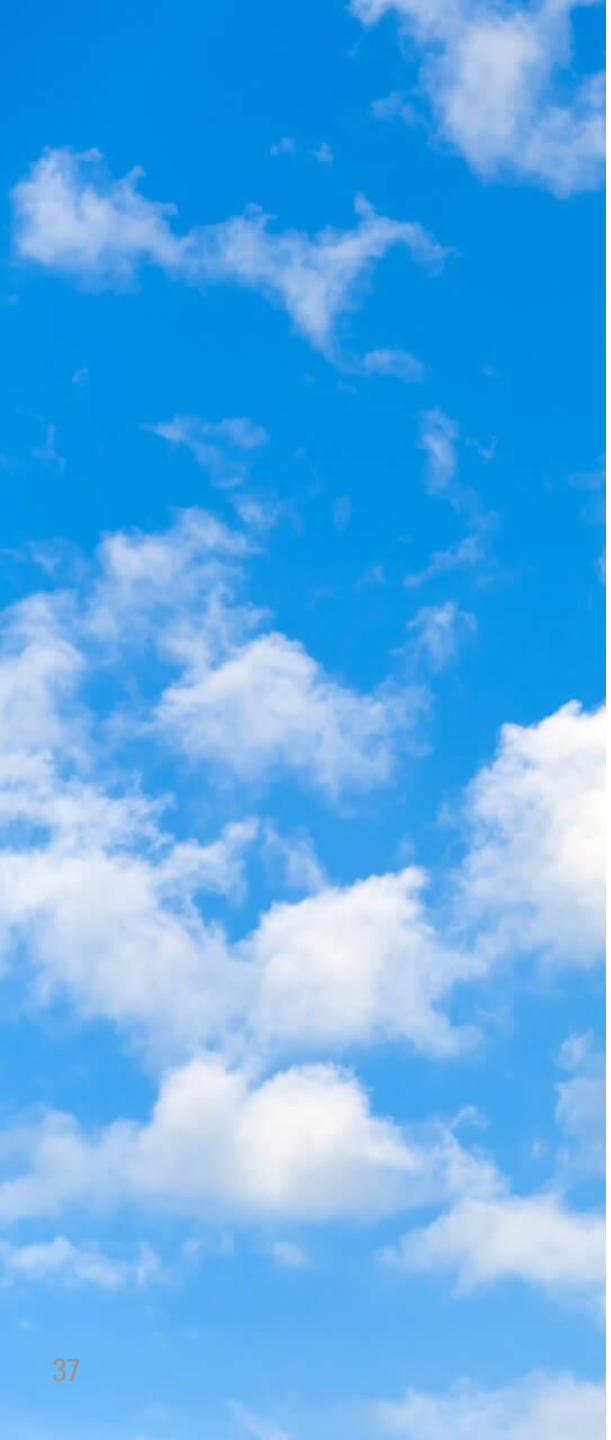
For Consideration/Discussion

- For utilities that have not yet considered/developed their data access solutions.
  - What questions do you have?
  - Do you have concerns about the feasibility of implementing any of these best practices?

- For utilities that have already developed data access solutions.
  - Do you have a sense of where your existing solution meets (or, where applicable, does not meet) these guidelines?
  - Do you have any questions/concerns about what it would take to close any gaps between your current solution and these guidelines?

Reach Out to the ENERGY STAR Team!

- Today's goal: emphasize and promote "best practice" as utilities are interpreting the formal requirements set forth in the MD BEPS law.
- Please review the Guidance for Utilities on Providing Whole-Building Energy Data to Enable Benchmarking in ENERGY STAR Portfolio Manager®.
- Reach out for additional 1-on-1 discussions with the ENERGY STAR team (contact information on next slide). We are available to:
  - Help utilities explore key considerations and best practices for the development of data access solutions.
  - Situate data access within the broader customer use of Portfolio Manager.
  - Advise utility IT teams, as well as with 3rd party vendors deploying solutions on behalf of utilities
  - Facilitate networking with other utilities that have developed solutions.



Thank you!

- **Brendan Hall: Hall.Brendan@epa.gov**
- **Katy Hatcher: Hatcher.Caterina@epa.gov**
- **Tracy Narel: Narel.Tracy@epa.gov**
- **Andrew Schulte: Andrew.Schulte@icf.com**

Search FAQs and submit questions to the ENERGY STAR Helpdesk:

https://energystar.my.site.com/PortfolioManager/s/

Appendix H - BEPS Overview to Energy Service Companies – June 11, 2024

Maryland
Department of the Environment

Maryland's Building Energy Performance Standards (BEPS)

Sam Furio

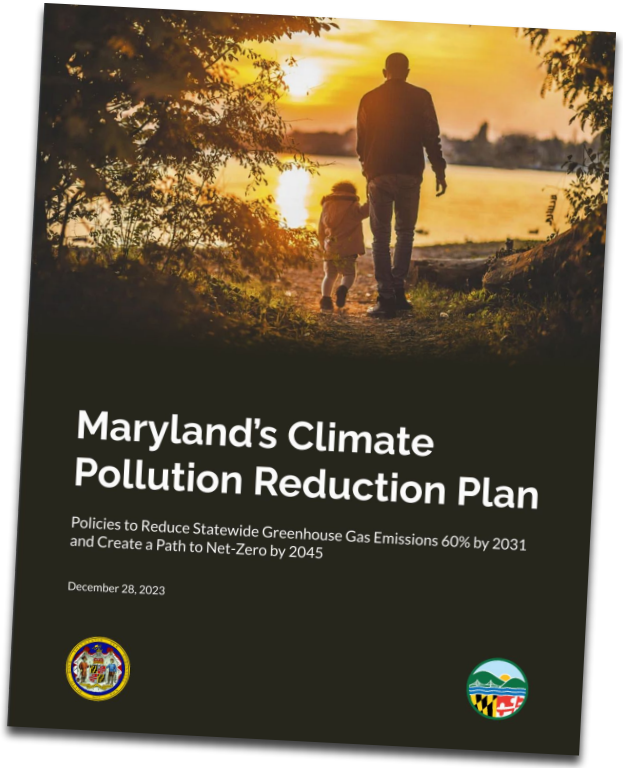
Outreach Coordinator, Building Decarbonization Team

Agenda

- What are Building Energy Performance Standards (BEPS)?
- What buildings are covered?
- Where building owners are: Benchmarking
- Where building owners need to go: BEPS Compliance
- Where Energy Service Companies (ESCOs) come in:
  - Benchmarking and Third Party Verification
  - Audits
  - Energy Efficiency
  - Electrification

BEPS Policy in Maryland

- The Climate Solutions Now Act of 2022 (CSNA) requires the Maryland Department of the Environment (MDE) to develop BEPS regulations that cover most large buildings in the state.
- BEPS is a key part of fulfilling Maryland's CSNA required greenhouse gas reduction goals and subsequent Climate Pollution Reduction Plan.
- **GOALS:** 60% statewide GHG reduction by 2031, and net-zero by 2045 (compared to 2006 levels).



Read the plan @ **mde.maryland.gov**

Policy Current Status

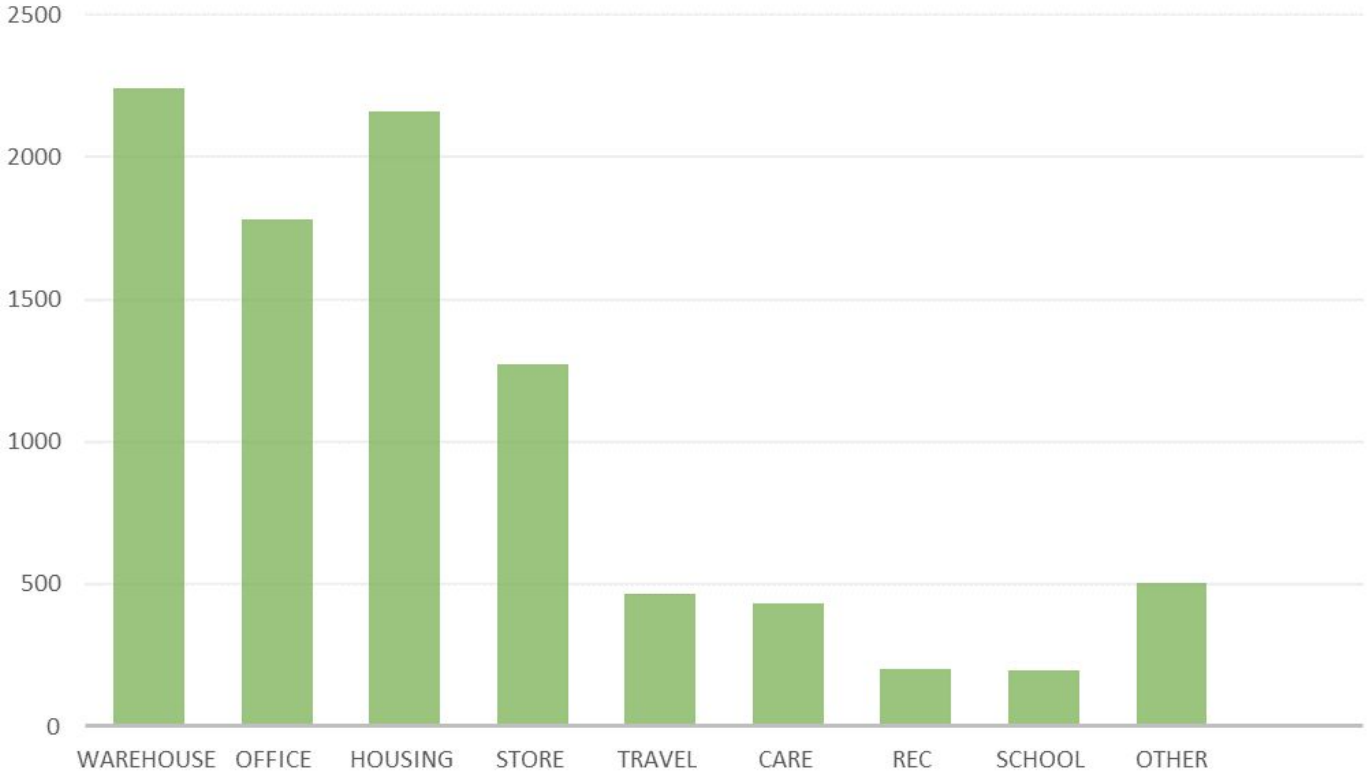
MDE intends to adopt a Building Energy Performance Standards (BEPS) regulation in 2024. Building owners should prepare to report benchmarking data to MDE by **June 1, 2025**. After using the benchmarking tool, building owners should determine if their buildings already achieve the proposed standards or if work is needed to achieve the proposed standards.

Covered Buildings

- 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.

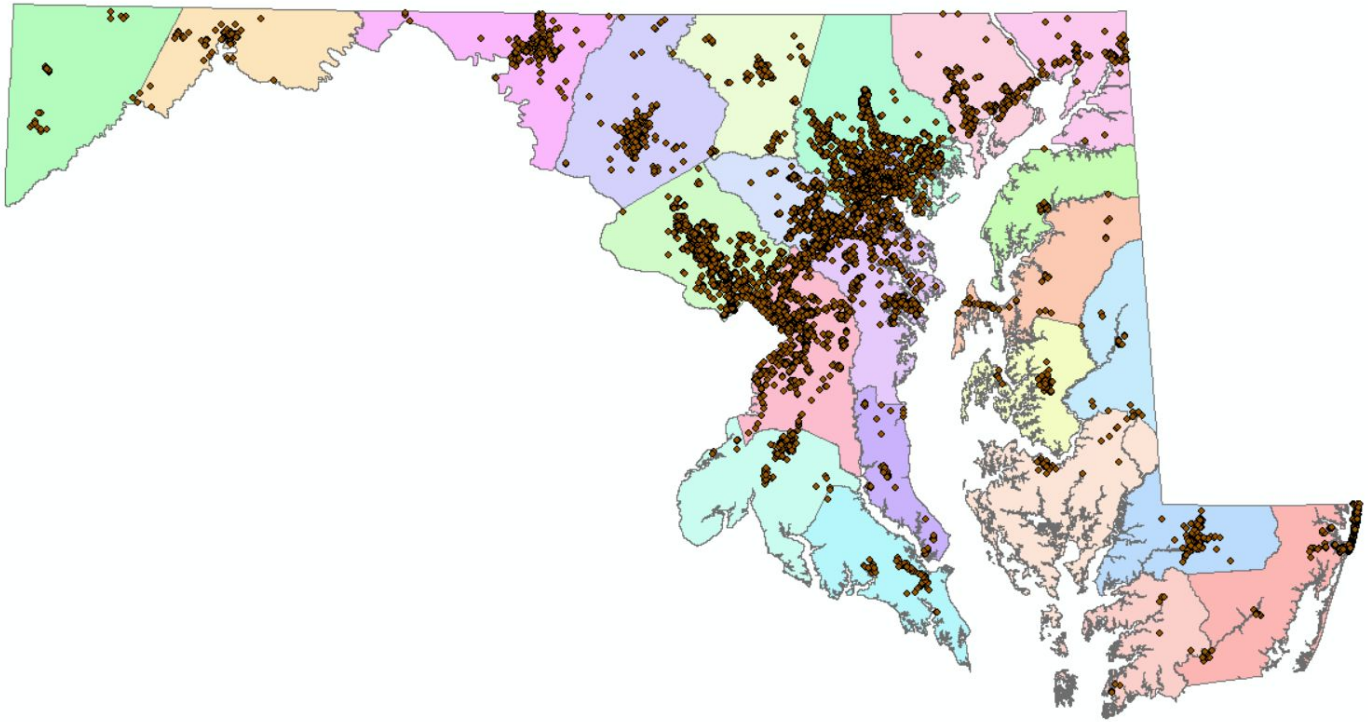
- Exempt buildings:
  - Historic buildings (individually designated as historic property under law);
  - Public or nonpublic elementary and secondary school buildings;
  - Manufacturing buildings;
  - Agricultural buildings; and
  - Federally-owned Buildings

Covered Buildings in MD



Preliminary analysis

Location of Covered Buildings



Preliminary analysis

What Does a Building Owner Need to Do?

1. Determine if a building is covered under BEPS by calculating its square footage or evaluating exemption status
    - Building < 35,000 ft^2: *No compliance necessary with State BEPS*
    - Building > 35,000 ft^2: *Compliance with State BEPS is Required*
2. **Start benchmarking!**
3. Assess whether the building is already achieving the proposed standards
4. If not meeting the standards, plan to make improvements and determine when it's preferable to pay the alternative compliance fee

Where Are Building Owners Now?

Benchmarking

Annually,
starting in 2025
Use ENERGY STAR Portfolio Manager to track annual energy use and ghg emissions

What's Next for Building Owners?

Benchmarking	Assessment
Annually, starting in 2025 Use ENERGY STAR Portfolio Manager to track annual energy use and ghg emissions	**Annually, starting in 2025** Determine if changes are needed to achieve the standards

What's Next for Building Owners?

Alternative Compliance Payment

Benchmarking	Assessment	Achieve Standards
Annually, starting in 2025 Use ENERGY STAR Portfolio Manager to track annual energy use and ghg emissions	**Annually, starting in 2025** Determine if changes are needed to achieve the standards	**Annually, starting in 2030** Achieve standards **OR** Achieve partial compliance and make alternative compliance payment

Alternative Compliance Pathway

Alternative compliance is available for the proposed net direct emissions standard in the form of payments set at the EPA's social cost of greenhouse gas

All figures are in 2020 dollars and will be adjusted for inflation to that year

Year	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2040+
Cost per metric ton of CO2e Overage	$230	$234	$238	$242	$246	$250	$254	$258	$262	$266	$270	$270 + $4/yr

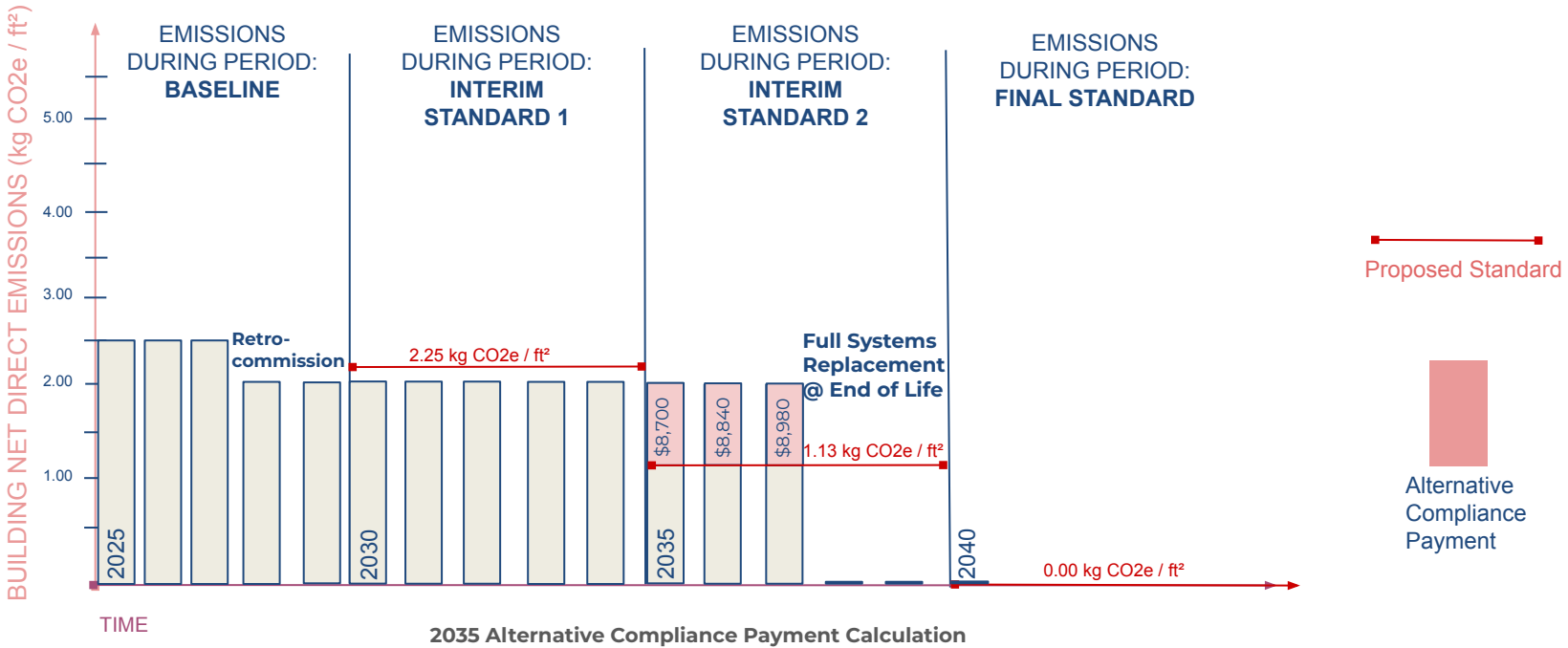
Alternative Compliance Spectrum

Building owner is not currently meeting the standard and makes no improvements to their property. They opt to meet compliance by making an Alternative Compliance Payment for the difference between the standard and their total emissions.

Building owner is already nearly in compliance and/or opts to make improvements to their property until they deem it is more cost-effective to make an Alternative Compliance Payment on remaining emissions over the proposed standard

Building owner is already meeting or makes improvements to meet the standard

Alternative Compliance Payment
40k Square Foot Case Study



2035 Alternative Compliance Payment Calculation
Emissions over standard: 2.00 - 1.13 kg $CO2e/ft^2$ = 0.87 kg $CO2e/ft^2$
0.87kg $CO2e/ft^2$*40,000 ft^2 / 1000 kg/ton = 34.8 tons CO2e
34.8 tons CO2e * $250/ton CO2e in 2035 = **$8,700**
8700/12 = $725/month

Where Do Energy Service Companies Come In?

Where Do Energy Services Companies Come In?

Everywhere!!

Alternative Compliance Payment

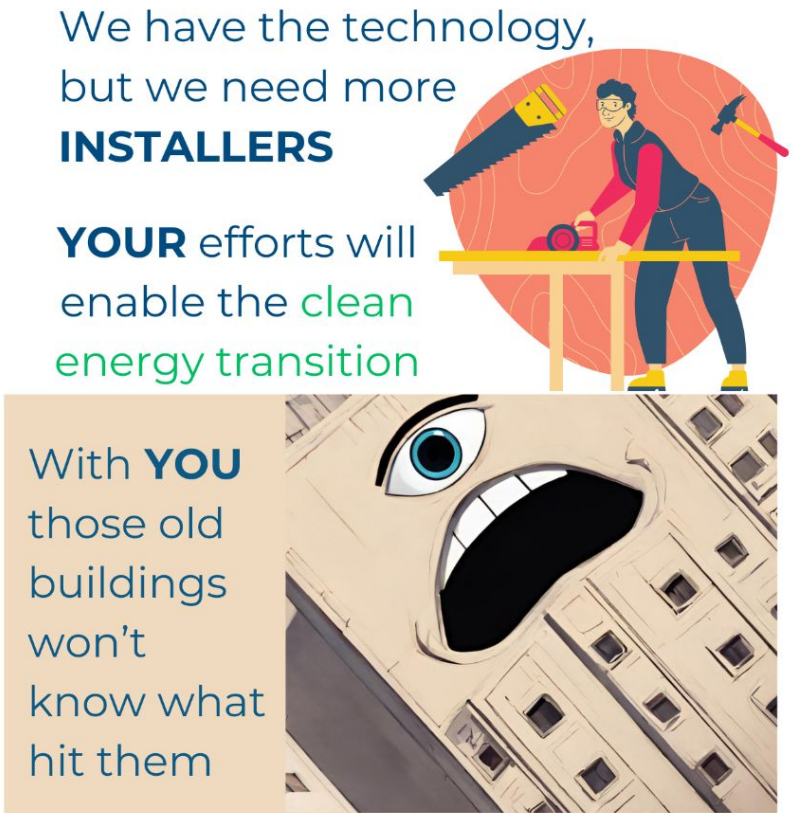
Benchmarking	Assessment	Achieve Standards
Annually, starting in 2025 Use ENERGY STAR Portfolio Manager to track annual energy use and ghg emissions	**Annually, starting in 2025** Determine if changes are needed to achieve the standards	**Annually, starting in 2030** Achieve standards **OR** Achieve partial compliance and make alternative compliance payment

Where Do Energy Service Companies Come In?

- Once building owners know where they are and where they need to get to, you'll help them get there

- Building owners will need assistance all the way through the BEPS process to achieve both proposed interim and final standards

Call to Action



Energy Service Company Services

- Benchmarking Support and Third Party Verification
- Energy Audits
- Energy Efficiency
- Electrification

Benchmarking Support and Third Party Verification

MAKE AN ENERGY STAR PORTFOLIO MANAGER (ESPM) ACCOUNT & TAKE FREE TRAININGS

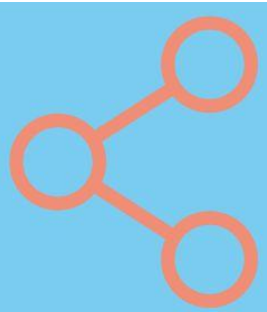
ESPM is the chosen energy benchmarking tool for compliance with Maryland's BEPS. Make a free account and start familiarizing yourself with the tool and its available trainings

DETERMINE YOUR BUILDING CHARACTERISTICS

Set yourself up for benchmarking success by ensuring your building square footage and utility meter information is accurate

LINK YOUR BUILDING WITH YOUR UTILITY

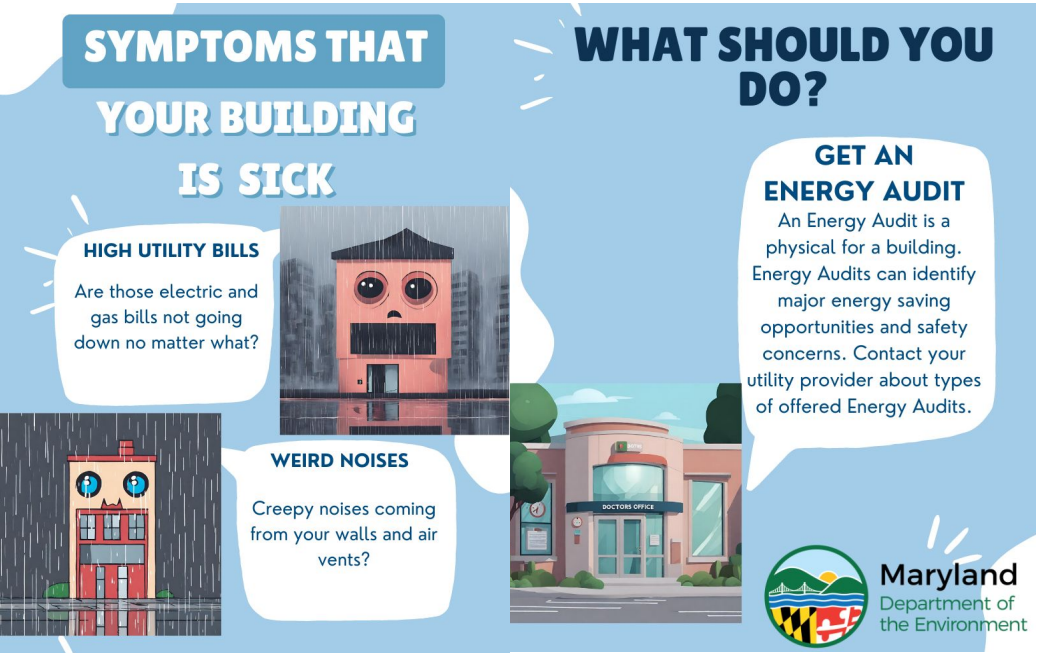
The majority of your energy data will be provided by a utility. In addition to creating your ESPM account, research your utility providers' data sharing process to make sure the data you receive is timely and accurate



PLAN AHEAD

Once you have access to your data in ESPM, determine how your building needs to perform to comply with BEPS and make a plan to get there

Energy Audits



Most utility providers, like the ones below, offer ratepayer funded energy audits to customers. Research your options today and get your building back to health!

pepco℠
AN EXELON COMPANY

bge℠
AN EXELON COMPANY

SMECO℠
Southern Maryland Electric Cooperative

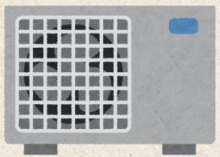
PotomacEdison™
A FirstEnergy Company

Energy Efficiency

LIGHTING

Upgrade all lighting to LED's

Reduce lighting power density



HVAC

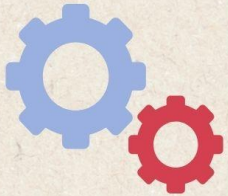
Install residential controls

Adjust HVAC schedules

BUILDING ENVELOPE

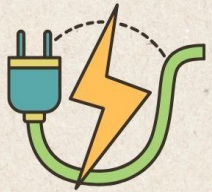
Reduce envelope leakage

Improve Insulation



RETRO - COMMISSIONING

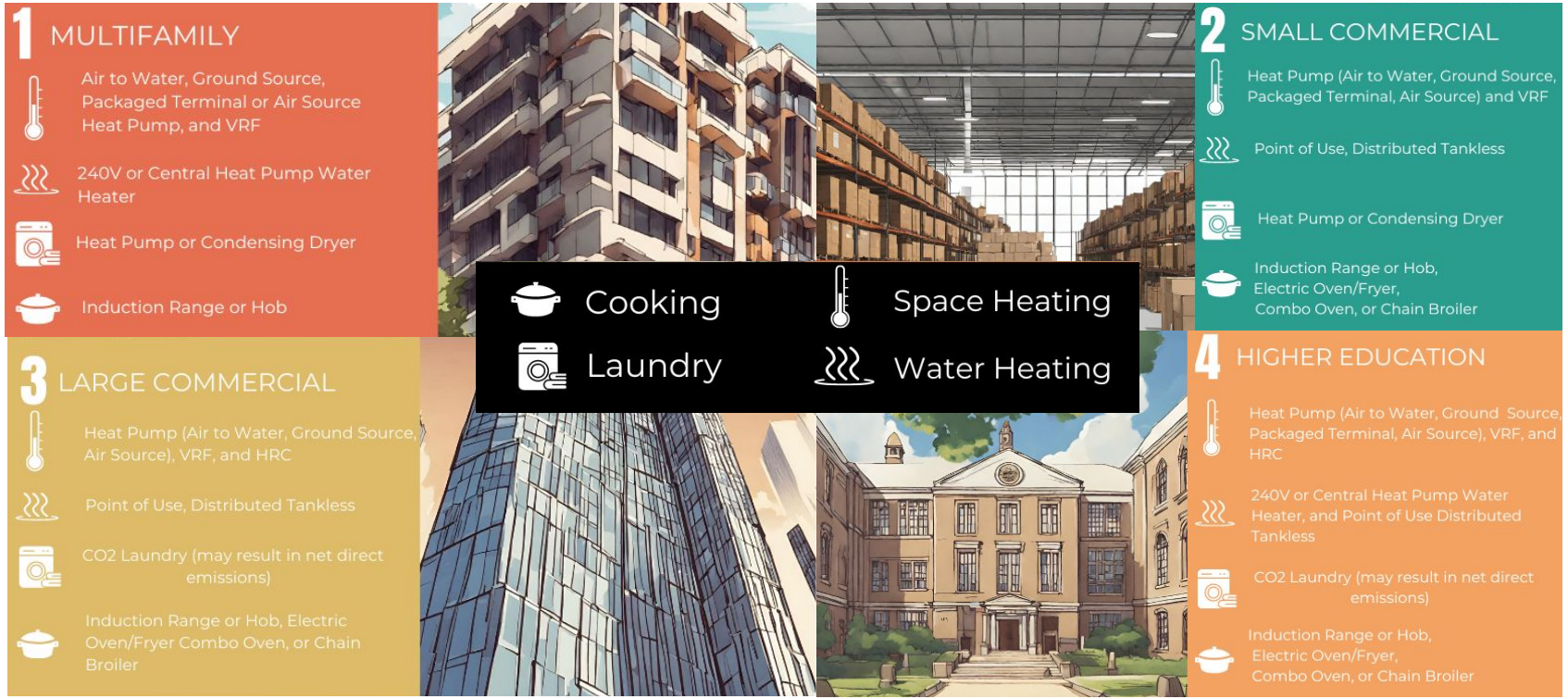
Conduct stage 1, 2, and 3 commissioning



PLUG LOAD CONTROL

Smart plug load management tools

Electrification



This content was created with the assistance of generative AI tools Microsoft Designer and Canva. The content has been reviewed and verified to be accurate and complete, and represents the intent of the Maryland Department of the Environment

The building Electrification Technology Roadmap. New Buildings Institute. (2023, April 20). https://newbuildings.org/resource/the-building-electrification-technology-roadmap/

Resources and Financial Support

EmPOWER MARYLAND

Utility incentives: staff O&M training, building tune ups, equipment

MARYLAND CLEAN ENERGY CENTER

Financing and technical assistance

Maryland Energy Administration

Clean Buildings Hub, grants, loans, rebates

Federal Incentives

Tax credits/ deductions (179-D, ITC, etc.)

MD PACE

Property Assessed Clean Energy Loans

Clean Buildings Hub

One-stop-shop clearinghouse of relevant information and resources to help stakeholders reduce energy use and emissions of their buildings, such as federal, state, local, and utility incentives. The Hub will catalyze and amplify resources (original and partner), peer learning networks, and educational programming.

Check out the HUB's website below for more information and to submit feedback on resources that would be useful to you!

Questions?

Building Decarbonization Team

beps.mde@maryland.gov

410-537-3183

BEPS Website

BEPS Email List

Appendix I - Electric and Gas Company Reporting Requirements Working Group Session 2 – July 11, 2024 (MDE slide deck)

Maryland
Department of
the Environment

MD Building Energy Performa5675nce Standards (BEPS)

Electric and Gas Company Reporting Requirements Working Group

Session 2 - 7/11/2024 @ 2pm

Zach Berzolla, Ph.D.
MDE *Building Decarbonization Section Head*

Session 2 Agenda

- Welcome Back
- Check-in on Data Access Solutions and Approaches Action Item
- EPA ENERGY STAR - Web Services Deep Dive & Program Delivery
- Roundtable Discussion
- For Eligible Electric and Gas Companies: EPA ENERGY STAR - Spreadsheet Data Delivery Option
- Mark your calendars: next session is **August 15th @ 2pm**

BEPS Working Group Purpose

- Review and prepare for the Maryland Building Energy Performance Standards (BEPS) Reporting Requirements of Electric and Gas Companies, as required by the Climate Solutions Now Act (CSNA) of 2022

- Inform and refine processes in the technical memorandum, “Technical Guidance and Calculation Methodologies to Comply with Building Energy Performance Standards;” develop supplemental resources such as white papers and instructional tools to support BEPS implementation and guidelines

BEPS Current Status

MDE intends to adopt a Building Energy Performance Standards (BEPS) regulation in 2024. Building owners should prepare to report benchmarking data to MDE by **June 1, 2025**. After using the benchmarking tool, building owners should determine if their buildings already achieve the proposed standards or if work is needed to achieve the proposed standards.

Check-in on Data Access Solutions and Approaches Action Item

Next Steps and Discussion

- Contact Energy Star with technical questions: statelocal@energystar.gov

- Mark your calendars: next session on August 15th @ 2pm

Questions?

Building Decarbonization Team

beps.mde@maryland.gov

410-537-3183

BEPS Website

BEPS Email List

Appendix J - Electric and Gas Company Reporting Requirements Working Group Session 2 – July 11, 2024 (ENERGY STAR slide deck)

Solutions for Utility Data Access

Presentation to the MD BEPS Utility Working Group

July 11, 2024

United States Environmental Protection Agency

Agenda

1. "Deep Dive" Topics:
   - Meter-to-Building Mapping
   - Gross vs. Net Consumption
   - Portfolio Manager Web Services API
   - Spreadsheet-Based Solutions
2. Wrap-up and Q&A

“Deep Dive” Topics

- Meter-to-Building Mapping
- Gross vs. Net Consumption
- Portfolio Manager Web Services API
- Spreadsheet-Based Solutions

- Meter-to-Building Mapping

Key Issue: Customers Need to Know that "Aggregate" Equals "Accurate"

Utilities need to protect the privacy of individual tenants' data…

Utility Meter-to-Building Mapping Process

…but building owners need to be able to validate that the aggregate consumption values are correct and complete

ute Metrics (2)

Add A Meter

View as a Diagram

Name Meter ID	Energy Type	Most Recent Bill Date	In Use? (Inactive Date)
Aggregate Electricity 1705353	Electric - Grid	11/30/2020	Yes
Aggregate Natural Gas 1705362	Natural Gas	11/30/2020	Yes

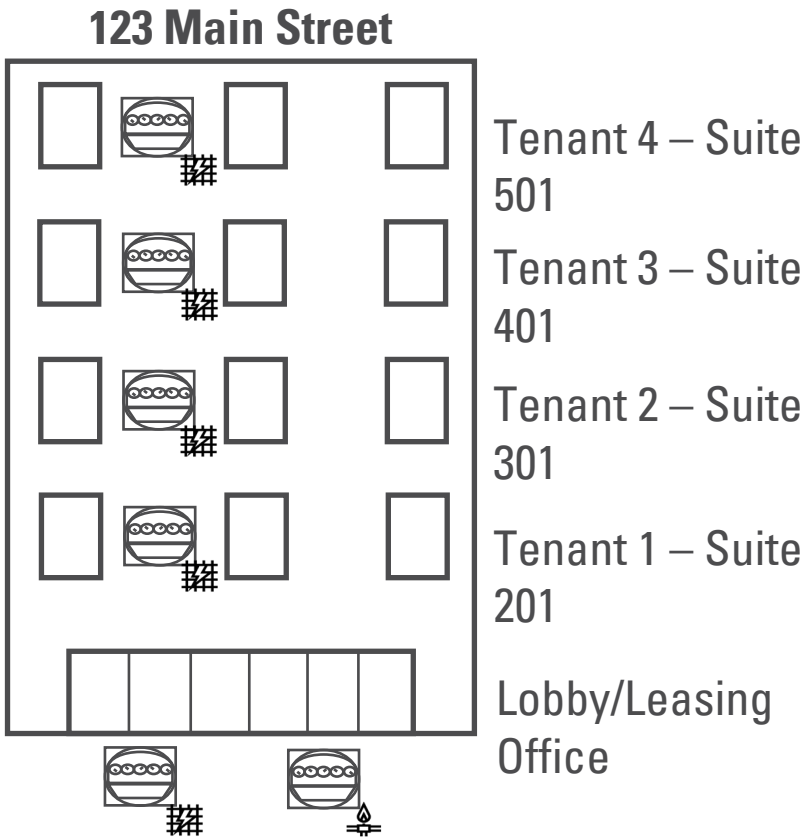
Download Annual Totals by Meter

ENERGY STAR

General Process for Aggregating Data

- Understand the physical location and boundaries of the property for which energy consumption data is being requested.
- Identify all the meter/service points associated with that location.
- Confirm the accuracy and completeness of this meter list with the data requestor.
- Establish an association in the utility's data system between the multiple "real-world" meter/service points and the "virtual" record being used to capture aggregate data.
- Maintain accurate meter-to-building mapping over time, to ensure that the aggregate consumption value reflects all the meters that track energy consumption during a given period.

Simplified Example of Portal-Based Mapping



Based on the addresses you provided, we've found the following meters/accounts at your property.

Please confirm which accounts should be associated with your property for purposes of providing whole-building aggregated data. If an account has been returned in error, please deselect. If you do not see an account associated with a tenant at your property, click "I don't see a tenant."

	Name and Address Associated with Account
X	Realty Partners, d.b.a. 123 Main Street, LLC 123 Main Street, Suite 101
X	ABC Consulting, Inc. 123 Main Street, Suite 201
X	Jones Accounting, LLC 123 Main Street, Suite 301
X	Gutierrez Advisors 123 Main Street, Suite 401
X	Smith Associates 123 Main Street, Suite 501
	ABC Associates 124 Broad Street, Suite 801

I don't see a tenant | Confirm associations

Documenting Meter-to-Building Mapping

- Meter-to-building mapping should be transparent, not a “black box.”
- Critical for any scenario in which future review and validation of benchmarking data may be needed.
- Should be available to the building owner/data requestor “on demand.”
- Mapping details should be updated as necessary to ensure that the “aggregate” consumption quantity reflects all meters/accounts measuring use during any given period.
- There is already an “aggregate meter” functionality where these details can be captured/stored in Portfolio Manager.

Example of an "Itemized Receipt" Using Portfolio Manager Functionality

Individual Meters Included in Electric Grid Meter

Use the table below to keep track of individual meters that are included in the usage of this aggregate meter.

Total Active Individual Meters = 3

		*Individual Meter Custom ID Name	*Individual Meter Custom ID	*Service Address for Meter	Meter is Active	*Date Meter Became Inactive
1	☐	Service Point	123456	123 Main St., Suite 201	☑	
2	☐	Service Point	345678	123 Main St., Suite 101	☑	
3	☐	Service Point	012345	123 Main St., Suite 302	☐	04/30/2021
4	☐	Service Point	234567	123 Main St., Suite 301	☑	

First Previous Page 1 of 1 Next Last 10

Add Another Entry
Delete Selected Entries
Delete ****ALL**** Meter data for this meter

Download to Excel

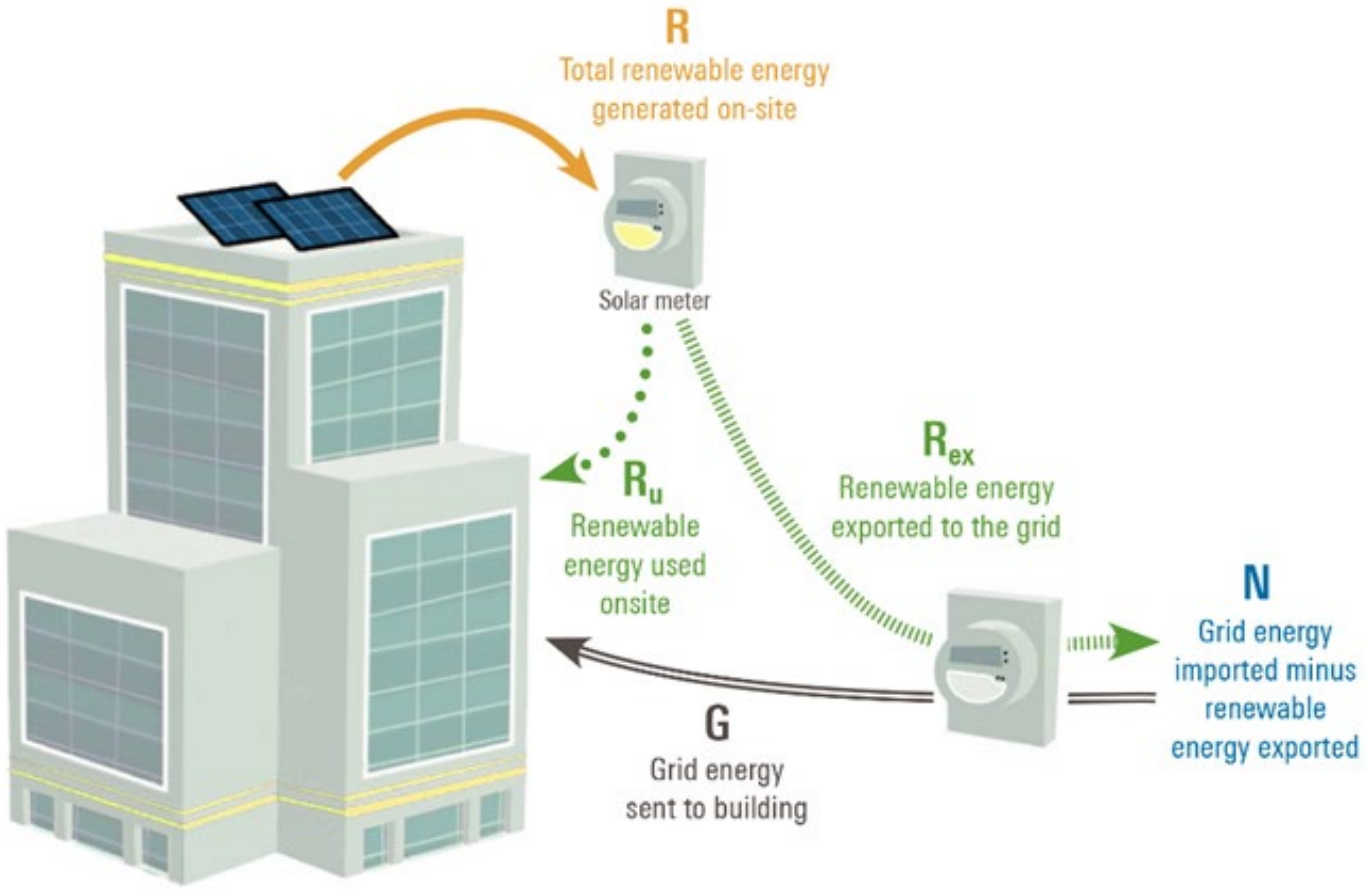
- Gross vs. Net Consumption

Ensure that Aggregate Data Captures Gross Grid Electricity Consumption

- Applicable in cases where properties generate and consume onsite renewable electricity and sell excess generation back to the grid.
- Using only "net-metered" consumption prevents Portfolio Manager from differentiating between the amount of grid electricity vs. onsite renewable electricity that was used in the operation of the property.
- If the utility's billing system only reports net-metered consumption, then the corresponding amount of electricity sold back to the grid should be identified and added back in when calculating aggregate consumption data (or should be provided to the data requestor separately so that they can make the necessary updates manually in Portfolio Manager).
- If installed metering technology cannot support the provision or calculation of "gross" electricity consumption, the utility should make the data requestor aware.

ENERGY STAR

Data Flows for Benchmarking in Portfolio Manager



R: **Total amount of renewable energy generated onsite**
Properties with onsite renewables should have access to this quantity

R_{ex}: **Renewable energy generated onsite, exported back to grid**
Availability depends on metering (utility meter or owner submeter)

R_u: **Renewable energy generated onsite, used onsite**
Can be calculated as R – R_{ex}.

G: **Grid energy sent to building**
Availability depends on metering (utility meter or owner submeter)

N: **Net consumption of grid energy, accounting for exports**
Shows what a customer owes on utility bills. Equal to G – R_{ex}.

Total site energy required to operate the building: Equal to Ru + G *or* N + R.

Total source energy required to operate the building: Must be calculated as Ru + G.

Meter Technology Can Affect Which Data Are Available

Net meters

Net meters can spin forward or backward, showing the net consumption of power. They won't tell you exactly what you imported and what you exported. They only indicate the difference between the two, or net usage (N).

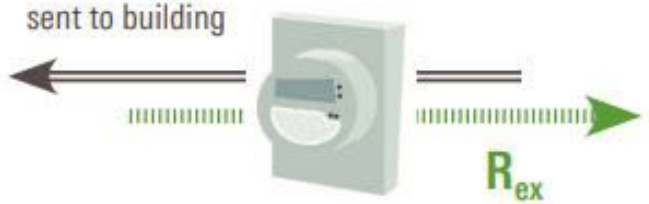
N
Grid energy used minus renewable energy exported

Net meters are most closely aligned with utility billing systems. These systems only require a measure of net usage to calculate bill amounts.

Bi-directional meters

Bi-directional meters tell you how much grid energy you imported (G) and how much renewable energy you exported (R_{ex}). Utilities may share these two values with the customer, or they may only share the difference, or "net" usage.

G
Grid energy sent to building



R_{ex}
Renewable energy exported to the grid

Dual meters

With dual metering, a traditional usage meter measures how much grid energy you imported (G), while a separate meter measures how much renewable energy you exported (R_{ex}). Utilities may share these two values with the customer, or they may only share the difference, or "net" usage. This is far less common than net meters and bi-directional meters.

G
Grid energy sent to building

R_{ex}
Renewable energy exported to the grid

ENERGY STAR

- Portfolio Manager Web Services API

Getting Data to Customers: Portfolio Manager Web Services API

- Upon customer request, utility uses EPA's web services API to send consumption data directly to customer's Portfolio Manager account.
- Can be used for initial provision of data, and then for ongoing monthly data updates.
- Once link is established between utility data system and customer PM account (via Connection/Sharing functionality), no further request is needed from customer to trigger monthly update.
- Establishes a "two-way" connection, by which the utility can see customer benchmarking results.

What Is the Portfolio Manager API?

- General Description
  - Suite of web services that allow utilities to exchange data directly with Portfolio Manager
  - Allows data entry and/or metrics retrieval that would otherwise be performed manually in the Portfolio Manager user interface
  - Facilitates automation and bulk data transfer on the part of the data provider
  - Covers most functions that can be performed via the Portfolio Manager graphical user interface (GUI)
- Technical Details
  - REST protocol
  - Basic HTML methods (GET, PUT, POST, DELETE)
  - Data transferred in XML format (no support for JSON at this time)
  - Providers responsible for developing their own back-end software solution and integration code

Online Resources Available, Including Full Technical Documentation

- APIs for Live and Test environments
- XML schemas
- Example requests and responses for each web service call
- Release notes
- Guidance documents
- Maintenance and update schedules

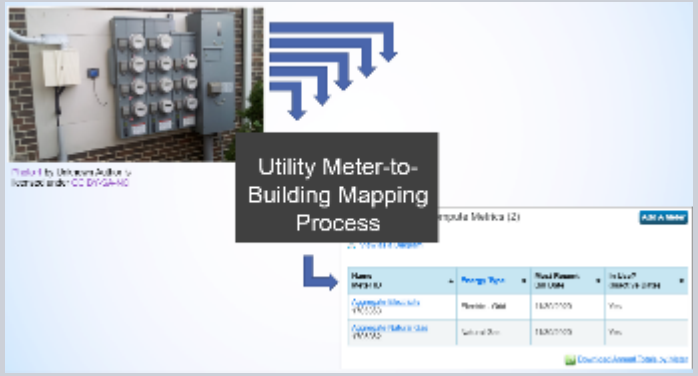
API Crosswalk for Typical Utility Process

Action	Responsibility	API Calls
Utility sets up API-enabled Portfolio Manager account	Utility	N/A – takes place in PM user interface
Utility establishes any Custom IDs, as needed to validate requestor and/or property	Utility	Create Custom Field
Property owner sets up property record in PM	Property owner	N/A – takes place in PM user interface
Property owner sends Connection request to utility via PM	Property owner	N/A – takes place in PM user interface
Utility reviews pending Connection request	Utility	Get Pending Connection Requests

API Crosswalk for Typical Utility Process (cont'd.)

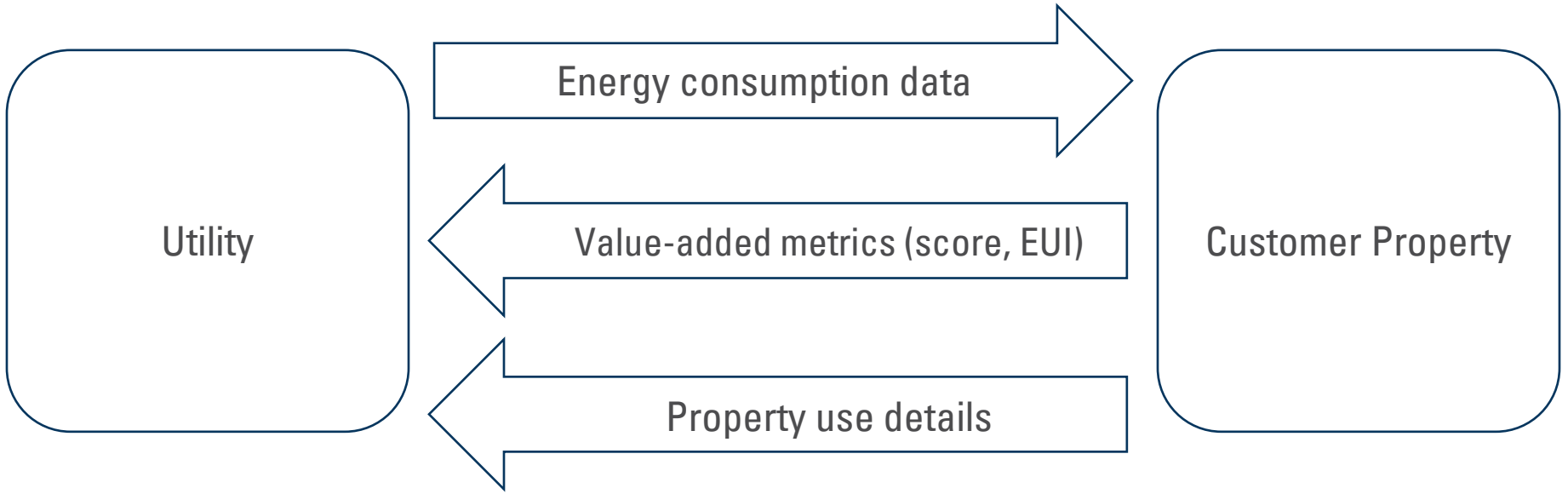
Action	Responsibility	API Calls
Utility accepts/rejects pending Connection request	Utility	Accept/Reject Pending Connection Requests
Property owner shares property/meter(s) with utility via PM	Property owner	N/A – takes place in PM user interface
Utility reviews pending Property Share request(s)	Utility	Get Pending Property Share Requests
Utility accepts/rejects pending Property Share request(s)	Utility	Accept/Reject Pending Property Share Requests
Utility reviews pending Meter Share request(s) (if necessary)	Utility	Get Pending Meter Share Requests
Utility accepts/rejects pending Meter Share request(s) (if necessary)	Utility	Accept/Reject Pending Meter Share Requests
Create new aggregated meter data object in customer's PM property record (if necessary)	Utility	Add Meter Associate Meter to a Property

API Crosswalk for Typical Utility Process (cont'd.)

Action	Responsibility	API Calls
Utility performs meter-to-building mapping in order to calculate aggregate consumption data that will be pushed to a corresponding meter object in the customer's Portfolio Manager property record 		
Send aggregated consumption data to a corresponding meter object in Portfolio Manager	Utility	Add Consumption Data
Query customer property record in Portfolio Manager for performance metrics at the whole-building level (as needed)	Utility	Reporting Services (multiple approaches/options)

The API May Provide the Most Benefits for Both Utility and Customer

- Goes beyond basic access to data.
- Streamlines process for both utility and customer.
- Facilitates regular, monthly updates.
- Allows two-way exchange of data to inform program design & delivery.



Discussion

- For utilities that have not yet begun scoping/developing their data access solutions…
  - What questions do you have about meter-to-building mapping, the requirement for gross (rather than net) energy consumption, and/or the Portfolio Manager web services API?

- For utilities that have already developed data access solutions …
  - Do you have any recommendations, considerations, or clarifications that you'd like to share with your peer utilities?
  - Do you have any questions/concerns about what it would take to close any gaps between your current solution and the new MD requirements?
  - What strategies/methodologies have you used to tackle meter-to-building mapping (e.g., address-based lookups; geolocation of meters)?

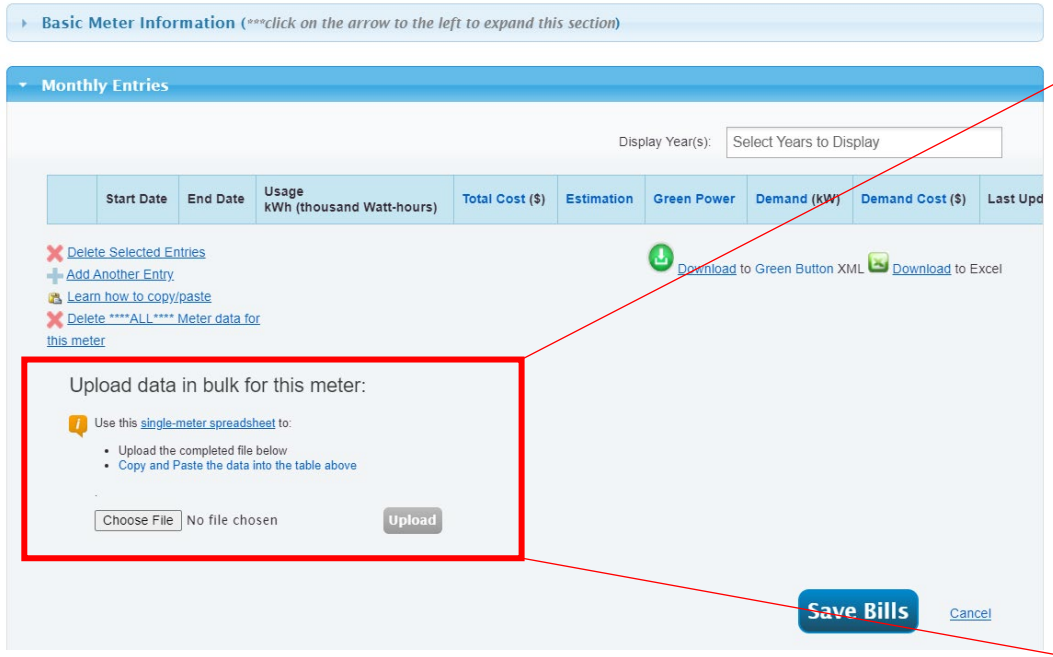
ENERGY STAR

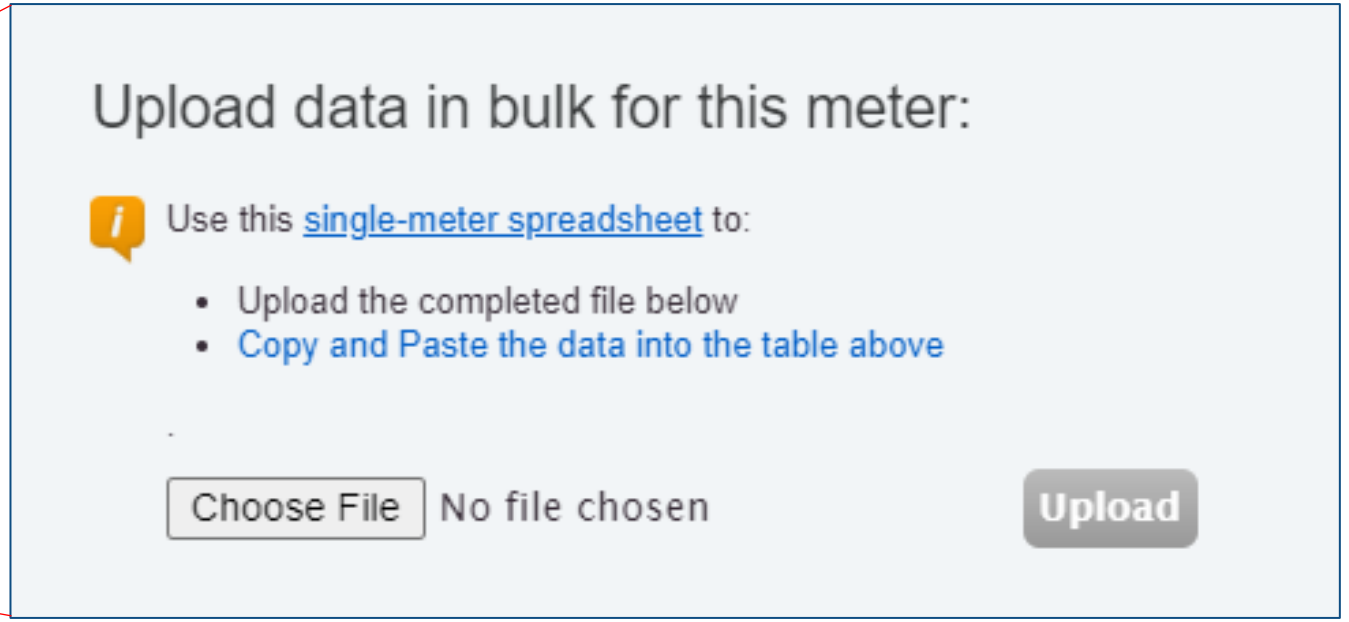
- Spreadsheet-Based Solutions

Getting Data To Customers: Spreadsheet-Based Delivery

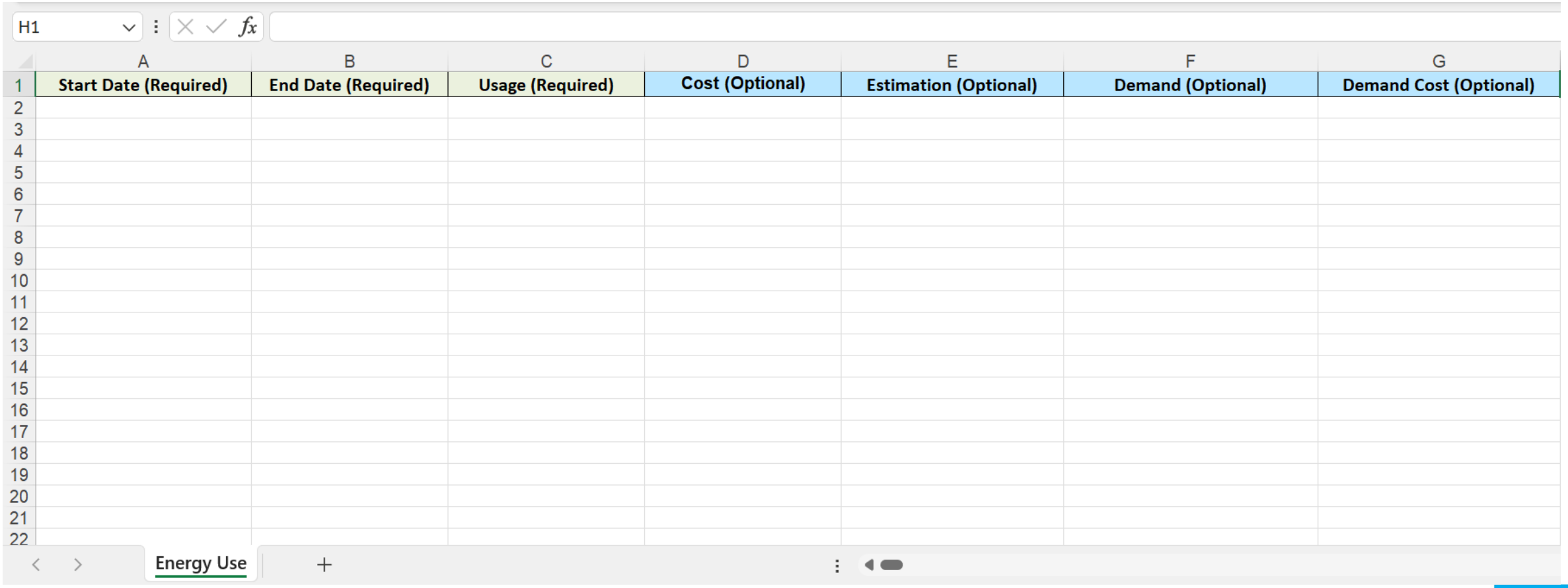
- Upon request, utility prepares data and sends to customer in spreadsheet format (ideally, in a format suitable for upload to Portfolio Manager)
- Customer responsible for getting data into Portfolio Manager
- Historically used for one-time provision of 12+ months of data
- Utility does not have visibility into customer benchmarking results

Meter-Level Upload Templates in Portfolio Manager





Template for Electricity



	A	B	C	D	E	F	G
1	Start Date (Required)	End Date (Required)	Usage (Required)	Cost (Optional)	Estimation (Optional)	Demand (Optional)	Demand Cost (Optional)
2							
3							
4							
5							
6							
7							
8							
9							
10							
11							
12							
13							
14							
15							
16							
17							
18							
19							
20							
21							
22							

Template for Metered Non-Electric Fuels

I1

	A	B	C	D	E
1	Start Date (Required)	End Date (Required)	Usage (Required)	Cost (Optional)	Estimation (Optional)
2					
3					
4					
5					
6					
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					

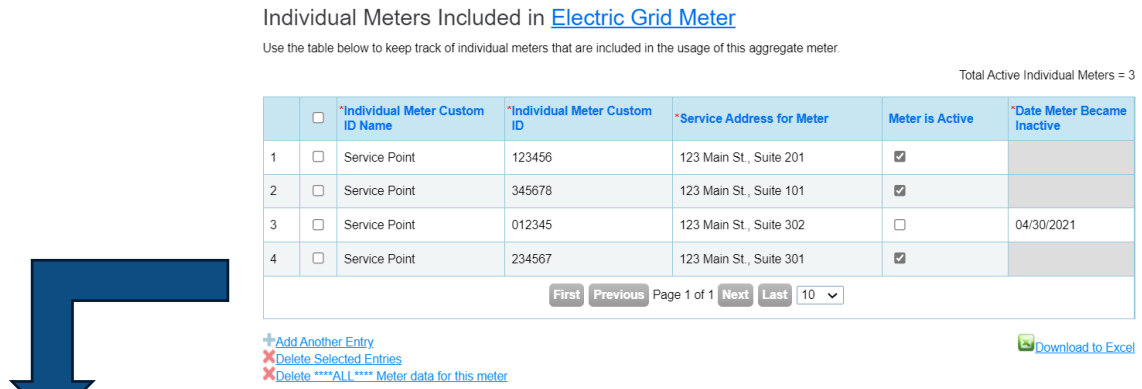
Energy Use

Reminder for Spreadsheet-Based Solutions

- Data format for spreadsheet-based solutions can be straightforward (start date, end date, consumption quantity for each monthly consumption record).
- However, these solutions still need to consider/address ongoing delivery of monthly data, documentation of meter-to-building mapping, and management of billing corrections/revisions.

No Established Solution (Yet) for Communicating Meter-to-Building Mapping Details via Spreadsheet

Since the utility is not pushing data to Portfolio Manager, it will need to determine how else to convey meter mapping information via spreadsheet.



Individual Meter Count	Individual Meter Custom ID Name (e.g., Meter ID, Premise ID, Service Point ID)	Individual Meter Custom ID (alphanumeric)	Service Address for Meter	Meter is Active? (Yes/No)	Date Meter Became Inactive
1	Meter ID	7654321	123 Main Steet, Suite 200	Yes	
2	Premise ID	33-V-100	456 Broad Street, Suites 100 - 110	Yes	
3	Meter ID	1234567	123 Main Street, Suite 100	No	4/1/2022
…	…	…	…	…	…
…	…	…	…	…	…
n - 1	Premise ID	33-V-200	456 Broad Street, Suites 200 - 210	Yes	
n	Meter ID	456789	123 Main Street, Suite 100	Yes	

Discussion

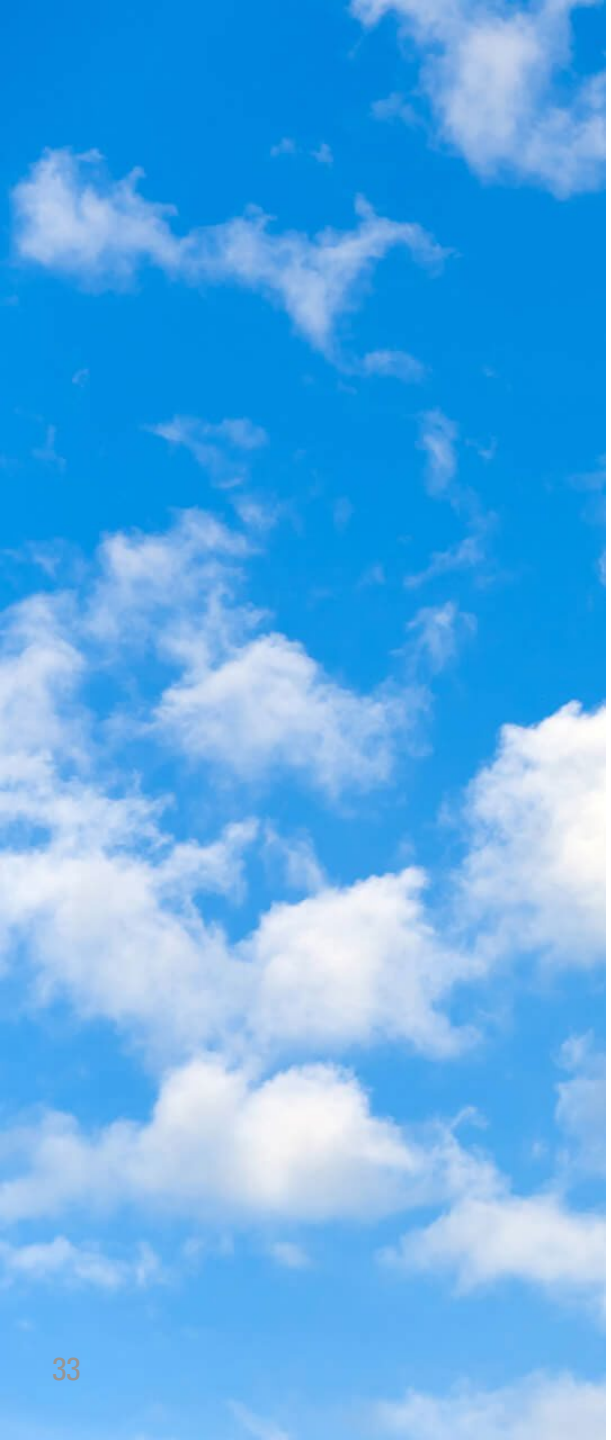
- For utilities that have not yet begun scoping/developing their data access solutions…
  - What questions do you have about delivering aggregate whole-building data to customers via spreadsheet?
  - Would you consider using the Portfolio Manager API as a data delivery mechanism, even if not required to do so?

- For utilities that have already developed data access solutions that entail spreadsheet-based data delivery…
  - Do you have any recommendations, considerations, or clarifications that you'd like to share with your peer utilities?

Wrap-up and Additional Q&A

Reach Out to the ENERGY STAR Team!

- Please review the Guidance for Utilities on Providing Whole-Building Energy Data to Enable Benchmarking in ENERGY STAR Portfolio Manager®.
- Reach out for additional 1-on-1 discussions with the ENERGY STAR team (contact information on next slide). We are available to:
  - Help utilities explore key considerations and best practices for the development of data access solutions.
  - Situate data access within the broader customer use of Portfolio Manager.
  - Advise utility IT teams, as well as with 3rd party vendors deploying solutions on behalf of utilities
  - Facilitate networking with other utilities that have developed solutions.



Thank you!

- **Brendan Hall: Hall.Brendan@epa.gov**
- **Katy Hatcher: Hatcher.Caterina@epa.gov**
- **Tracy Narel: Narel.Tracy@epa.gov**
- **Andrew Schulte: Andrew.Schulte@icf.com**

Search FAQs and submit questions to the ENERGY STAR Helpdesk:

https://energystar.my.site.com/PortfolioManager/s/

Appendix K – BEPS Overview to Maryland BEPS Cohort for Local Government – July 17, 2024

Maryland
Department of the Environment

Maryland's Building Energy Performance Standards (BEPS)

2024 Overview of Building Energy Performance Standards Regulations

MD BEPS Cohort for Local Government

July 17th, 2024

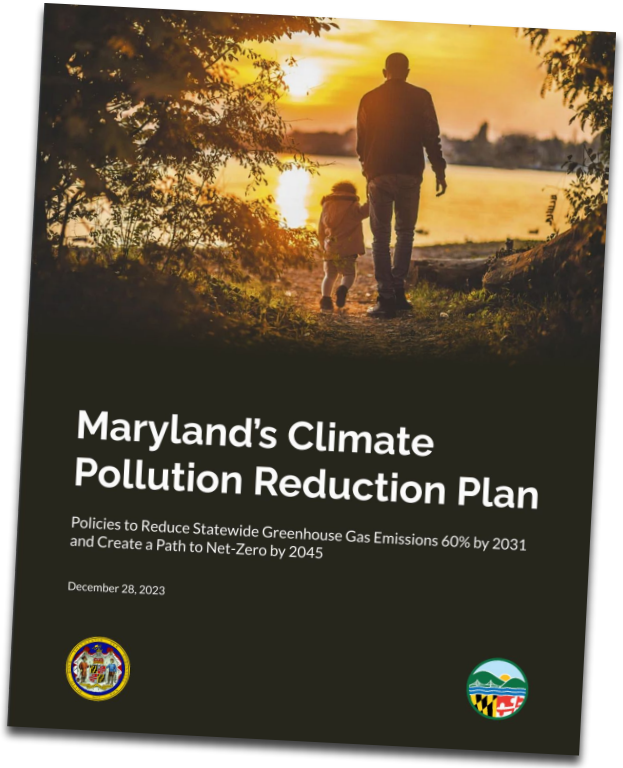
Sam Furio
Outreach Coordinator
MDE Building Decarbonization Team

Agenda

- BEPS update
- BEPS policy overview
  - What buildings need to comply?
  - Where building owners are now: benchmarking
  - Where building owners need to go next: BEPS compliance

Maryland's BEPS Policy

- The Climate Solutions Now Act of 2022 (CSNA) requires the Maryland Department of the Environment to develop BEPS, a key part of fulfilling the state's required greenhouse gas (GHG) reduction goals
- Learn about BEPS and other proposed GHG reduction policies in Climate Pollution Reduction Plan
- **GOALS:** 60% statewide GHG reduction by 2031, and net-zero by 2045 (compared to 2006 levels)



Read the plan @ **mde.maryland.gov**

BEPS Policy Update

BEPS Policy Update

- MDE is withdrawing the December 2023 proposed BEPS regulation and advancing a revised BEPS regulation

BEPS Policy Update

- MDE is withdrawing the December 2023 proposed BEPS regulation and advancing a revised BEPS regulation
- What's changed between the two versions?

BEPS Policy Update

- MDE is withdrawing the December 2023 proposed BEPS regulation and advancing a revised BEPS regulation
- What's changed between the two versions?
    - Removal of Site Energy Use Intensity (Site EUI) Standards
    - Modification of select definitions and procedures
        i. Agricultural building definition
        ii. Manufacturing building definition
        iii. Exemption procedure
        iv. Public infrastructure property types
        v. Consumer price index

BEPS Policy Update

- MDE is withdrawing the December 2023 proposed BEPS regulation and advancing a revised BEPS regulation
- What's changed between the two versions?
  - Removal of Site Energy Use Intensity (Site EUI) Standards
  - Modification of select definitions and procedures
- What stays the same between the two versions?

BEPS Policy Update

- MDE is withdrawing the December 2023 proposed BEPS regulation and advancing a revised BEPS regulation
- What's changed between the two versions?
  - Removal of Site Energy Use Intensity (Site EUI) Standards
  - Modification of select definitions and procedures
- What stays the same between the two versions?
  - All other requirements, which includes:
    - Reporting requirements, including the reporting of energy use and emissions data to MDE annually starting June 1, 2025
    - Net direct emissions standards

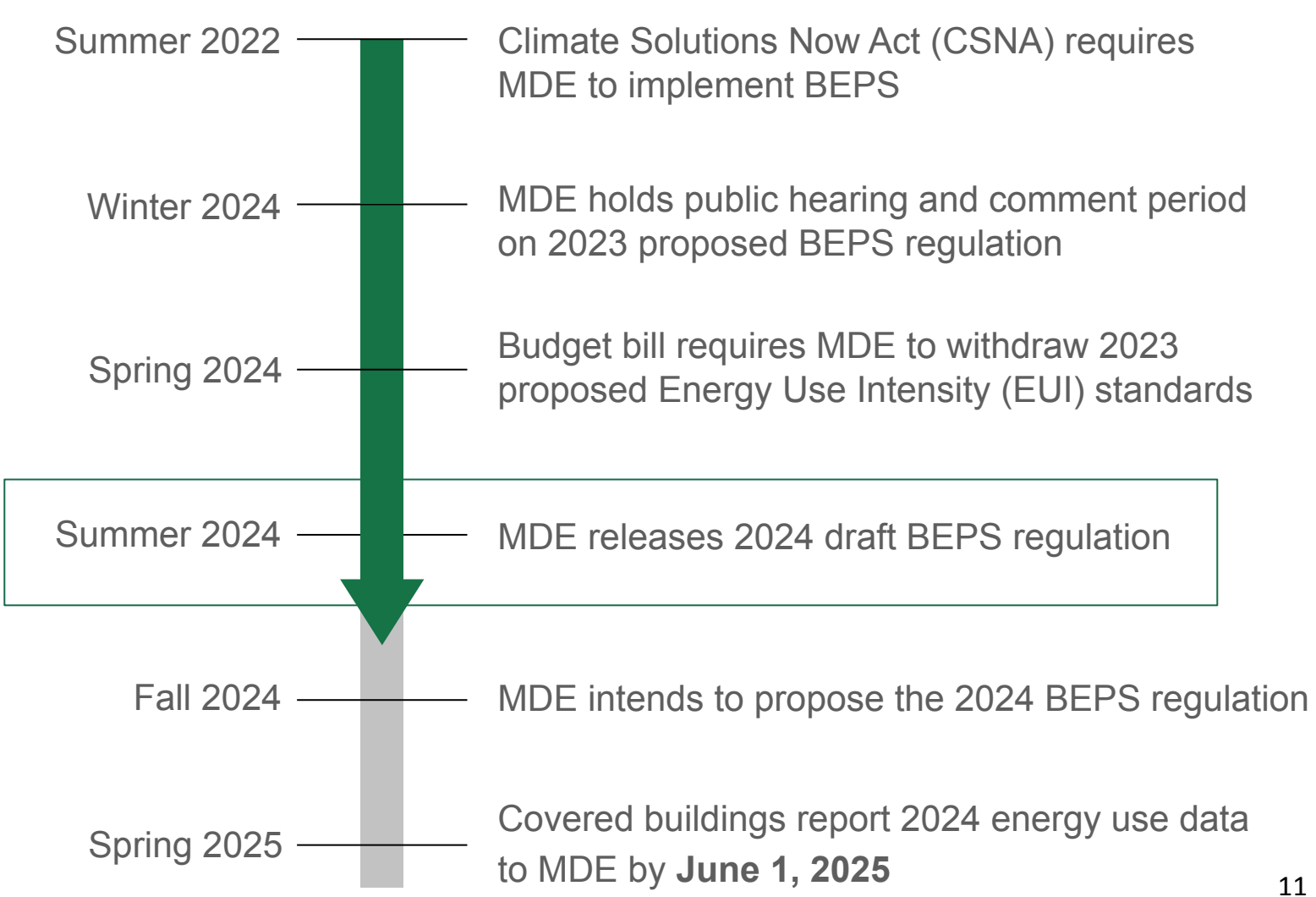
Looking Ahead for BEPS

- MDE intends to establish site EUI standards in 2027
  - After analysis and report submission to the Maryland Legislature of covered buildings' 2025 calendar year energy use data

- Building owners should refer to the site EUI standards proposed in December 2023 for directional guidance as they plan improvements to their buildings

- Building owners are advised not to install electric resistance heating equipment without considering how the use of such equipment would influence the site EUI

What's next for BEPS?

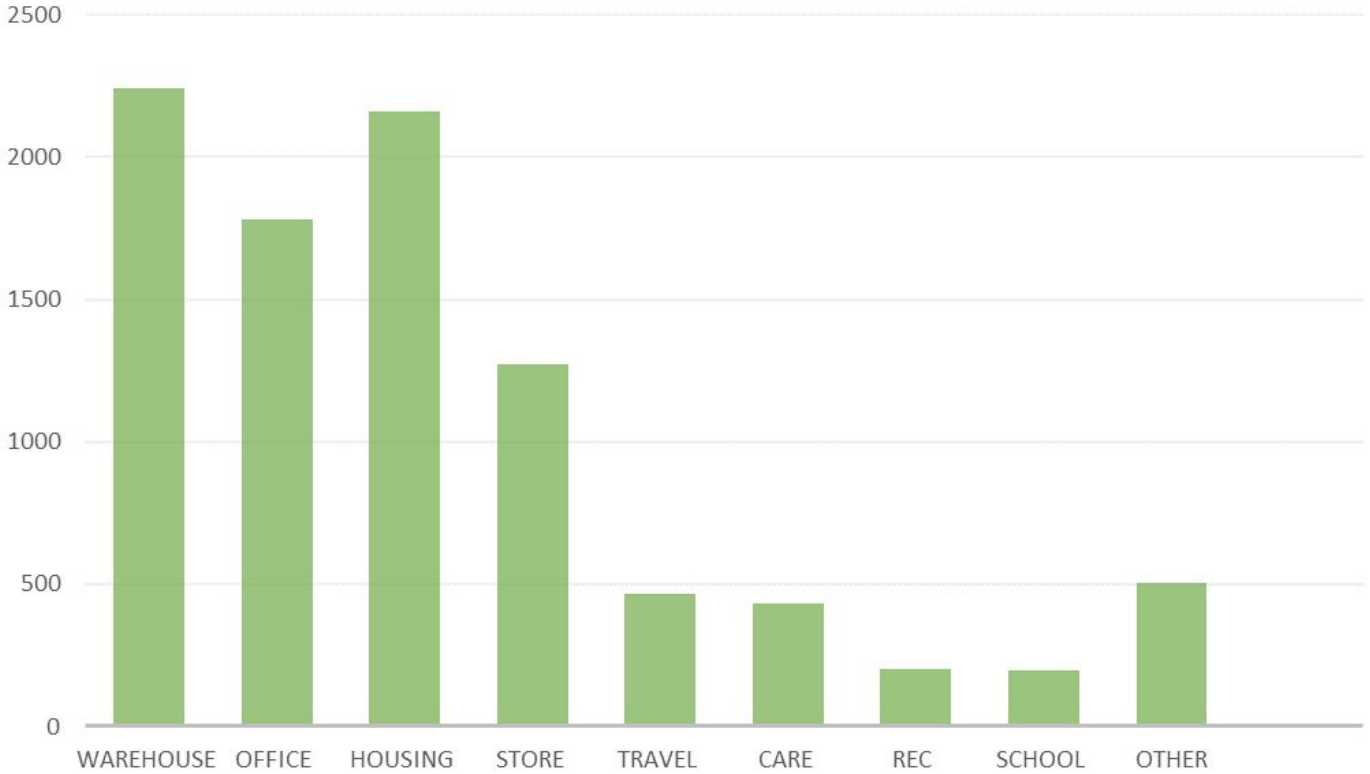


Covered Buildings

- 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

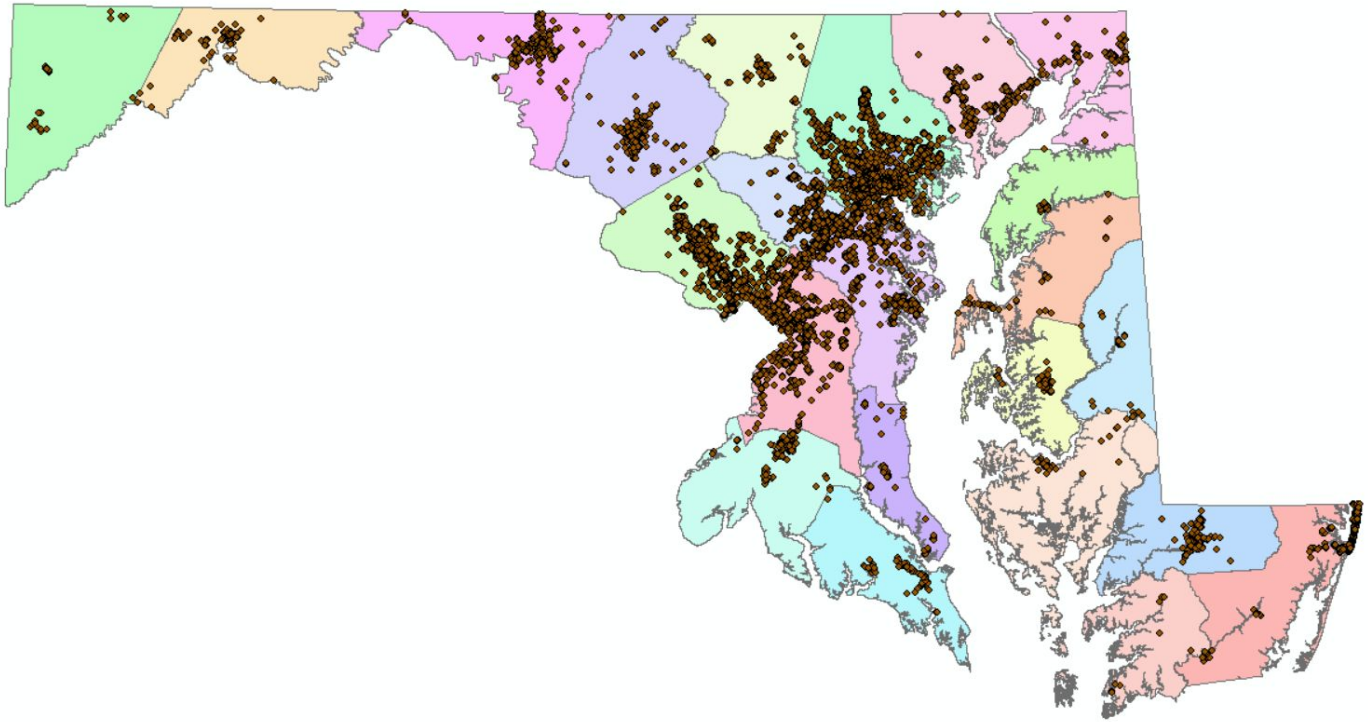
- Exempt buildings:
  - Historic buildings (individually designated as historic property under law);
  - Public or nonpublic elementary and secondary school buildings;
  - Manufacturing buildings;
  - Agricultural buildings; and
  - Federally-owned buildings

Covered Buildings in MD



Preliminary analysis

Location of Covered Buildings



Preliminary analysis

What Does a Building Owner Need to Do?

1. Determine if a building is covered under BEPS by calculating its square footage or evaluating exemption status
    - Building < 35,000 ft^2: *No compliance necessary with State BEPS*
    - Building > 35,000 ft^2: *Compliance with State BEPS is Required*
2. **Start benchmarking**
3. Assess whether the building is already achieving the proposed standards
4. If not meeting the standards, plan to make improvements and determine when it's preferable to pay the alternative compliance fee

Where Are Building Owners Now?

Benchmarking

Annually,
starting in 2025
Use ENERGY STAR Portfolio Manager to track annual energy use and ghg emissions

What's Next for Building Owners?

Benchmarking	Assessment
Annually, starting in 2025 Use ENERGY STAR Portfolio Manager to track annual energy use and ghg emissions	**Annually, starting in 2025** Determine if changes are needed to achieve the standards

What's Next for Building Owners?

Alternative Compliance Payment

Benchmarking	Assessment	Achieve Standards
Annually, starting in 2025 Use ENERGY STAR Portfolio Manager to track annual energy use and ghg emissions	**Annually, starting in 2025** Determine if changes are needed to achieve the standards	**Annually, starting in 2030** Achieve standards **OR** Achieve partial compliance and make alternative compliance payment

Alternative Compliance Pathway

Alternative compliance is available for the proposed net direct emissions standard in the form of payments set at the EPA's social cost of greenhouse gas

All figures are in 2020 dollars and will be adjusted for inflation to that year

Year	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2040+
Cost per metric ton of CO2e Overage	$230	$234	$238	$242	$246	$250	$254	$258	$262	$266	$270	$270 + $4/yr

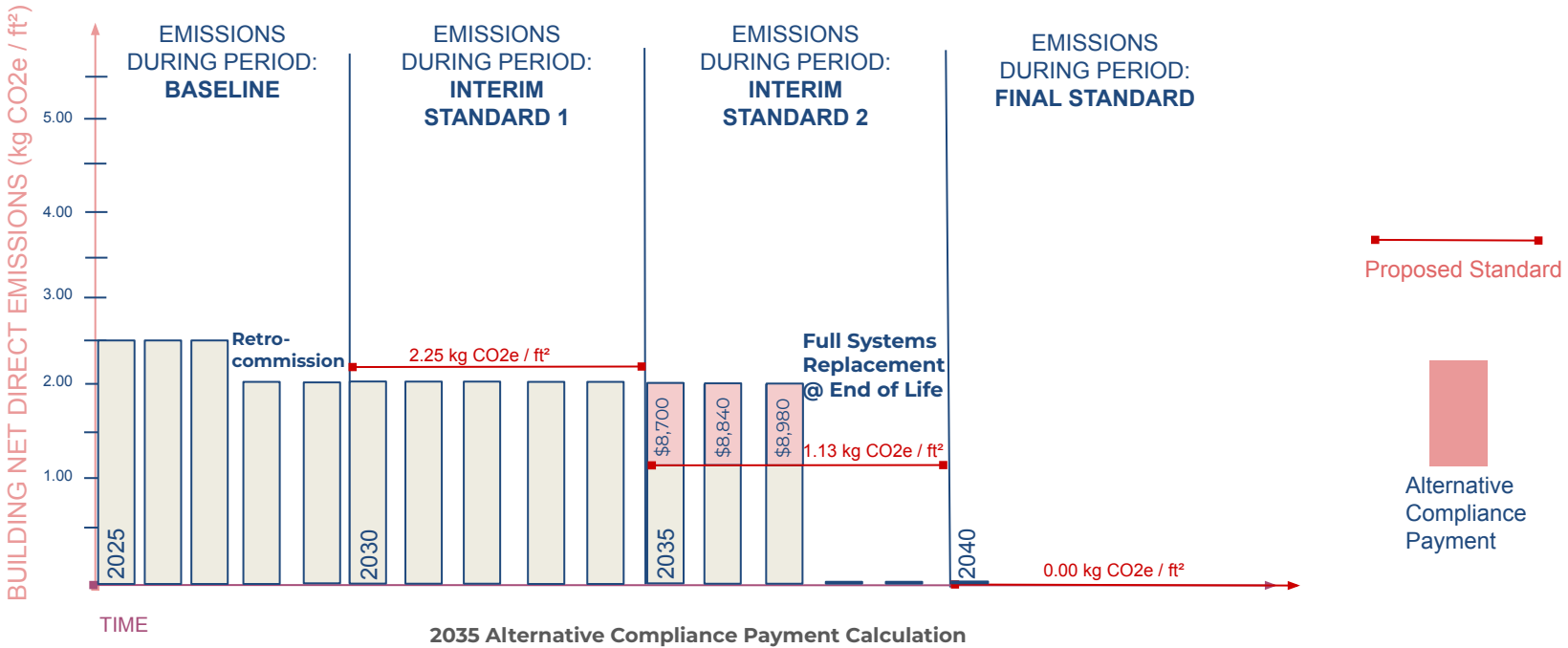
Alternative Compliance Spectrum

Building owner is not currently meeting the standard and makes no improvements to their property. They opt to meet compliance by making an Alternative Compliance Payment for the difference between the standard and their total emissions

Building owner is already nearly in compliance and/or opts to make improvements to their property until they deem it is more cost-effective to make an Alternative Compliance Payment on remaining emissions over the proposed standard

Building owner is already meeting or makes improvements to meet the standard

Alternative Compliance Payment
40k Square Foot Case Study



2035 Alternative Compliance Payment Calculation
Emissions over standard: 2.00 - 1.13 kg $CO2e/ft^2$ = 0.87 kg $CO2e/ft^2$
0.87kg $CO2e/ft^2$*40,000 ft^2 / 1000 kg/ton = 34.8 tons CO2e
34.8 tons CO2e * $250/ton CO2e in 2035 = **$8,700**
8700/12 = $725/month

Resources and Financial Support

EmPOWER MARYLAND

Utility incentives: staff O&M training, building tune ups, equipment

MARYLAND CLEAN ENERGY CENTER

Financing and technical assistance

Maryland Energy Administration

Clean Buildings Hub, grants, loans, rebates

Federal Incentives

Tax credits/ deductions (179-D, ITC, etc.)

MD PACE

Property Assessed Clean Energy Loans

Questions?

Building Decarbonization Team

beps.mde@maryland.gov

410-537-3183

BEPS Website

BEPS Email List

Appendix L – BEPS AQCAC Presentation – July 29, 2024

Maryland
Department of
the Environment

Maryland Building Energy Performance Standards (BEPS) 2024

July 29, 2024

Air Quality Control Advisory Council Presentation

Zach Berzolla, Ph.D., Building Decarbonization Section Head

Presentation Outline

- Timeline
- Regulation Updates
- Background
- Outreach
- Discussion / Questions

BEPS Timeline

Summer 2022	Climate Solutions Now Act (CSNA) requires MDE to implement BEPS
Winter 2024	MDE holds public hearing and comment period on 2023 proposed BEPS regulation
Spring 2024	FY25 Budget Bill requires MDE to withdraw 2023 proposed site Energy Use Intensity (EUI) standards
Summer 2024	MDE releases 2024 draft BEPS regulation
Fall 2024	MDE intends to propose the 2024 BEPS regulation
Spring 2025	Covered buildings report 2024 energy use data to MDE by **June 1, 2025**

BEPS Timeline

Spring 2026	BEPS Baseline Report Submission of 2025 energy use data on June 1, 2026
Summer 2026	MDE conducts studies required by FY25 Budget
Fall 2026	MDE submits report to the Maryland Legislature of covered buildings' 2025 calendar year energy use data
Spring 2027	MDE intends to re-introduce site EUI standards, satisfying CSNA requirement
January 2030	BEPS interim standards begin to take effect
Spring 2031	Covered buildings report 2030 energy use data to demonstrate compliance

BEPS Proposed Regulation

- December 2023 proposal has been withdrawn; revised version advanced
- What's changed between the two versions?
  - Removal of Site Energy Use Intensity (Site EUI) Standards
  - Modified the agricultural building definition, manufacturing building definition, exemption procedure, public infrastructure property types, and the consumer price index for clarification
- What stays the same between the two versions?
  - All other requirements, which includes:
    - Reporting requirements, including the reporting of energy use and emissions data to MDE annually starting June 1, 2025
    - Net direct emissions standards

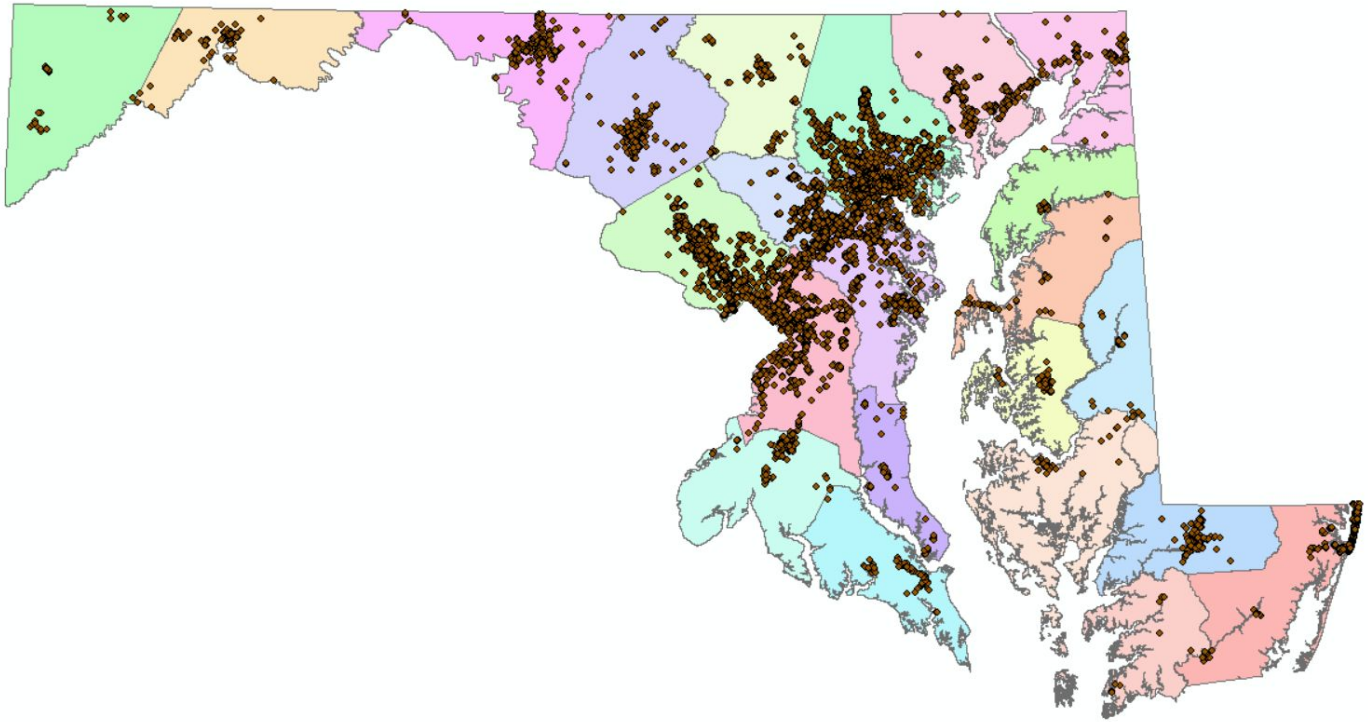
Site EUI Guidance

- MDE intends to establish site EUI standards in 2027.
- Building owners should refer to the site EUI standards proposed in December 2023 for directional guidance as they plan improvements to their buildings.
- Building owners are advised not to install electric resistance heating equipment without considering how the use of such equipment would influence the site EUI.

Covered Buildings

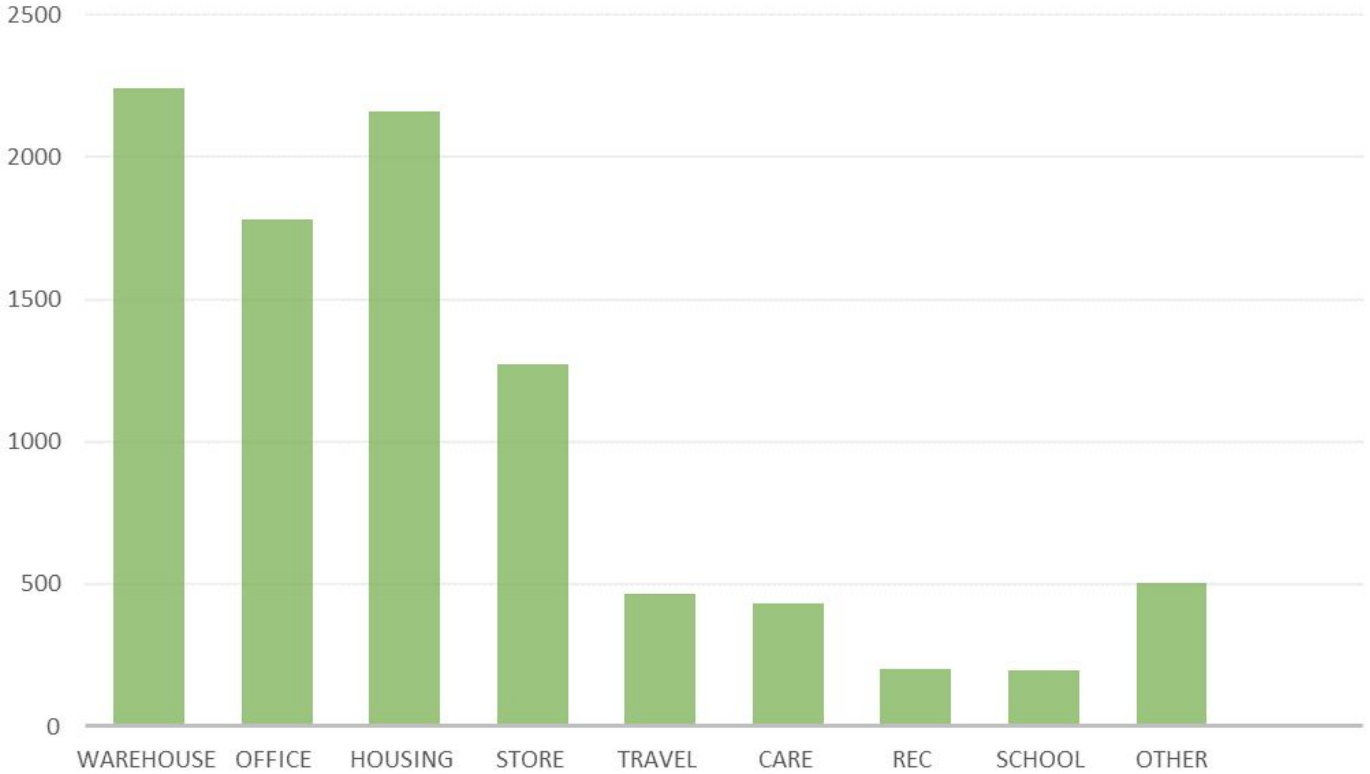
A covered building is a building in Maryland that has a gross floor area of 35,000 square feet or more excluding the parking garage area.

Location of Covered Buildings



Preliminary analysis

Covered Buildings in MD



Preliminary analysis

Exempt Buildings

Exempt buildings:

- Buildings smaller than 35,000 square feet;
- Historic buildings (designated as historic property under law);
- Public or nonpublic elementary and secondary school buildings;
- Manufacturing buildings;
- Agricultural buildings; and
- Federally-owned buildings

Exemptions: Energy Use

- Food service facilities that engage in commercial cooking and water heating
- Electric vehicle charging
- Emissions from required combustion equipment if a federal or State regulation requires backup equipment to run on combustible fuels; only for certain property types
- Others excluded by the benchmarking tool

Exemptions: Additional

- Exemption from benchmarking and performance standard requirements
  - Financial distress;
  - Not occupied; or
  - Demolition.
- Exemption from establishing baseline performance.
  - Less than 50% of the floor area was occupied.
- Exemptions for affordable housing providers.
  - Affordable housing provider demonstrates good faith effort to secure funding.

What's Next for Building Owners?

Alternative Compliance Payment

Benchmarking	Assessment	Achieve Standards
Annually, starting in 2025 Use ENERGY STAR Portfolio Manager to track annual energy use and GHG emissions	**Annually, starting in 2025** Determine if changes are needed to achieve the standards	**Annually, starting in 2030** Achieve standards **OR** Achieve partial compliance and make alternative compliance payment

Performance Standard

- Net Direct Greenhouse Gas Emissions Standards (“emissions standards”):
  - By 2030, achieve a 20% reduction as compared with 2025 levels for average buildings of similar construction
  - By 2035, achieve a 60% reduction as compared with 2025 levels for average buildings of similar construction
  - By 2040, achieve net-zero direct greenhouse gas emissions

	Net Direct Emissions Standards kg CO2e per square foot		
Property Type	**Interim Standard for 2030-2034**	**Interim Standard for 2035-2039**	**Final Standard for 2040 and beyond**

BERKELEY LAB
LAWRENCE BERKELEY NATIONAL LABORATORY

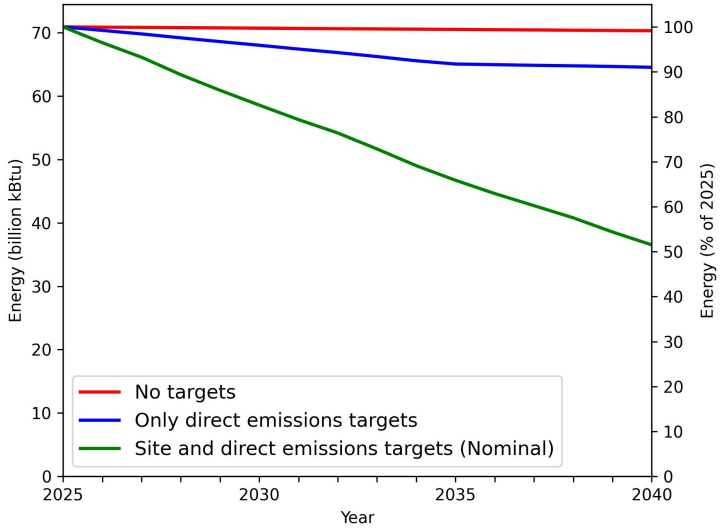
U.S. DEPARTMENT OF ENERGY

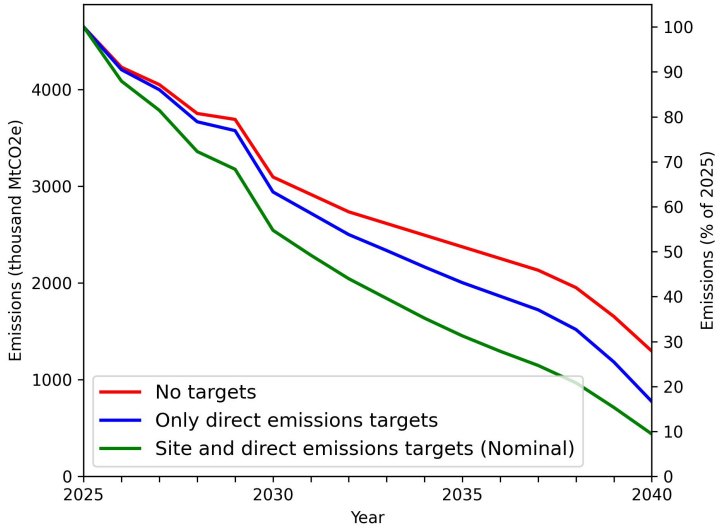
Building Performance Standards:

Air Quality Control Advisory Council Briefing

MDE - Energy and Emissions Reductions

- Emissions savings aggregate of cleaner projected grid, electrification, and efficiency

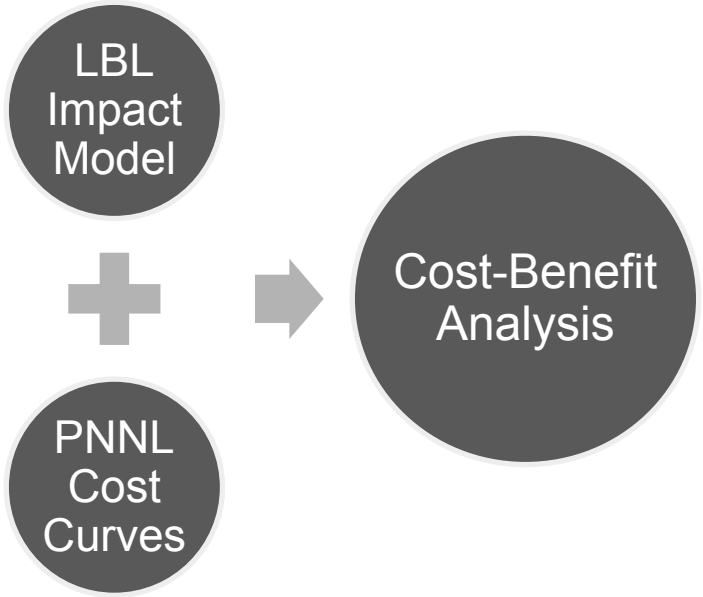




Integrating Costs into Impact Modeling

- Utilizing PNNL data on implementation costs for various energy retrofits at buildings, developing region-specific cost curves to help quantify **state-wide** magnitude of investment costs

- Integrated into LBNL impact model to quantify cost-benefit and model compliance rates



BERKELEY LAB

State-wide Results: 2025 – 2050*

- Total Building Area Covered: ~990MM SqFt
- Baseline Energy Costs: $68.94B
- BAU System Replacement Costs: $0.91B
- Total Efficiency Investments: $0.20B
- Total Electrification Investments: $5.53B
- Total Energy Cost Savings from Baseline: $4.56B
- **Net Cost of All Investments: $0.42B**

*All metrics shown aggregated over 2025-2050 time period
Does not include any energy efficiency/electrification incentives

Average Building Results: 2025 – 2050*

- **Net Cost: $0.65 / SF**
- 25% save more than $0.06 per square foot
- 25% spend more than $2.65 per square foot

*All metrics shown aggregated over 2025-2050 time period unless otherwise specified
Does not include any energy efficiency/electrification incentives

Contacts

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Andrea Mengual
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Economic Impacts

- On average, over the 2025-2050 time horizon, covered buildings spend $0.65 per square foot
- Under a future regulation that includes emissions and site EUI standards, over the 2025-2050 time horizon, on average covered buildings save $4.47 per square foot
- Significant funding from the federal Bipartisan Infrastructure Law and Inflation Reduction Act are expected to reduce costs of compliance with BEPS and speed their return on investments
- Building Energy Transition Implementation Task Force recommended programs, policies, and incentives aimed at reducing GHG emissions from the buildings sector and development of a plan for funding the retrofit of covered buildings to comply with BEPS

Resources and Financial Support

EmPOWER MARYLAND

Utility incentives: staff O&M training, building tune ups, equipment

MARYLAND CLEAN ENERGY CENTER

Financing and technical assistance

Maryland Energy Administration

Clean Buildings Hub, grants, loans, rebates

Federal Incentives

Tax credits/ deductions (179-D, ITC, etc.)

MD PACE

Property Assessed Clean Energy Loans

Clean Buildings Hub

One-stop-shop clearinghouse of relevant information and resources to help stakeholders reduce energy use and emissions of their buildings, such as federal, state, local, and utility incentives. The Hub will catalyze and amplify resources (original and partner), peer learning networks, and educational programming.

Check out the HUB's website below for more information and to submit feedback on resources

Outreach

- Sector-specific meetings in November and December 2022
- Informational webinars posted to MDE website
- AQCAC Presentations on December 12, 2022, March 13, 2023, June 12, 2023, September 11, 2023
- Building Energy Transition Task Force July 2023 - January 2024
- December 2023 Proposal and January 2024 public hearing and comments

Outreach (cont.)

- Small Business Impact Notice and Documents posted July 15
- Outreach sessions scheduled for August 2024
- Local Government Maryland BEPS Cohort 2024-2025
- Working Group sessions meeting from June - October, 2024
  - Electric and Gas Company Reporting Requirements
  - District Energy Systems
  - Benchmarking and Report Submission
  - Campus Compliance
  - Additional to be scheduled in late 2024 and in 2025

Wrap-Up of Next Steps in BEPS

- The Climate Solutions Now Act of 2022 requires MDE to develop BEPS regulations that cover most large buildings in the state with net direct emissions & site EUI standards
- Site EUI has been removed from the regulation based on the 2024 Budget requirements
  - MDE intends to establish site EUI standards based on 2025 benchmarking data after requirements in the budget language are met
- Decarbonizing large buildings is an important step toward achieving Maryland's greenhouse gas reduction goals
- Robust stakeholder outreach, education, and technical support are in progress to assist with compliance

Discussion and Questions

Contact

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

MDE BEPS email: BEPS.MDE@maryland.gov

Appendix M – BEPS Informational Session 1: How to Get Started: Decarbonizing Large Buildings – August 6, 2024

Maryland's Building Energy Performance Standards (BEPS)

How To Get Started: Decarbonizing Large Buildings

August 6, 2024

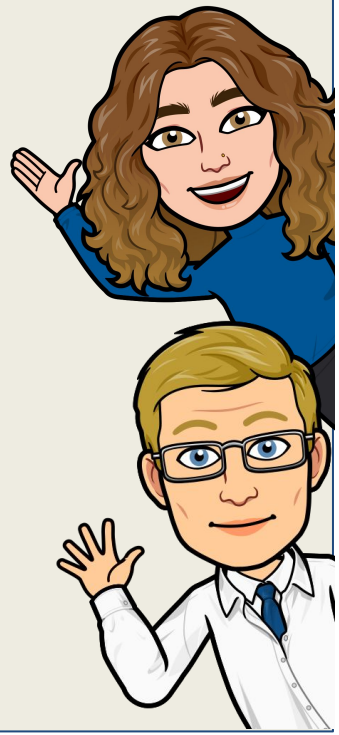
Visit Our Website

mde.maryland.gov

Sam Furio - *Outreach Coordinator*

Agenda

- Meet Dr. Decarb and Ms. Price
- Building regulations overview
- How to get started
- Benchmarking
- Compliance
- Resources



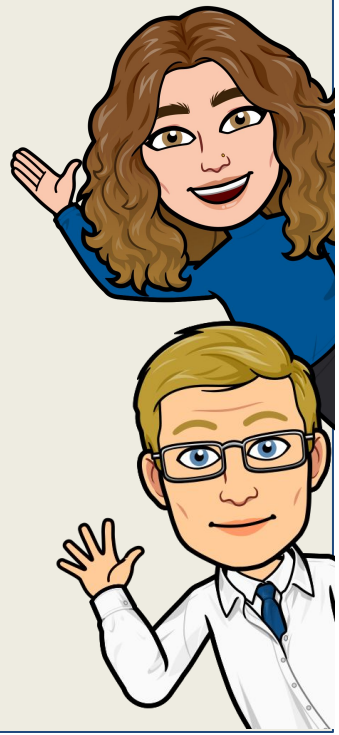
Outreach Sessions

Aug. 6 – How to Get Started: Decarbonizing Large Buildings

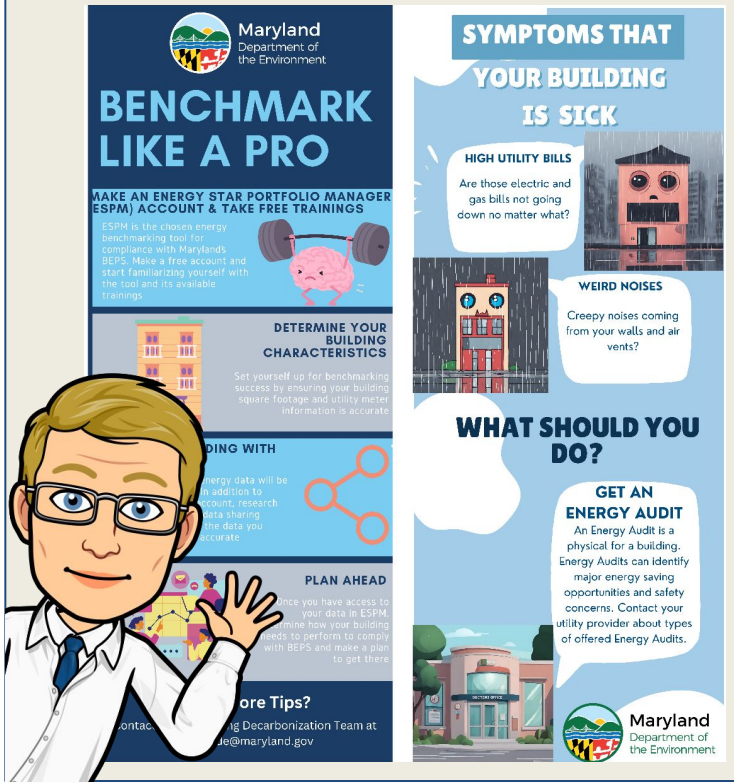
Aug. 13 – Dr. Decarb Answers Questions About Building Standards

Aug. 22 – Clean Buildings for All: Leaving No One Behind

Sept. 10 – Benchmarking and Reporting Working Group



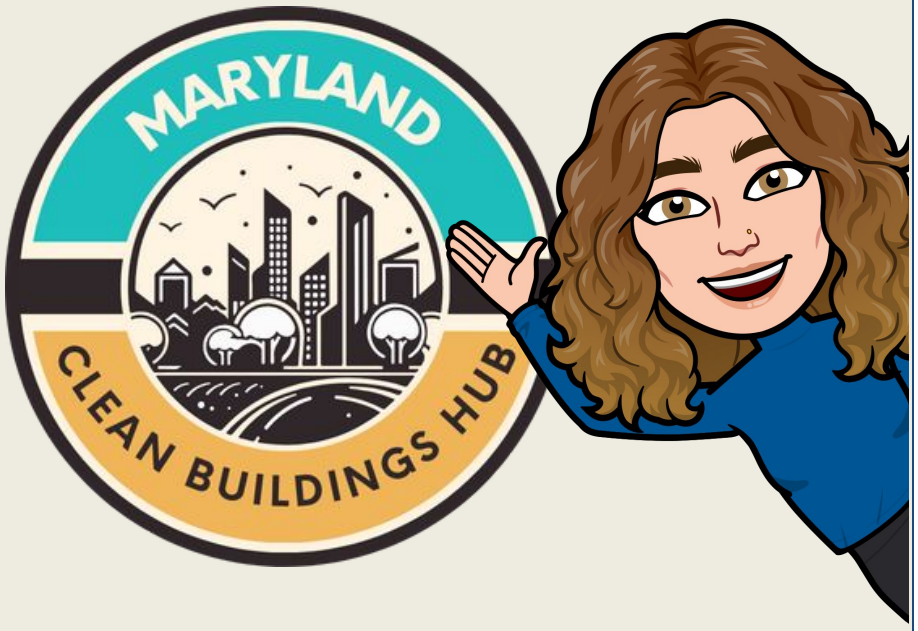
Dr. Decarb Diagnoses and Prescribes



- Webinar series launches **August 13th @ 7 p.m.**
- Dr. Decarb and his team are here to help you better understand how to comply with the regulations
- Sign-up today for our newsletter to receive resources and helpful tips

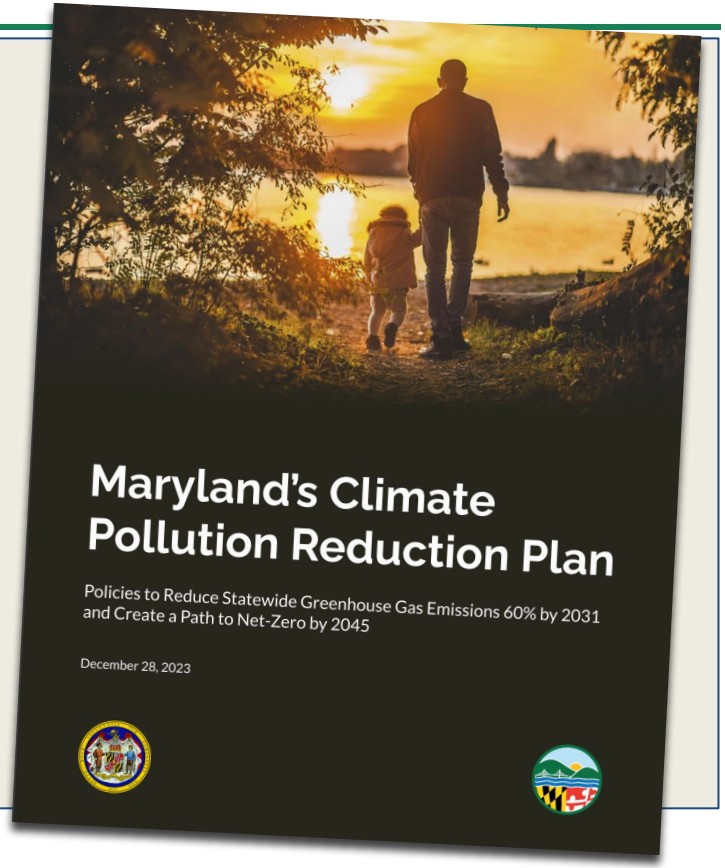
Ms. Price is Your Resource Liaison

- Ms. Price from the Maryland Energy Administration is launching her webinar series on **August 22nd @ 7 p.m.**
- Ms. Price is here to help you get the **resources you need** to decarbonize buildings
- Sign-up today for the Clean Buildings For All webinar and The Hub newsletter



Climate Pollution Reduction Plan

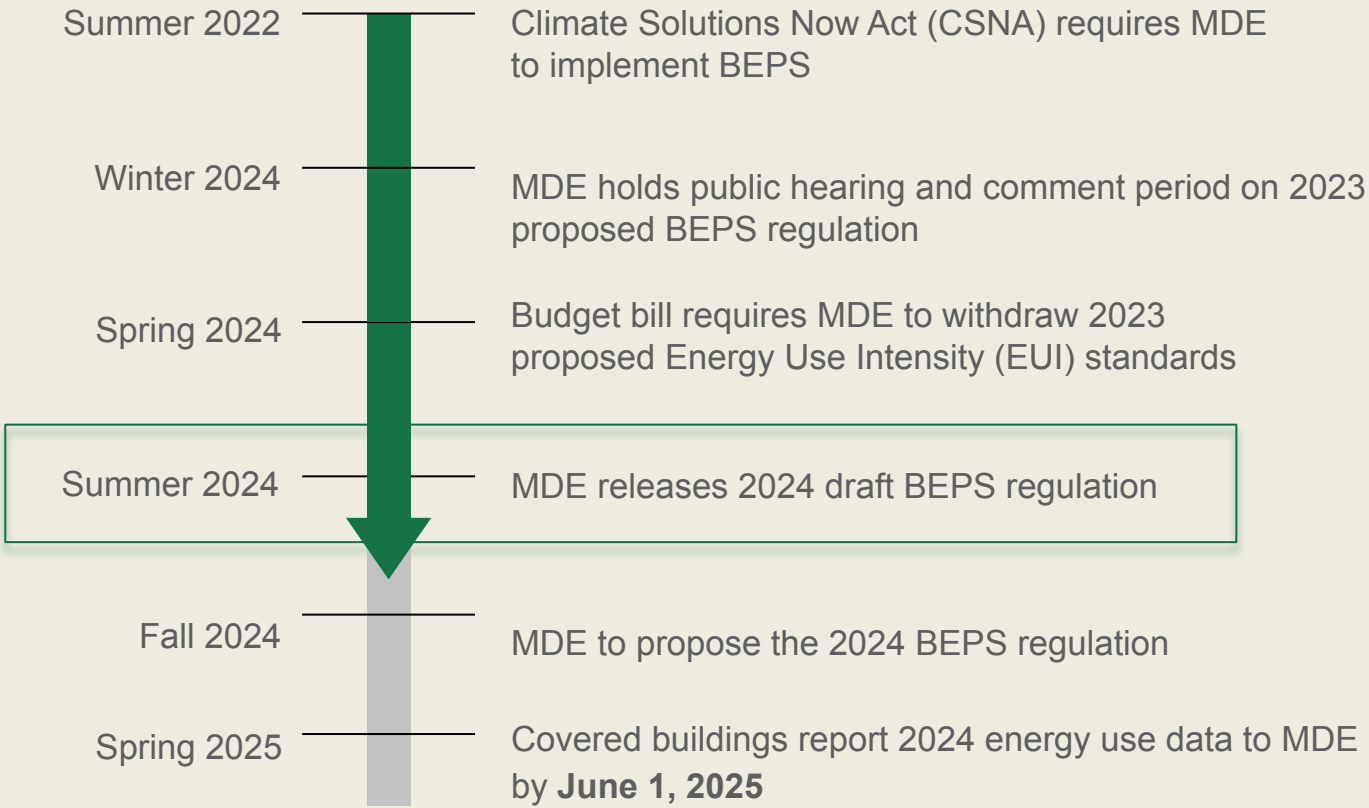
- Climate Solutions Now Act of 2022 (CSNA) requires the Maryland Department of the Environment to develop Building Energy Performance Standards (BEPS)
- CSNA requires Maryland to reduce statewide greenhouse gas emissions 60% by 2031 (compared to 2006 levels) and reach net-zero emissions by 2045



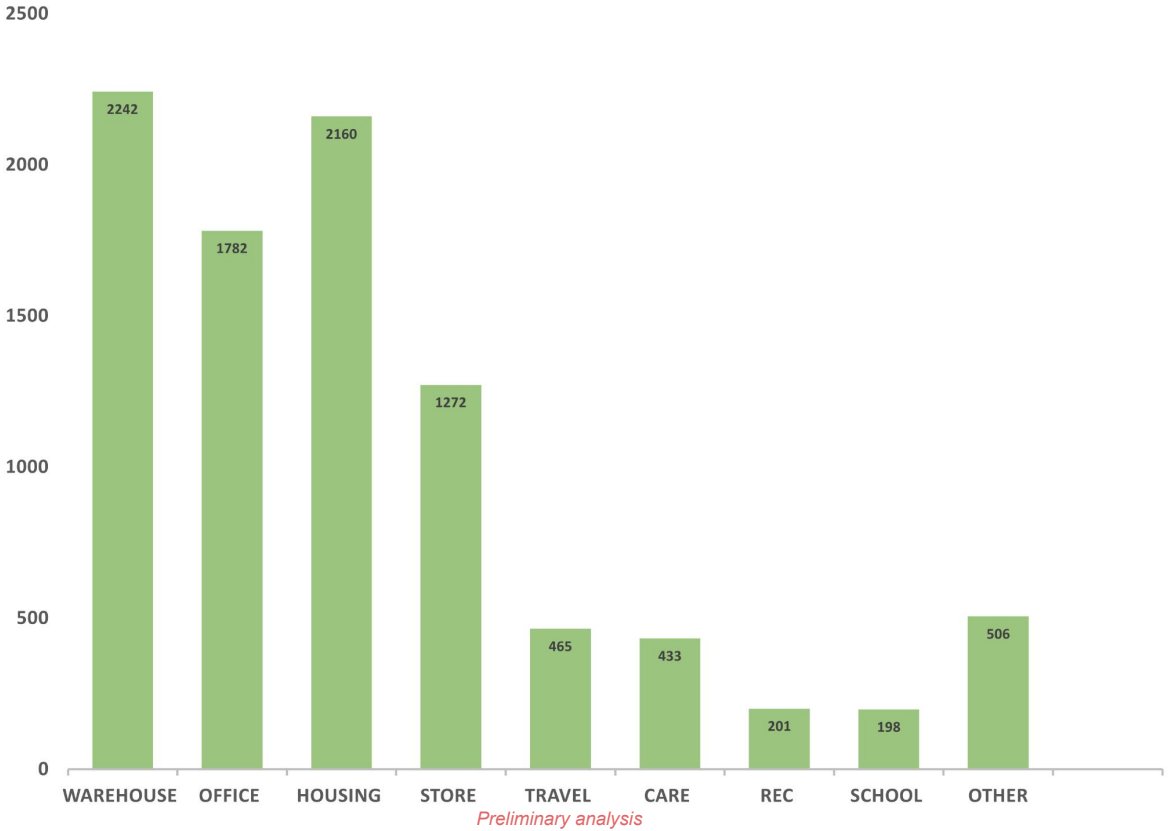
Overview of BEPS Regulation

- Most buildings 35,000 square feet or larger are covered
- Start benchmarking now - required by June 1, 2025
- Buildings over 35,000 square feet must meet interim standards in 2030, reach zero net direct emissions by 2040
- Building owners can make an alternative compliance payment in lieu of fully achieving the emissions standards

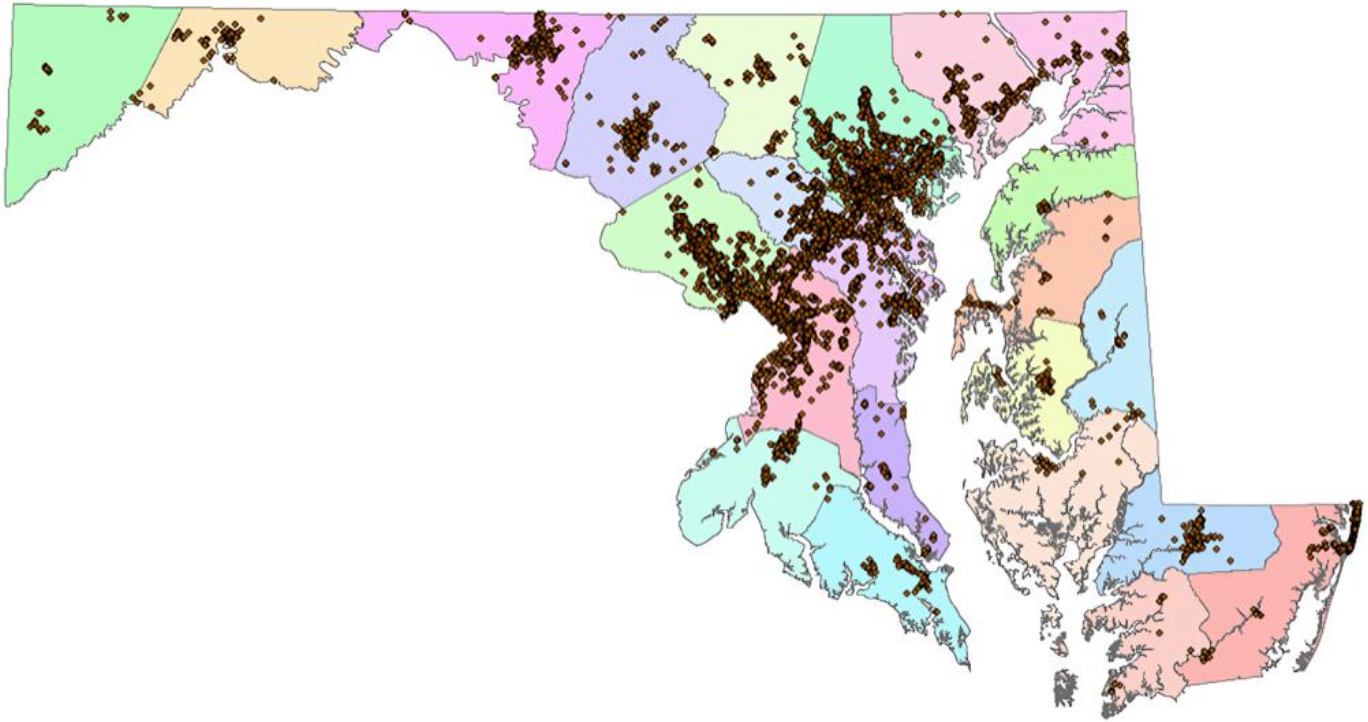
Regulation Timeline



Covered Buildings: Property Types



Covered Buildings: Locations



Preliminary analysis

Exemptions: Buildings

- Historic buildings (designated as historic property under law);
- Public or nonpublic elementary and secondary school buildings;
- Manufacturing buildings;
- Agricultural buildings; and
- Federally-owned buildings

Photo courtesy of www.gwwoinc.com

Exemptions: Energy Use

- Food service facilities engaging in commercial cooking and water heating
- Electric vehicle charging
- Emissions from required combustion equipment if a federal or State regulation requires it
- Misc. (see TM) e.g. cell towers

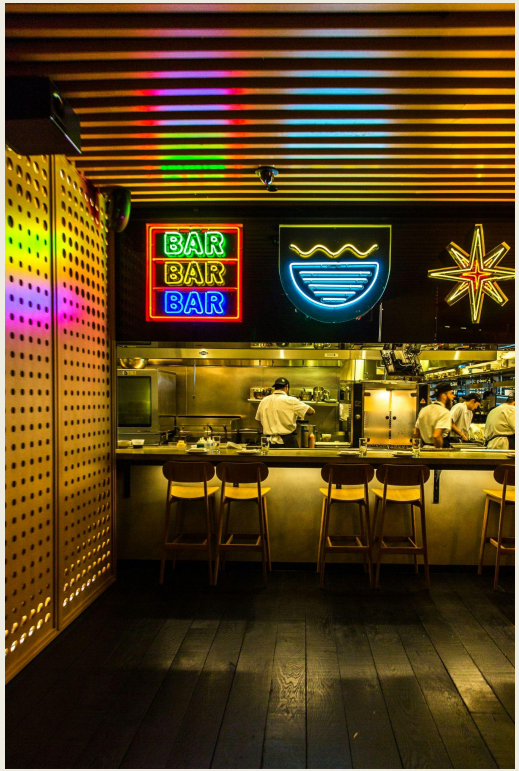


Photo by Jason Leung on Unsplash

What Does a Building Owner Need to Do?

1. Determine if a building is covered by calculating its square footage and/or evaluating exemption status
2. **Start benchmarking**
3. Assess whether the building is already achieving the proposed standards
4. If not meeting the standards, plan to make improvements and determine when it's preferable to pay the alternative compliance fee
5. Prioritize **efficient** electrification projects, as MDE intends to bring back site energy use intensity.

Taking Steps Now

- Conduct an energy audit
- Install LED lighting
- Purchase ENERGY STAR certified electric equipment
- Make weatherization improvements to the building envelope, including air sealing and insulation
- Retro-commission building systems
- Install control systems for plug loads, lighting, and HVAC

How to Get Started

Benchmarking

Annually,
starting in 2025
Use ENERGY STAR Portfolio Manager to track annual energy use and greenhouse gas emissions

How to Get Started

Benchmarking	Assessment
Annually, starting in 2025 Use ENERGY STAR Portfolio Manager to track annual energy use and greenhouse gas emissions	**Annually, starting in 2025** Determine if changes are needed to achieve the standards

How to Get Started

Alternative Compliance Payment

Benchmarking	Assessment	Achieve Standards
Annually, starting in 2025 Use ENERGY STAR Portfolio Manager to track annual energy use and greenhouse gas emissions	**Annually, starting in 2025** Determine if changes are needed to achieve the standards	**Annually, starting in 2030** Achieve standards **OR** Achieve partial compliance and make alternative compliance payment

Alternative Compliance Payments

Alternative compliance is available for the proposed net direct emissions standard in the form of payments set at the US Environmental Protection Agency's (EPA) social cost of greenhouse gas. These rates are the lowest permitted by law.

Year	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2040+
Cost per metric ton of CO2e	$230	$234	$238	$242	$246	$250	$254	$258	$262	$266	$270	$270 + $4/yr

All figures are in 2020 dollars and will be adjusted for inflation to that year

Compliance Spectrum

Undesirable

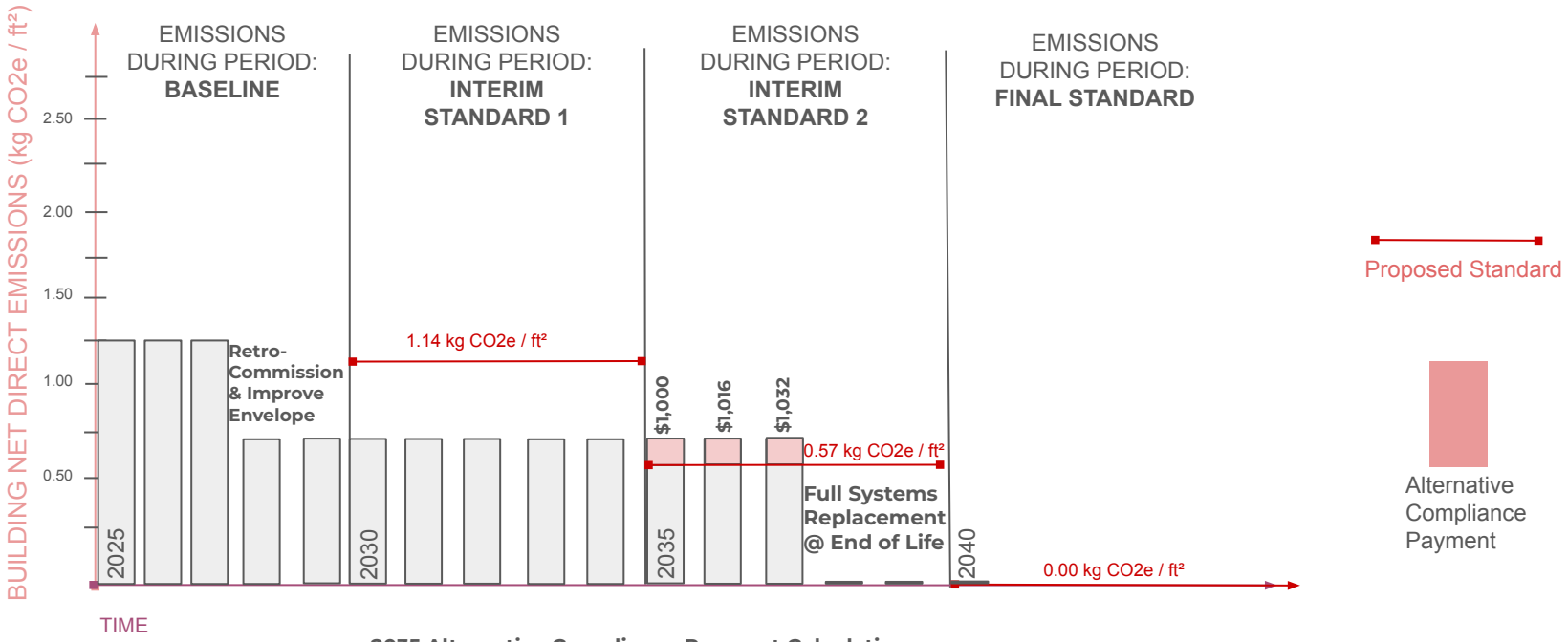
Ideal

Building owner is not currently meeting the standard and makes no improvements to their property. They opt to meet compliance by making an Alternative Compliance Payment for the difference between the standard and their total emissions.

Building owner is already nearly in compliance and/or opts to make improvements to their property until they deem it is more cost-effective to make an Alternative Compliance Payment on remaining emissions over the proposed standard.

Building owner is already meeting or making improvements to meet the standard.

Example: Alternative Compliance Payment



2035 Alternative Compliance Payment Calculation
Emissions over standard: 0.67 - 0.57 kg CO2e/ft^2 = 0.1 kg CO2e/ft^2
0.1kg CO2e/ft^2*40,000 ft^2 / 1000 kg/ton = 4 CO2e
4 tons CO2e * $250/ton CO2e in 2035 = **$1,000/year**
$1000/12 = ~ $83/mth

Resources and Financial Support

EmPOWER MARYLAND

Utility incentives for training, building tuneups, equipment

MARYLAND CLEAN ENERGY CENTER

Financing and technical assistance

Maryland DEPARTMENT OF HOUSING AND COMMUNITY DEVELOPMENT

Grants and loans for energy efficiency

Federal Incentives, tax credits and deductions

MD PACE Property Assessed Clean Energy Loans

Turn-key, low cost, standardized services to make buildings energy efficient

Maryland Energy Administration

Clean Buildings Hub, grants, loans, rebates

Clean Buildings Hub

Questions?

Website

mde.maryland.gov

Email

beps.mde@maryland.gov

Call

410-537-3183

Social Media

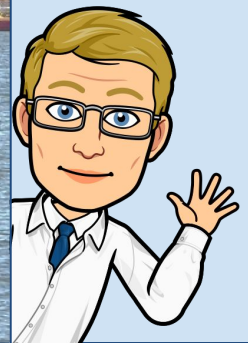
@md_environment

Appendix N – BEPS Informational Session 2: Dr. Decarb Answers Questions About Building Standards – August 13, 2024

MDE Building Decarbonization Team

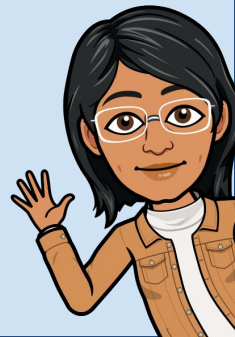
Dr. Decarb Answers Questions About Building Standards

August 13, 2024 @ 7 pm



"Dr. Decarb"
Zach Berzolla, PhD.
MDE Building Decarbonization Section Head

"Mary Lynn"
Building Owner



Maryland's BEPS Overview

MDE BEPS Website

BEPS Email List

Building Decarbonization Team

Email: beps.mde@maryland.gov Phone: 410-537-3183

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FAQ Agenda

Covered Buildings

What does a covered building look like?

Energy Consumption Data

How do I get my energy consumption data from my electric and/or gas company or building tenant?

What happens if they don't provide it?

Building Upgrade Resources

What resources are available to help building owners upgrade their building if necessary?

Renewable Energy

Can I use renewable energy to comply with Maryland BEPS?

Montgomery County

My building is in Montgomery County. What do I have to do to comply?

BEPS Policy Update

What changes were made between the BEPS regulation proposed in December, 2023 and this new 2024 draft?

FAQ Agenda

Public Comments

Will there be opportunities to provide public comment on the BEPS regulation in 2024?

Noncompliance Penalties

Are there penalties associated with noncompliance?

Third Party Verification

Why do I need to have my energy data third party verified and who is eligible to be a verifier?

Flexibilities in Compliance

What flexibilities are available when trying to comply with the regulatory requirements?

Unique Building Situations

How does the regulation account for my building's unique situation?

BEPS Informational Sessions

How can I learn more about BEPS?

Covered Buildings

What does a covered building look like?

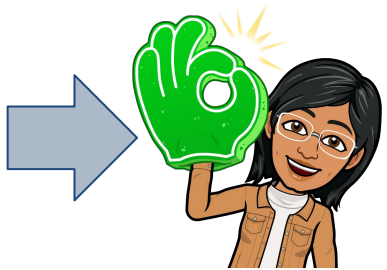
Covered buildings are larger than 35,000 square feet.

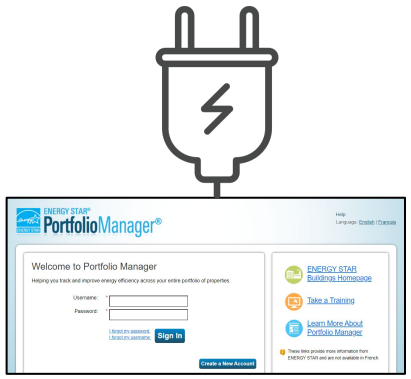
- Average grocery store is 40,000 square feet
- 1 acre of land is 43,560 square feet
- A football field is 57,600 square feet

Energy Consumption Data

How do I get my energy consumption data from my electric and/or gas company or building tenant? What happens if they don't provide it?

	2025	2026 and beyond
Electric and gas companies	90 days	30 days
Tenants	30 days	30 days





Building Upgrade Resources

What resources are available to help building owners upgrade their building if necessary?

MEA Clean Buildings Hub
Grants, loans and rebates

Federal Incentives

Tax credits/ deductions (179-D, ITC, etc.)

Renewable Energy

Can I use renewable energy to comply with BEPS?

Montgomery County

My building is in Montgomery County. What do I have to do to comply?

Building owners in Montgomery County will begin data sharing with MDE through ENERGY STAR Portfolio Manager (ESPM) in 2025 and from then on will update their data directly in ESPM.

ENERGY STAR® PortfolioManager®

Maryland Department of the Environment

This data will be reported to both Montgomery County and MDE.

Montgomery County Department of Environmental Protection

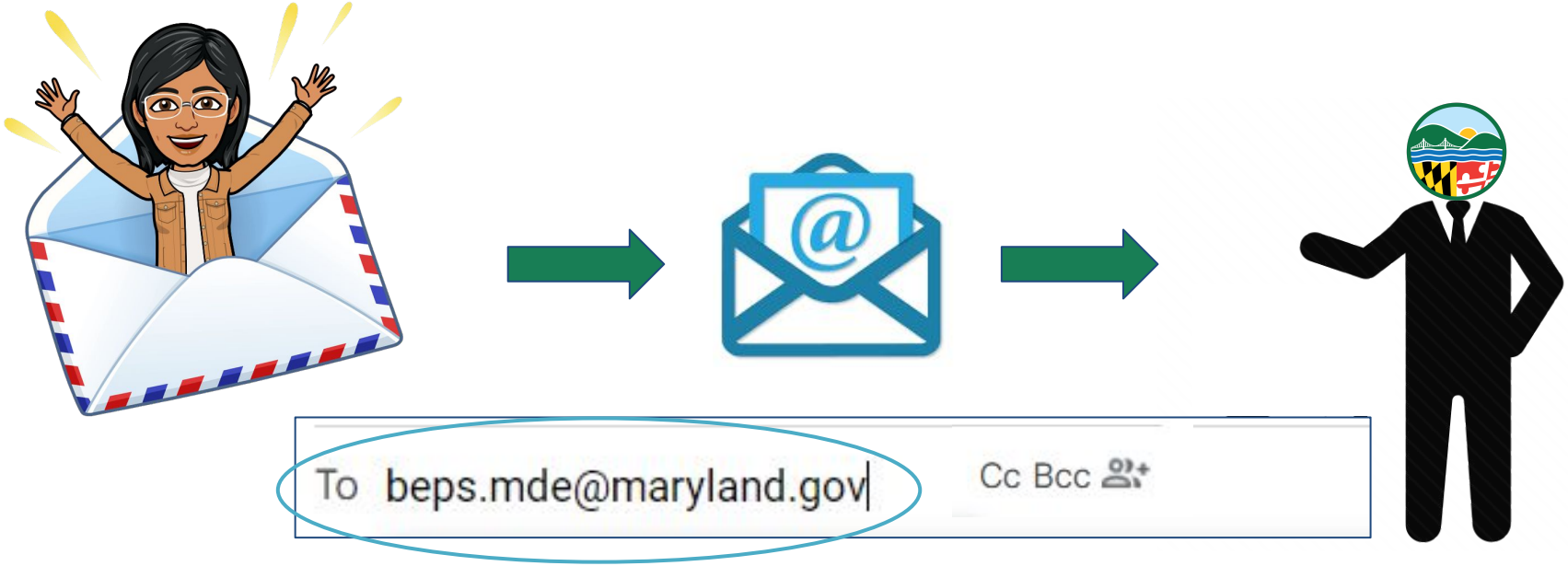
BEPS Policy Update

What changes were made between the BEPS regulation proposed in December 2023 and this new 2024 draft?

- Removal of the proposed site energy use intensity (EUI) standards
- Modification of,
  - Agricultural building definition,
  - Manufacturing building definition,
  - Exemption procedure,
  - Public infrastructure property types, and
  - The consumer price index.

Public Comments

Will there be opportunities to provide public comment on the BEPS regulation in 2024?

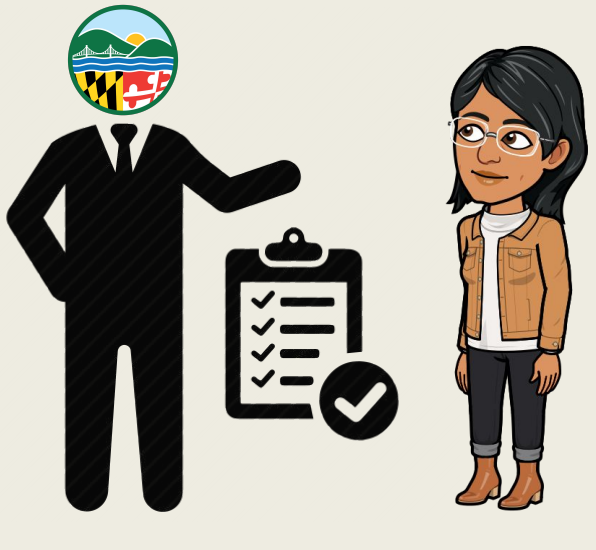


Noncompliance Penalties

Are there penalties associated with noncompliance?

MDE intends to work with building owners and tenants to come into compliance with the regulation and has discretion in pursuing compliance actions.

Failure to comply with any aspect of the BEPS regulation would put the party in question in violation of an MDE regulation, which would be handled by the MDE Air and Radiation Administration compliance program.



Third Party Verification

Why do I need to have my energy data third party verified and who is eligible to be a verifier?

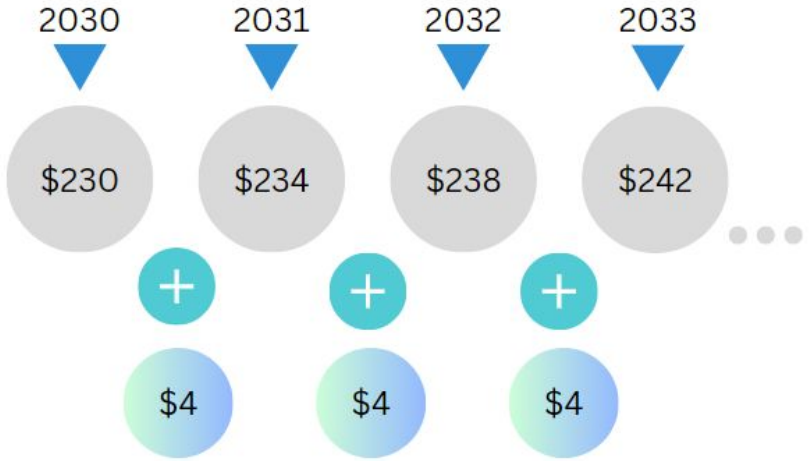
<u>Third party verifiers must have current licenses or certifications:</u>

- Professional Engineer (PE) issued within the United States;
- Licensed Architect issued within the United States;
- Certified Energy Manager (CEM);
- Building Energy Assessment Professional.

Any other additional data verifier license or training program credentials recognized by the Department.

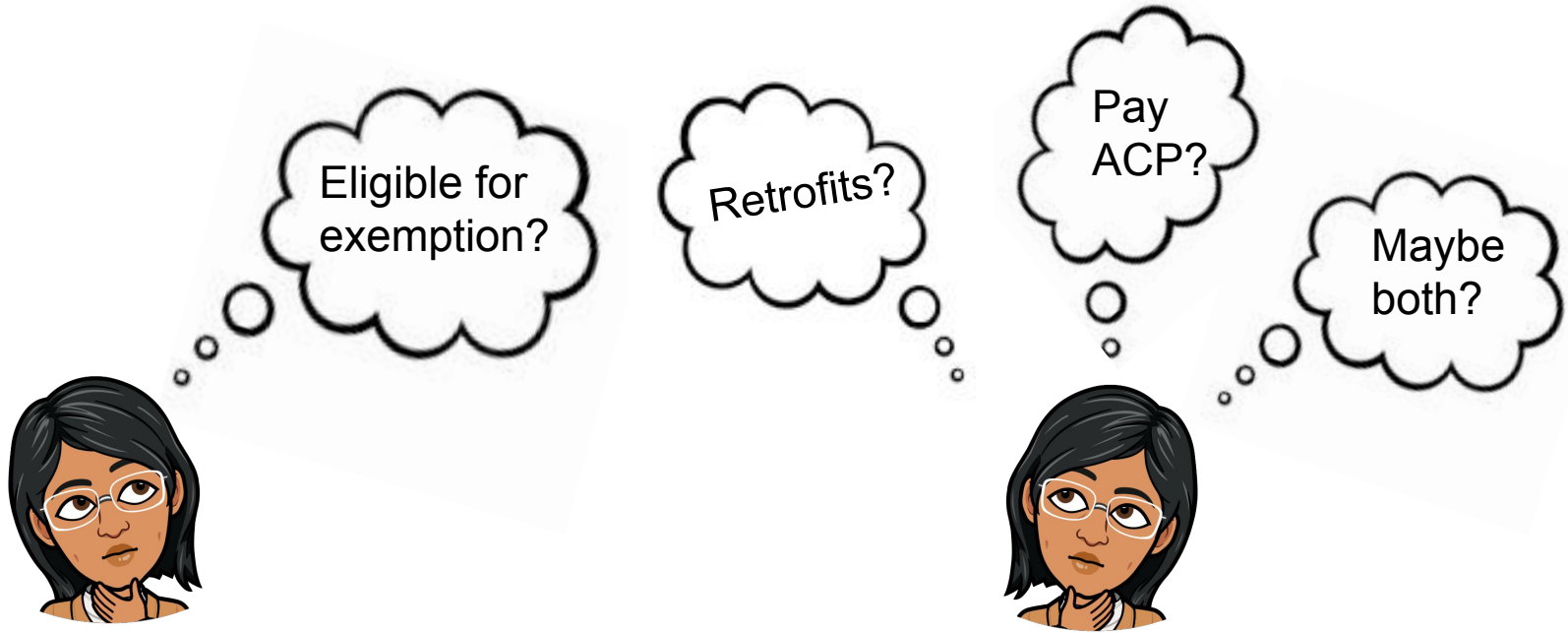
Flexibilities in Compliance

What flexibilities are available when trying to comply with the regulatory requirements?



Unique Building Situations

How does the regulation account for my building's unique situation?



BEPS Informational Sessions

How can I learn more about BEPS?

Upcoming Sessions and Webinars

- **Aug. 22** – Clean Buildings for All: Leaving No One Behind
- **Sept. 10** – Benchmarking and Reporting Working Group

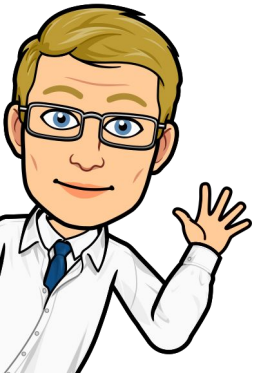
Thanks for Attending!

MDE Building Decarbonization Team

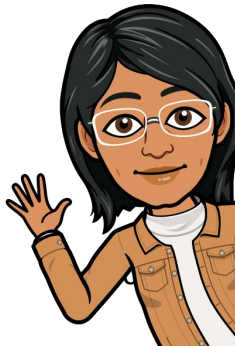
beps.mde@maryland.gov

410-537-3183

“Dr. Decarb”



“Mary Lynn”
Building Owner



Appendix O – Electric and Gas Company Reporting Requirements Working Group

Session 3 –August 15, 2024

Maryland
Department of
the Environment

Maryland Building Energy Performance Standards (BEPS)

Electric and Gas Company Reporting Requirements Working Group

Session 3 - 8/15/2024 @ 2pm

Zach Berzolla, Ph.D.
MDE *Building Decarbonization Section Head*

Session 3 Agenda

- Welcome back
- BEPS policy update
- MDE requirements and clarifications
- Next steps
- Spreadsheet utilities Q&A

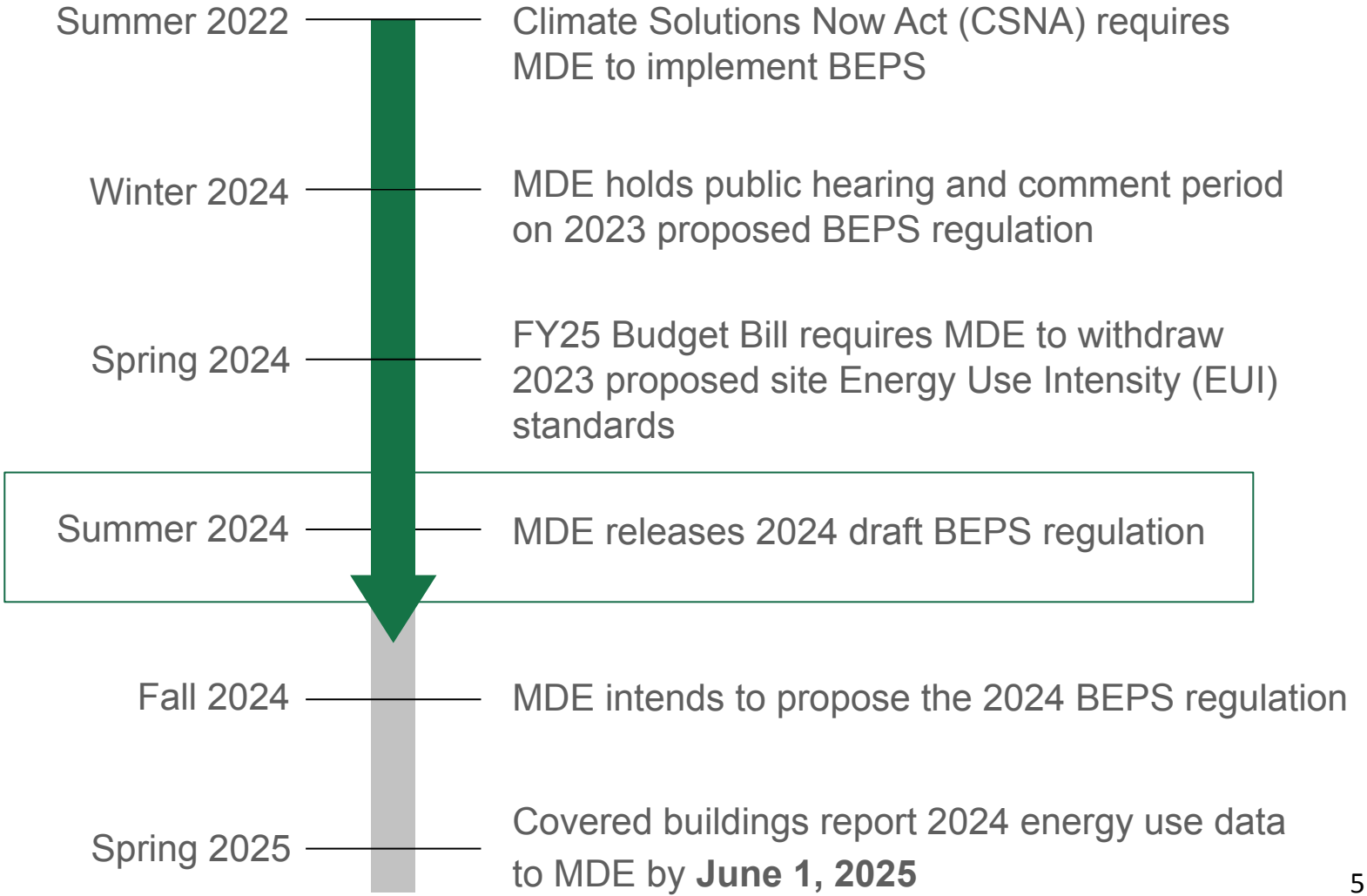
BEPS Proposed Regulation

- December 2023 proposal has been withdrawn; revised version advanced.
- What's changed between the two versions?
  - Removal of Site Energy Use Intensity (Site EUI) Standards,
  - Modified the agricultural building definition, manufacturing building definition, exemption procedure, public infrastructure property types, and the consumer price index for clarification.
- What stays the same between the two versions?
  - All other requirements, which includes:
    - Reporting requirements, including the reporting of energy use and emissions data to MDE annually starting June 1, 2025
    - Net direct emissions standards

Site EUI Guidance

- MDE intends to establish site EUI standards in 2027
- Building owners should refer to the site EUI standards proposed in December 2023 for directional guidance as they plan improvements to their buildings.
- Building owners are advised not to install electric resistance heating equipment without considering how the use of such equipment would influence the site EUI.

BEPS Timeline



BEPS Timeline

Spring 2026	BEPS Baseline Report Submission of 2025 energy use data on June 1, 2026
Summer 2026	MDE conducts studies required by FY25 Budget
Fall 2026	MDE submits report to the Maryland Legislature of covered buildings' 2025 calendar year energy use data
Spring 2027	MDE intends to re-introduce site EUI standards, satisfying CSNA requirement
January 2030	BEPS interim standards begin to take effect
Spring 2031	Covered buildings report 2030 energy use data to demonstrate compliance

Building Owner Reporting Requirements

- Starting in 2025, annually collect previous calendar year whole building energy data for owned, covered building(s) and submit to MDE through ENERGY STAR Portfolio Manager (ESPM) by June 1st
  - Data shall be requested from relevant utilities
- Data must be submitted to MDE sorted by month and fuel type. Building owners will exclude energy consumption for certain end uses.
- Use ESPM's data quality checker prior to submission, and in certain years, have the data verified by a third party verifier
- Retain 5 years of historical data

Effective January 1, 2025: Electric & Gas Company Reporting Requirements

- **Data Retention**
  - Maintain whole building energy data for no less than 5 years
  - Starting with 2024 data

- **Data Provision**
  - Provide 12 months of whole building energy data to the building owner, aggregated on a monthly basis and by fuel type
  - On request within 90 days in 2025 and 30 days in 2026 and beyond

- **Aggregation Threshold**
  - ≥ 5 tenants: no authorization needed
  - < 5 tenants: written or electronic consent from each tenant (can be in lease)

- **Mechanism for Data Delivery**
  - Investor owned: > 40k customers must provide data through ESPM Web Services
  - All others: provide data via ESPM Web Services or a pre-defined spreadsheet format

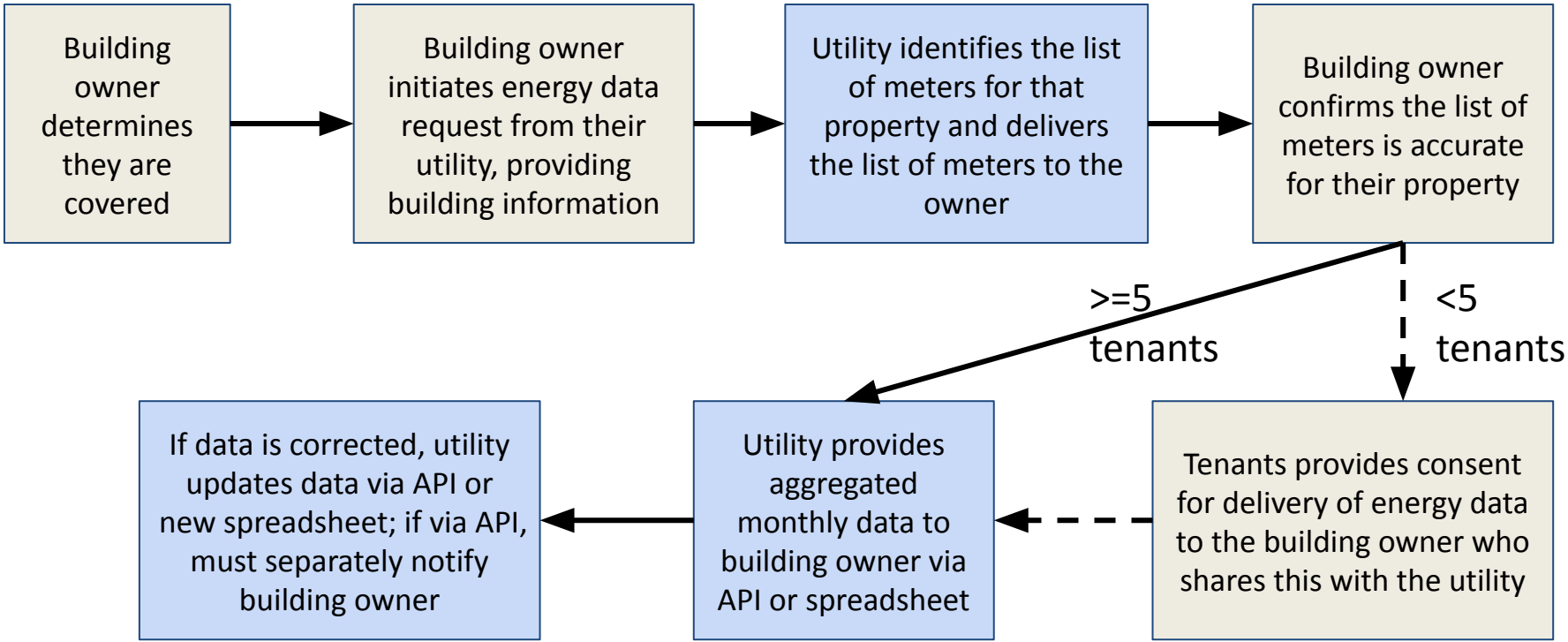
Effective January 1, 2025: Electric & Gas Company Reporting Requirements

- **Data Completeness and Accuracy**
  - For properties with onsite generation of renewable electricity (e.g., solar or wind energy), the consumption values delivered to the building owner must capture total (gross) grid electricity consumption as metered by the electric or gas company, rather than net (or net-metered) consumption of grid electricity.
  - Develop a process to identify and confirm with the building owner the list of meters that will be used to calculate the aggregated total as follows:

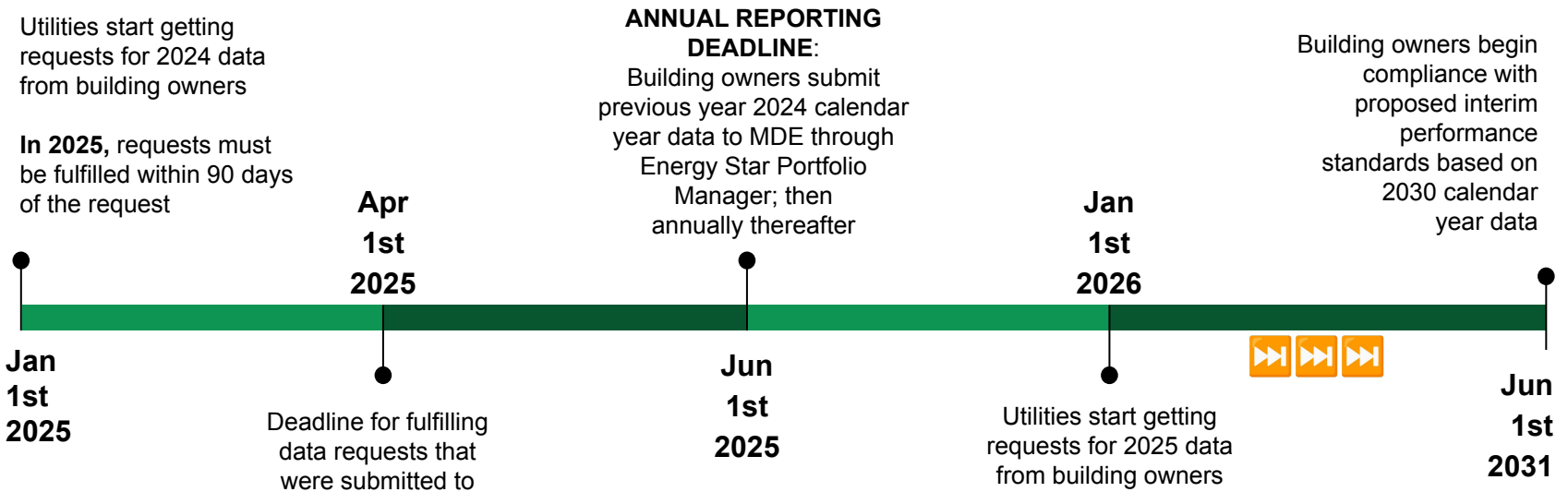
    (a) Provide to the building owner a listing of all meters included in the whole building energy consumption data for verification purposes

    (b) If any correction or update takes place at a meter that is included in the whole building energy consumption data, then the affected value(s) shall be proactively updated through the benchmarking tool's web services API or through an updated spreadsheet template with a notification provided to the building owner/data requestor

Flowchart For Data Requests



Electric & Gas Co. Reporting Timeline



Next Steps

- Schedule a 1 on 1 session! Booking link coming soon.
- Implementation & Communications Plan
  - High-level process description for building owners to request data
  - Relevant websites/landing pages
  - Method of communication
- Input on: collaborations around informational sessions in early 2025 for their customers
- Contact ENERGY STAR with technical questions: statelocal@energystar.gov

Questions?

Building Decarbonization Team

beps.mde@maryland.gov

410-537-3183

BEPS Website

BEPS Email List

Appendix P – BEPS Informational Session 3: Clean Buildings for All: Leaving No One Behind – August 22, 2024.

Maryland's Building Energy Performance Standards (BEPS)

Clean Buildings for All: Leaving No One Behind

August 22, 2024

Visit Our Website

mde.maryland.gov

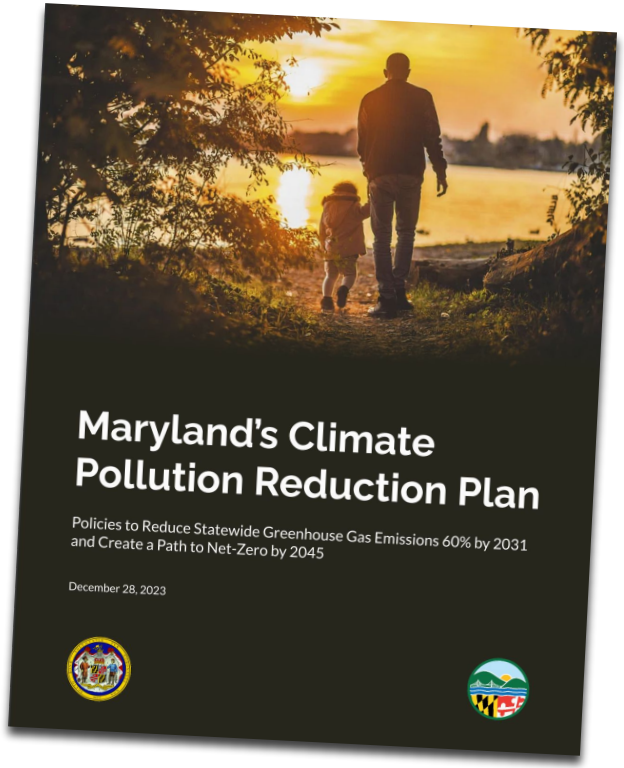
Sam Furio - Building Decarbonization Outreach Coordinator

Agenda

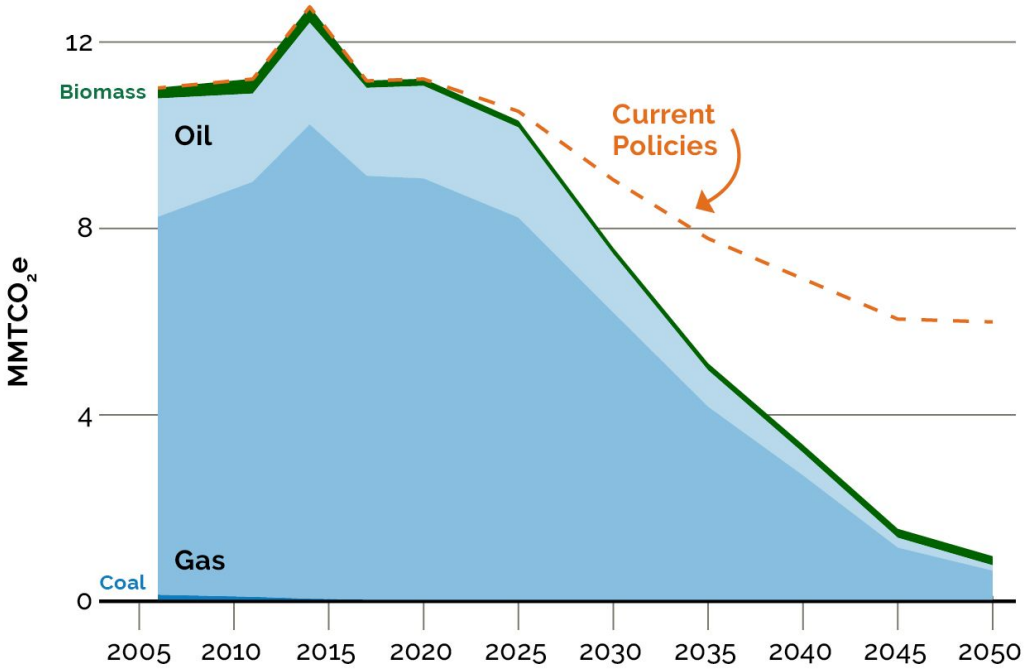
1. Climate Pollution Reduction through Building Decarbonization
2. Benefits For All
3. Maryland Energy Administration: Clean Buildings Hub
4. Q&A

Climate Plan Objectives

1. Reduce statewide greenhouse gas emissions 60% by 2031 (from 2006 levels)
2. Set the state on a path to achieve net-zero emissions by 2045
3. Create net economic benefits for Maryland, including more than 27,000 green jobs
4. Full plan at mde.maryland.gov



Electrification of Buildings



Building Energy Performance Standards and federal incentives for heat pumps reduce emissions, but not enough

New policies, such as **Zero-Emission Heating Equipment Standards** and **Clean Heat Standards** will reduce emissions fast enough to achieve our goals

Electrification Creates Local Jobs

Upgrading a boiler to a heat pump can't be outsourced

Implementing this Plan will create an additional **27,000 jobs** between now and 2031

Electricians and heat pump installers will benefit

Lower Energy Costs for Families

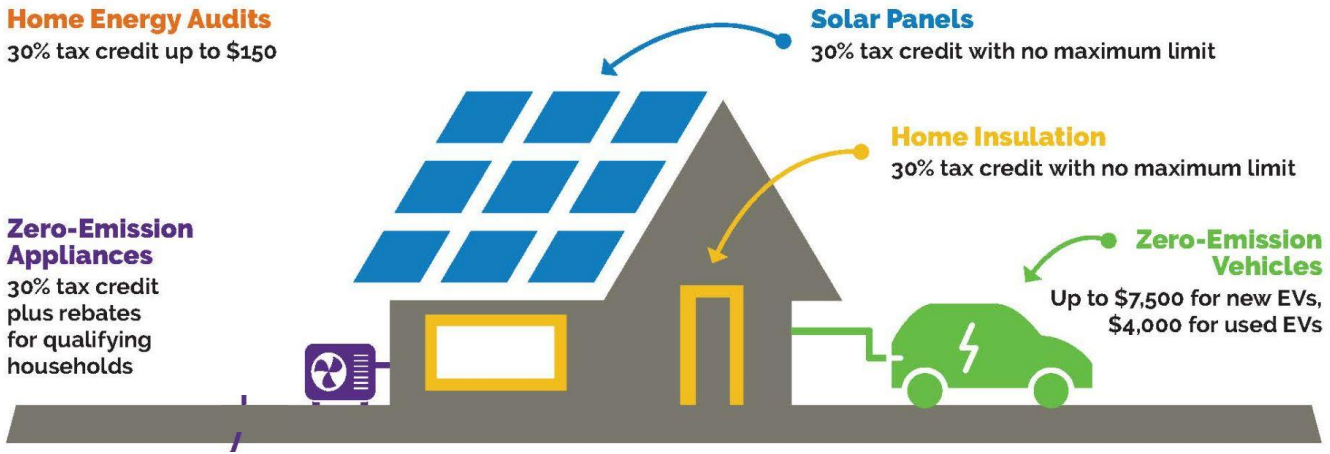
The average Maryland household saves **$2,600** annually by using heat pumps and EVs instead of gas appliances and gas cars.

Savings increase to **$4,000** annually for households that switch from oil or propane to heat pumps and EVs.

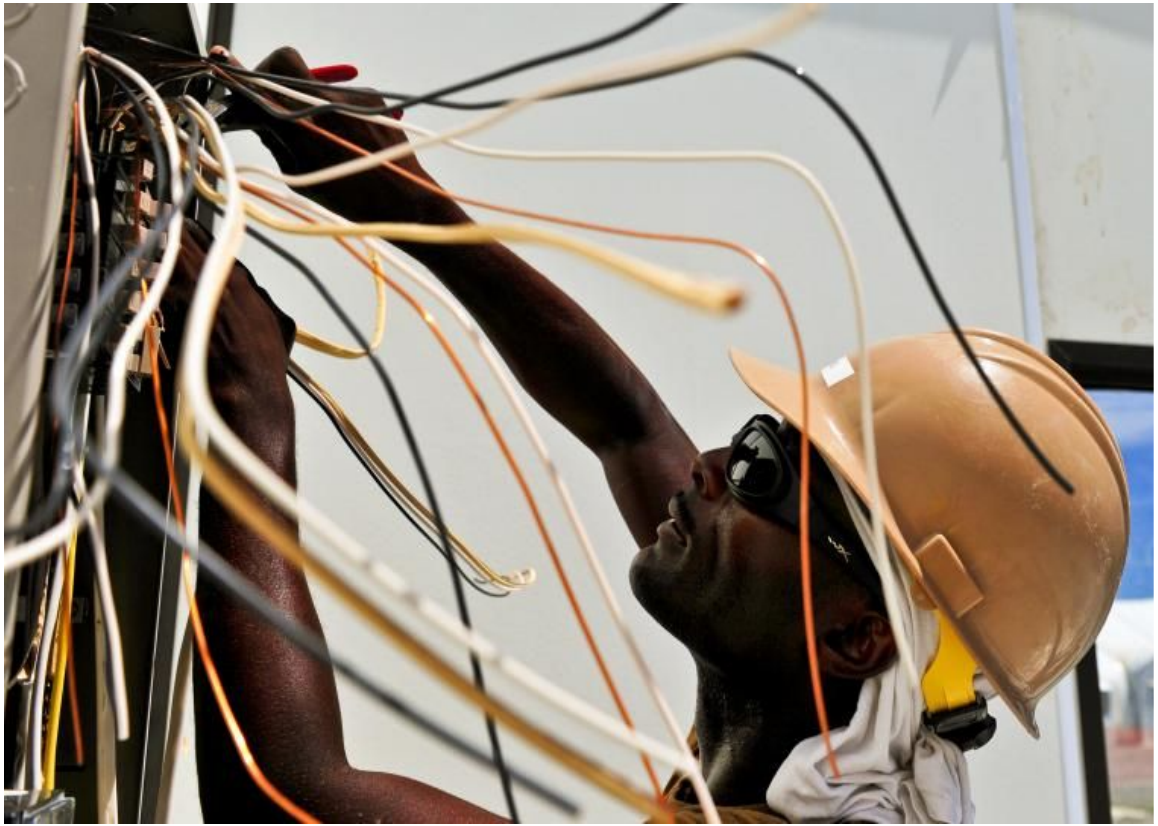
Federal Tax Credits

Take Advantage of Existing Incentives for Zero-Emission Devices

The Inflation Reduction Act offers tax incentives and rebates for making improvements around the house. More details at **energy.gov/save**



Economic Benefits



Creates jobs and lowers household energy costs

Increases total personal income by **$2.5 billion**

Grows Maryland's gross domestic product by **$5.3 billion** between now and 2031

Health Benefits

This Plan delivers between **$142 million and $321 million** in additional health benefits in 2031 compared to current policies

Most of the health benefits occur in **historically disadvantaged** communities

Just Transition Working Group

Main Objectives:

- Will support clean energy technology while considering equitable economic development at the community level.
- Advise the Maryland Commission on Climate Change on equitable workforce development that also supports the transition to clean energy.

Join the Conversation:

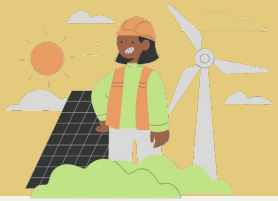
- Upcoming Meeting Dates: 08/30, 09/27, 10/25, and 11/22
- MDE Staff: cindy.osorto1@maryland.gov, UMD Staff: stvo@umd.edu

MCCC MARYLAND COMMISSION ON CLIMATE CHANGE

6 Guiding Principles for Just Transition

1

QUALITY CLEAN JOB CREATION

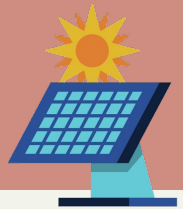


2

OCCUPATIONAL TRAINING & EDUCATION

3

PROMOTING INVESTMENT IN CLEAN JOBS & IMPACTED COMMUNITIES



4

IDENTIFYING & ELIMINATING STRUCTURAL BARRIERS TO EMPLOYMENT

5

HIRING & RETAINING UNDERREPRESENTED WORKERS

6

COLLABORATING WITH STAKEHOLDERS, ESPECIALLY EMPHASIZING WORKERS

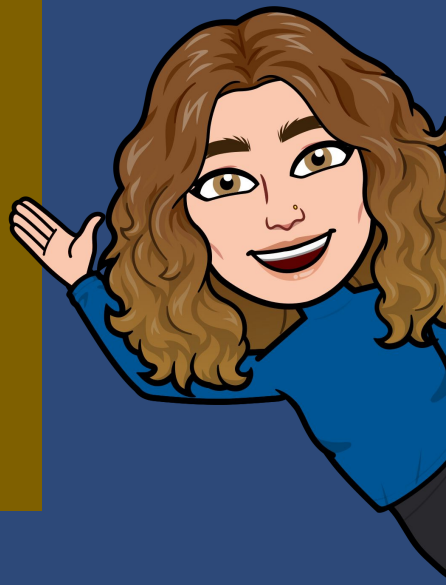
Leaving No One Behind: Maryland Clean Buildings Hub

Rebecca Price, Manager, Maryland Clean Buildings Hub

August 22, 2024

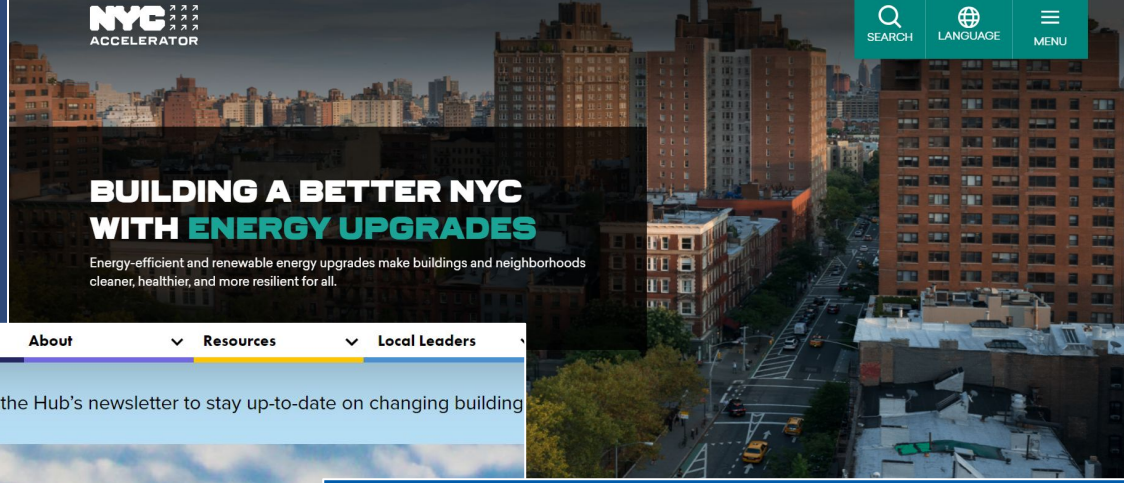
Vision

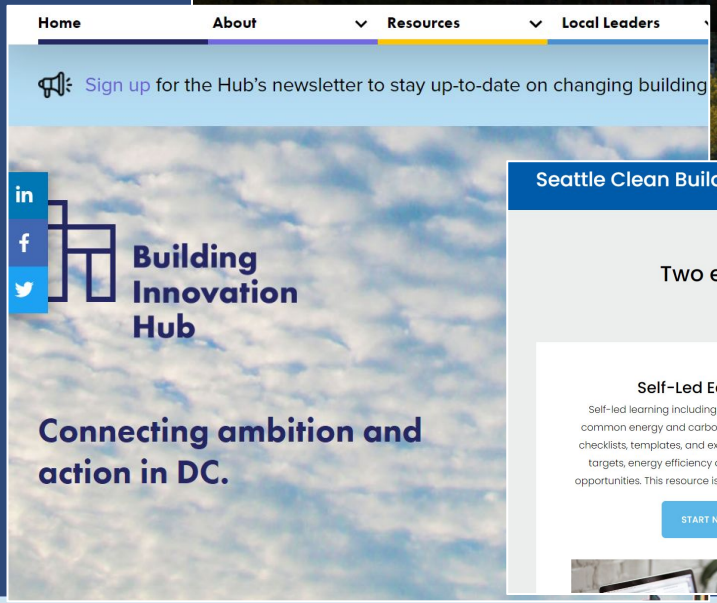
The Hub envisions a state where every building owner has access to the information, resources, and funding/financing it needs to become highly energy efficient and to eliminate onsite fossil fuel usage in a cost-effective manner.

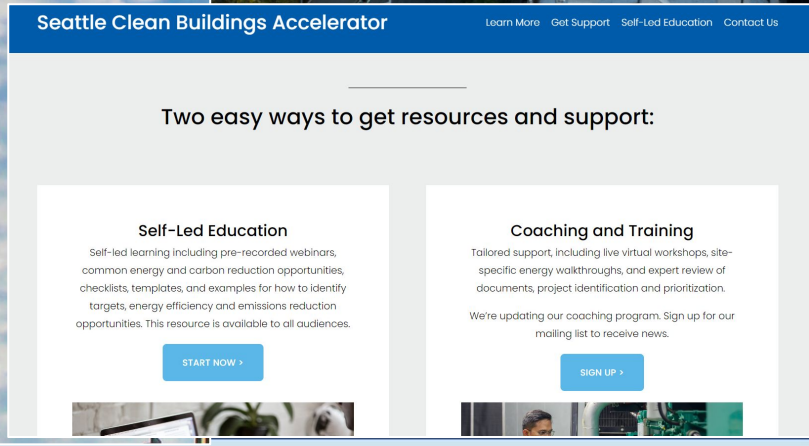


The ‘Hub’ model

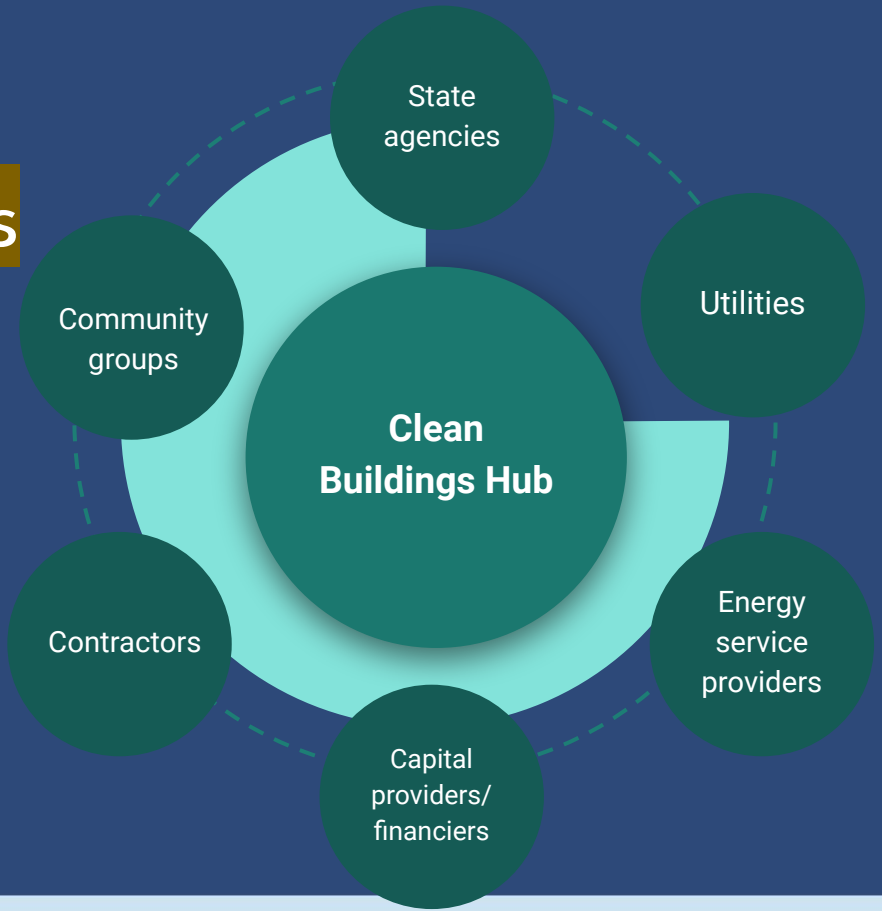
- Educator
  - Resource development & curation
- Convener
  - Peer-to-peer learning opportunities
  - Events
- Building ‘Czar’
  - Helping shape state programs based on market feedback







Bigger than the sum of its parts



Types of assistance: Financing & Funding

Funding spotlight: Maryland Energy Administration

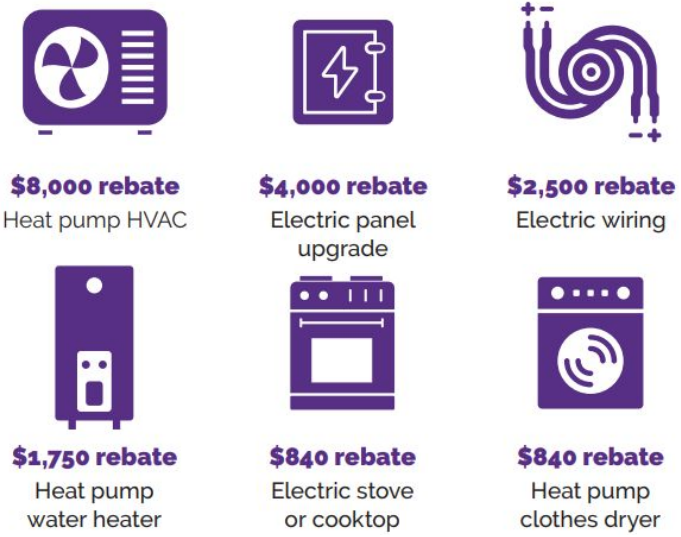
- Commercial, Industrial, and Agricultural (CI&A) grant program
- Jane E. Lawton Conservation Loan
- Maryland Smart Energy Communities grant program
- Governor's electrification carve-out (forthcoming!)
- IRA rebates (forthcoming!)
  - Home Efficiency Rebates
  - Home Electrification and Appliance Rebates

Electrification Rebates

Rebates from the Maryland Energy Administration will be available starting in 2025 for low, moderate and middle-income households.

Climate plan proposes to keep electrification rebates flowing when federal funding runs out.

Receive up to:



Types of assistance: Decarbonization pathways

How do I make sense of my audit?

What technology combinations should I pursue?

How do I create a plan for my entire portfolio of buildings?

How do I design my leases?

What's the difference between ASHRAE Level 1, 2, and 3 audits?

What certifications should I be looking for in a contractor?

I've benchmarked. Now what?

Dimensions

- Newsletter
- Website
  - How-to guides/primers
  - Funding/financing matrix
  - Templates
  - Case studies
- Workshops/webinars/trainings/cohorts

Call for input

- Ongoing stakeholder needs assessment
  - https://tinyurl.com/mvdearzw

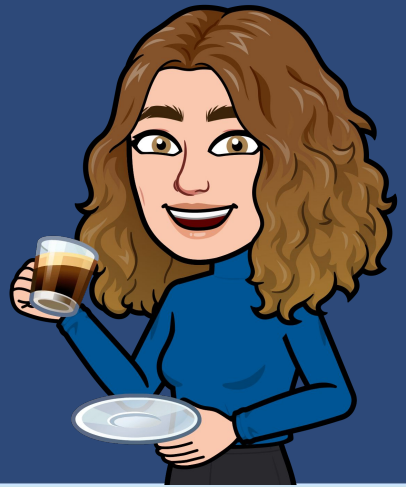
- Poll: What resources would be most helpful to you?

Connect

building.decarbonization@maryland.gov

https://tinyurl.com/ywjt7pf5

energy.maryland.gov/Pages/MDCleanBuildingsHub



Questions?