DENVER
CLIMATE ACTION, SUSTAINABILITY & RESILIENCY

City and County of Denver

Energize Denver Benchmarking and Energy Performance Requirements

for

Manufacturing, Agricultural, and Industrial (MAI) Buildings
25,000 Square Feet and Larger

Technical Guidance

Version 1.0
April 1, 2025

Building Performance Help Desk
energizedenver@denvergov.org
1-844-536-4528
Performance Requirements Lookup Tool

Nothing in this Guidance shall supersede any Denver ordinance or regulation.
Denver Revised Municipal Code, Chapter 10, Article XIV.

If a change to the Technical Guidance would affect a compliance pathway, CASR shall substantially follow the notification and public hearing procedures of Section 2-94 of the D.R.M.C. to allow public comment and input on the proposed changes. Changes to the Technical Guidance would be adopted when the document is posted on CASR's website.

DENVER
CLIMATE ACTION, SUSTAINABILITY & RESILIENCY

Contents

ACRONYMS

ACCA – Air Conditioning Contractors of America
ACO – alternate compliance option
AEE – Association of Energy Engineers
AIA – American Institute of Architects
ANSI – American National Standards Institute
ASHRAE - American Society of Heating, Refrigerating and Air-Conditioning Engineers
CASR - Office of Climate Action, Sustainability, and Resiliency
CBECS – Commercial Buildings Energy Consumption Survey
CCD – City and County of Denver
CMMS – computerized maintenance management system
CO – certificate of occupancy
CPD – Community Planning and Development
DLC – Design Lights Consortium
DOE – United States Department of Energy
DRMC – Denver Revised Municipal Code
DSCR – debt-service coverage ratio
EBITDA – earnings before interest, taxes, depreciation, and amortization
EEM – energy efficiency measure
EMA – Energy Management Association
EPA – United States Environmental Protection Agency
EPB – equity priority building
EPI – ENERGY STAR Plant Energy Performance Indicator
ESPM – ENERGY STAR Portfolio Manager
EUI – weather-normalized site energy use intensity
EV – electric vehicle
FF – fossil fuel
GHG – greenhouse gas
GHGi – greenhouse gas intensity
GWP - global warming potential
HOA – homeowner association
IEQ – indoor environmental quality
IES - Illuminating Engineering Society
ITE – information technology equipment
kBtu - kilo British thermal unit
kWh – kilowatt hour
LBNL – Lawrence Berkeley National Laboratory
LED – light emitting diode
MAI – Manufacturing/Agricultural/Industrial
NOI – net operating income
NREL – National Renewable Energy Laboratory
O&M – operations and maintenance
PE – Professional Engineer
PPE – Photosynthetic photon efficacy
PUE – power use effectiveness
RA – Registered Architect
REC - Renewable Energy Credit
RMI – Rocky Mountain Institute
ROI – return on investment
WBDG – Whole Building Design Guide
µMol/J – micromoles per joule

DEFINITIONS

Administrative Citation: a citation for a violation of the Code, the rules and regulations adopted by the Director and promulgated by the Manager, or noncompliance with an Order issued by the Manager by which a civil penalty for the violation or noncompliance is assessed.

Annual Site Energy Usage: the total energy consumed by the building in one year measured in kBtu, including all equipment and fixtures attached to the building energy meters

Benchmarking: measuring a covered building's energy performance using the ENERGY STAR Portfolio Manager tool or other similar platforms as CASR may designate.

Benchmarking Submission: the data submitted each year via the ENERGY STAR Portfolio Manager tool, or other similar platforms as CASR may designate, using a template and submission link to be distributed and publicized by CASR. All information expressly denoted as mandatory by either ENERGY STAR Portfolio Manager or CASR shall be included in the submission.

Campus: 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 higher education or hospital campuses.

Capitalization Rate: any rate used to convert income into value.

Climate vulnerable communities: These communities are populations that are disproportionately at risk from the adverse impacts of climate change than other communities. This is due to their heightened sensitivity, exposure, or lack of capacity to cope with climate-related hazards. These communities often face greater risks from extreme weather events, rising sea levels, heatwaves, and other climate-related disruptions. This can be due to a combination of factors like social, economic, geographic, and environmental factors.

Commercial and multifamily buildings: every building or structure that is regulated by the Denver Building and Fire code and that it not a detached one- or two-family dwelling or townhouse not more than three stories above grade plane height with a separate means of egress, and their accessory structures are not more than three stories above grade plane in height as defined in Section [A] 101.2 Scope section of the 2021 International Building Code.

Data Center: a room or series of rooms that share data center systems, whose primary function is to house equipment for the processing and storage of electronic data and that has a design total Information Technology Equipment (ITE) power density exceeding 20 watts per square foot (20 watts per 0.092 m^2) of conditioned area and a total design ITE load greater than 10 kW. Class A is where 15% or more of the square footage of the building is a data center. Class B is where less than 15% of the square footage of the building is a data center.

Debt-service coverage ratio (DSCR): a metric calculated by dividing net operating income by debt service value, including principal and interest.

Decision: any CASR approval or denial of an Owner's application for a target adjustment, timeline extension, renewable credit submission, or alternate compliance option.

Deep-energy retrofit: a deep energy retrofit is a building-specific, whole-building analysis designed to identify points in the building lifecycle where investments in energy efficiency can achieve the highest return. A deep energy retrofit may occur over a few years and will require a more significant financial commitment than

conventional energy retrofits. The energy savings created with a deep energy retrofit are generally greater than 40%.

Energy audit: an evaluation of a building that identifies potential energy efficiency measures for building systems and operations in accordance with the American Society of Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE) Standard 211-2018 Level 2

ENERGY STAR Portfolio Manager (ESPM): the online tool created by the US Environmental Protection Agency used to measure and track a building's energy use, water consumption, and greenhouse gas emissions

Equity Priority or Under-resourced building: These buildings serve and/or house climate-vulnerable communities with less access to resources. These communities may face more barriers adapting to a changing climate. They include multifamily affordable housing, affordable apartments, and income-qualified condominiums where most residents earn below 80% of the area median income. They also include nonprofit-owned buildings providing essential services like housing, healthcare, and food assistance, as well as limited-revenue commercial buildings. Additionally, buildings in areas with high energy burden, elevated asthma rates, low-income residents, and other social equity indicators.

Existing Building Performance: the energy efficiency and renewable energy of a covered building measured by site Energy Use Intensity (EUI), or EUI adjusted for renewable energy using data reported via the ENERGY STAR Portfolio Manager tool or other platforms as CASR may designate

Final Decision: for an appeal of a Decision, Notice, or Order means the Director's decision arrived at after review of the Recommended Decision or its decision after hearing the matter or review of written briefs in the first instance or a Recommended Decision for which Director review is not timely filed.

Financial Solvency Concerns: a vacancy rate for the Covered Building that reduces the New Operating Income so that the DSCR is less than 1.5; non-renewal of a tenant, costs to renew a tenant, or costs of finding a replacement tenant would reduce the DSCR to less than 1.5; or loan maturities, interest rate resets, capitalization rate movements, and insurance rate changes that reduce the DSCR to less than 1.5. This definition also includes if the Covered Building does not currently meet the definition of Qualifying Financial Distress and the requirements of D.R.M.C § 10-404, but Owner can demonstrate that the required upgrades would cause the Covered Building to go into qualifying financial distress.

Fossil Fuel: a hydrocarbon-containing form of energy consumed in a building, such as natural gas, fuel oil, propane, or coal/coke.

Greenhouse Gas (GHG): carbon dioxide (CO2), methane (CH4), nitrous oxide (N2O), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), sulfur hexafluoride (SF6), and nitrogen trifluoride (NF3).

Green Power: Green Power is a generic term for renewable energy sources and specific clean energy technologies that emit fewer GHG emissions compared to other energy sources that supply the electric grid. Building owners and managers may use green power directly from an on-site renewable system or purchase green power from your utility or independent green power supplier.

Gross Floor Area (GFA): the total building square footage, measured between the outside surface of the principal exterior fixed walls of a building. GFA should include lobbies, tenant areas, common areas, meeting rooms, break rooms, atriums (base level only), restrooms, elevator shafts, stairwells, mechanical equipment areas, basements, storage rooms. GFA should not include exterior spaces, balconies, patios, exterior loading docks, driveways, covered walkways, outdoor play courts, parking, or crawl spaces.

Hearing Officer: the person the Director delegates pursuant to the Code to conduct a hearing or review a case that has been submitted for determination based on written argument and written statement of facts.

High Performance Existing Buildings Program: the administrative program implemented by CASR requiring the Benchmarking, reporting, and Existing Building Performance in commercial and multifamily buildings that are located within the City and County of Denver.

Lighting Power Density: the lighting power load per unit area of a building or a space in a building as measured in watts per square foot.

Manufacturing/Agricultural/Industrial Building is a subset of the Covered Building definition, and means a facility where energy is consumed in process loads for manufacturing, agricultural, or industrial purposes, or for other process loads. Process loads are energy consumed for bona fide purposes other than heating, cooling, ventilation, domestic hot water, cooking, lighting, appliances, office equipment, small, or other plug loads. This classification includes buildings with Class A data centers, food manufacturing, and ENERGY STAR Portfolio Manager building types Drinking Water Treatment & Distribution, Other – Utility, and Wastewater Treatment Plant. Multi-use buildings with at least one tenant that meets this definition may be classified as a Covered MAI Building.

Maintenance Penalty: a penalty assessed if the building met its interim or final targets and switches to a lower level of cost per kBtu not achieved.

Net Operating Income (NOI): the actual or anticipated net income that remains after all operating expenses are deducted from effective gross income, but before mortgage debt service and book depreciation are deducted; may be calculated before or after deducting replacement reserves. Note: This definition mirrors the convention used in corporate finance and business valuation for EBITDA (earnings before interest, taxes, depreciation, and amortization).

New Covered Building: a building that received its certificate of occupancy after November 22, 2021 and meets the definition of a covered building.

New Covered MAI Building: a building that received its certificate of occupancy after November 22, 2021 and meets the definition of a covered MAI building.

Non-Emitting Energy Source: an energy source produced in a manner that does not directly release greenhouse gases as a result of fossil fuel combustion.

Non-Emitting Thermal Energy Network: a system, that is operated, owned, used, or intended to be used for distribution of thermal energy to two or more buildings for heating, cooling, or hot water, where such energy is produced from Non-Emitting Energy Source.

Notice or Order: any notice or order, civil penalty assessment, or administrative citation issued pursuant to the Director's authority under the Code.

Off-site green power or renewables: green power purchases from your utility or independent suppliers.

On-site green power or renewables: electric generation systems located at your property that produce Green Power.

Operations and maintenance (O&M): the functions, duties and labor associated with the daily operations and normal repairs, replacement of parts and structural components, and other activities needed to preserve an asset so that it continues to provide acceptable services and achieves its expected life

Operation and maintenance program: A plan meeting the specifications found in American Society of Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE) Standard 100-2018, Section 6, that addresses every applicable building system and element as outlined in Annex D and follows the implementation requirements laid out in Annex L that address the functions, duties and labor associated with the daily operations and normal repairs, replacement of parts and structural components, and other activities needed to preserve an asset so that it continues to provide acceptable services and achieves its expected life

Overall Capitalization Rate: an income rate for a total real property interest that reflects the relationship between a single year's net operating income expectancy and the total property price or value; used to convert net operating income into an indication of overall property value.

Owner: the person or entity having a legal or equitable interest in real property and its fixtures and appurtenances, which shall explicitly include but not be limited to a homeowner's association.

Performance period: the defined timeframe of benchmarking data that is used for evaluation of energy performance requirements for compliance

Process load: a process load is energy consumed for bona fide purposes other than heating, cooling, ventilation, domestic hot water, cooking, lighting, appliances, office equipment, or other plug loads.

Production Efficiency: the annual site energy usage in a Covered MAI building divided by a standard manufacturing or agricultural production unit(s), such as kBtu per widgets produced or kBtu per pounds of flower produced. Additional examples of production efficiency may include power use effectiveness (PUE; data centers), or some other metric for other industrial uses.

Production Efficiency Improvement: a reduction in energy use intensity from baseline where energy use intensity is calculated as the annual site energy usage divided by a standard manufacturing or agricultural production unit(s).

Power use effectiveness (PUE): a measure of Data Center infrastructure efficiency, representing the amount of energy that is needed per unit delivered to IT equipment. It is computed as the total annual source energy divided by the annual IT source energy.

Recommended Appeal Decision: a Hearing Officer's findings of fact, conclusions of law, and the decision he or she recommends to the Director following a hearing or review of written briefs.

Renewable Energy: useful electrical, thermal, or mechanical energy converted directly or indirectly from resources of continuous energy flow or that are perpetually replenished and whose utilization is sustainable indefinitely and can be measured in kWh. The term includes, if it can be measured in kWh provided, sunlight, the wind, geothermal energy, hydrodynamic forces, and organic matter available on a renewable basis such as forest residues, agricultural crops and wastes, wood and wood wastes, animal wastes, livestock operation residue, aquatic plants, and municipal wastes.

Renewable Energy Certificate (REC): Renewable Energy Certificates (RECs) are the tradable, legal rights to the environmental benefits of green power. These rights can be sold separately from the actual electricity (kWh).

Retro-commissioning: a process to improve the efficiency of an existing building's equipment and systems. It can often resolve problems that occurred during design or construction, or address problems that have developed throughout the building's life as equipment has aged, or as building usage has changed.

Qualifying Financial Distress: any of the following: (1) the building is the subject of a qualified tax lien sale or public auction due to property tax arrearages; (2) the building is controlled by a court appointed receiver; or (3) the building has been acquired by a deed in lieu of foreclosure.

Savings to investment ratio (SIR): the total lifetime cost savings of an EEM divided by the initial cost to implement the EEM

Return on investment (ROI): the total annual cost savings of an EEM divided by the initial cost to implement the EEM.

Simple payback: estimated initial energy efficiency measure cost divided by the energy efficiency measure first-year calculated utility savings. Both savings and costs are in dollars ($), and the simple payback is expressed in years. Incentives, rebates, and tax credits should include any programs available through Xcel Energy, Colorado Energy Office, the State of Colorado, and federal income tax credits such as the 179D tax credit.

Site Energy Use Intensity (EUI): a building's weather normalized energy use expressed as energy per square foot per year as a function of its size, normalized for weather and other characteristics that are significant drivers of energy performance as feasible with the reporting platform used. A building's EUI is calculated by dividing the total energy consumed by the building in one year (measured in kBtu) by the total Gross Floor Area of the building.

Target Penalty: a penalty level assessed if the building did not reach the Interim Target or Final Target during the applicable performance period.

Tenant: entity having a legal or equitable interest in the possession, occupancy, or the benefits of real property and its fixtures and appurtenances under a lease or similar legal instrument.

1. INTRODUCTION

This technical guidance for Manufacturing, Agricultural, and Industrial (MAI) Buildings 25,000 Square Feet and Larger was developed by Denver's Office of Climate Action, Sustainability and Resiliency (CASR). This guidance manual covers policies and procedures for the benchmarking and performance requirements that are specific to MAI buildings. This guide is intended as a companion document to the Energize Denver Technical Guidance for Buildings 25,000 Square Feet and Larger. Aspects of the Energize Denver policy that affect all covered buildings, including MAI buildings, such as Equity Priority Building (EPB) compliance assistance, disclosure before and upon sale, benchmarking requirements, energy efficiency targets, renewable energy, other alternate compliance options, performance evaluation, enforcement and penalties, and appeals, are not duplicated in this guide. Please refer to the Energize Denver Technical Guidance for more information on these topics.

1.1 Rules and Regulations Update Summary as of April 1, 2025

Following extensive stakeholder engagement throughout 2024, the City has adjusted Energize Denver's compliance timeline and other options to make compliance more manageable and achievable for building owners, facility managers, and service providers.

1.1.1 Updated Target Deadlines and Additional Time Options

When submitting the building's benchmarking report in the 2025 reporting year, owners have an option to request and receive a timeline extension for any building experiencing compliance challenges. The submitter will "opt-in" to the timeline extension during the 2025 benchmarking report submission process. The timeline extension would not be approved until the benchmarking report or exemption request is complete with the "opt-in" selected, and the report or request is approved by CASR. Buildings with benchmarking reports unsubmitted or in "pending revisions" would not receive the timeline extension.

Key Changes to deadlines for all covered buildings:

- The 2024/2025 interim target would be due in 2028
- The 2027 interim target would be eliminated
- The final target would be moved from 2030 to 2032
- The targets for MAI buildings under the MAI alternate compliance option would align with the updated timeline of 2028/2032
- Buildings requiring timeline extensions may utilize the alternate compliance procedures outlined in Section 7 of the Energize Denver Technical Guidance

Timeline Extensions: Options for buildings to extend deadlines beyond 2032 through developing a long-term plan for compliance. Reasons include:

- End of HVAC system service life
- Energy service capacity limitations
- Downtown steam loop system infrastructure planning
- Major renovations to building

Compliance Holds: New option for buildings to place a two-year hold on compliance requirements due to short-term circumstances.

- Financial Distress & Vacancy: Buildings facing financial hardship or high vacancy rates can receive a two-year compliance delay, with annual check-ins.
- Redevelopment Areas: Buildings within formally designated redevelopment zones may delay retrofits for up to two years if a redevelopment plan is in place.
- Lease Expirations: Buildings with major leases expiring near target deadlines can receive a hold until the new tenant moves in.

- HVAC System Flexibility: Buildings are not required to replace HVAC systems before the end of their useful life. If HVAC equipment has exceeded 50% of its useful life, owners receive flexibility in replacement timing while still meeting efficiency targets.

1.1.2 Third-Party Data Verification Required with 2025 or 2026 Benchmarking

To confirm that buildings are benchmarking with sufficient detail to receive an accurate final target, CASR requires third-party data verification of one benchmarking submission between 2025 and 2026. Either:

- The 2024 calendar year benchmark report (submitted in 2025) must be verified OR
- The 2025 calendar year benchmark report (submitted in 2026) must be verified OR
- A building that has already performed third-party verification for a target adjustment has satisfied this requirement.

After completing this verification requirement, buildings will not require another third-party data verification until the calendar year their building performance is being evaluated.

1.1.3 Target & Incentives

Several adjustments were made to the energy efficiency targets and available incentives:

- Custom Targets: Creating ability to adjust a building's energy efficiency target beyond standard target adjustments
- Incentivizing Reuse: For adaptive reuse projects, adjusting energy efficiency targets when converting buildings for new uses.
- New Incentive for Decarbonized Thermal Networks: Additional target incentive for buildings that connect to non-emitting thermal energy networks (e.g., district geothermal systems and other types).
- Expanded Renewable Credit Options: Off-site solar investments can now be located anywhere in Colorado (previously limited to Denver). On- or off-site renewables owned within Denver now count at a 1.5x credit multiplier instead of 1:1.
- Adjusted Energy Efficiency Floor Target for MAI Buildings: Increased from 30 kBtu/sqft/year to 52.9 kBtu/sqft/year, recognizing sector-specific energy needs.

1.1.4 Other Changes

- Penalty Rates Cut in Half: Financial penalties for non-compliance reduced by 50% to ease cost burdens on building owners. No penalties will be levied until late 2029 based on compliance.
- Electrification Feasibility Report Requirement Removed: Buildings are no longer required to submit an electrification feasibility report as part of a timeline extension request.

1.2 Support Services

The city is focused on helping buildings save money through expanded rebates, planning assistance, and a business hub with compliance dashboards and financial resources, so building owners can make informed decisions. The Energize Denver Building Performance Policy provides several options for buildings to make reducing energy use practical, more affordable, and better aligned with each unique building. CASR will work with building owners, managers, and service providers in setting accurate energy efficiency targets and developing compliance plans and realistic timelines for their buildings to reduce energy use.

Expanded support services include:

- Expanded Help Desk with 1:1 Coaching Services: Expanded support capacity and personalized consultations for building owners to develop tailored compliance strategies. Available Monday–Friday, 8 AM–5 PM (1-844-536-4528 or energizedenver@denvergov.org) assisting with:
  - Energy efficiency targets
  - Audit planning
  - Timeline adjustments
  - Incentives and funding options

- Online Energy Management Tool: Features include:
  - Performance dashboards
  - Virtual energy assessments
  - Project planning tools
  - Resource library with compliance guides and best practices
- Resources for Buildings Portal: A one-stop shop for:
  - Guides and playbooks
  - Webinars and training materials
  - Incentives and financing options
  - Service provider directory
- New Rebates Available: Rebates for energy audits and building energy management training to promote cost savings and best practices in energy efficiency improvements. If a building's compliance plan includes replacing space or water heating and cooling equipment, check out Denver's Commercial Building Equipment Rebates.
- Building Management Portal (Launching May 1): A centralized platform for managing compliance, tracking progress, and accessing resources.
- Enhanced Contractor & Service Provider Trainings: Expanded training programs for professionals supporting energy compliance efforts.
- Streamlined Communications: Improved clarity on compliance through upgrades to technical guidance and communications materials.
- New Compliance Resources for MAI Buildings: Tailored guidance and sector-specific resources to assist in meeting targets for manufacturing, agricultural, and industrial buildings.

Important facts about the Energize Denver Building Performance Policy:

- As long as a building has submitted a compliance plan through the Timeline Extension process to make progress toward its target, penalties will not be levied. As of the publication date of this guide, no penalties have been levied on a building in the city under Energize Denver. Performance evaluations for the interim target won't begin until mid-2029.
- Electrification is not a requirement to meet the energy efficiency targets. While transitioning to electric systems is not required, it can be a helpful strategy to stabilize long-term energy costs.
- We recognize that replacing entire HVAC systems is a significant investment. The city will not require buildings to replace existing gas systems before the end of their useful life, so building owners and managers have time to plan for major expenses and system transitions.
- Many buildings have determined that the information they submitted in their benchmarking reports was incorrect or not detailed enough, negatively impacting their energy efficiency targets. The target adjustment process can help solve this issue.

1.3 The Business Case for High-Performing MAI Buildings

We all want Denver to remain a vibrant and welcoming place to do business. Energize Denver is one way we're helping our community to thrive. The goal of the Energize Denver Building Performance Policy is to reduce energy use by buildings, make Denver more competitive, and cut carbon pollution. Cities and jurisdictions across the country are adopting similar measures. Denver believes that following this national trend will keep our economy competitive for decades to come, ensuring that we rise together, create a thriving future for all, and build a more resilient city with sustainable practices that benefit both our community and economy.

High-performing MAI buildings can increase their competitive edge through strategic energy efficiency and electrification investments. In addition to upgrades that are relevant for all building types (e.g., LED lighting, HVAC upgrades, building tune-ups and retro-commissioning, etc.), MAI buildings may have numerous additional beneficial upgrades available to them. For example:

- Electricity usage can be significantly reduced through a compressed air audit and leak detection and correction program.
- Food manufacturing processes can become cleaner and more efficient through the strategic electrification of ovens and other production equipment.
- In warehouse-type industrial buildings, significant gas savings can be achieved through simple investments and behavioral changes, such as by installing controls and set points on heaters, only heating areas of the building that are occupied by humans instead of the entire building, closing bay doors when not in use or installing rapid-rise roll-up doors, installing fans to circulate air, and improving building insulation to keep warm air in the building during the winter.
- Given the large footprint and relatively low height of many MAI buildings, they are uniquely primed for rooftop solar installations to offset their energy usage. In addition, some MAI buildings have properties that extend beyond their building footprint, which presents additional opportunities for ground-level solar array installations and/or geothermal energy extraction.
- Manufacturing facilities with painting and curing processes can significantly increase their efficiency by replacing gas processes with efficient infrared technologies.
- Variable speed motors and variable frequency drives (VFD) (new installations or recalibration/recommissioning of existing motors) can drive down energy usage and prolong the life of the motors.
- Cold storage facilities can drive down their energy intensity through industrial refrigeration and insulation improvements.
- In certain industrial applications (e.g., industrial laundry facilities, food manufacturers with refrigerated rooms, data centers, etc.) waste heat recovery systems can drastically reduce heating needs through reuse of process heat that would otherwise escape the building unused.
- In cannabis facilities, investments in LED grow lights and high-efficiency dehumidification and cooling systems often have rapid payback times and lead to drastic energy use reductions.

All of these upgrades, especially when performed strategically with the help of energy service professionals, will help improve production efficiency, decrease energy bills, and overall improve the competitiveness of MAI buildings in Denver. Consider receiving a high-quality energy audit from a consultant with experience working in MAI buildings as a first step in determining which investments make most sense for your building.

2. APPLICABILITY

2.1 Covered Buildings

For benchmarking and performance requirements, a covered building means any commercial, multifamily, institutional, municipal, manufacturing, agricultural, or industrial building 25,000 square feet or larger in Gross Floor Area (GFA) in the City and County of Denver (CCD). Commercial or multifamily buildings are defined by the applicable scope of the current Denver Building & Fire Code and include commercial, multifamily, institutional, municipal, manufacturing, agricultural, and industrial buildings, or any building type listed in the Building Type Target list in Appendix A of the Energize Denver Technical Guidance.

Buildings that are exempt from the requirements are:

- a stand-alone parking garage; or
- a building that is used for the generation of power produced and sold commercially to other parties and meets the definition of an ENERGY STAR Portfolio Manager Energy/Power Station building type.

The way a covered building is benchmarked or has performance requirements applied to it is also dependent on how the building receives its utilities and cross-over of those meters or energy using equipment between other buildings and/or tenants. The benchmarking and performance requirements could be aggregated amongst multiple buildings as a campus, or the building could be permanently broken

down into multiple buildings if none of the energy-using meters or equipment is shared by other buildings or tenants. For example, if a large-scale shopping center has a stand-alone tenant that does not share utility meters or energy-using equipment between other tenants, that stand-alone tenant could be broken out into a separate covered building. In the opposite situation, a "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 higher education or hospital campuses). In these situations, if utility meters are shared across buildings, those buildings' energy use would most likely be aggregated as one campus or building within ENERGY STAR Portfolio Manager and receive one mixed-use energy efficiency target.

The City and County of Denver does not have jurisdiction over state-owned, federal-owned, or foreign consulate buildings. Applicability is based on the building ownership, not the tenants, so if a state or federal entity is a tenant in a privately-owned building, the performance requirements would apply to the entire building. In ground lease situations, the entity that builds the structure is the owner of the building, and therefore responsible for meeting the building's performance requirements.

2.1.1 Manufacturing, Agricultural, and Industrial Building Definition

A Manufacturing/Agricultural/Industrial (MAI) Building is a subset of the covered building definition. A Covered MAI Building is a facility where energy is consumed in process loads for manufacturing, agricultural, or industrial purposes, or for other process loads. Process loads are energy consumed for bona fide purposes other than heating, cooling, ventilation, domestic hot water, cooking, lighting, appliances, office equipment, small, or other plug loads. This classification includes buildings with Class A data centers, food manufacturing, and ENERGY STAR Portfolio Manager building types Drinking Water Treatment & Distribution, Other – Utility, and Wastewater Treatment Plant.

Multi-use buildings with at least one tenant that meets this definition may be classified as an MAI Building. Distribution centers and warehouses do not qualify as MAI buildings unless a portion of the energy used in the building is consumed for MAI process loads.

2.2 Gross Floor Area

Gross floor area (GFA) is defined as the total building square footage, measured between the outside surface of the principal exterior fixed walls of a building. GFA should include lobbies, tenant areas, common areas, meeting rooms, break rooms, atriums (base level only), restrooms, elevator shafts, stairwells, mechanical equipment areas, basements, storage rooms. GFA should not include exterior spaces, balconies, patios, exterior loading docks, driveways, covered walkways, outdoor play courts, parking, or crawl spaces. This definition aligns with the definition of GFA in the Environmental Protection Agency 's (EPA) ENERGY STAR Portfolio Manager.

2.2.1 Measuring GFA for Applicability and EUI

The GFA is the total property square footage, as measured between the exterior walls of the building(s). It is also acceptable to measure from the inside perimeter of the exterior walls if that is more readily available. This includes all areas inside the building(s) including supporting areas. GFA is not the same as rentable space, but rather includes all area inside the building(s). Rentable, or leasable, space is a sub-set of GFA. Table 1 lists areas to include and exclude in the calculation of GFA.

TABLE 1: GFA CALCULATION INCLUSION/EXCLUSION

Include in GFA	Exclude from GFA
Lobbies	Parking
All floors of a multi-story building	Exterior spaces
Tenant Areas	Balconies
Common Areas	Decks
Corridors	Patios

Clubhouses	Pavilions
Meeting Rooms	Outdoor pool decks
Break Rooms	Exterior Loading Docks
Atriums (count the base level only)	Driveways
Restrooms	Covered Walkways
Elevator Shafts, and other vertical penetrations	Outdoor Courts (Tennis, Basketball, etc.)
Stairwells	Crawl Spaces
Mechanical Equipment Areas	Attics
Basements	Garage Elevator Vestibules (unconditioned)
Storage Rooms	The interstitial plenum space between floors and ceiling (which house pipes and ventilation)
Laundry Rooms	
Garage Elevator Vestibules (if conditioned)	

The measurement boundary must be between the exterior walls of the building and conform with inclusions/exclusions as outlined in Table 1. Due to the different standards in building documentation, the owner or building representative may need to reference multiple documents to ensure that measurements are consistent with the requirements and not another common metric such as rentable, leasable, or taxable space. The following documents and methods may be used to calculate GFA:

- Architectural/engineering site drawings
- Building measurement report
- Building permit applications
- Measuring wheel

2.3 Tenant Responsibility

Rule 3.2.C.i obligates tenants to provide energy benchmarking data to the building owner for the purposes of the benchmarking and performance requirements. A building owner does not always need consent from a tenant to receive aggregated energy data from Xcel Energy. Consent is required from tenants if:

- there are three or fewer Xcel tenants in the building, or
- one tenant uses more than 50 percent of the building's total energy.

If the owner needs consent and a tenant is refusing to provide it, there are some options for the building owner:

- Provide more context. The building owner is legally required to benchmark annually. Xcel Energy will aggregate the energy use of all tenants in ESPM to protect privacy. No specific proprietary information is reported. Benchmarking is a widely implemented practice in the United States. It is a proven way to reduce overhead costs related to energy use as well as improve the air quality within a community.
- Share the Ordinance and Rules language that obligates the tenant to provide this data to the building owner.
- Leverage current lease agreement terms. Most leases contain basic language requiring tenants to abide by local, state, and federal regulations, which in this case, would require the tenant to work with the owner to meet the legal requirements of the building.
- If the tenant is responsible for all aspects of the building where energy use is considered or based on the lease agreement between the tenant and building owner, the building owner could determine if their lease allows a pass through of fines to the tenant. Additional smart leasing guidance is available in the Energize Denver Hub under Resources for Building Owners with suggested language for future leases.
- Update the current lease at the end of its term or establish “green leasing” agreements with tenants to set terms related to data sharing, data access, and or complying with local, state, or federal regulations.

2.3.1 Breaking up a Building for Compliance Purposes

As of March 2025, there is an option to break up a building into separate building IDs for ease of completing the compliance requirements. This is only allowed for commercial buildings with multiple tenants or multifamily buildings where there is a commercial tenant or owner, and the building owner and current tenant must agree to this change. The portion of the building to be separated must not share any energy-using systems or utilities with neighboring tenants and the only shared items are walls, foundations, and roofs. For energy-using systems, this means each tenant has their own space and water heating and cooling equipment and lighting. For utilities, this means each unit has its own utility meters for all uses – water, electricity, gas, or other fuels. Applicability of the Energize Denver rules still applies to the whole building's gross floor area and each individual unit's space must comply with the regulation for a building 25,000 sq. ft and larger and the building owner is still the entity responsible for compliance.

This would be a permanent change to the compliance structure for the building and requires effort on the building owner side to work with their tenant and the Help Desk to split the building with accurate square footage, detailed use types, and contact information for each space. The building owner will also have to work with each tenant to setup their ENERGY STAR Portfolio Manager account and change the auto-uploads of utility data from Xcel Energy. The only way a building owner could change the future compliance structure of the building in the future is if a major renovation, addition, or demolition of the space happened that permanently changed the square footage or use of an individual space. If a building owner chooses to explore this option, they must call the Help Desk to discuss the situation.

2.4 Demolition

For the performance requirements, the building owner has two options when it comes to the demolition of a whole building (not an interior space). An exemption should be requested if the demolition will be completed *before* the next performance period evaluation. If a building owner is planning to demolish a building within 1-2 years *after* performance requirements are due, then the owner can apply for an interim compliance hold. See Section 7.1 for more details on the submission process.

Scenarios in which a demolition benchmarking exemption would be approved are:

- A building for which a demolition permit for the entire building has been issued and for which demolition work has commenced on or before the Benchmarking report for the performance period is due.
- A building for which a demolition permit for a portion of the building has been issued in which the remaining building will be less than 25,000 sq. ft., which would shift the building to the small building performance requirements (5,000-24,999 sq. ft.).

3. ANNUAL BENCHMARKING REQUIREMENTS FOR MAI BUILDINGS

Benchmarking the building accurately and with attention to detail is foundational to the Energize Denver Building Performance Policy. The building's energy efficiency target is based on the amount of total energy used over one calendar year divided by the building's gross floor area square footage, otherwise called "energy use intensity" or "EUI." This section will cover the basics of benchmarking a building, but also offer tips on how detailed the benchmarking report needs to be to normalize the building's energy efficiency target.

MAI building owners must benchmark the building's energy usage annually using the EPA's ENERGY STAR Portfolio Manager (ESPM) tool, and by June 1 each year, must accurately report energy performance

information to CASR for the previous calendar year.[1] Table 2 shows an example of the calendar year and when the benchmarking report is due to CASR.

TABLE 2: TARGET AND PERFORMANCE PERIOD SCHEDULE

Calendar Year	Reporting Deadline
January 1 to December 31, 2024	September 1, 2025
January 1 to December 31, 2025	June 1, 2026
January 1 to December 31, 2026	June 1, 2027
January 1 to December 31, 2027	June 1, 2028
January 1 to December 31, 20xx	June 1 following year

Please review the Energize Denver Technical Guidance for more information on benchmarking exemptions, data verification requirements, etc.

New in 2025: The start of the 2025 benchmarking season (for reporting calendar year 2024 data) has been delayed until May 1, 2025, and extended through September 1, 2025. In addition, to confirm that buildings are benchmarking with enough detail to receive an accurate final target, CASR requires that either the 2024 benchmark report turned in during the 2025 reporting season, or the 2025 benchmarking report turned in during the 2026 reporting season is third-party data verified following the process outlined in the Energize Denver Technical Guidance. After this verification, third-party data verification of a benchmarking report will not be required until the building's performance evaluation of their final target year measurement period.

At a minimum, to be compliant with the annual benchmarking requirements, the benchmarking report must include:

- basic descriptive information, including the building address, gross floor area, use types per ESPM categories, and the name of the individual or entity making the submission
- annual and monthly energy usage information for all energy meters used by the building.
- energy use metrics calculated by ESPM, including, but not limited to, energy usage by individual fuel source, site EUI, source EUI, weather-normalized site EUI, weather-normalized source EUI, and total annual greenhouse gas emissions

3.1. Basic Benchmarking Process

The benchmarking process involves several key components designed to ensure accurate energy reporting. First, users must complete a thorough review of their entries, double-checking all submitted data for accuracy and completeness. This verification process is crucial for maintaining reliable benchmarking records.

Supporting documentation is available through multiple channels to facilitate the submission process. Xcel Energy provides a comprehensive Benchmarking Services Guide specifically designed to assist owners in requesting automated energy data uploads. Additionally, the Energize Denver website serves as a central resource hub, featuring instructional videos and direct links to current year data requests.

To streamline the submission process, separate checklists are maintained for different scenarios: one tailored for previously benchmarked buildings and another specifically designed for first-time submissions. These resources work together to ensure a smooth reporting experience, regardless of whether you're submitting for the first time or updating existing records.

[1] D.R.M.C. § 10-403

All necessary documentation and support materials, including detailed submission guidelines and current year requirements, can be accessed online through official channels. This centralized approach ensures that users have ready access to all required information throughout the benchmarking process.

If benchmarking for the first time, see these instructions on how to set up an account in ESPM. Once the building is set up with basic information in ESPM, here's how to benchmark your building properly. Figure 1 outlines the high-level process.

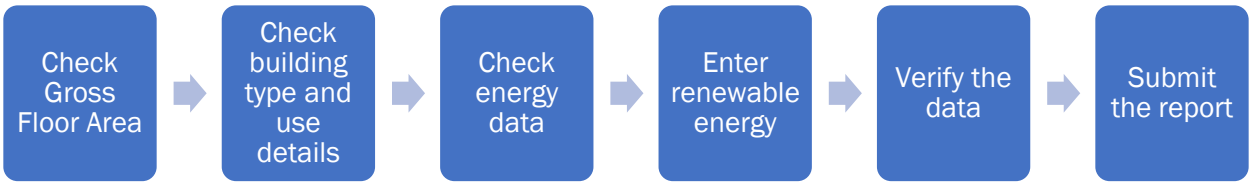

FIGURE 1: BENCHMARKING PROCESS

1) Check your Gross Floor Area (GFA)
   a) Check your numbers against the definition of GFA in Section 2. If you've entered a round number, like 150,000, it is probably not reflective of the actual building size.
   b) Parking – if parking areas are contained within the building, the square footage of the parking should be removed from the total GFA of the building inside ESPM, and also accounted for as a use type (see Step 2).

2) Check your building type and use details
   a) Building types:
      i) Building types are defined by ESPM definitions of property types.
      ii) You can choose to benchmark your building as one property type following EPA guidance, or you may break down high-intensity property type square footage. Mixed-use MAI buildings that would like to request a site-specific blended final energy efficiency target as a commercial building should follow the instructions in Section 4.1.1 of this guide.
      iii) ESPM building types "Drinking Water Treatment & Distribution," "Other – Utility," and "Wastewater Treatment Plant" are defined as Covered MAI buildings and must continue to benchmark as such. Similarly, the ESPM building type "Data Center" is defined as a Covered MAI Building if 15% or more of the square footage of the building is a data center (i.e., a "Class A" data center). All other Covered MAI buildings, including cannabis growers and manufacturing plants, must benchmark as the ESPM building type "Manufacturing/Industrial Plant."
      iv) Starting with the 2025 benchmarking season, buildings which benchmark as the Manufacturing/Industrial Plant building type must select their plant types within ESPM.
   b) Parking:
      i) Parking areas that are contained within the building should be accounted for as a use type and should include entering required data in ESPM, such as which configuration it is: open, partially enclosed, and completely enclosed, or if it has heating.
   c) Campuses:
      i) A "campus" is a collection of two or more buildings, of any building type or size, that acts as a single cohesive property with a single shared primary function and is owned and operated by the same party, such as higher education or hospital campuses.
      ii) Buildings on a campus may benchmark differently based on how the individual buildings are metered by the utility company. If the campus shares a few meters amongst the buildings,

then you would benchmark all of the energy use and square footage as one building. If the campus has individual meters per building, they will benchmark each building as a "child" property of the "parent" campus property. For more information on how to benchmark as a campus, check out this resource land have a conversation with the Help Desk.

3) Check your energy data
   a) Auto-upload from Xcel Energy:
      i) CASR recommends you have Xcel Energy automatically upload aggregated whole-building data for electricity and natural gas. In ESPM you will create only one 'virtual' electricity meter (units in kWh) and one 'virtual' natural gas meter (units in therms). Name these meters 'whole building electricity' and 'whole building natural gas'. Then, follow the exact steps in Xcel's Benchmarking Services Guide to have Xcel auto-load your data.
      ii) Auto-upload is required if you are benchmarking a multi-tenant building with tenant meters that you need Xcel Energy to aggregate so you have whole building data.
      iii) Spend the time to double-check your energy data. If you've had problems with billing in the past year, it could reflect in your energy data and need to be adjusted.
   b) Manual entry needed:
      i) Natural gas purchased from transport gas providers (i.e., not purchased directly from Xcel Energy) will have to be manually entered. Make sure the units selected for the meter in ESPM match those shown on the transport bill - often MMBtu, or MBtu, as defined in ESPM.
      ii) Xcel Energy's Steam Loop
         (1) Manual entry is required. When setting up the meters, steam units are kLbs.
      iii) Xcel Energy's Denver District Cooling Loop
         (1) Manual entry is required. When setting up the meter(s), chilled water units are ton hours.
         (2) If you have a building that is currently on or is planning to join the Denver District Cooling Loop, please reach out to the Help Desk after the submission of your first benchmarking report with district chilled water usage. Because you are on this loop, CASR will apply a target adjustment to your final target to account for the way Xcel Energy bills chilled water usage. Current Denver District Cooling Loop users automatically had a target adjustment applied in February 2024. This adjustment does not require an application.
   c) MAI buildings using a "production efficiency metric"
      i) MAI buildings that are considering pursuing a production efficiency metric (see Section 4.4.1.1.2) must also benchmark a custom metric(s) relevant to the building's operations. To learn how to enter your custom metric data into ESPM, review this step-by-step guide.
      ii) For an example of a custom metric, a cannabis grow facility could use a custom metric of pounds of flower produced per year; therefore, the growing efficiency would be calculated as the annual site energy usage divided by the pounds of flower produced. This would allow for growers to fill the canopy area with more plants and/or expand their production, so long as the production on a per-unit basis becomes more efficient. For a manufacturing facility, the custom metric could be the number of widgets produced per year for the manufacturer of a specific product, pounds of a particular food product produced per year for a food manufacturing, pounds of metal processed each year for a metal fabricator, number of glass bottles produced per year for a glass manufacturer, number of vehicles serviced per year at a vehicle repair facility, etc. In this way, the facility would be evaluated on its annual site energy usage divided by the chosen custom metric. This would allow the facility to expand its production, so long as the production on a per-unit basis becomes more efficient. The possibilities for the custom metric are theoretically unlimited, so long as the metric is emblematic of the main production process in the facility.
   d) Opportunities to exclude energy use:
      i) For all these functions, if energy use is sub-metered, the energy use can be excluded from the benchmarking data:

(1) Parking
(2) Electric vehicle (EV) charging stations or other transportation-related devices
(a) If the charging stations are sub-metered:
(i) If the EV chargers have their own utility meter and are separate from the main electricity meter, then leave out the energy use altogether and exclude the meter from your benchmarking.
(ii) If the EV charger is on the main meter but sub-metered or you receive reports on the kWh used, use negative entries. If the charging stations are provided under a third-party vendor, use the total kWh units that are listed in the monthly reports from the vendor.
(b) If the charging stations are not sub-metered:
(i) Follow the ESPM directions to enter EV charging information. In ESPM, it will affect your ENERGY STAR score, but it does not change source or site EUI. See the Energize Denver Technical Guidance for the target adjustment process to normalize the final target for this situation.
(ii) Level 1 and 2 Charging Stations can be counted as the number of vehicles that can be simultaneously charged at that station. For example, if you have a Level 2 station can charge two cars simultaneously, count that as two Level 2 chargers in ESPM.
(c) If you believe your charging stations are heavily used and would benefit more from the methodology to exclude metered energy use instead of using the target adjustment, you could consider installing meters on the charging stations and using the exclusion methodology described above.

e) Third-party loads
i) Examples include antennas, cell towers, or billboards. If the load is used for the purpose of the business in the building, it is not considered third-party.
ii) This energy use must be sub-metered to exclude it from benchmarking data.

f) Unique high-intensity energy loads
i) Examples include on-site laundry systems (unless the building is an MAI building used for industrial laundry services) and sidewalk heating systems. Other items would be considered on a case-by-case basis.
ii) This energy use must be sub-metered to exclude it from benchmarking data.

g) Emergency Generators
i) Fuel used for emergency generator testing and maintenance purposes does not have to be reported as an energy use in ESPM. However, if you use the generator to supplement or replace utility-supplied electricity for normal operations, then the fuel-use should be reported.

4) Renewables
a) The ESPM entry of renewable generation is optional – it will not be used to calculate the Renewable Credit for performance evaluation (Section 4.4.3).

5) Verify the Data
a) In the ‘Details’ tab, find the ‘Unique Identifiers (IDs)’ box on the left. Under ‘Standard ID-City/Town,’ select ‘Denver Building ID’ from the dropdown and enter the building’s unique 4-digit Denver Building ID in the box to the right. You can use CASR’s Performance Requirements Look Up Tool to find your Denver Building ID. You only need to enter your Denver Building ID once. If you do not add this ID to your building’s property details, we cannot see your report and you will not be in compliance.
b) In the ‘Energy’ tab, verify that all energy data is entered from January – January.
c) In the ‘Summary’ tab, run Portfolio Manager's Data Quality Checker.
d) In the "Property Notes" field, enter any contextual information about your building that you wish to have publicly disclosed.

In 2025, Energize Denver transitioned to Web Services. Instead of having to find a new data request link each year, you will now complete a one-time setup to prepare and submit reports. After this initial setup, you can continue submitting reports through the Energize Denver Reporting Portal.

6) Prepare the Report
   a) Confirm or enter the Building's Denver Building ID (DBID) into ESPM under the property details section. Add the building's 4-digit unique DBID (found in the compliance notice or at energizedenver.org). If the person does not add the DBID to the building's property details at this step, or has an incorrect DBID, CASR cannot see the report and the building will not be in compliance.
   b) (One time only) Connect with "EnergizeDenver" in ESPM.
   c) (One time per property, first time reporting) Share your Property with "EnergizeDenver" in ESPM.

7) Submit the Report
   a) Visit the Energize Denver Reporting Portal and log into the building's account. First time users need to register to log in.
   b) (One time only, first time reporting) Use the 'Claim Buildings' page to search by Building ID or Address to claim the building.
   c) To Submit the prepared benchmarking report, click the Submit button next to the Claimed Building on the My Buildings page or Dashboard Overview tab.
   d) Receive confirmation of the report's status and see if revisions are needed.
   e) Repeat the report submission process next year.

3.2 Accessing Whole-building Energy Use Data

Xcel Energy offers an energy benchmarking service that will automatically upload the building's utility data into ESPM or aggregate tenant/resident data into one ESPM account. Xcel Energy offers a step-by-step guide to work through the process. The process to set up the Xcel Energy auto upload involves these steps:

- Step 1: Create an account in Portfolio Manager®
- Step 2: Create a property in Portfolio Manager
- Step 3: Create meters in Portfolio Manager
- Step 4: Set up account in the Xcel Energy Benchmarking Portal
- Step 5: Back in Portfolio Manager, connect your account with Xcel Energy
- Step 6: Share your property and meters with Xcel Energy
- Step 7: Xcel Energy will confirm your relationship with the building owner
- Step 8: Xcel Energy will compile your tenant list
- Step 9: Tenant to meter matching
- Step 10: Work through consent process
- Step 11: Initial upload
- Step 12: Ongoing processing

Building representatives can ask for assistance with these processes by reaching out to the Xcel Energy benchmarking help desk at benchmarking@xcelenergy.com.

3.3 Benchmarking a Plant Energy Performance Indicator Score

MAI Buildings that are considering pursuing the Plant Energy Performance Indicator (EPI) Score metric on the performance pathway must submit a completed EPI Score spreadsheet with their annual benchmarking submission. Use this form to submit the completed EPI Score spreadsheet.

4. MAI ALTERNATE COMPLIANCE OPTION

The key difference between performance requirements for general and MAI buildings is that general buildings are assigned an energy efficiency target based on their use type, while MAI buildings must improve their energy performance relative to their individual baseline. This section will outline the requirements of participating in this MAI alternate compliance option (ACO).

For general buildings' energy efficiency targets and options, please see the Energize Denver Technical Guidance for information on final targets, target adjustments, renewable credit, and other considerations for all covered buildings.

4.1 Eligibility

To be eligible for this ACO, the building must meet the definition of a Covered MAI Building. Buildings where a portion of the building meets the MAI definition, and multi-tenant buildings which contain MAI and non-MAI tenants, may pursue this MAI ACO, but have slightly different compliance options.

4.1.1 Multi-Tenant and Mixed-Use MAI Buildings

Buildings where a portion of the building meets the MAI definition, and multi-tenant buildings which contain MAI and non-MAI tenants, may pursue this MAI ACO. Examples include multi-tenant warehouse buildings with MAI and non-MAI (i.e., general commercial) tenants, and campuses with numerous buildings with different use types. This does NOT include, for example, a manufacturing building which has associated office and warehouse spaces that are associated with the manufacturing process/tenant (that would be considered a standard MAI building).

Multi-tenant and mixed-use MAI buildings must choose one of the following compliance options:

1. Consider the entire building an MAI building and pursue the MAI ACO for the whole building. This option might be applicable to a building where sub-metering the energy usage of the MAI and non-MAI tenants is not possible. In this instance, the building has the option to choose between the Performance and Prescriptive Pathways but must use the 30% Site EUI Reduction metric. If the building owner in this instance chooses to pursue the Prescriptive Pathway (described in Section 4.4.2), then the energy audit and Action Plan must encompass both the MAI and non-MAI portions of the building.
2. Sub-meter the energy usage of the MAI and non-MAI tenants and treat them as separate buildings for compliance purposes; the MAI building would pursue the MAI ACO, and the non-MAI building would be assigned energy efficiency targets based on the property type(s).
3. Remove the building's MAI designation and consider the entire building a mixed-use commercial building (not an MAI building). A site-specific blended final target measured in EUI will be assigned based on the percentage of GFA assigned to each building type. The Manufacturing/Industrial Plant property type will be assigned a 52.9 EUI target (as listed in Appendix A of the Energize Denver Technical Guidance).

If a building wishes to pursue Option #3, they should have a conversation with CASR's Industrial Administrator. The building would be removed from the MAI Alternate Compliance Option and would be moved into the commercial building program. Verification from a third-party on the size and usage of the building may be required when requesting a mixed-use target.

4.1.2 New MAI Buildings

All new buildings will enter into the High-Performance Existing Buildings Program after they have received their certificate of occupancy (CO) and are in operation and consuming energy for 12 full calendar months. At that time, they are required to start reporting annual energy benchmarking data to CASR. CASR will set the final target and interim target (if applicable) within 6 months of receiving the first benchmarking report for that building.

For new construction that meet the definition of a Covered MAI building, the owner must apply for MAI designation and choose their compliance path upon becoming an existing building. If the owner of a new MAI building does not choose a compliance path, then the 30% EUI reduction performance metric will be assigned to the building for compliance purposes.

For example, if a new MAI building receives its certificate of occupancy in November 2024, the first benchmarking report will be due on June 1, 2026 for calendar year 2025 data, and the building owner must apply for MAI designation and choose their compliance path by June 1, 2027 (i.e., at the time that the second calendar year of benchmarking data is due).

The owner may choose any of the performance pathway and metric options presented in Section 4.4, or may choose the following additional option for new MAI buildings:

1. Efficiency Maintenance Target: The Owner of a New Covered MAI Building must choose one of the following metrics by the end of the second calendar year of benchmarking to maintain through 2032 and annually thereafter:
    a. EUI
    b. Production Efficiency
    c. ENERGY STAR Energy Performance Indicator Score of 75

    For example, if a new MAI building receives its certificate of occupancy in November 2024, the first benchmarking report will be due on June 1, 2026 for calendar year 2025 data, and the second benchmarking report will be due on June 1, 2027 for calendar year 2026 data; calendar year 2025 or 2026 data, or an average of the two years, for the chosen metric (whichever is more indicative of normal, efficient operations) must then be maintained indefinitely. The building owner or manager should have a conversation with CASR's Industrial Administrator to discuss their options and to determine if this is an appropriate compliance option for the building.

An existing commercial (i.e., non-MAI) building that undergoes significant redevelopment and/or renovation that triggers new building code requirements (e.g., due to a change in occupancy) and which is subsequently reclassified as an MAI building, may petition CASR to be considered a New Construction MAI building for compliance purposes. Similarly, a non-MAI commercial building that has achieved its final EUI target and subsequently is reclassified as an MAI building may petition CASR to be considered a New Construction MAI building for compliance purposes.

4.2 Overview

While the MAI ACO is a specialized process that will be unique to each MAI building, there are a few high-level steps that each MAI building should consider in their compliance journey.

Step 1: Benchmarking

Ensure that you are benchmarking your building's annual site energy usage annually. MAI buildings must ensure that they include at least one of the approved MAI property types in their benchmarking submissions (Section 3).

Step 2: MAI designation

The first step in the MAI compliance process is to apply for official MAI designation (Section 4.3). If you are not sure whether your building has received MAI designation, you can use the Performance Requirements Look Up Tool to search for the building's ID or address and look for the bolded "This building has official MAI designation" text.

Step 3: Check your baseline EUI and think about your compliance plan

It is anticipated that most MAI buildings will pursue the default compliance path for MAI buildings. The default compliance path for MAI buildings is either:

- A 30% Site EUI reduction target by 2032 (if the 2022 baseline EUI is above a 75.5), or
- A 52.9 Site EUI target by 2032 (if the 2022 baseline EUI is below a 75.5).

For buildings with official MAI Designation wishing to pursue this default compliance path, the MAI ACO application is not required – targets for the default compliance path will be assigned after April 1, 2025.

However, some MAI buildings will find that the default compliance path is not the most ideal for them. Other compliance options exist within the MAI ACO, which are detailed in the following sections. These include:

- The ability to request a baseline year prior to 2022, as early as 2018, to account for energy efficiency upgrades you have already implemented in the building.
- A Prescriptive Pathway to compliance (Section 4.4.2).
- A 2032 target of a 30% Production Efficiency Improvement (Section 4.4.1).
- A 2032 target of a 75 Plant ENERGY STAR Energy Performance Indicator score (Section 4.4.1).

To request any of these compliance options, the building must submit an MAI ACO Application. Although the default compliance path will be assigned after April 1, 2025, the MAI ACO application may be submitted through December 31, 2025.

Step 3b: Do you need an energy audit?

Energy audits are recommended for most buildings – they help you identify and prioritize energy efficiency and electrification projects in your building. ASHRAE Level 2 energy audits are required when applying for a Timeline Extension (all buildings) or the Prescriptive Pathway (MAI buildings only). An energy audit can also help you make the most informed decision about your path to compliance with the MAI ACO.

Step 4: Now that you have your compliance path and energy efficiency targets, how will you get into compliance?

Some MAI buildings have already achieved their targets, and simply must maintain their energy performance going forward. Others will have to reduce their energy consumption or improve their production efficiency over time. Can you "tune up" the systems and equipment in your building? What energy efficiency projects will you implement to achieve the energy efficiency targets for your building? Can you electrify your gas systems? Will you purchase or install renewable energy? Do you need a Timeline Extension to plan for end of system life or other some other circumstance that requires more time? These are all questions to ask yourself as you approach the 2028 interim target measurement period for MAI buildings.

4.3 MAI Designation Application

If you believe your building satisfies the eligibility criteria for MAI buildings, then the first step in applying for the MAI ACO is to apply for official MAI designation. To apply for this designation, the owner or representative must fill out a MAI designation form on the Energize Denver MAI website. Only buildings with an approved MAI designation via the intake form are eligible for this Alternate Compliance Option.

For buildings designated as an MAI building, submitting the annual benchmarking report is an important part of maintaining the MAI designation, which gives you access to the MAI alternate compliance option. If the annual benchmarking is not submitted, it could jeopardize access to the MAI ACO, and the building could be reclassified to the "Other" property type with a 49.2 Site EUI final target.

For a covered building that benchmarks as a "Manufacturing/Industrial Plant" building type but does not apply for MAI building designation or the MAI ACO, the building will be switched to the "Other" building type with a 49.2 Site EUI final target.

4.4 Pathway and Metric Options

Covered Buildings with an MAI designation may choose from a variety of compliance paths and optional supplemental credits, as demonstrated in Figure 2, and detailed in this section. If a building owner of an MAI-designated building does not choose a pathway and metric by April 1, 2025, the building will default to the Performance Pathway with either a 30% Site EUI reduction or a 52.9 Site EUI, whichever is less stringent. However, the building may still apply to the MAI ACO through December 31, 2025, with their chosen compliance pathway and metric.

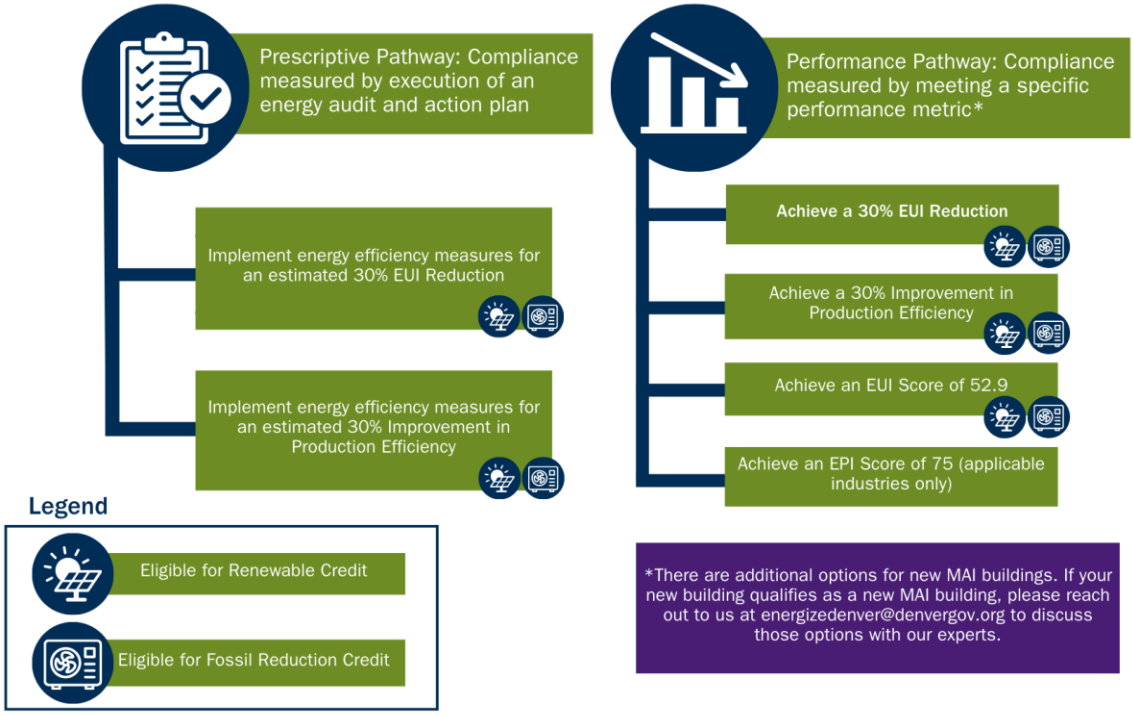

FIGURE 2: VISUAL REPRESENTATION OF MAI ACO PATHWAYS AND METRICS

4.4.1 Performance Pathway

In the Performance Pathway, the building owner chooses a metric that is most applicable to their operations and meets that metric's reduction goals by the deadlines. A building owner choosing the Performance Pathway must select one of the following four metric options and follow the instructions for demonstration within the section. Depending on the metric you choose, your compliance process will be slightly different.

4.4.1.1 *Metric Options and Compliance Process*

In the Performance Pathway, there are four different types of metrics a building owner could choose from, with different pros and cons for each.

4.4.1.1.1 30% Site EUI Reduction Metric

A 30% Site EUI Reduction metric is for the building to achieve a 30% reduction in their Site EUI metric in 2032 relative to the building's baseline year.

This metric is available to all MAI-designated buildings, including multi-tenant and mixed-use MAI buildings. If a building owner does not choose a performance pathway and metric, then this pathway and metric will be assigned to the building by default for compliance purposes.

The energy efficiency target for this metric is to reduce the building's EUI by 30% by the end of the final performance year, as compared to the baseline year. The building must realize a 10% EUI reduction by the interim performance year and a 30% EUI reduction by the final performance year, as verified through annual benchmarking data. Buildings pursuing this metric are eligible for the Renewables Credit and the Fossil Fuel Reduction Incentive.

The baseline year is 2022, but the building owner may request a baseline year as early as 2018. An earlier baseline year is especially pertinent if the building owner has already made investments into energy efficiency in their building (e.g., high-efficiency HVAC equipment, LED lighting, compressed air leak detection programs, etc.). The building owner must ensure that benchmarking data for the building is available prior to when the energy efficiency investments were made in the building. For example, if the building installed a new high-efficiency boiler in 2021, then the building owner should ensure that benchmarking data is on-file with the City at least as far back as 2020. To use an earlier baseline year, benchmarking data for that year and all subsequent years must either be on-file with the City already, or back-reported. Furthermore, if 2022 did not reflect normal operations (e.g., production was still ramping up), the building owner may request to use a later baseline year, with a justification as to why this adjustment is needed.

This metric may be a good option for a building that has already achieved significant EUI reductions from its baseline (as described in the example above). Additionally, this metric may be chosen by a building that has never made energy efficiency upgrades (and thus may have many low-hanging-fruit efficiency projects available) or a building which is not eligible for any of the other metric options in this section.

4.4.1.1.2 30% Production Efficiency Improvement Metric

A 30% Production Efficiency Improvement is similar to a 30% EUI Reduction, but instead of the weather-normalized annual site energy usage being normalized to the square footage of the building, it is normalized to a custom metric that the building owner proposes to CASR. The intent of the production efficiency metric is to normalize an energy use metric specifically to the operations conducted in the building, which will allow for changes in production volume over time. Examples of a weather-normalized annual site energy usage production efficiency metric could be:

- energy per weight of flower produced (cannabis)
- energy divided by PUE (data centers)
- energy divided by pounds of a particular food product produced (food manufacturing)
- energy divided by pounds of metal processed (metal fabricator)
- energy divided by number of glass bottles produced (glass manufacturer)
- energy divided by number of vehicles serviced per year (vehicle repair facility)
- energy per widgets produced (manufacturing)
- energy divided by any other metric(s) proposed by the building owner.

The building owner must propose the custom metric to CASR, indicating the methodology they will use to consistently calculate the custom metric from year to year and to prove that the production efficiency has improved over time. The proposed production efficiency metric will be reviewed and approved by CASR on a case-by-case basis. When proposing a production efficiency metric, the building owner must provide proof,

such as annual sales or production reports, that the chosen metric is the right metric for your operations. This option may not be viable for manufacturers that produce non-standard custom products, but all building owners wishing to pursue this metric are encouraged to work with CASR to find an agreeable production metric, if possible.

A building owner may propose that their building's production efficiency metric be evaluated based on a 30% GHGi reduction metric (e.g., GHG per sq ft or GHG per production efficiency metric). The GHG emissions will be based on benchmarking data and will include both direct (Scope 1) and indirect (Scope 2) emissions as defined and measured through ESPM. CASR's methodology for calculating limitations of indirect emission reductions will mirror the emissions factor used by the State of Colorado in their Building Performance Colorado program. If a building owner were to propose that their building be evaluated based on a 30% GHGi reduction metric, then the building would not be eligible for the Renewable Credit or the Fossil Fuel Reduction Incentive because GHG reductions for renewable or reductions in fossil fuel use would be included in the GHG accounting.

This metric is available to all single-tenant MAI-designated buildings which produce a standard product.

The energy efficiency target for this metric is to improve the building's production efficiency (see definition in the Definitions section of this document) by 30% by the end of the final performance year, as compared to the baseline year. The building must realize a 10% efficiency improvement by the interim performance year and a 30% efficiency improvement by the final performance year, as verified through annual benchmarking data. Buildings pursuing this metric are eligible for the Renewables Credit and the Fossil Fuel Reduction Incentive.

The baseline year is 2022, but the building owner may request a baseline year as early as 2018, as described in Section 4.4.1.1.1.

This metric may be a good option for a building that produces a standard product and plans to significantly ramp up the production of that product before the final performance year. In that way, the building can focus on investing in energy efficiency while simultaneously expanding their operations.

4.4.1.1.3 52.9 Site EUI Target

The 52.9 Site EUI Target is similar to the final target for each building type listed in the table in Appendix A of the Energize Denver Technical Guidance in that the final target is set regardless of the baseline EUI. This metric was established to account for certain MAI buildings that are already highly efficient and currently have low EUIs.

This metric is available to all MAI-designated buildings. This metric would be a good option for buildings with a baseline Site EUI below approximately a 75.5 (meaning that the building would have less than a 30% EUI reduction goal).

Multi-tenant and mixed-use MAI buildings may request a blended final Site EUI target, with a 52.9 EUI target for the portion of the building with the Manufacturing/Industrial Plant property type. A building choosing this option would no longer be in the MAI program (see Section 4.1.1).

The energy efficiency target for this metric is to reduce the building's Site EUI to a 52.9 by 2032, with the interim target established for 2028 as 1/3 of the way between the baseline Site EUI and the final target. If the Site EUI for the building is maintained at 52.9 or below, the building is automatically in compliance once the building owner chooses this pathway or once the default compliance path is assigned. Buildings pursuing this metric are eligible for the Renewables Credit and the Fossil Fuel Reduction Incentive.

4.4.1.1.4 ENERGY STAR Energy Performance Indicator (EPI) Score of 75

The EPI Score is an EPA ENERGY STAR Score designed for certain manufacturing industries. Similar to commercial ENERGY STAR scores, the higher the score, the more efficient the building. The scores have been normalized by the EPA across similar plants in the United States. These EPI Scores are currently the only federal standards for analyzing and comparing the energy efficiency of certain manufacturing plant types. Eligible industries are encouraged to fill out their relevant EPI spreadsheet to determine their baseline EPI Score and the 2032 goal is to achieve a 75 for the EPI Score.

This metric is available to MAI-designated buildings that qualify as an eligible plant type. Building owners are encouraged to visit the EPA Plant EPI Score website to determine whether the building is an eligible plant type. Eligible plant types, as indicated by the plant's operations and corresponding North American Industry Classification System (NAICS) code, include:

1. aluminum casting plant, 331521, 331524
2. automobile assembly, automobile engine plant, and automobile transmission, 336111, 336112, 336310, 336350
3. cement manufacturing, 327310
4. commercial bread & roll bakery, 311812
5. container glass manufacturing, 327213
6. cookie and cracker bakery, 311821
7. distilled spirits, 312140
8. flat glass manufacturing, 327211
9. fluid milk and yogurt processing, 311511
10. frozen fried potato processing, 311411
11. integrated paper and paperboard manufacturing, 322121, 322130
12. integrated steel plant, 331111
13. iron casting plant, 331511
14. juice processing, 311421, 312111
15. nitrogenous fertilizer plant, 325311, 325312
16. pharmaceutical manufacturing, 325400
17. pulp mill, 332110
18. wet corn milling, 311221

The energy efficiency target for this metric is to achieve an EPI Score of 75 (out of 100) by 2032, with the interim target established for 2028 as 1/3 of the way between the baseline Site EPI Score and the Final 2032 EPI Score of 75. If the EPI Score for the building is maintained at 75 or above, the building is automatically in compliance once the building owner chooses this pathway and submits its annual EPI Score spreadsheet. Buildings pursuing this metric are *not* eligible for the Renewables Credit and the Fossil Fuel Reduction Incentive, as the EPI Score spreadsheet already accounts for renewable energy generation and gas efficiency improvements.

As described in Section 3.2, buildings pursuing this energy efficiency target have the additional requirement to submit a completed EPI Score spreadsheet annually. The spreadsheet will be due to CASR at the time of the annual benchmarking submission (typically, June 1st of each year).

For example, a relatively new distillery invested in highly efficient production equipment when it was established, and the building owner believes that their building is already quite energy efficient. The building owner fills out the EPI Score spreadsheet and finds that its baseline EPI Score is an 80. The building owner could choose this metric option and would have already achieved its final target.

For another example, a commercial bread and roll bakery fills out the EPI Score spreadsheet and finds that its baseline EPI Score is a 70. The building could choose this metric option if they feel that it would be easier to improve their score by 5 points instead of pursuing a 30% Site EUI reduction target. On the other hand, if

the commercial bread and roll bakery fills out the EPI Score spreadsheet and finds that its baseline EPI Score is a 20, this might not be a good metric option, as improving the building's score to a 75 would be nearly impossible without a complete overhaul of the building, its systems, and its production equipment.

4.4.1.2 *Timeline*

Buildings pursuing the MAI ACO Performance Pathway must follow the following timeline in Table 3 for compliance unless the timeline is adjusted through a Timeline Extension alternate compliance option.

TABLE 3: MAI ACO PERFORMANCE PATHWAY TIMELINE

Year	Activity	Measurement Period	Benchmarking & Renewable Credit Reporting Deadline
2022	Benchmarking	January 1 to December 31, 2022	December 1, 2023
2023	Benchmarking	January 1 to December 31, 2023	June 1, 2024
2024	Benchmarking	January 1 to December 31, 2024	September 1, 2025
2025	Benchmarking	January 1 to December 31, 2025	June 1, 2026
	MAI buildings assigned to the 30% EUI reduction default target April 1, 2025		
	Submit chosen pathway and metric through the MAI ACO application by December 31, 2025		
2026	Progress check	January 1 to December 31, 2026	June 1, 2027
2027	Progress check	January 1 to December 31, 2027	June 1, 2028
2028	Interim target measurement period to make 1/3 progress to final target	January 1 to December 31, 2028	June 1, 2029
2029	Progress check	January 1 to December 31, 2029	June 1, 2030
2030	Progress check	January 1 to December 31, 2030	June 1, 2031
2031	Progress check	January 1 to December 31, 2031	June 1, 2032
2032	Final target measurement period	January 1 to December 31, 2032	June 1, 2033
2033	Maintenance of target begins	January 1 to December 31, 2033	June 1, 2034
20XX	Maintenance continues	January 1 to December 31, 20XX	June 1, 20XX

4.4.1.3 *Demonstration of Compliance*

At a base level, all that a building owner has to do to prove compliance with the energy efficiency target is to turn in an annual benchmarking report by the deadline in the year when the evaluation is due. Renewables and alternate compliance options are voluntary and only flexibility options to tailor compliance to an individual building. Compliance with targets is demonstrated through the submission of the annual Benchmarking report with additional annual benchmarking data for custom metrics or EPI Scores (if applicable), and the additional submission of renewable credit information (if applicable). The schedule of energy efficiency targets and their submission deadlines is presented in Table 1. If a building is exempt from Benchmarking in a given compliance year, then the building must comply through an alternate compliance option.

4.4.1.4 *Performance Evaluation for the Performance Pathway*

CASR will begin the performance evaluation process on June 1 each year. The process includes:

- Confirming the benchmarking submission is complete
- Confirming the EPI spreadsheet is submitted (if applicable)

- Assessing the building's change in on-site fossil fuel consumption over time
- Checking if the owner submitted a renewable credit submission
- Checking the owner's chosen performance metric compared to the target

When evaluating performance, CASR is examining the difference between the energy efficiency target achieved during the performance period (minus the renewable credit and fossil fuel reduction incentive, if applicable) with the target required. All MAI metrics will be converted into kBtu values for compliance evaluation purposes.
Performance Evaluation:

- If the kBtu difference is a positive number, the building used more kBtu than the target allowed, resulting in a "kBtu not achieved" value. This means the building did not meet their target for the performance period.
- If the kBtu difference is a negative number, the building used less kBtu than the target allowed, meaning the building met their target and is in compliance for the performance period.

If the building did not submit a Benchmarking Report for the year of performance evaluation, the most recent approved Benchmarking Report will be used to evaluate compliance and assess penalties.

Building owners will be notified of the building's compliance status by an email to the contacts on file. See the Energize Denver Technical Guidance for a detailed explanation of the compliance notification timeline. If CASR does not have a building contact email, a letter will be mailed to the building's main address.

4.4.2 Prescriptive Pathway

In the prescriptive pathway, the building owner completes an energy audit of the building and proposes a prescriptive list of projects that result in a 30% reduction in energy use, to be completed by certain deadlines. The goals of the Prescriptive Pathway are the same as the goals of the Performance Pathway, but the compliance process is different.

4.4.2.1. *Metric Options*

4.4.2.1.1 Estimated 30% Site EUI Reduction Metric

An Estimated 30% Site EUI Reduction metric is for the building to achieve a 30% reduction in their Site EUI metric in 2032 relative to the building's baseline year.

This metric is available to all MAI-designated buildings.

The energy efficiency target for this metric is to create a list of energy efficiency measures (and renewable energy projects if applicable) that reduce the building's EUI 30% from the baseline year to be measured during the final target year. The project list must estimate a 10% EUI reduction by the interim target measurement period. The results of implementing the project list and realizing energy use reductions will be verified through annual benchmarking data. Buildings pursuing this metric are eligible for the Renewables Credit and the Fossil Fuel Reduction Incentive.

The baseline year is 2022, but the building owner may request a baseline year as early as 2018. To use an earlier baseline year, benchmarking data for that year and all subsequent years must either be on-file with the City already, or back-reported, If 2022 did not reflect normal operations (e.g., production was still ramping up), the building may request to use a later baseline year, with a justification as to why this adjustment is needed.

4.4.2.1.2 Estimated 30% Production Efficiency Improvement Metric

An estimated 30% Production Efficiency Improvement is similar to a 30% EUI Reduction, but instead of the weather-normalized annual site energy usage being normalized to the square footage of the building, it is

normalized to a custom metric that the building owner proposes to CASR. See Section 4.4.1.1.2 for more detail on this metric.

This metric is available to all single-tenant MAI-designated buildings which produce a standard product.

The baseline year is 2022, but the building owner may request a baseline year as early as 2018.

4.4.2.2 Demonstration of Compliance for the Prescriptive Pathway

Step 1: MAI Buildings with an approved MAI Designation that wish to pursue the Prescriptive Pathway must apply to the MAI ACO by December 1, 2025. The application for the Prescriptive Pathway requires the following:

- Receive an energy audit from an auditor listed on the trained MAI vendor list, available on CASR's website. To be listed, energy auditors must have attended an MAI vendor training and passed a quiz on the compliance structure for MAI buildings. The energy audit must satisfy the CASR-defined minimum requirements outlined in Section 4.4.2.3. Please refer to the MAI Energy Audit Educational Guide for further detail.
- The building owner must create an Action Plan upon completion of the energy audit (see Action Plan Template in Appendix A). The Action Plan will document which recommendations will be implemented by the interim year (2028; make 1/3 progress to the final target) and the final target. The Action Plan should be a maximum of 10 pages.
    - The Action Plan may reflect the investments already made in the building if said investments were made after the chosen baseline year. The associated savings (as proven through benchmarking data and/or energy modeling) and supporting documentation (e.g., invoices) must be provided as an attachment to the Action Plan, proving that the investments were made, and the savings were realized. These investments will count toward the interim target if the savings can be proven via benchmarking data.
        1. For example, if the building owner chooses a baseline year of 2018 and had made investments in the building in 2019 which resulted in an actual 10% EUI reduction (based on benchmarking data, the building's actual energy performance), and the building owner chose the 30% EUI reduction metric, then goal could be an estimated 20% EUI reduction. If a building has this situation, the building owner or manager should have a conversation with CASR's Industrial Administrator.
    - The Renewables Credit and the Fossil Fuel Reduction Incentive may be included as part of the building's Action Plan. However, if, upon completion of the energy audit, the identified opportunities for a building do not result in an estimated 30% savings in the chosen metric, the building must include one or both supplemental credits/incentives in the Action Plan to reach the target. See Sections 4.4.3 and 4.4.4 for more information on supplemental credits.
    - Agricultural Building Minimum Requirements: If, as part of the Action Plan, the owner of an agricultural building installs new grow lights, they must ensure that all grow lights are DLC-listed horticultural grow lights, to ensure a minimum PPE of 1.9 µMol/J. PPE is an industry-accepted metric for horticultural lighting efficacy.
- The energy audit report and completed Action Plan are due to CASR by December 31, 2025 at the absolute latest, unless a Timeline Extension has been approved.

Step 2: CASR will review and approve, amend, or reject the Action Plan. The review process is as follows:

- After all deliverables (i.e., energy audit report and Action Plan) have been submitted, CASR will review the complete package to ensure that it aligns with all requirements. CASR may request additional documentation or clarification on any of the submitted documents. After CASR has completed its review, it will use the proposed information to create and issue an Action Plan Approval. After CASR has issued the Action Plan Approval, the building owner will have thirty (30) days to appeal the approval by submitting a revised Action Plan. CASR will review the revised Action Plan and either

issue a new Action Plan Approval, ask for additional clarification or documentation, or reject the appeal. If the appeal is rejected, the building owner may proceed using the previously approved Action Plan or choose a Performance Pathway.

- All items included in the Action Plan Approval become requirements of the Prescriptive Pathway for that building and a building owner must successfully complete all of the requirements to be in compliance. If a building cannot complete a given item in the signed Action Plan by the deadline, the building owner must contact CASR and indicate which measure(s) cannot be completed, a reason for the inability to complete the measure(s), and an explanation of why the building owner cannot apply for a Timeline Extension in order to complete the measure at a date beyond the performance period. CASR will work with the building owner to adjust the Action Plan accordingly, if applicable.

Step 3: The building must complete the first part of the Action Plan (i.e., 1/3 of the estimated savings goal) by the end of the interim performance year (2028). This will be confirmed in the Interim Implementation Report, due by March 1, 2029. The building owner must submit to CASR an Interim Implementation Report confirming the successful implementation of the first part of the Action Plan.

- Note: During the year of the required submission of the Interim Implementation Report (i.e., March-December 2029), CASR will visit a minimum 10% of MAI buildings pursuing this Prescriptive Pathway to verify the successful implementation of the measures outlined in the first half of the Action Plan.

Step 4: The building must complete the Action Plan by the end of the final performance year (2031). This will be confirmed in the Final Implementation Report, due by March 1, 2032. The building owner must submit to CASR a Final Implementation Report confirming the successful implementation of the entire Action Plan.

- Note: During the year of the required submission of the Final Implementation Report (i.e., March-December 2032), CASR will visit a minimum 10% of MAI buildings pursuing this Prescriptive Pathway to verify the successful implementation of the measures outlined in the Action Plan.

Step 5: The building must complete and submit to CASR an Evaluation, Monitoring, and Verification Report by June 1, 2033, along with the annual benchmarking submission. This step allows CASR and the building owner to measure and verify the performance of the energy efficiency investments made in the building against the predicted savings, based on 2032 data.

- Based on the completed Action Plan, buildings are estimated to see a 30% savings. If the Evaluation, Monitoring, and Verification Report and the 2032 benchmarking data shows less than a 20% actual savings, after the evaluation of the fossil fuel reduction incentive and renewables credit, the building owner must complete Step 6.

Step 6: If the Evaluation, Monitoring, and Verification Report and the 2032 benchmarking data shows less than a 20% actual savings[2], the building must take one additional step, and design and implement a Corrective Action Plan to make necessary changes and upgrades and ensure that the new equipment was commissioned correctly and is operating as intended. The following timeline is required for the Corrective Action Plan:

- By December 31, 2033, the building will design and submit a completed Correction Action Plan to CASR, documenting the steps that the building will take to achieve at least a 20% actual savings.
- By December 31, 2034, the building will finish implementing its Corrective Action Plan.
- By March 1, 2035, the building will submit a Corrective Action Plan Implementation Report, confirming the successful implementation of the entire Corrective Action Plan.
- The building must complete and submit to CASR an additional Evaluation, Monitoring, and Verification Report by June 1, 2036, along with the annual benchmarking submission. This step

[2] If at least a 20% actual savings is realized, then Step 6 will not be required.

allows CASR and the building owner to measure and verify the performance of the energy efficiency investments made in the building during the Corrective Action Plan implementation, based on 2035 data.

4.4.2.3 *Energy Audit Minimum Requirements for the MAI Prescriptive Pathway*

MAI Buildings completing an energy audit for a Timeline Extension Application *only* may follow the instructions in the Energize Denver Technical Guidance. For an energy audit that satisfies the requirements of both the Timeline Extension and the MAI Prescriptive Pathway, follow the instructions in this section.

For the Prescriptive Pathway in the MAI Alternate Compliance Option: Energy audits for individual MAI buildings must follow ANSI/ASHRAE/ACCA Standard 211-2018 and have the following minimum requirements:

- Energy auditor must have passed CASR's MAI Energy Auditor Training. If you prefer to use a specific energy auditor, please encourage the individual to receive the training to be included in the list prior to the audit being conducted. You can view a list of auditors who have passed the MAI Energy Auditor Training by going to the "Directory of Trained Service Providers" on the Energize Denver Hub.
- Energy auditor must have one of the following licenses, credentials, or certifications:
    - Professional Engineer (licensed in the United States)
    - Certified Energy Auditor (Association of Energy Engineers)
    - Certified Energy Manager (Association of Energy Engineers)
    - Building Energy Assessment Professional (ASHRAE)
    - High-Performance Building Design Professional (ASHRAE)
    - Energy Management Professional (Energy Management Association)
- Energy Auditor must be a third-party individual or company and not be employed by the organization that owns or operates the building.
- Energy audit must be a minimum of an ASHRAE Level 2.
- MAI buildings are *not* required to submit their energy audit through the online Denver Audit Template tool for the Prescriptive Pathway. However, if an MAI building also wishes to apply for a Timeline Extension, the energy audit must be submitted through the online Denver Audit Template tool.
  Baseline identification:
    - Baseline should be calendar year 2022 by default, but a building owner may request a baseline year as early as calendar year 2018
    - Baseline EUI should be in Weather-normalized Site EUI (or Site EUI if the building cannot receive a weather-normalized version)
- Timeframe of Audit
    - Audits completed since July 1, 2023 will be accepted.
    - If the building owner wishes to use an audit completed between January 1, 2020 and July 1, 2023, CASR will accept the audit, so long as the audit is updated to include the minimum requirements needed for the Prescriptive Pathway.
- Investment analysis minimum requirements:
    - Individual measure cost and estimated site EUI savings and/or production efficiency improvement, including savings to investment ratio (SIR) and simple ROI calculations.
    - Total project cost and site EUI savings and/or production efficiency improvement, including total SIR and simple ROI.
        - Electric savings should be identified in kWh or kBtu and gas savings should be identified in kBtu.
    - The energy audit should evaluate both electric and fossil fuel systems in the building. If the chosen energy audit program does not include an evaluation of fossil fuel systems, the building owner is encouraged to pay for an additional evaluation of said equipment.

4.4.2.4. *Timeline*

Buildings pursuing the MAI ACO Prescriptive Pathway must follow the following timeline in Table 4 for

compliance unless the timeline is adjusted through a Timeline Extension alternate compliance option (Section 7 of the Energize Denver Technical Guidance).

TABLE 4: MAI ACO PRESCRIPTIVE PATHWAY TIMELINE

Year	Activity	Measurement Period	Benchmarking & Renewable Credit Submission Deadline
2022	Benchmarking	January 1 to December 31, 2022	December 1, 2023
2023	Benchmarking	January 1 to December 31, 2023	June 1, 2024
2024	Benchmarking	January 1 to December 31, 2024	September 1, 2025
2025	Benchmarking	January 1 to December 31, 2025	June 1, 2026
	MAI buildings assigned to the 30% EUI reduction default target April 1, 2025		
	Submit chosen pathway and metric through the MAI ACO application by December 31, 2025		
2026	Benchmarking	January 1 to December 31, 2026	June 1, 2027
2027	Benchmarking	January 1 to December 31, 2027	June 1, 2028
	Building completes first portion of Action Plan by end of year		
2028	Benchmarking and measurement period of first portion of Action Plan	January 1 to December 31, 2028	June 1, 2029
2029	Benchmarking	January 1 to December 31, 2029	June 1, 2030
	Building submits Interim Implementation Report by March 1, 2029		
2030	Benchmarking	January 1 to December 31, 2030	June 1, 2031
2031	Benchmarking	January 1 to December 31, 2031	June 1, 2032
	Building completes Action Plan by end of year		
2032	Benchmarking and measurement period of Action Plan	January 1 to December 31, 2032	June 1, 2033
	Building submits final Implementation Report by March 1, 2032		
2033	Benchmarking	January 1 to December 31, 2033	June 1, 2034
	Building submits Evaluation, Monitoring, and Verification Report by June 1, 2033		
If Corrective Action Plan is Required			
2033	Building submits Corrective Action Plan by December 31, 2033		
2034	Benchmarking	January 1 to December 31, 2034	June 1, 2035
	Building finishes implementing the Corrective Action Plan by December 31, 2034		
2035	Benchmarking	January 1 to December 31, 2035	June 1, 2036
	Building submits Corrective Action Plan Implementation Report by March 1, 2035		

2036	Benchmarking	January 1 to December 31, 2036	June 1, 2037
	Building submits Evaluation, Monitoring, and Verification Report by June 1, 2036		
20XX	Benchmarking	January 1 to December 31, 20XX	June 1, 20XX

Figures 3 shows a simplified representation of the prescriptive pathway actions to improve energy efficiency in the building without the annual benchmarking due dates in Table 3.

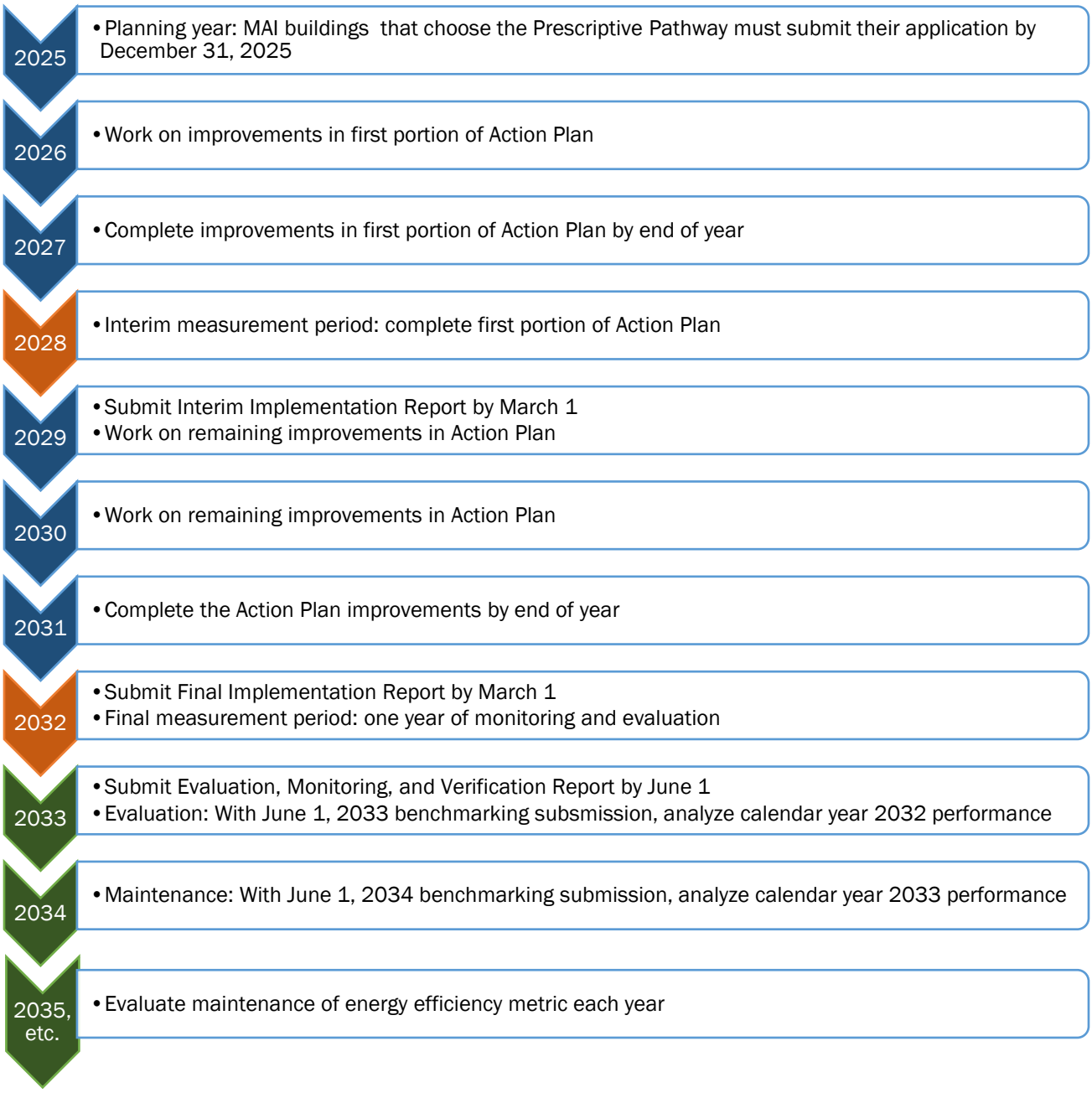

FIGURE 3: MAI ACO PRESCRIPTIVE PATHWAY ACTIONS WITHOUT CORRECTIVE ACTION PLAN

4.4.2.5 *Performance Evaluation for the Prescriptive Pathway*

CASR will begin the performance evaluation process on June 1 each year. The process includes:

- Confirming the benchmarking submission is complete
- Assessing the building's change in on-site fossil fuel consumption over time
- Checking if the owner submitted a renewable credit submission
- Checking the owner's chosen performance metric compared to the target

When evaluating performance for the MAI Prescriptive Pathway, CASR is examining whether the Action Plan has been completed as described and whether the annual benchmarking report and other required documentation (outlined in Section 4.4.2.2) has been satisfactorily completed and submitted on-time. If everything has been completed according to the ACO notice, then the building will be in compliance.

If an MAI building pursuing the Prescriptive Pathway does not comply with the Action Plan or any other requirements of the Prescriptive Pathway, then the building will default to the Performance Pathway with either a 30% Site EUI reduction or a 52.9 Site EUI, whichever is less stringent, for performance evaluation and penalty assessment (see Section 4.4.1).

Building owners will be notified of the building's compliance status by an email to the contacts on file. See the Energize Denver Technical Guidance for a detailed explanation of the compliance notification timeline. If CASR does not have a building contact email, a letter will be mailed to the building's main address.

4.4.3 Supplemental Credits: Renewable Credit

The Renewable Credit works the same for MAI buildings as it does for all commercial and multifamily buildings. Please see the Energize Denver Technical Guidance for more detailed information on the Renewable Credit. A building owner may supplement any of the MAI performance metrics listed above with the Renewable Credit, *except* for the EPA Plant EPI Score metric.

Technically, any MAI building could satisfy its performance requirements by sourcing at least 30% of overall energy demand for the building from renewables, provided the renewables satisfy the requirements outlined in the Renewable Credit.

4.4.4 Supplemental Credits: Fossil Fuel Reduction Incentive

The Fossil Fuel Reduction Incentive is only available to MAI buildings. This is offered in lieu of the Electrification Credit, which is only available to commercial and multifamily buildings.

A building owner may supplement any of the MAI performance metrics listed above, *except* for the EPA Plant EPI Score metric, with the Fossil Fuel Reduction Incentive. If, between the baseline year and the performance evaluation year, an MAI building reduces its direct FF consumption (e.g., through efficiency improvements, the electrification of fossil fuel equipment, the removal of extraneous fossil fuel equipment, etc.), then the percentage of fossil fuel reduction, relative to the baseline year, will be directly credited towards the chosen metric, using the following formula:

$$\text{Credit} = \frac{\text{Baseline FF Usage} - \text{Final FF Usage}}{\text{Baseline Total Energy Usage}} \times 100\%$$

Where "Baseline FF Usage" is the annual site energy usage from fossil fuels in the baseline year, "Final FF Usage" is the annual site energy usage from fossil fuels in the performance year, and "Baseline Total Energy Usage" is the annual site energy usage from all energy sources in the baseline year.

Simply stated, if an MAI building reduces its fossil fuel consumption over time, it will receive the Fossil Fuel Reduction Incentive. For example, an industrial bakery may reduce its fossil fuel consumption over time by

electrifying its gas ovens, improving the efficiency of existing gas equipment, replacing gas HVAC systems with high-efficiency heat pumps, or simply removing unnecessary gas processes. A cannabis grow may reduce its fossil fuel consumption over time by retro-commissioning existing equipment after installing LED grow lights, investing in high-efficiency industrial-grade dehumidification and cooling equipment, or replacing gas HVAC systems with high-efficiency heat pumps.

The maximum possible credit is 10% and will be applied to the building's final target. For example, if the MAI building's final target is a 50 EUI and the building receives a 10% credit, the building only must realize a 55 EUI.

The Fossil Fuel Reduction Incentive will be evaluated during each building's performance evaluation of the interim and final targets. During the evaluation, if it is found that a building has reduced its absolute fossil fuel consumption as compared to the baseline year, the credit will be applied to the chosen pathway and metric before assessing renewable credits and then evaluating the performance of the chosen compliance path.

4.4.5 MAI Pathway Notice

After CASR has completed its review of the MAI ACO Application submission, it will create a Performance or Prescriptive Pathway Notice that will state the new performance requirements for the building. The Notice will include:

- baseline year, baseline value, and energy efficiency targets
- details of the Action Plan (for the Prescriptive Pathway)
- agreed-upon timeline
- reporting requirements
- penalty level that would be assessed if the building does not achieve compliance
- the version of the rules and regulations that would apply to enforcement

4.4.6 Amending MAI ACO Pathways and Metrics

2025 is the year for MAI buildings to strategize their compliance plan. MAI buildings must apply to the MAI ACO by the end of the year or work towards the default energy efficiency targets. However, situations change, and some buildings may need to amend their MAI ACO after the application deadline. The building may apply to CASR to amend their MAI compliance pathway and/or metric beyond 2025.

For example, if a building is pursuing a 30% Site EUI Reduction metric but their production volumes begin to increase significantly, they may apply to amend their targets based on a 30% Production Efficiency Improvement metric. In this instance, the building would need to explain the production increase, propose a custom efficiency metric, and prove that they have robust production accounting such that the building energy usage can be normalized to that production metric. Conversely, if a building is pursuing a 30% Production Efficiency Improvement metric but their production volumes begin to decrease significantly, they may apply to be assigned targets based on a 30% Site EUI Reduction metric.

As another example, a building pursuing the Prescriptive Pathway may find that they have achieved a 30% savings, as demonstrated through their benchmarking reports. This building may apply to switch to the Performance Pathway to avoid the reporting requirements of the Prescriptive Pathway.

There may be scenarios in which a building does not have enough time to finish their MAI ACO application by the end of 2025. For example, if a building wants to pursue the Prescriptive Pathway, they will need to begin the auditing process multiple months before the end of 2025. However, there may be unforeseen delays, and audit analyses and reports may take longer than expected. The building in this scenario would still be assigned to the default compliance path in 2025 but may still apply to the MAI ACO in 2026 when the energy audit and Action Plan are finalized. If a building finds themselves in this situation, they should alert CASR of

the timing constraints and their intended application timeline.

There are many reasons why an MAI building may need to amend their compliance path after 2025. For certain scenarios, Timeline Extensions may be available to the building (please see Section 7 of the Energize Denver Technical Guidance for a detailed list of allowable reasons for a Timeline Extension request). However, delayed action or lack of planning on the part of the building owner is not a valid reason for a Timeline Extension. As such, if a building does not plan for compliance in 2025 and does not apply to the MAI ACO until 2026 or beyond, they will still be subject to the compliance timelines outlined in this section. In other words, not strategizing a compliance plan in 2025 will leave the building will less time to make the upgrades needed to achieve their energy efficiency targets and avoid penalties.

5. OTHER ALTERNATE COMPLIANCE OPTIONS

A MAI building owner is also eligible for two additional alternate compliance options to adjust the timeline of implementation:

1. Interim Compliance Hold: MAI buildings that wish to apply for an Interim Compliance Hold should follow the instructions in Section 7.1 of the Energize Denver Technical Guidance.

2. Timeline Extension:

   For MAI buildings pursuing the Prescriptive Pathway, owners may incorporate the elements of a Timeline Extension application into their Action Plan. For example, if the owner needs additional time due to the reasons acceptable for a Timeline Extension, the Action Plan could demonstrate the timeline that the building will be able to achieve its final target. The application must include the minimum requirements for a Timeline Extension, including an Operations and Maintenance Program and documentation justifying the reason for the Timeline Extension request. In this instance, the Prescriptive Pathway Action Plan could serve as the Timeline Extension Compliance Plan, as long as the Action Plan includes an overview of proposed Operations and Maintenance improvements. Please review the Timeline Extension requirements in the Energize Denver Technical Guidance document for more information. MAI buildings wishing to pursue this option should have a conversation with CASR's Industrial Administrator on combining the Timeline Extension process with the Prescriptive Pathway application.

   For MAI buildings pursuing the Performance Pathway, the owner should follow the instructions for requesting a Timeline Extension in the Energize Denver Technical Guidance. The owner may apply for a Timeline Extension when applying to the MAI Alternate Compliance Option or may submit a Timeline Extension application at a later date.

   The Timeline Extension application for an MAI building may include details related to plans for future building or business expansions or increases in production.

6. ENFORCEMENT AND PENALTIES

CASR prefers that building owners invest in their buildings to reach the performance targets instead of paying penalties to the city and is committed to supporting building owners with their efforts and exploring the flexibility that alternate compliance options can afford. Please review the Enforcement and Penalties section of the Energize Denver Technical Guidance document for more details.

6.1 Penalty Assessment

For the performance requirements, penalties are assessed by taking the "kBtu not achieved", then multiplying it by the cost per kBtu to calculate the penalty amount.

"kBtu not achieved" * Cost/kBtu = $ penalty amount

If an MAI building pursuing the Prescriptive Pathway does not comply with the Action Plan or any other requirement of the Prescriptive Pathway, then the building will default to the Performance Pathway with either a 30% Site EUI reduction or a 52.9 Site EUI, whichever is less stringent, for performance evaluation and penalty assessment.

6.2 Example Compliance Scenarios for MAI Buildings

This section contains several examples of combining different compliance strategies and resulting penalties assessed for MAI buildings pursuing the MAI alternate compliance option. Penalties are cumulative because the interim target (if applicable) is designed to help the building be on track to meet the final target, so early action is encouraged. In all of these examples, the minimum level for performance target penalties were assessed in an MAI building that is 150,000 sq. ft.

The chosen metric in these examples was assumed to be the 30% EUI Reduction metric, but the same concepts and calculations apply to other metric options. For example, EUI can be substituted for production efficiency in the below examples using the following formula:

$$Production\ Efficiency\ (\frac{kBtu}{Widget}) = \frac{Total\ Building\ Energy\ (\frac{kBtu}{year})}{Total\ Widgets\ Produced\ per\ Year}$$

If an MAI building chooses a metric in the Performance Pathway and for some reason their penalties are higher than they would have been in the 30% EUI Reduction metric, the maximum penalty the building will be assessed will be the penalty for the 30% EUI Reduction metric.

For the interim calculation for the 75 EPI Score Target, the EPI tool "Reference Plant" will be adjusted by the CASR team to determine the level of site energy (kBtu/year) needed to achieve the required interim score with an equivalent level of production. The actual plant energy may increase or decrease by a different percentage if the level of production has changed.

6.2.1 Example # 1

This example shows an existing MAI building of 150,000 sq. ft. that did nothing to improve their EUI (Table 5).

Scenario:

- Did not receive the fossil fuel reduction incentive
- Did not purchase or install renewables
- Did not apply for a Timeline extension
- Building achieved *no reduction* from a 2022 baseline of 80 EUI

TABLE 5: EXAMPLE 1: NO REDUCTIONS

Year	Targets in EUI	EUI Actual	kBtu Performance	Targets in kBtu	kBtu not achieved	Penalty Level	Penalty
2028	72	80	12,000,000	10,800,000	1,200,000	$0.23/kBtu	$276,000
2032	56	80	12,000,000	8,400,000	3,600,000	$0.23/kBtu	$828,000
						Cumulative Penalties	$1,104,000

6.2.2 Example # 2

This example shows an existing MAI building that did make some progress on their final target but did not take advantage of the renewables or fossil fuel reduction credits to fill in the gap (Table 6).

Scenario:

- Did not receive the fossil fuel reduction incentive
- Did not purchase or install renewables
- Did not apply for a Timeline Extension
- Building achieved *some reduction in EUI* from a 2022 baseline of 80 EUI

TABLE 6: EXAMPLE 2: SOME EUI REDUCTIONS

Year	Targets in EUI	EUI Actual	kBtu Performance	Targets in kBtu	kBtu not achieved	Penalty Level	Penalty
2028	72	68	10,800,000	10,800,000	N/A	$0.23/kBtu	$0
2032	56	60	9,000,000	8,400,000	600,000	$0.23/kBtu	$138,000
						Cumulative Penalties	$138,000

6.2.3 Example # 3

This example shows an existing MAI building that knew they were going to miss the interim target but purchased renewables instead of submitting a Timeline Extension application. It did make some progress on its final target and used renewables again as well as the fossil fuel reduction credit to fill in the gap (Table 7).

Scenario:

- Received the fossil fuel reduction incentive in the final performance year
- Purchased long-term off-site renewables contract
- Did not apply for a Timeline Extension
- Building achieved *some reduction in EUI* from a 2022 baseline of 80 EUI

TABLE 7: EXAMPLE 3: SOME EUI REDUCTIONS AND RECEIVED ADDITIONAL CREDITS

Year	Targets in EUI	EUI Actual	kBtu Performance	Targets in kBtu	kBtu not achieved	Penalty Level	Penalty
2028	72	75+RC	10,800,000	10,800,000	N/A	$0.23/kBtu	$0
2032	56	70+RC+Fossil Fuel Reduction Incentive	8,400,000	8,400,000	N/A	$0.23/kBtu	$0
						Cumulative Penalties	$0

6.2.4 Example # 4

This example shows a new MAI building that was constructed in November 2024 and was pursuing the efficiency maintenance metric with a 2026 baseline year. The building's energy efficiency worsened in between the baseline year and when compliance was measured in 2032 (Table 8).

Scenario:

- Did not purchase or install renewables
- Did not apply for a Timeline Extension
- Building *increased its EUI* from a 2028 baseline of 80 EUI

TABLE 8: EXAMPLE 4 - NEW MAI BUILDING WITH AN INCREASE IN EUI

Year	Actual EUI	Target in EUI	kBtu Performance	Target in kBtu	kBtu not achieved	Penalty Level	Penalty
2032	85	80	12,750,000	12,000,000	750,000	$0.35/kBtu	$262,500
						Cumulative Penalties	$262,500

7. APPEALS

A building owner has the right to appeal a Decision, Notice, or Order (administrative citation) by filing a "petition for review." Please review the appeals instructions in the Energize Denver Technical Guidance.

Appendix A – MAI Prescriptive Pathway Action Plan Template

This Action Plan is intended to give CASR a summary look into what it going to be implemented and the implementation timeline. The Action Plan (Word or PDF document for submission) must cover the following and should be a maximum of ten (10) pages:

1. Optional: What improvements and upgrades have you already implemented in your building?
    a. List the improvements or upgrades already implemented in the building, if any, prior to the audit being conducted, including specific details on what was installed/replaced, when the installation occurred, and the savings achieved by that installation (based on benchmarking data). Include relevant documentation (e.g., equipment specifications and dated installation invoices) as attachments to the Action Plan.
    b. The building owner or manager should have a conversation with CASR's Industrial Administrator to discuss the above investments and, if approved, what the new interim and final targets will be.
2. What improvements and upgrades are you going to perform to achieve the interim and final targets?
    a. Operations and Maintenance are important aspects of high energy performance buildings but should not be included in the Action Plan as part of the required upgrades or improvements.
    b. Short Term Payback Actions
    c. Long term Payback Actions
    d. Energy Efficiency Measures listed in Energy Audit but not included in upgrade list
        i. Include an explanation of why these items are not being included in the proposed upgrades
    e. Are you planning to pursue either or both of the supplemental credits? If yes, are they included in your Action Plan – why or why not?
3. How do those actions enable the building to meet the final target?
    a. List each action and estimated Site EUI reduction or estimated production efficiency improvement (depending on chosen metric) in a table format.
    b. Tally the cumulative estimated savings from all of the improvements or upgrades.
4. When are you going to perform the improvements or upgrades?
    a. The Action Plan should be divided into two sections, indicating which items will be installed by the beginning of the interim and final target year measurement periods.
5. Milestone Reporting Plan
    a. In the Action Plan, indicate your acknowledgement of the deadlines to submit the required reports for the Prescriptive Pathway, including the:
        - Interim Implementation report, due March 1, 2029
        - Final Implementation report, due March 1, 2032
        - Evaluation, Monitoring, and Verification report, due June 1, 2033
        - (if applicable) Corrective Action Plan Implementation Report, due March 1, 2035.
    b. These reports are an opportunity for a building owner to communicate challenges and, if necessary, work with CASR to adjust the Action Plan accordingly to achieve the target savings.