



Manufacturing, Agricultural, and Industrial (MAI) Alternate Compliance Option (ACO) Training for Building Owners and Managers

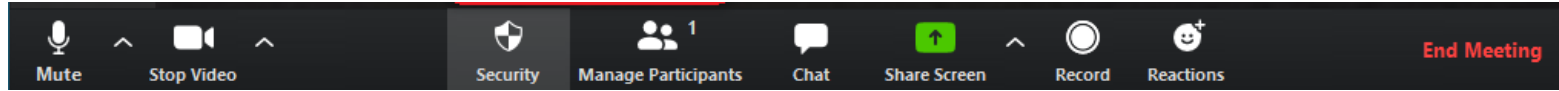
October 24, 2023

Daniel Raynor, Industrial Administrator

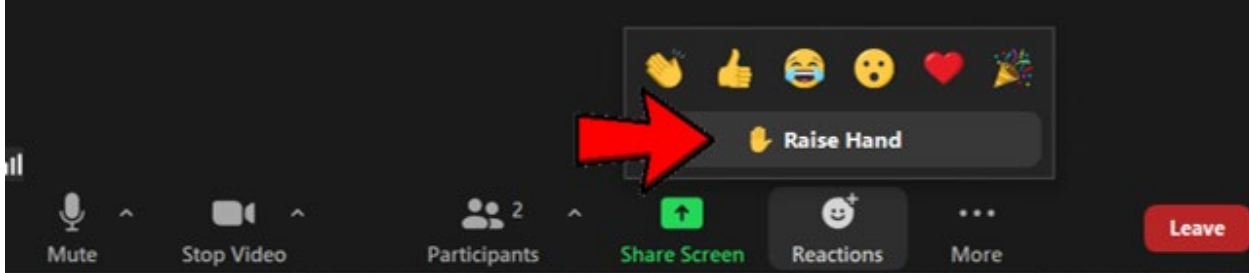
Zoom Meeting Norms

- Thank you for joining!
- This meeting is being recorded and will be posted to the website
- Please be respectful of others in the meeting
- Mute yourself when you are not talking

Zoom Meeting Norms



- If you have questions or comments, please raise your hand or submit in the Q&A. You can “up vote” questions.



Today's Agenda

- Introductions
- Energize Denver Overview
- Electrification Program
- Energize Denver Program for MAI Buildings
- Timelines
- Timeline Adjustment Alternate Compliance Option
- Penalties and Compliance Scenarios
- Support & Incentives

Energize Denver Overview

Better Buildings, Better Lives

Better Buildings, Better Lives

Imagine a Zero-Carbon Future where:

- **Buildings and Homes are healthy**
- **We are all comfortable in extreme temperatures**
- **We can all breathe quality air indoors, even on the smokiest days**

**Better
Buildings,
Better
Lives**

**Buildings and Homes are responsible for
64%
of climate pollution in Denver.**

**Better
Buildings,
Better
Lives**

**BUT Denver's electric grid will be
85% renewable by 2030
AND carbon-free by 2050.**

Better Buildings, Better Lives

Electric heat pumps and efficient buildings are the key to shifting off natural gas and eliminating emissions by 2040 (or sooner where it's easier)

Denver's equitable path to zero-carbon will:

- **Create good local jobs**
- **Make Denver more competitive**
- **Reduce energy burden**
- **Reduce energy bills.**

**Better
Buildings,
Better
Lives**

A Combination of Carrots and Sticks



CARROTS



STICKS

A Combination of Carrots and Sticks



CARROTS

Incentives and Support

- Equity Priority Building and Income-Qualified programs
- Rebates for heat pumps
- Pilot project funding
- Navigational services and technical assistance



STICKS

A Combination of Carrots and Sticks



CARROTS



STICKS

Regulations

- Denver Energy Code: New/renovated buildings/homes trending toward Net Zero
- Performance Requirements: Existing buildings must improve energy efficiency.
- Electrification Requirements: Heat pumps should be used when replacing existing building HVAC or water heating equipment when feasible.

A Combination of Carrots and Sticks



CARROTS

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STICKS

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Energize Denver Ordinance Sections

Benchmarking

- Implemented by CASR
- Buildings 25K+ sq. ft. submit energy data annually

Performance

- Implemented by CASR
- Minimum energy efficiency requirements for buildings 25K+ sq. ft, and buildings 5,000 to under 25K sq. ft.
- Improvements to energy efficiency and increase renewables

Electrification

- Implemented by CPD
- All Commercial and Multifamily Buildings
- Partial Electrification of Space and Water Heat upon System Replacement, when Cost Effective

Electrification Updates to Code

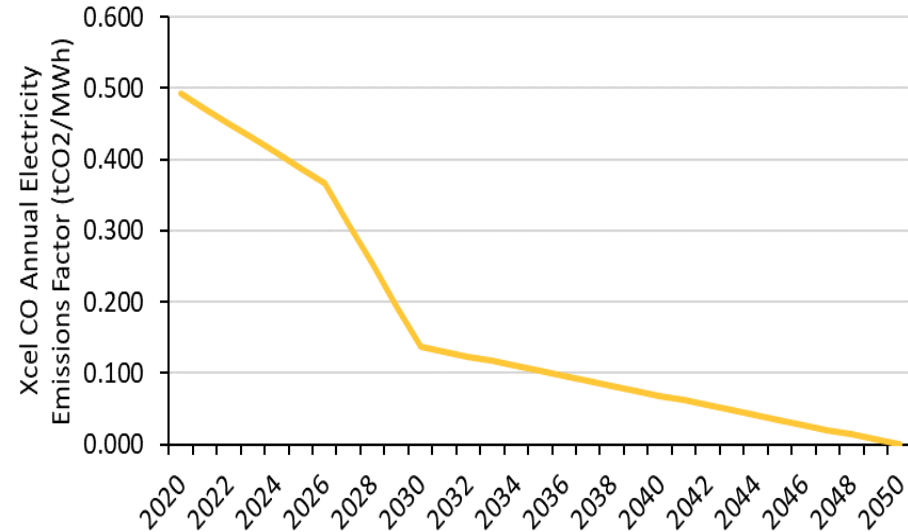
Applies to all buildings under the International Building Code

Xcel Energy is Rapidly Decarbonizing the Grid

Goal: 80% renewable electrical grid by 2030!

[2021 Xcel Energy Clean Energy Plan](#)

- Colorado [House Bill 19-1261](#) requires Xcel to decarbonize the grid.
- Denver's electric grid is already built to withstand high air conditioning load during the summer.
- Through Xcel/CASR analysis, we found the grid can support electrified winter heating needs without significant infrastructure build-out.



Heat Pumps as the Solution

- Heat pumps *move* heat instead of *creating* it, achieving 200-300% efficiency (100% efficiency is based on a source that creates heat – ex. natural gas).
- While natural gas is currently less expensive than electricity, more efficient heat pumps use 2-3x *less* energy than gas heating systems.
- As such, except on especially cold days, these systems should achieve relative cost parity on usage.



Existing Building Electrification Requirements

*Partial **electrification** of Space and Water Heat required in Building Code upon System Replacement, when Cost Effective*

Amending Denver Building and Fire Code	2023	2025	2027
Permit process: Changes to near parity in permitting between unitary AC/condensing units serving a heated space, gas furnaces, gas hot water heaters and heat pumps.	X		
Equipment replacement: Heat pumps required upon replacement of unitary AC/condensing units serving a heated space, gas furnaces, gas hot water heaters when cost-effective.		X	
Permit process: Changes to near parity in permitting between PTACs, boilers, central hot water systems and heat pumps.		X	
Equipment replacement: Heat pumps required upon replacement of PTACs, boilers, central hot water systems when cost-effective.			X

Overview of Changes Effective March 1, 2023

Permit process changes to near parity in permitting between gas systems and electrification

Starting March 1, 2023, when replacing a unitary air conditioner or condensing unit, a natural gas furnace, or natural gas water heaters in commercial and multifamily buildings with another gas system or unitary AC, there will be new requirements in Denver Energy Code, based on Energize Denver:

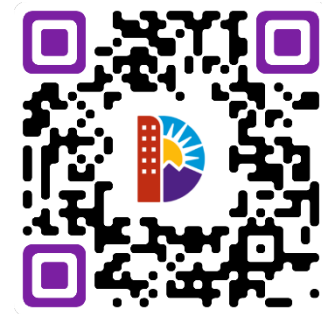
- Quick permits - permits that can be issued without the need for a plan review - for affected equipment will no longer be available
- Affected equipment replacements will require a plan review to obtain a permit
- Boilers are not affected until 2025
- denvergov.org/quickpermits

Electrification Feasibility Reports

Assesses the feasibility of using an electric heat pump or dual fuel heat pump when replacing HVAC equipment and compares the heat pump to a natural gas system on:

- Install costs
- Estimated annual energy cost change (%)
- Social cost of carbon dioxide over the life of equipment

When replacing gas equipment, an Electrification Feasibility Report is one option for compliance (in addition to right-sizing of equipment or gas pipe pressure testing of all gas piping).



MAI Alternate Compliance Option

MAI Stakeholder Engagement



- Four rounds of MAI stakeholder meetings from Sept. 2022 – Feb. 2023
- Focus group meetings with specific industries
- Round table discussions with MAI energy service providers
- Meetings with individual building owners and managers, including over a dozen site visits
- Brainstorming sessions with industry experts; energy efficiency experts; federal, state, and local agencies (e.g., the EPA, the US Department of Energy, the Colorado Energy Office); Xcel Energy; various sustainability groups; etc.

Important Definitions

Covered MAI Building Definition

- A facility where energy is consumed in process loads for manufacturing, agricultural, or industrial purposes.
- Process loads are energy consumed for bona fide purposes other than comfort heating and 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 facilities
- ENERGY STAR Portfolio Manager building types:
 - Drinking Water Treatment & Distribution
 - Energy/Power Station
 - Other – Utility
 - Wastewater Treatment Plant

Multi-Tenant / Multi-Use Buildings

- Multi-use buildings with at least one tenant that meets the definition of a Covered MAI Building may be classified as a Covered MAI Building.

Require sub-metering
and treat the MAI and
non-MAI tenants as
separate buildings

OR

Treat the whole building
as MAI;
for the Prescriptive
Pathway, require Energy
Audits and Action Plans
for the entire building

New Covered MAI Building Definition

- A building that received its certificate of occupancy after November 22, 2021 and meets the definition of a covered MAI building.

Examples of new MAI Buildings:

- ✓ New construction
- ✓ 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
- ✓ A non-MAI commercial building that has achieved its 2030 EUI target and subsequently is reclassified as an MAI building

Production Efficiency Definitions

- “Production Efficiency” means 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.
- “Production Efficiency Improvement” means 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).

Fossil Fuel Definition

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

This is relevant for the fossil fuel reduction credit.

MAI Designation

MAI Designation

- The first step in the process is for MAI buildings to receive official MAI designation via a designation form.
- Approximately 270 MAI buildings have already received official designation.
- Buildings that benchmark as MAI but do not apply for MAI designation will be assigned to the “Other” property type and will be assigned energy use intensity (EUI) targets.

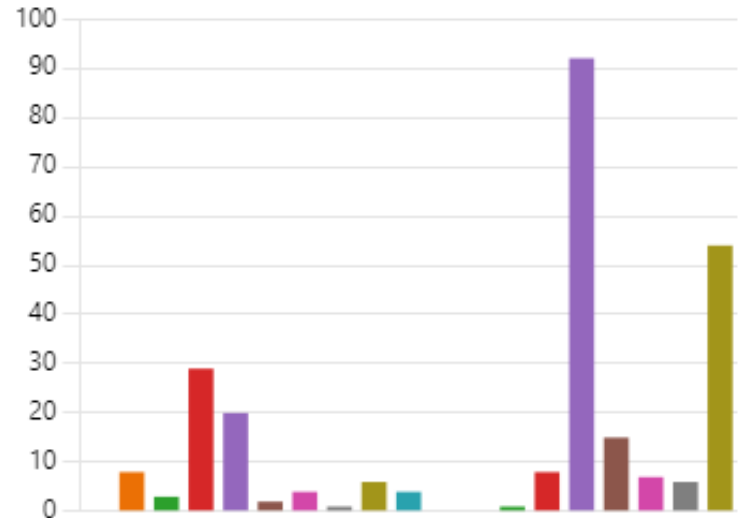
MAI Buildings – Who are they?

+ ~45
grow
houses

+ 17
Industrial
buildings

● Auto Assembly, Auto Engine ma...	0	● Fertilizer manufacturing	0
● Industrial repair services (e.g., h...	8	● Petroleum Refining	0
● Cement manufacturing	3	● Pharmaceuticals	1
● Food manufacturing: Bread & R...	29	● Clothing/textile/furniture/uphol...	8
● Other food and non-alcoholic b...	20	● Other Manufacturing (e.g., other...	92
● Brewery/distillery	2	● Commercial printer	15
● Glass manufacturing	4	● Industrial Laundromat	7
● Paper or Pulp Mill	1	● Waste services (e.g., trash, recycl...	6
● Steel Plant	6	● Other	54
● Metal (Aluminum or Iron) Casting	4		

~270 total buildings



Benchmarking Requirements

Benchmarking MAI Buildings

- Starting in 2023, MAI buildings are required to benchmark their annual site energy usage through Energy Star Portfolio Manager (ESPM).
 - MAI buildings will have an extended deadline of December 1, 2023 for submitting 2022 data. Future years have a June 1 annual deadline.
- For buildings pursuing the Production Efficiency metric, they must benchmark a custom metric within ESPM.
- For buildings pursuing the EPI Score metric, they must submit a completed EPI spreadsheet with their benchmarking submission each year.

Baseline Years

- For all performance options for existing MAI buildings, the default baseline year will be 2022.
- However, a building may request a baseline year as early as 2018, to account for efficiency improvements made prior to 2022.

Note!

If using an earlier baseline year, all subsequent years of benchmarking data must be retroactively submitted, if not already on file with CASR.

Third-Party Data Verification

Complete and accurate benchmarking is the foundation for building performance standards

Required submission within the benchmarking report for performance evaluation years (e.g., 2026 and 2030, unless adjusted)

ENERGY STAR® Data Verification Checklist

N/A EPA Sample Office

Registry Name: EPA Sample Office
Property Type: Office
Gross Floor Area (GFA): 275,500
Built: 1975

ENERGY STAR® Score: _____
For Year Ending: Dec 31, 2019
Date Generated: Sep 1, 2022

1. The ENERGY STAR score is a 1-to-100 assessment of a building's energy efficiency as compared with similar building nationwide, adjusting for climate and business activity.

Property & Contact Information

Property Address	Property Owner	Primary Contact
EPA Sample Office 123 Main Street Arlington, Virginia 22206	_____	_____

Property ID: 20090470

1. Review of Whole Property Characteristics

Basic Property Information

1) Property Name: EPA Sample Office
Is this the official name of the property? Yes No
If "No," please specify: _____

2) Property Type: Office
Is this an accurate description of the primary use of this property? Yes No

3) Location:
123 Main Street
Arlington, Virginia 22206
Is this correct and complete? Yes No

4) Gross Floor Area: 275,500 sq ft Yes No

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- Generate a Data Verification Checklist within ESPM following Portfolio Manager directions; there will be additional verification requirements for certain metrics.
- Have a third-party data verifier confirm the information and sign checklist.
- Keep signed checklist on file and enter verifier's information on the Details tab in ESPM.
- If the building is already ENERGY STAR Certified for that year, if the time frame overlaps by six months or more, then the checklist used for certification can be used.

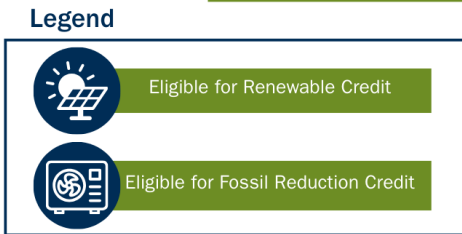
MAI Performance Requirements

Performance Requirements for the MAI Alternate Compliance Option (ACO)



Implement energy efficiency measures for an estimated 30% EUI Reduction

Implement energy efficiency measures for an estimated 30% Improvement in Production Efficiency



Achieve a 30% EUI Reduction

Achieve a 30% Improvement in Production Efficiency

Achieve an EUI Score of 30

Achieve an EPI Score of 75 (applicable industries only)

Source 30% of Energy from Renewables

Maintain baseline energy use from first or second year of operation

Applicable to new buildings only

MAI ACO Pathway Options

MAI Buildings must choose to pursue one of two compliance pathways:



Prescriptive Pathway: Compliance measured by execution of an energy audit and action plan

- Good for buildings who don't know where to start
- Step-by-step process
- More reporting requirements
- Compliance based on execution of Action Plan



Performance Pathway: Compliance measured by meeting a specific performance metric

- Good for buildings that have already made upgrades or already have a plan
- ACO application & annual benchmarking are the only reporting requirements
- Compliance based on achieving your performance target

Performance Pathway Metrics



Prescriptive Pathway: Compliance measured by execution of an energy audit and action plan

Implement energy efficiency measures for an estimated 30% EUI Reduction



Implement energy efficiency measures for an estimated 30% Improvement in Production Efficiency



Legend



Eligible for Renewable Credit



Eligible for Fossil Reduction Credit



Performance Pathway: Compliance measured by meeting a specific performance metric

Achieve a 30% EUI Reduction



Achieve a 30% Improvement in Production Efficiency



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Achieve an EPI Score of 75 (applicable industries only)

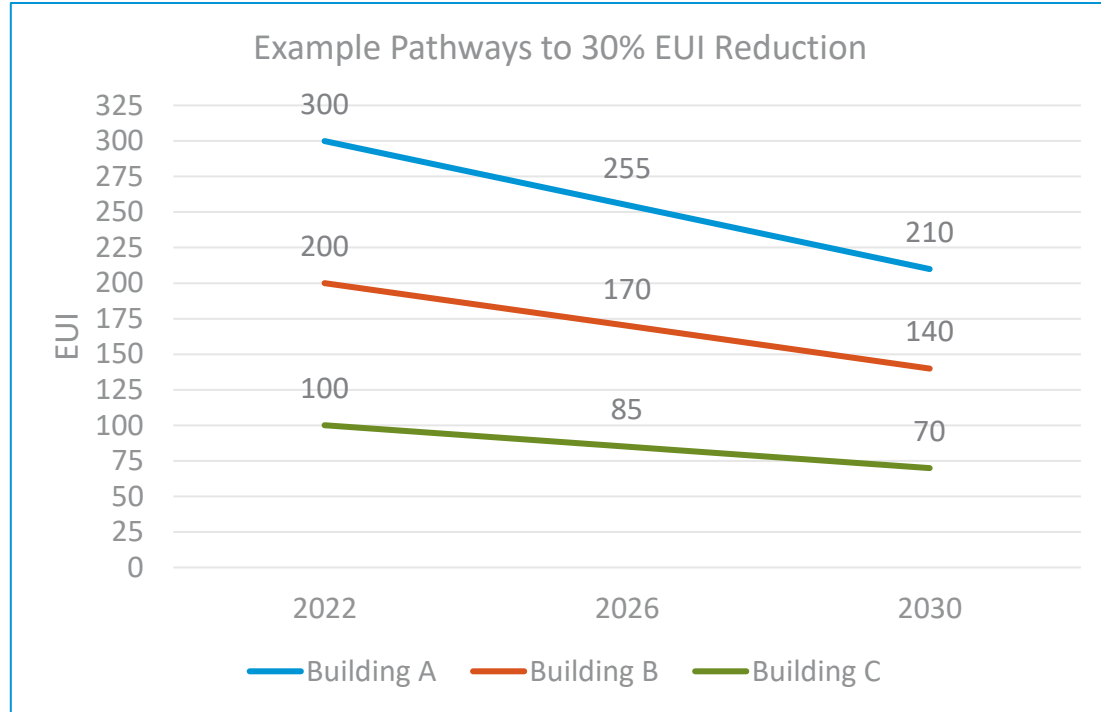
Source 30% of Energy from Renewables

Applicable to new buildings only

Maintain baseline energy use from first or second year of operation

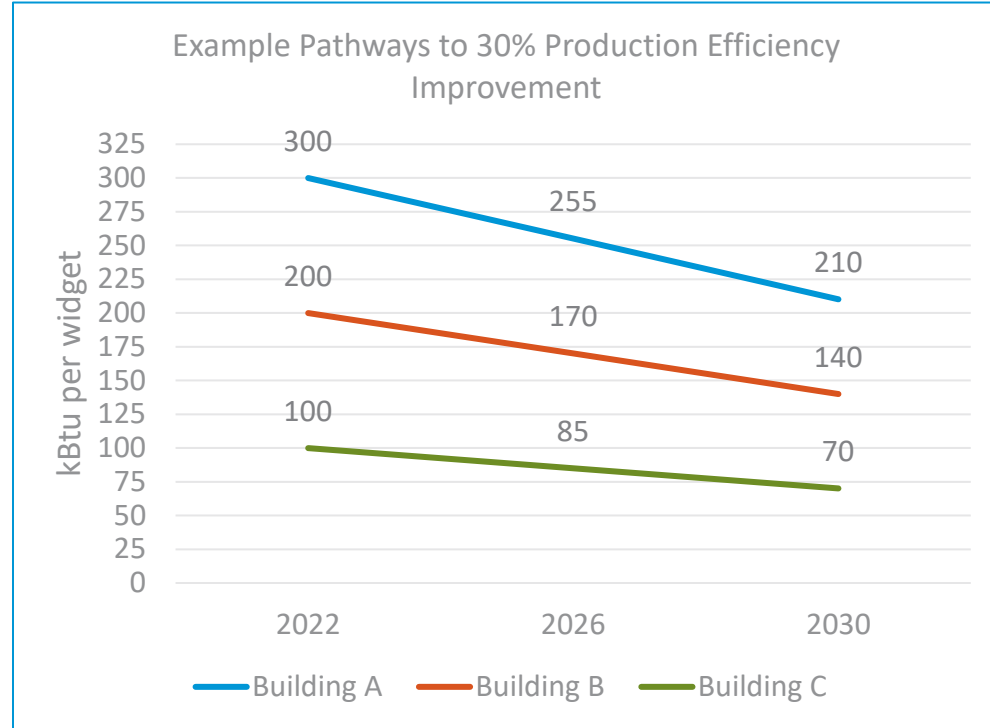
Performance Metric #1 – 30% EUI Reduction

- Reduce your building's EUI by 30% as compared to your baseline year.
- This performance pathway will be the default option for a building that does not apply to the ACO, or which defaults on the Prescriptive Pathway.



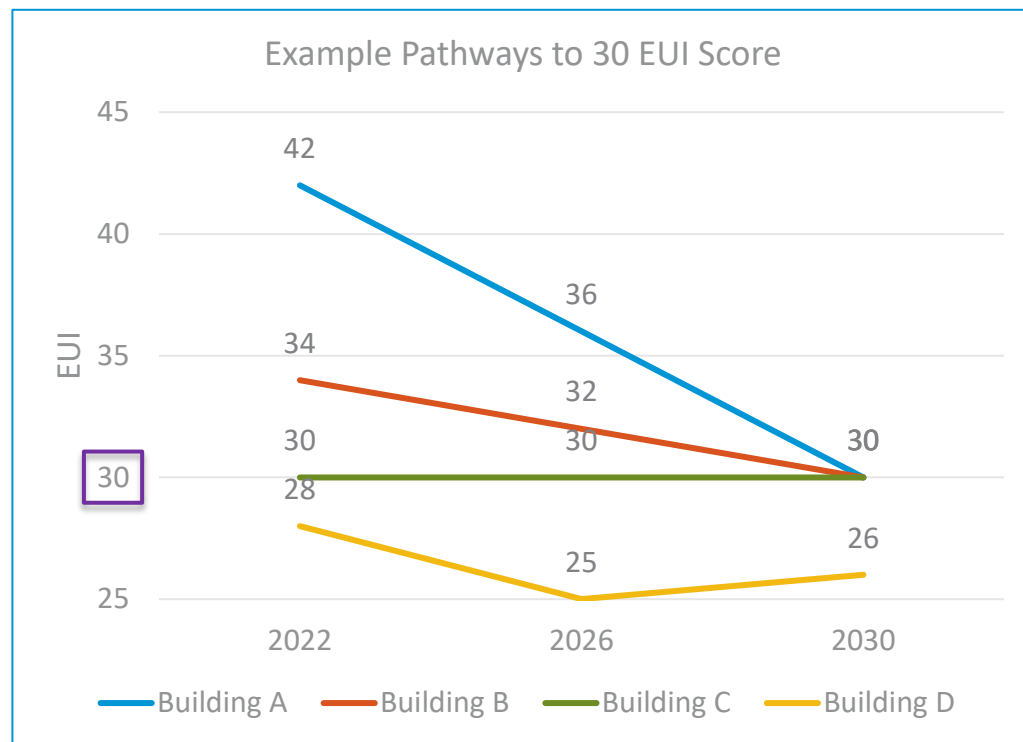
Performance Metric #2 – 30% Production Efficiency Improvement

- Improve your production efficiency 30% as compared to your baseline year.
- The building owner would propose the production efficiency metric to CASR. The widget must be a standard product. This might not be a good option for a manufacturer that produces non-standard custom products.



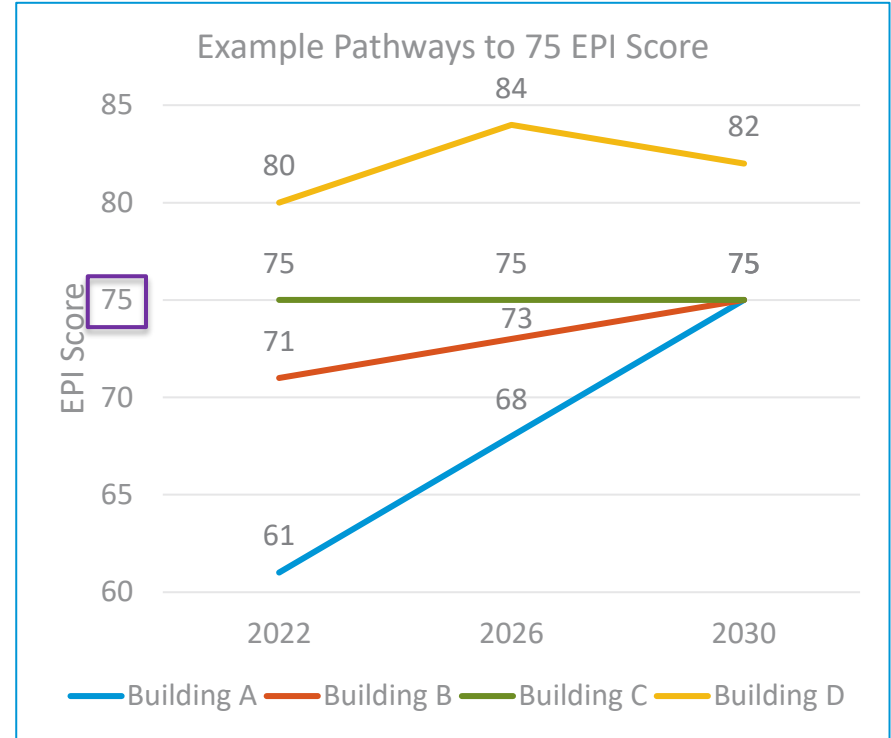
Performance Metric #3 – 30 EUI Score

- Reduce your site EUI down to a 30 by 2030.
- If your EUI is maintained at 30 or below, your building is automatically in compliance.
- The interim target will be the halfway point between the baseline EUI and the final 2030 EUI target.



Performance Metric #4 – EPI Score Pathway

- Achieve and maintain an EPA Plant Energy Performance Indicator (EPI) Score of 75 or higher.
- The interim target will be the halfway point between the baseline EUI and the final 2030 EUI target.
- Currently available for 20 industries.
- Not eligible for supplemental credits.



Performance Metric #4 – EPI Score Pathway Eligibility

Available for the following industries in Denver, based on NAICS code:

- aluminum casting
- cement manufacturing
- commercial bread & roll bakery
- container glass manufacturing
- cookie and cracker bakery
- distilled spirits
- flat glass manufacturing
- fluid milk processing
- frozen fried potato processing
- integrated paper and paperboard manufacturing
- integrated steel plant
- iron casting plant
- juice processing
- pharmaceutical manufacturing
- pulp mill
- wet corn milling

Performance Metrics for New MAI Buildings

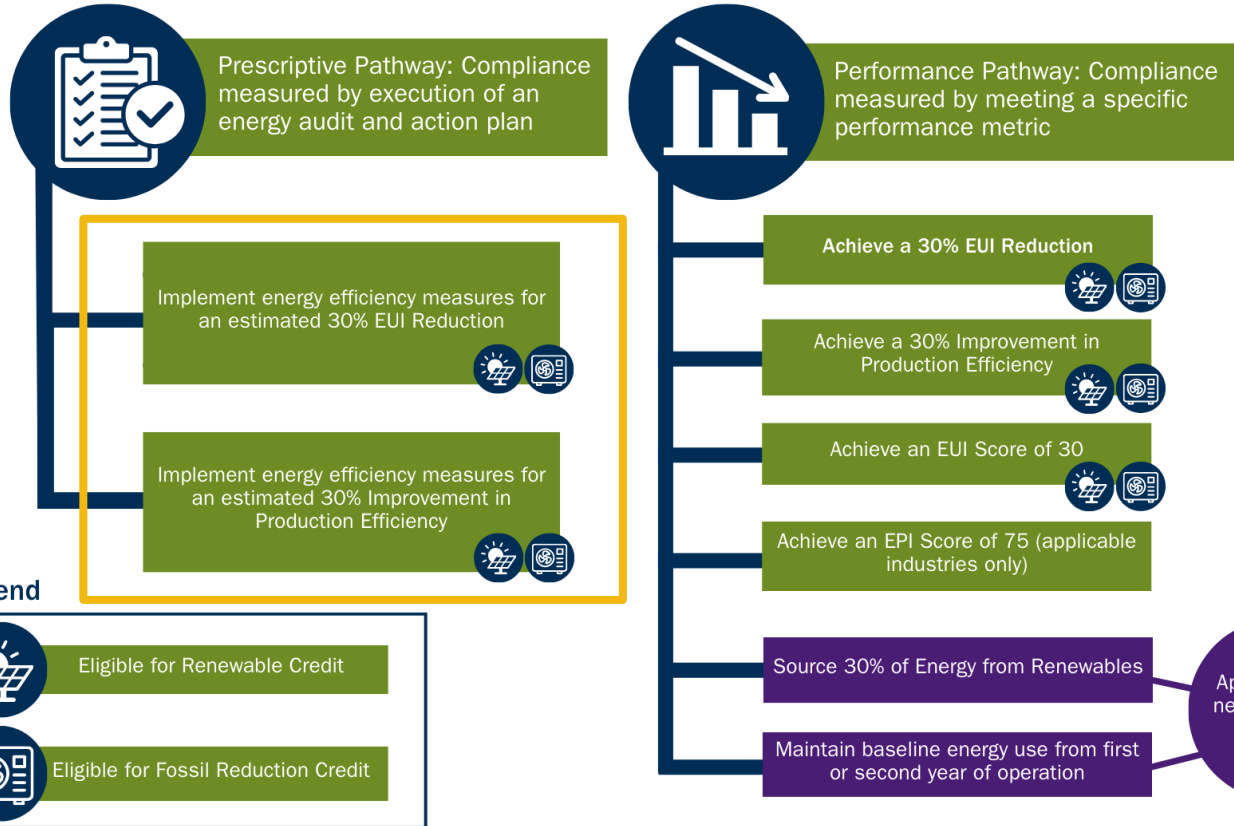
Definition: a building that received its certificate of occupancy after November 22, 2021, and meets the definition of a covered MAI building.

1. Source at least 30% of annual site energy usage for the building from renewables.
2. Choose a metric (e.g., EUI or Production Efficiency) by the end of the second calendar year of benchmarking to maintain through 2030 and annually thereafter. The goal is to maintain the first or second calendar year of data, or an average of the two years (whichever is more indicative of normal, efficient operations). The building owner or manager should have a conversation with CASR's Industrial Administrator about this option.

Note!

Only one final (2030) performance year for new MAI buildings.

Prescriptive Pathway Metrics



Prescriptive Metric #1 – Estimated 30% EUI Reduction

- Receive an energy assessment (ASHRAE Level II Energy Audit) and create an Action Plan to install measures equal to an estimated 30% EUI reduction.

Note!
Supplemental
Credits can be used
to “fill the gap”



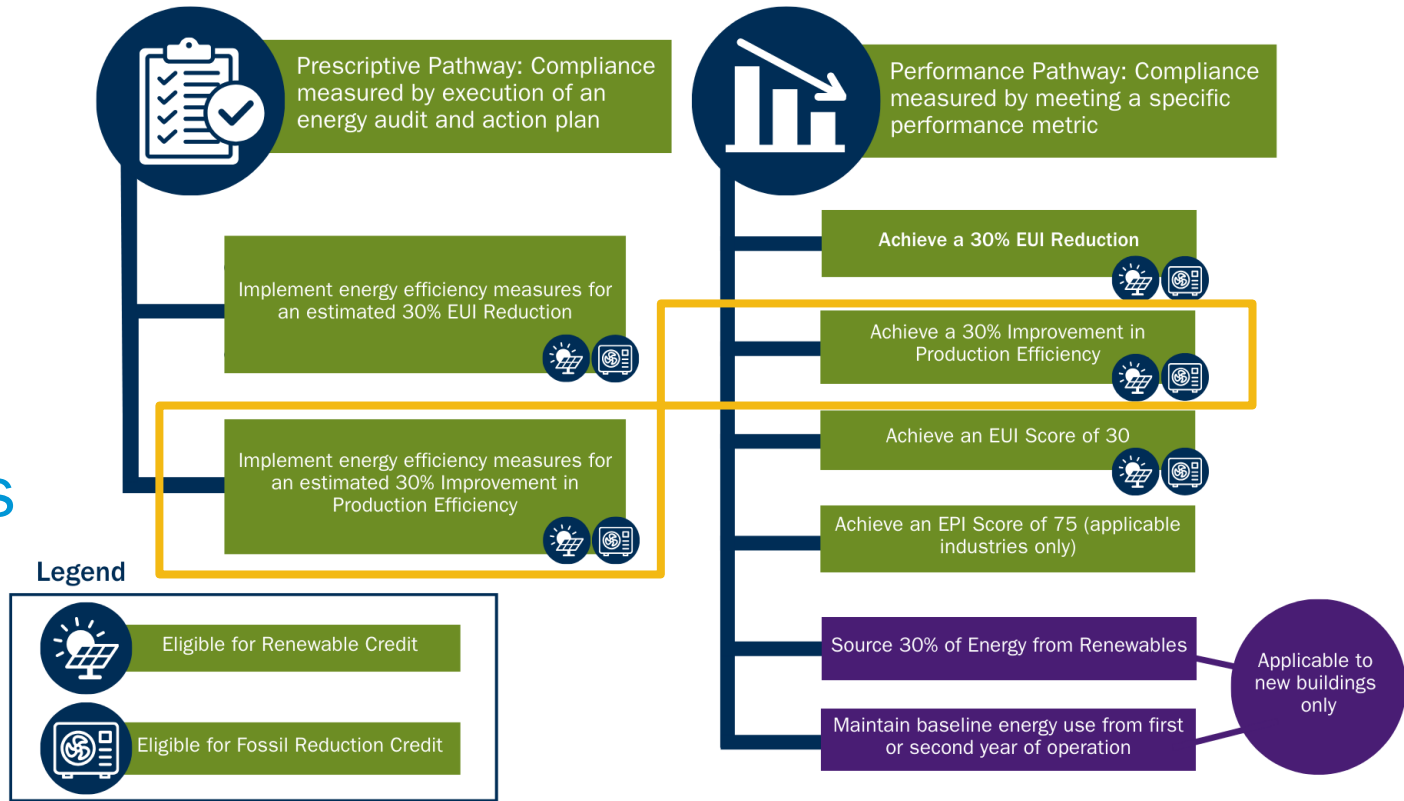
MAI Prescriptive Pathway Action Plan Template

Prescriptive Metric #2 – Estimated 30% Production Efficiency Improvement

- Receive an energy assessment (ASHRAE Level II Energy Audit) and create an Action Plan to install measures equal to an estimated 30% production efficiency improvement.

Note!
Supplemental
Credits can be used
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Measuring Production Efficiency with Custom Metrics



Example Production Efficiency Metrics

- Weight of flower produced by a cannabis grower
- PUE (data centers)
- 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
- Number of widgets produced by a manufacturer
- Any other metric(s) proposed by the building owner

Notes on Production Efficiency Metrics

- The widget must be a standard product. This might not be a good option for a manufacturer that produces non-standard custom products.
- The building owner can propose multiple metrics, if each unit requires a comparable amount of energy to produce on a per-unit basis.
- The following formula will be used to calculate production efficiency:

$$\text{Production Efficiency} \left(\frac{\text{kBtu}}{\text{Widget}} \right) = \frac{\text{Annual Site Energy Usage} \left(\frac{\text{kBtu}}{\text{year}} \right)}{\text{Total Widgets Produced per Year}}$$

Benchmarking a Custom Metric

Custom metric guide has been developed – training video is in the works!

Edit Use Details for Entire Property

These values represent how your Property Use has changed over time and are used to provide you with the most accurate metrics possible for your property for any time period. If you have a multi-property building (campus), you need to [update these Property Use Details in BOTH the parent and child properties.](#)

Use Name:

Custom Use Detail 1 Name * Units:

<input type="checkbox"/> Current As Of	Value
<input type="checkbox"/> 01/01/2024 (to present)	1250
<input type="checkbox"/> 01/01/2023 (through 12/31/2023)	1100
<input type="checkbox"/> 01/01/2022 (through 12/31/2022)	1000
<input type="checkbox"/> 01/01/2021 (through 12/31/2021)	900
<input type="checkbox"/> 01/01/2020 (through 12/31/2020)	875

+ Add a New Row to update with new information ()
 X Delete Selected Entries

MyPortfolio | Sharing | Reporting | Recognition

Custom Metrics for EPA Sample Office Property

Create custom metrics for this property, using standard and/or [custom use details](#), that can be used in reporting to see your property's energy performance that is relevant to your property/operation.

Just tell us what you want to know. For example:

I want to see **Total (Location-Based) GHG Emissions per Workers on Main Shift (Metric Tons CO2e)**. Learn more about [custom.\(intensity\).metric](#)

Custom Metric 1

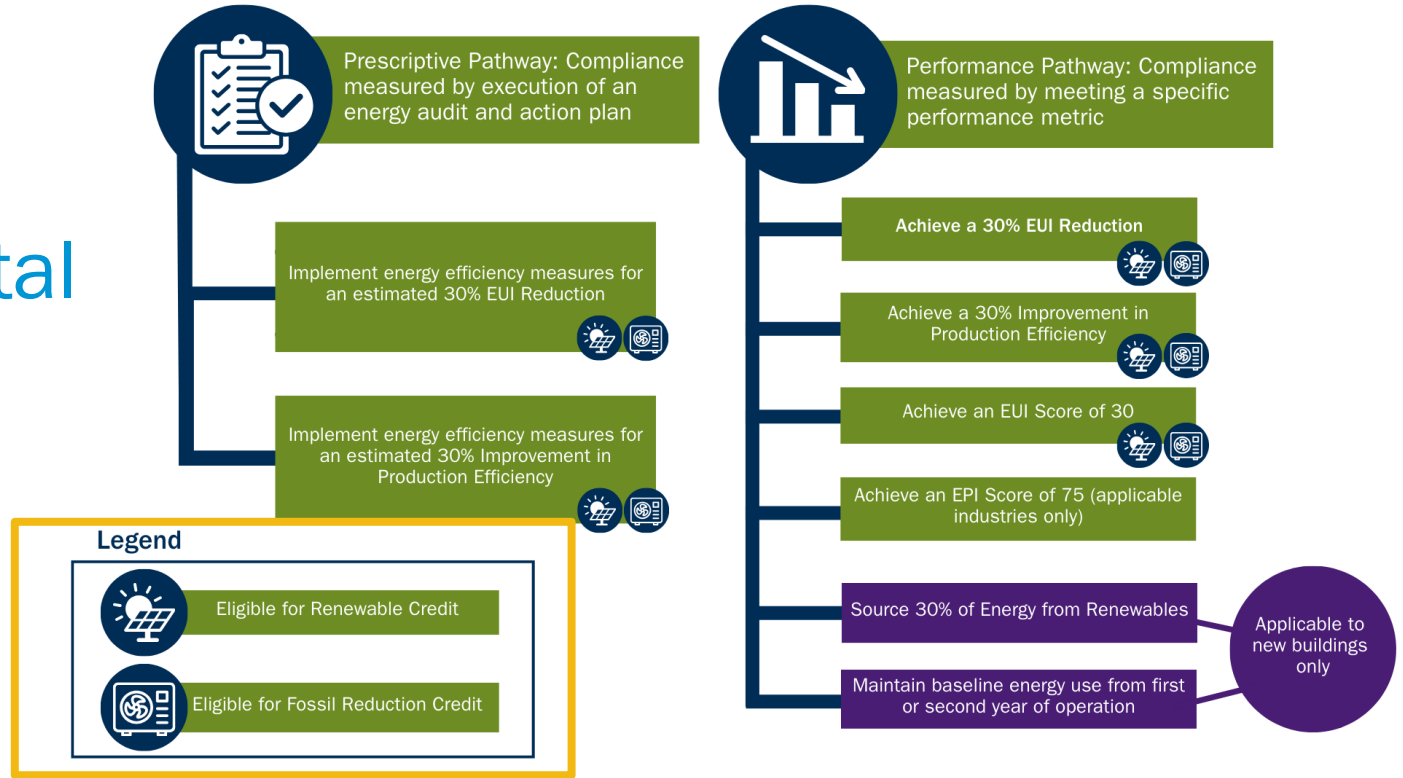
I want to see select metric per select use detail

Name: **Weather Normalized Site Energy Use per Loaves of bread baked annually** (kBtu)

The name has been auto-generated, but you are free to edit it as you please

Metrics Summary			
Metric	Dec 2017 (Energy Baseline)	Dec 2019 (Energy Current)	Change
Site EUI (kBtu/ft²)	103.2	107.5	4.30 (4.20%)
Energy Cost (\$)	568,913.91	549,267.15	-19646.76 (-3.50%)
Custom Use Detail #1 - Name	Number of Loaves of Bread Baked Annually	Number of Loaves of Bread Baked Annually	N/A
Custom Use Detail #1 - Value	500	800	N/A
Custom Metric 1 - Name	Weather Normalized Site Energy Use per Loaves of bread baked annually	Weather Normalized Site Energy Use per Loaves of bread baked annually	N/A
Custom Metric 1 - Value	57896.4	37422.2	-20474.21 (-35.40%)

Supplemental Credits



Renewables Credit

Solar or wind power generation, on-site or off-site, will be credited to the building's total energy use before performance targets are evaluated, *regardless of Renewable Energy Credit (REC) retainage.*

- The credit will be calculated on an annual basis based on generation that occurred in the 12-month performance period being evaluated.
- If an Owner can demonstrate that the building's renewable energy sources are a confidential business practice, the Owner can submit a Confidentiality Request for renewable credit submission to be kept confidential and not subject to CORA requests or included in open data disclosures.

In other words, the building owner does not need to retain the RECs to get the Renewables Credit.

Renewables Credit

Long-term Installations or Contracts – No Limit

On-site installation

Provide proof that the solar or wind installation is installed, most likely an interconnection agreement

Off-site installation

Provide proof of ownership (contract or interconnection agreement)

Off-site owned by third party

Provide evidence of a subscription, lease, or purchase of a share in program offered by Xcel Energy or located in Colorado PSC territory

Must be at least five (5) years and renewed a minimum of every five (5) years for the life of the building

Renewables Credit

Short-term Contracts or Subscriptions

Contract or Subscription

- Provide evidence of a subscription, lease, or purchase of a share in either an Xcel Energy program or a community project located in Colorado PSC territory.

Term

- Term of purchase must be at least 12 months to equal the performance period of the interim target and continue to be purchased annually for maintenance of the target through the next interim target date.

Short-term contracts or subscriptions are allowed to assist with **interim targets only:**

- 2024, 2025, 2026 - up to 20% of the building's electricity usage
- 2027, 2028, 2029 - up to 10% of the building's electricity usage
- 2030 and beyond - short-term not allowed

Fossil Fuel Reduction Credit

This credit is automatic – MAI buildings do not need to apply.

- A building which reduces its absolute fossil fuel (FF) consumption by the performance evaluation year, relative to the baseline year, will receive a credit on the performance target.
- Credit: If the goal is 30% savings and a building receives a 10% credit, then the building only must realize a 20% savings. If the goal is a 30 EUI and the building receives a 10% credit, the building only must realize a 33 EUI.

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

Example Fossil Fuel Reduction Credit

- An MAI building has a baseline EUI of a 100 and is 50% electrified (i.e., 50 EUI is electricity, 50 EUI is gas). Pursuing the 30% EUI reduction metric.
- By the final performance year, the gas EUI has been reduced to a 40, and the overall EUI is an 80 (electricity also went down).

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

$$\text{FF Reduction Credit} = (50-40)/100 \times 100\% = 10\%$$

New goal for performance evaluation: 20% EUI Reduction

Other Requirements

MAI Alternate Compliance Option Application

The MAI Alternate Compliance Option Applications for existing MAI buildings is due by December 1, 2024.



Energize Denver: Manufacturing, Agricultural, and Industrial Building Alternate Compliance Option Application

This Alternate Compliance Option application is for buildings with an official Manufacturing, Agricultural, and Industrial (MAI) Building designation. Upon receiving MAI designation from CASR's Industrial Administrator, via the MAI designation forms, the MAI building must then apply to the MAI Alternate Compliance Option with their chosen compliance pathway and metric and any additional required information and documentation.

MAI Energy Audit Minimum Requirements

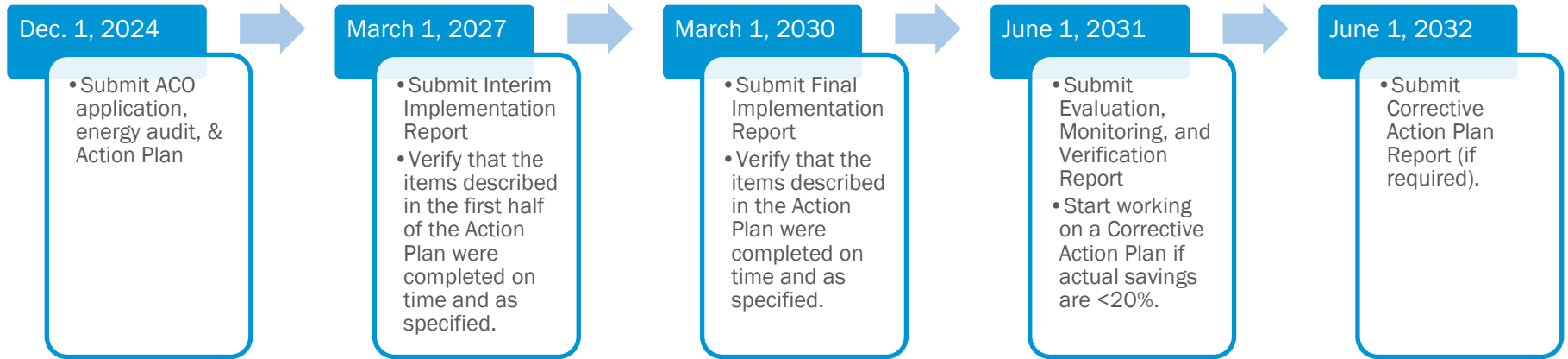
- ANSI/ASHRAE/ACCA Std. 211-2018, Level 2
- **Energy auditor** must have passed CASR's MAI Energy Auditor Training and be one of the following:
 - Professional Engineer
 - Certified Energy Auditor
 - Certified Energy Manager
 - Building Energy Assessment Professional
 - High-Performance Building Design Professional
 - ✓ **Must be third-party**
- **Baseline identification:**
 - Baseline should be within calendar year 2018-2022
 - Baseline should be in Weather-normalized Site EUI
- **Timeframe of Audit:**
 - Audits completed since July 1, 2023
 - If the audit was completed Jan 1, 2017-July 1, 2023, the building energy use info and savings calcs must be updated to the chosen baseline and the audit must meet the minimum requirements of the Prescriptive Pathway
- **Investment analysis** minimum requirements:
 - All existing equipment inventoried (all fuel types)
 - All measures needed to reach 2030 target
 - Individual measure & total project (1) cost and (2) estimated site EUI savings and/or production efficiency improvement, including SIR and ROI

Prescriptive Pathway Action Plan

The Action Plan is intended to give CASR a summary look into what it going to be implemented in the building and the implementation timeline. It must cover:

1. What investments have already been implemented in the building, if any? What were the actual savings achieved, based on benchmarking data? Provide proof.
2. What improvements are you going to perform to achieve the 2026 and 2029 targets ahead of the 2030 monitoring year?
 - Operations & Maintenance
 - Short-term payback actions
 - Long-term payback actions
 - EEMs listed in Energy Audit but not taking action on
3. What is the estimated savings associated with each improvement or upgrade?
4. When are you going to perform the improvements or upgrades?
5. Acknowledgement of the deadlines to submit the required reports (Milestone Reporting Plan)

Prescriptive Pathway Reporting Requirements



NB: Upon submission of the Implementation Reports, 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.



Timelines

Prescriptive Pathway Timeline

*Building could request an extension on the energy audit and/or Action Plan, but the targets will remain. Timeline Adjustment Alternate Compliance Options are also available to MAI buildings.

Deadline	Prescriptive Pathway Requirements	Benchmarking & Renewable Credit Submission Deadline
		December 1, 2023
December 1, 2024*	Submit chosen pathway and metric, energy audit, and Action Plan	June 1, 2024
		June 1, 2025
December 31, 2026	Interim year – Building completes half of Action Plan (i.e., 50% of the estimated savings goal)	June 1, 2026
March 1, 2027	Building submits interim Implementation Report	June 1, 2027
		June 1, 2028
December 31, 2029	Building completes Action Plan	June 1, 2029
March 1, 2030	Building submits final Implementation Report	June 1, 2030
June 1, 2031	Building submits Evaluation, Monitoring, and Verification Report; City communicates compliance status, issues penalties (if needed), and informs the building on next steps and whether a Corrective Action Plan is required	June 1, 2031
June 1, 2032	Building submits Corrective Action Plan (if required)	June 1, 2032

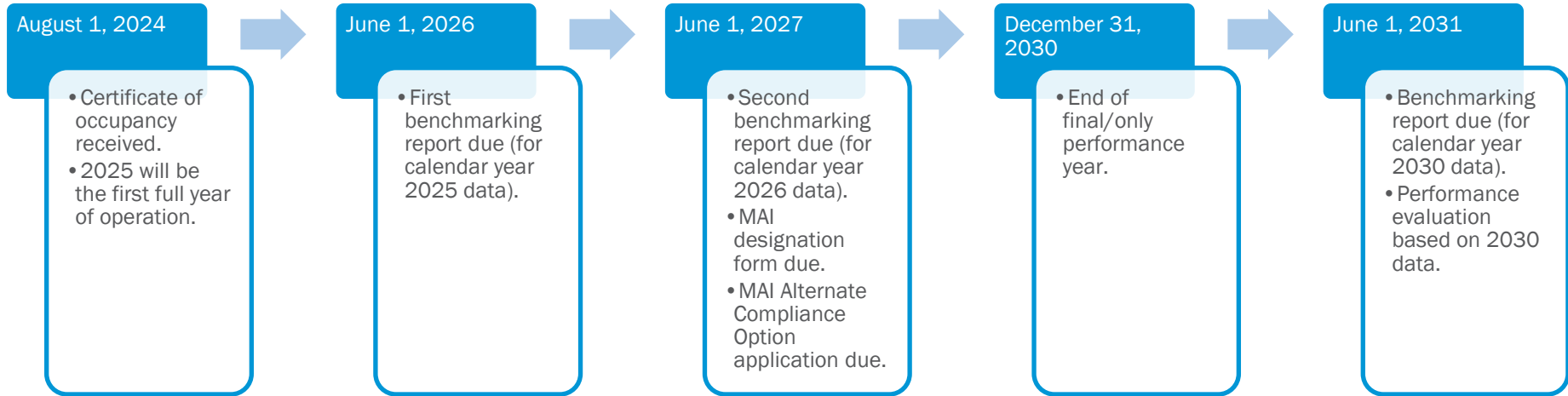
Performance Pathway Timeline

Deadline	Performance Pathway Requirements	Benchmarking & Renewable Credit Submission Deadline
		December 1, 2023
December 1, 2024	Submit chosen pathway and metric	June 1, 2024
		June 1, 2025
2026	Interim year – make at least 50% progress to 2030 goal (reported June 1, 2027)	June 1, 2026
		June 1, 2027
		June 1, 2028
		June 1, 2029
2030	Final target year – achieve final performance target (reported June 1, 2031)	June 1, 2030
June 1, 2031	City communicates compliance status, issues penalties (as necessary), and informs the building on next steps	June 1, 2031

New MAI Building Timeline

- The first benchmarking report will be due after the first calendar year of occupancy.
- The building owner must apply for MAI designation and apply to the MAI Alternate Compliance Option when the second calendar year of benchmarking data is due.
- There will only be one final target year (2030).
- Verification of performance will be demonstrated by the benchmarking report due on June 1, 2031.

Example Timeline for a New MAI Building





Timeline Adjustment Alternate Compliance Option

Flexibility in Compliance

Energize Denver Alternate Compliance Options:

- [Timeline Adjustment](#)
- Electrification
- 30% Reduction Property Type
- [Manufacturing/Agricultural/Industrial](#)

Timeline Adjustment

Apply for a timeline for a variety of reasons that could make achieving the interim or 2030 targets difficult.

Can apply for one or multiple timeline adjustments in one application

- Planning for end of major equipment system life
- Planning for major renovation
- Landmark Preservation Commission review process delays
- Financial distress
- Electrification of space and water heating equipment or the entire building
- Benchmarking exemption (1-year) during an evaluation year
- Steam loop district system limitations
- Innovative approach to energy efficiency
- Change of building ownership
- Equity-priority buildings may qualify for additional reasons not listed
- Other reasons on a case-by-case basis

Timeline Adjustment Application

Minimum requirements for each attachment outlined in upcoming Technical Guidance

- Application form - questions about what reasons are present, justification for the delay, and details on renewable plans (Appendix D).
- Attachments:
 - Energy Audit that meets the minimum requirements
 - Retrofit Plan (Word or PDF) document (Appendix E)
 - Electrification Feasibility Report, if required
 - O&M Program document
 - Supporting documentation that would support the request

Results in a Timeline Adjustment Agreement:

- status of the proposal: agreed, agreed to with modifications, or not agreed
- details of the retrofit plan
- agreed-upon timeline
- reporting requirements
- penalties that would be assessed if the plan is not completed as agreed

Penalties and Compliance Scenarios

Prescriptive Pathway Compliance

Prescriptive Pathway compliance is measured by the completion of the Action Plan. The building needs to meet a minimum threshold of energy savings in order to avoid a Corrective Action Plan (CAP).

Example: 6 items proposed for a 30% estimated reduction in energy use

Compliance measured by:

- 3 items (15% reduction) completed by 2026
- 3 items (15% reduction) completed by 2029
- 2030 is a monitoring year
- 2031 performance evaluation to show minimum threshold of energy savings ($\geq 20\%$) or to require a 1-year CAP ($< 20\%$).

Prescriptive Pathway Penalties

**Prescriptive Pathway compliance is measured by the completion of the Action Plan.

If the building does not comply with any portion of the Action Plan (e.g., does not implement certain items, does not submit an Implementation Report, does not perform monitoring in 2030, does not conduct a required Corrective Action Plan, etc.) then the building will be switched to the Performance Pathway, 30% EUI Reduction Metric for compliance and penalty evaluation purposes.

Performance Pathway Compliance & Penalties

** Performance Pathway compliance is measured by hitting a specific performance target. If the target is not reached, after supplemental credits are assessed, then a penalty may be levied.

Penalties will be assessed based on the kBtu reduction not achieved. This is straightforward for the 30% EUI Reduction and 30 EUI Target metrics. The 30% Production Efficiency Improvement and 75 EPI Score metrics will be converted into a kBtu not achieved value if the building does not hit its target.

Penalties

- CASR prefers that building owners invest in their buildings to reach the 2030 targets instead of paying penalties. We're committed to supporting building owners with their efforts and exploring the flexibility that **renewable credits** and **alternate compliance options** can afford.
- Two types of penalties: target (\$0.42/kBtu for existing MAI buildings and \$0.63/kBtu for new MAI buildings) and maintenance (\$0.05/kBtu if <5% increase)
- Penalty assessed by examining 12-month performance period for the target year after benchmarking is received by June 1 the following year

Calculation:

$$\begin{aligned} \text{Actual kBtu used} - \text{Target kBtu} &= \text{"kBtu not achieved"} \\ \text{"kBtu not achieved"} \times \text{Cost/kBtu} &= \$ \text{ penalty amount} \end{aligned}$$

Minimum Penalty Schedule

Type	Penalty Level	Assessment Period
Benchmarking, failure to correct errors, knowingly withholding or inaccurate information	\$2,000	annually
Target Penalty – Commercial Bldgs.	\$0.30/kBtu	2024/2025, 2027, 2030
Target Penalty – ACO for Existing MAI Bldgs.	\$0.42/kBtu	2026, 2030
Target Penalty – ACO for New MAI Bldgs.	\$0.63/kBtu	2030
Maintenance Penalty	\$0.05/kBtu	Starting 2031 then annually
Failure to reach target as agreed in Timeline Adjustment Agreement	By submission date in Table 5C	As outlined in agreement

Example – No Reduction

The building is
150,000 sq. ft.
Baseline EUI: 80

- Did not receive the fossil fuel reduction credit
- Did not purchase or install renewables
- Did not apply for a timeline adjustment ACO
- No reduction from 2022 baseline of 80 EUI

Year	EUI Targets	EUI Actual	kBtu Performance	kBtu Target	kBtu not achieved	Penalty Level	Penalty
2026	68	80	12,000,000	10,200,000	1,800,000	\$0.42/kBtu	\$756,000
2030	56	80	12,000,000	8,400,000	3,600,000	\$0.42/kBtu	\$1,512,500
Cumulative Penalties							\$2,268,500

Example – Some Reduction

The building is
150,000 sq. ft.
Baseline EUI: 80

- Did not receive the fossil fuel reduction credit
- Did not purchase or install renewables
- Did not apply for a timeline adjustment ACO
- Building achieved some reduction in EUI from a 2022 baseline of 80 EUI

Year	EUI Targets	EUI Actual	kBtu Performance	kBtu Target	kBtu not achieved	Penalty Level	Penalty
2026	68	68	10,200,000	10,200,000	--	\$0.42/kBtu	\$0
2030	56	60	9,000,000	8,400,000	600,000	\$0.42/kBtu	\$252,000
Cumulative Penalties							\$252,000

Example – Some Reduction & Supplemental Credits

The building is
150,000 sq. ft.
Baseline EUI: 80

- Received the fossil fuel reduction credit (FFRC) in the final performance year
- Purchased long-term off-site renewables contract and received the renewables credit (RC)
- Did not apply for a timeline adjustment ACO
- Building achieved some reduction in EUI from a 2022 baseline of 80 EUI

Year	EUI Targets	EUI Actual	kBtu Performance	kBtu Target	kBtu not achieved	Penalty Level	Penalty
2026	68	75 + RC	10,200,000	10,200,000	--	\$0.42/kBtu	\$0
2030	56	70 + RC + FFRC	8,000,000	8,400,000	--	\$0.42/kBtu	\$0
Cumulative Penalties							\$0

Example – New MAI Building with Some Renewables

The building is
150,000 sq. ft.

- Chose the 30% renewables metric
- Purchased long-term off-site renewables contract and/or installed on-site renewables
- Did not apply for a timeline adjustment ACO
- Building installed or purchased *some but not all* of the renewables necessary to hit the 30% goal

Year	EUI in 2030	Total kBtu consumption in 2030	kBtu Renewables Required	kBtu Renewables Generated	kBtu not achieved	Penalty Level	Penalty
2030	80	12,000,000	3,600,000	3,000,000	600,000	\$0.63/kBtu	\$378,000
Cumulative Penalties							\$378,000

Example – New MAI Building with Some Renewables

The building is
150,000 sq. ft.
Baseline EUI: 80

- Chose the efficiency maintenance metric
- Did not purchase or install renewables
- Did not apply for a timeline adjustment ACO
- Building increased its EUI from the baseline

Year	EUI in 2030	EUI Target	kBtu Performance	kBtu Target	kBtu not achieved	Penalty Level	Penalty
2030	85	80	12,750,000	12,000,000	750,000	\$0.63/kBtu	\$472,500
						Cumulative Penalties	\$472,500

Colorado State Building Performance Standard

The Colorado Air Quality Control Commission adopted rules and regulations in August 2023 for a State building performance standard that affects buildings 50,000 sq. ft. and larger. Denver's building performance team will be working with the Colorado Energy Office to align our programs over the next year as they hire staff and begin standing up that program.

For more information on the State program, visit [Building Performance Standards | Colorado Energy Office](#).

Support & Incentives

Support & Resources: denvergov.org/energizeddenver

- Resources and technical assistance available through the [Energize Denver Hub](#)
- Materials: How-to guides, check lists, etc.
- Targeted Outreach and Education

Energize Denver Hub - Existing Buildings

Denver is at the cutting edge of addressing climate change through regulations and programs aim to improve existing commercial and multifamily building energy performance while keeping [equity as a priority](#). The Energize Denver Hub is your one-stop-shop to understand Denver's existing building regulations, incentives and programs. By moving building owners to electrify their heating and cooling systems and improve energy performance, Denver will not only reduce greenhouse gas emissions from commercial and multifamily buildings by 80% by 2040, but also lower energy bills and improve public health outcomes. Building electrification and performance standards are new to everyone in the building industry. We are working to roll out the resources you need to help you with this transition. More resources are always being added.

Sign up for our newsletter to find out about updates!

Looking for resources for single-family homes, duplexes, triplexes, or townhomes? Head over to our [Home Energy Hub](#).



Buildings 25,000 sq. ft. or Larger

Buildings 25,000 sq. ft. or larger are



Buildings 5,000-24,999 sq. ft.

Buildings between 5,000 and



Buildings Under 5,000 sq. ft.

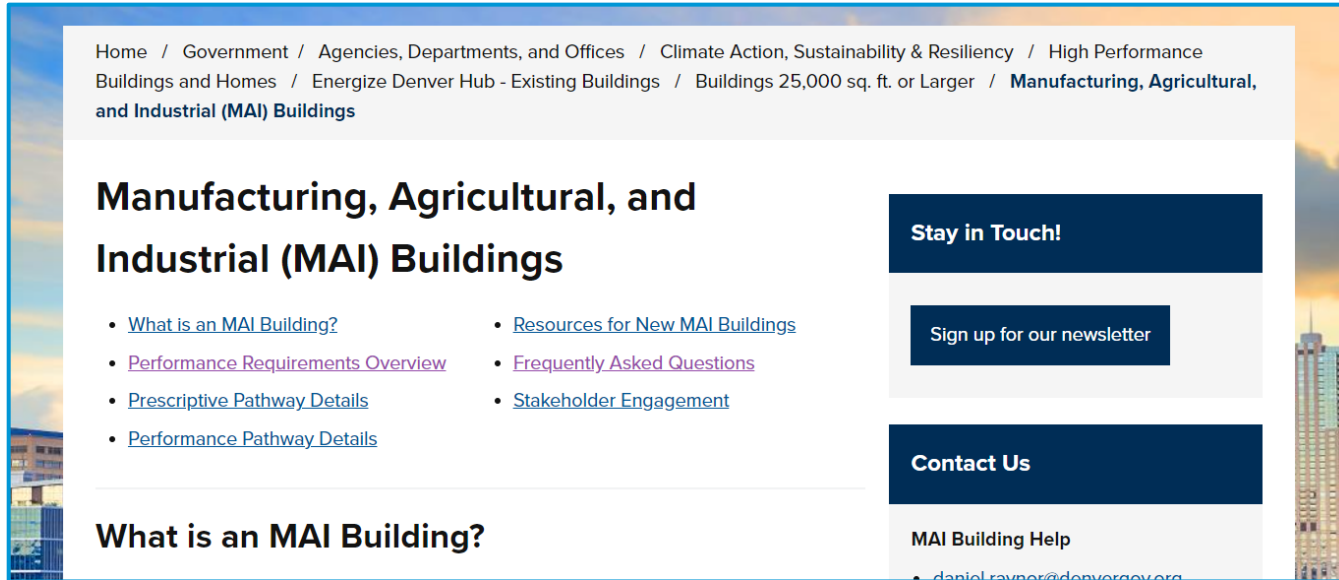
Existing buildings under 5,000 sq.

MAI-Specific Resources

[MAI page](#) on the Hub

Email: daniel.raynor@denvergov.org

Meet: <https://calendly.com/danielraynor/30min>



Incentives and Financing

- [Xcel Energy](#): Cost savings programs, lighting and equipment rebates, new building programs, electric vehicle options, renewable energy, strategic energy mgmt. cohort, access to the [National Energy Improvement Fund](#)
- [CASR Steam Program](#) can help contribute to the refinancing capital stack and to help pay for upgrades in buildings on steam.
- Financing programs for energy improvement projects: [C-PACE](#) financing, [Colorado Clean Energy Fund](#) and the [Green Bank of Colorado](#)



Incentives and Financing

Receive an energy audit:

- Xcel [Strategic Energy Management \(SEM\)](#) program
- Xcel [Business Energy Assessment \(BEA\)](#) program
- [Industrial Assessment Centers \(IACs\)](#): the federal government will match (50% up to \$300,000 per facility) for any recommendations that an IAC makes

Incentives and Financing

Federal Programs

- US DOE is investing millions to decarbonize the industrial sector: [energy.gov/industrial-technologies](https://www.energy.gov/industrial-technologies)
- Specifically, navigate to the "Funding and Technical Assistance" page that allows for searches: <https://www.energy.gov/industrial-technologies/industrial-technologies-funding-and-technical-assistance>

Questions?

Energize Denver Help Desk:

General support for benchmarking and performance requirements

<http://denvergov.org/energizedenver>

energizedenver@denvergov.org

or 844-536-4528

Industrial Administrator:

daniel.raynor@denvergov.org