Energize Denver
Awards Supplement
January 2022
Denver Office of Climate Action, Sustainability, and Resiliency: Introducing the new Energize Denver Building Performance Policy

Denver’s Office of Climate Action, Sustainability, and Resiliency is working on building all new and existing commercial and multifamily buildings net zero emissions, sustainable, and resilient. Commercial and multifamily buildings account for 49% of greenhouse gas emissions in the city and county of Denver. These places where we live, work, and spend 90% of our time are the key to a sustainable, resilient future for the city. CASS’s goal is to help all existing buildings in Denver capture the value of high performance while working to achieve net zero emissions. Net zero emissions means that buildings in Denver will be highly efficient, all-electric, grid flexible and 100% powered by renewable electricity. This requires existing buildings to use significantly less energy and is the reason behind the Energize Denver Building Performance Policy.

Which buildings are impacted by the Energize Denver requirements? The Energize Denver requirements apply to building owners and managers of commercial and multifamily buildings 5,000 square feet in area or larger (covered buildings). Figure 2 presents the commercial and multifamily buildings 5,000 square feet and larger (covered buildings). These smaller buildings will be addressed under-resourced buildings.

What are the Energize Denver requirements and implications for owners of covered buildings? The Energize Denver Building Performance Policy was passed by Denver City Council on Nov. 22 and was based on recommendations from the Energize Denver Task Force. Energize Denver requires owners of covered buildings to significantly reduce greenhouse gas emissions, with the target being a 30% reduction in building energy use by 2030 as measured by the building’s energy usage per square foot, or Energy Use Intensity (see Figure 1). Covered building owners must address existing building performance through energy-efficiency improvements, switching to renewable energy, and/or upgrading to renewable heating and cooling systems (electrification) to reduce greenhouse gas emissions, so the city will achieve its climate action goal of net zero emissions in existing buildings by 2040. Covered buildings are the focus of Energize Denver because they contribute the most emissions from buildings and homes in the city, as illustrated in Figure 2.

What steps must covered building owners take to comply with the Energize Denver requirements, and when do they have to meet these requirements? There are different requirements for buildings smaller than 25,000 sf and buildings 25,000 sf and larger. For covered buildings 25,000 sf and larger, owners must benchmark their building’s energy usage annually using the Energy Star Portfolio Manager tool by June 1 each year (the city publishes building energy performance data at www.energizedenver.org). This benchmarking requirement has been in effect since 2016.

In this new requirement, covered buildings 25,000 sf and larger must meet energy performance targets in calendar years 2024, 2027 and 2030. Final 2030 targets will be published in late January 2022 and interim targets (2014 and 2027) will be set by May 1, 2022, for most buildings. Energy performance targets will be a set of Normalized Site Energy Use Intensity target specific to different building types (e.g., multifamily housing, office, hotel, medical office, retail store, etc.). Targets will be set for every covered building type in Denver such that a 30% total energy savings across all covered buildings is achieved.

To meet target EUIs, owners of covered buildings will need to make improvements prior to the target year. For example, to meet 2024 interim targets, covered buildings need to make improvements and upgrades by 2023 to be performing at the target EUI by 2024. An example timeline is presented in Figure 1.

Covered buildings will demonstrate compliance with the energy performance targets through the building’s annual Energize Denver benchmarking submission. Solar power generation, on- or off-site, will be fully credited toward electricity use, lowering a covered building’s EUI.

Owners of covered buildings with a gross floor area of 5,000-24,999 sf have two options for compliance:

1. Install all LED lights or show that an equivalent lighting power density to what all LEDs would have resulted in has been achieved, or
2. Install solar panels or purchase off-site solar that generates enough electricity to meet 20% of the building’s annual energy usage.

Economically, these smaller buildings will be phased into compliance by size, as follows:

- Buildings 15,001-24,999 sf must comply by Dec. 31, 2025.
- Buildings 10,001-15,000 sf must comply by Dec. 31, 2026.
- Buildings 5,000-10,000 sf must comply by Dec. 31, 2027.

Energize Denver also requires a gradual adoption of electric heating and cooling systems to replace gas systems at end of system life and when cost effective. End of system life electrification requirements for easy to electrify systems such as furnaces and RTUs will begin in 2025, and end of system life electrification requirements for harder to electrify systems such as PTACs and boilers will begin in 2027. While electrification requirement deadlines will not begin as soon as the energy performance targets, electrification is a key strategy for covered buildings to meet their EUI targets. Natural gas-burning space and water heaters account for 33% of emissions from buildings. However, by 2030, thanks to a swiftly decarbonizing grid, gas combusted in buildings and homes contributes over 40% of emissions from buildings. The swift decarbonization of the grid combined with technology advances in high-efficiency HVAC and renewable heating and cooling technologies, namely heat pumps, are enabling significant greenhouse gas reduction opportunities.

Denver’s goal is to reduce heating emissions by 50% in commercial and multifamily buildings by 2040. The Energize Denver requirements will make a substantial dent in Denver’s buildings emissions, reducing them by roughly 80% by 2040, with the ultimate goal of reducing emissions from all sources to 100% by 2050.

Are there other options for owners of covered buildings that can’t meet targets? If a covered building cannot reasonably meet interim or final energy performance targets, an owner may apply for an alternate compliance option. Alternate compliance options will be available for the following reasons:

1. Different compliance timeline. Owners may apply for a different compliance timeline if capital improvements will be most cost effective if they wait until all system life, the building’s life, or a major renovation or other similar reason.
2. Different compliance timeline for under-resourced buildings. The owner of an under-resourced building with limited access may apply to change the compliance timeline to make compliance more feasible by timing it to coincide with the refacing of the building, or other similar reasons.
3. Target adjustment. A building’s target EUI may be adjusted due to a few specific reasons, such as the inherent characteristics of the building that make achieving the target challenging, a substantial change in the use of the building (e.g., a new data center or 24-hour call center moved in), or other significant variations in operations of the building. If applying for this alternative compliance option, the application must include the proposed final energy performance target EUI based on an analysis or energy model from a professional engineer that explains why the building cannot meet the target assigned to its group and why the new target represents the maximum energy performance, from energy-efficiency upgrades and solar-on-site or off-site, possible for the building.

Prescriptive: The prescriptive option is available for buildings 25,000-

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**Figure 1**

Progress Toward 30% Reduction in Total Energy Use x 2030 Goal

- **Yellow** = Current Trending
- **Blue** = Benchmark Trending
- **Red** = Projected trajectory

<table>
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<th>Year</th>
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<tr>
<td>2025</td>
<td>34.2</td>
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<tr>
<td>2030</td>
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Projected progress toward the 2030 goal of a 30% reduction in total energy use.

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**Figure 2**

Commercial and multifamily buildings make up the majority of emissions from buildings and homes:

- **Industrial** 14%
- **Multifamily** 15%
- **Commercial** 48%
- **Homes** 24%

Emissions from buildings in the city, based on building type

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**Figure 3**

Timeline of Energize Denver requirements, 2021 to 2031

- **2022** Start EUI for 125k sf target
- **2024** Make improvements and upgrades for 2nd interim target
- **2025** Perform 1st interim benchmarking report, start planning for 2nd interim target
- **2026** Submit 1st interim target EU
- **2027** Submit 2nd interim benchmarking report, start planning for final target EU
- **2028** Perform at final targets target EU
- **2030** Submit final target EU

Continued Page 19
Denver is committed to reducing emissions and achieving net zero energy in existing buildings by 2050. The energy used in commercial and multifamily buildings accounts for 49% of Denver’s greenhouse gas emissions, making the largest contributor of any sector. Reducing energy use in large buildings is essential to meeting Denver’s overarching goal of reducing total greenhouse gas emissions 80% by 2050. As part of an effort to achieve our goal, the city’s Energize Denver program started in 2016 with the passing of the benchmarking ordinance, requiring commercial and multifamily buildings 25,000 square feet or larger to report their energy usage annually. The Energize Denver Awards stemmed from the benchmarking ordinance to recognize and promote the accomplishments of building owners and managers who have made significant energy reductions but also those that have made significant social and environmental gains.

The winners of this award were buildings that has underwent a retrofit or conversion to all-electric, installation of VRF or converted space or water heating/cooling to electric (within the last five years).

Community leadership: Communities are often strengthened in times of need or when faced with adversity. Winners in this award category were building owners that positively impacted their community over the past year.

Energy-saving retrofit: Saving money is at the top of every building owner’s mind, which is why energy retrofits have become an increasingly popular method for building owners to reduce energy costs while reaping additional social and environmental gains.

La Tela Condos
Address: 603 N Inca St, Denver, CO 80204
Building Type: Multifamily
Square Footage: 68,300
Year Built: 2020
Owner: ECL Inca Commons LLC
Management Team: ACCU, Inc. James W. Phipher President

The Santafe Art District welcomed Denver’s first 100% permanently affordable condominiums in the spring of 2021. La Tela Condos is a 52-unit condominium reserved for income-restricted individuals and families earning up to 80% of the median income. While upfront affordability was a key design principle of this new construction project, future energy costs were of equal concern. For this reason, La Tela Condos was designed to have all-electric heating and cooling paired with on-site solar and minimal gas usage. From the day the project was originated to ground break, the entire team behind La Tela had sustainability in mind. According to the building architects at Studio Completiva, the goals for this project were “based on market studies that described a demand for sustainability, resilience and stable operating costs.” That meant fully considering the economic, social and environmental implications at every stage of the project.

The construction budget was carefully considered while also diligently modeling energy performance and future energy costs. Studio Completiva noted that in the design phase, it was identified that electrification was a way to “simplify the construction trades on site while also reducing building equipment costs, keeping the project within budget.” As a result, the building was designed with all-electric heat- ing and cooling (in units and common areas) and cooking equipment. While it was initially intended that the building be fully electric, gas-fired boilers were installed to provide hot water to each unit. Additional efficiency measures such as Energy Star appliances, energy-efficient building insulation, pumps and LED lighting also were installed. To further reduce costs for residents, a rooftop solar photovoltaic array was installed to help offset electrical demand. The solar array is owned by La Tela Condominiums Association and the energy produced is first used in common areas and then split equally among the residents. The solar array is estimated to produce 73,384 kilowatt hours annually, which could save the homeowner’s association and residents just over $7,000 a year in energy costs.

The innovative concept of La Tela Condos was brought together by a number of public and private partners, most notably Shanahan Development, Elevation Community Land Trust, Denver’s Department of Housing Stability Urban Land Con servancy and Studio Completiva. The project used a land trust model, which ensures long-term affordability for nearly 150 residents. For many of these residents, homeownership was never an option in Denver, which is why La Tela serves as a leading example of a sustainable housing solution.
Community Leadership Award Winners

1st Place – Fusion Studios

Fusion Studios
Address: 3737 Quebec St., Denver, CO 80207
Building Type: Multifamily
Square Footage: 66,005
Year Built: 1985
Owner: Fusion Studios LLP
Management Team: Renaissance
Property Management Co., Becca Wiman, property manager; Fusion

In early 2020, Fusion Studios, formerly Quality Inn and Suites, officially opened its doors to the community. Located in Denver’s Park Hill neighborhood, this new affordable housing project provides short-term and permanent housing for those experiencing homelessness. Colorado Coalition for the Homeless purchased and renovated the building located at 3737 Quebec St. to convert 139 hotel units into fully furnished micro-apartments. The nonprofit saw this project as an opportunity to continue to address the ever-growing issue of homelessness and affordable housing, at a time that the city of Denver needed it most. After securing city and state funding, the coalition quickly got to work, bringing the project together to start in a matter of months.

Of the 139 units, 25 are designed for short-term stays, providing stability while awaiting permanent housing. The other 114 units are intended for long-term supportive housing. Each of the units is fully furnished, equipped with a bed, dresser desk, chair, television and a full kitchenette. Rent is made affordable primarily due to housing vouchers, ensuring that residents pay no more than 30% of their monthly income in rent.

In addition to the units, common areas also were adapted to better fit the needs of the residents. The former hotel’s commercial kitchen was converted to be a food pantry, providing residents with food baskets twice a week. Other common areas in the building are regularly used to host a variety of essential care providers, offering essential services such as dental, medical and home health among many others. The building is fully staffed with a care team, including maintenance, housekeeping, security, front desk attendants and property managers.

The care team works to address the daily needs of residents, but also to provide support to those struggling to adapt to permanent housing.

2nd Place (Tie) – Denver Art Museum

Denver Art Museum
Address: 100 W. 14th Ave. Parkway, Denver, CO 80204
Building Type: Museum
Square Footage: 210,000
Year Built: 1971
Owner: Denver Art Museum
Management Team: Mark Baker, director of facilities, and Felicia Alvarez, custodial supervisor

The Denver Art Museum has been a longstanding staple in the community, which is why the building staff worked around the clock to provide a safe and comfortable environment for the community to return to after the worst of the COVID-19 pandemic. Led by Mark Baker, director of facilities, the museum implemented a number of health and safety protocols as well as adapted existing operations to create a space where individuals and families could go, providing a sense of normalcy in uncertain times. These changes allowed for the museum to continue operating while city and state mandates were in place, whether that meant solely online, restricted in-person operations or a hybrid approach.

Notable health and safety improvements included:
• UVA lighting and MERV 14 filters to treat the air;
• Charcoal filters that scrub out particulates in the air;
• Pinpoint ionization to add enhanced protection against viruses and bacteria;
• Nano-touch pads on doors and handles to provide self-cleaning protection against the spread of COVID-19;
• Handheld sanitizing sprayers to sterilize all the operational surfaces that are used by the public;
• Timed ticketed entry to minimize overcrowding in galleries; and
• Increased frequency of daily cleanings, doubled cleaning cycles in restrooms and common areas.

Operational changes included work-from-home options to protect staff and providing web-based and hybrid content.

Not only did the museum make extensive adjustments to its operations, but also it made a prominent shift in the content of the programming and exhibitions being displayed. Mark and his team felt that it was essential to focus on themes that would speak to the heart of the community and the social experiences encountered over the past year. For example, highlighting times when mankind or groups of people have experienced tragedy and have managed to rise above and emerge stronger. As an extension of this, the museum also provided local teachers with classroom art packages for use in schools and with their children as a way to keep the community inspired and also as a way to process the impacts of this past year.

These efforts, among many others, highlight the significant impact the Denver Art Museum has had on the Denver community. The museum is confident that many of its efforts over the past year are here to stay and will have lasting impacts on the mental health of the community.
Energize Denver Awards

2nd Place (Tie) – Food Bank of the Rockies

Food Bank of the Rockies
Address: 10700 E. 48th Ave., Denver, CO 80249
Building Type: Distribution center
Square Footage: 102,970
Year Built: 1979
Owner: Food Bank of the Rockies Inc.
Management Team: Brook Folsom, director operations and Steve Kullberg, chief operating officer

Over the past year and a half, the Denver community has severely felt the impacts of COVID-19 in myriad ways. Topping the list is the issue of food accessibility and security. Due to the pandemic, many people lost their jobs, children found themselves without access to nourishing school lunches and older adults became isolated from needed food services. Food Bank of the Rockies recognized this and adjusted nearly every aspect of its operations to respond to the community’s needs in this time of dire need.

Chief among the obstacles Food Bank of the Rockies faced was how to increase its scale and reach across Colorado and Wyoming. Addressing this hurdle entailed expanding its food sourcing, distribution and program offerings throughout the 53-county service area, and playing a vital role in achieving these actions was Food Bank of the Rockies’ distribution center located in Denver. Vidha Dixit, a Food Bank of the Rockies Denver employee, noted the Denver distribution center “adapted swiftly to the rising need for food caused by COVID-19, including facilitating over 75 mobile pantry sites, all serviced, stocked, and supported through the distribution center to ensure the Food Bank equitably reached every neighbor in need of food assistance, regardless of location.”

This work was largely made possible due to the distribution center adding upward of 50 full-time employees, doubling its walk-in freezer storage capacity, adding a night crew, shifting to drive-thru food distributions, increasing facility accessibility and expanding the loading dock doors.

In addition to facility changes at the Denver distribution center, Food Bank of the Rockies also rethought its food distribution programs. Some of the most notable programs added and expanded include: EverGreen Boxes, Food for Kids, Culturally Responsible Food Initiative, Totes of Hope and FRESH. All of these programs target underserved groups of people such as elderly adults, children who are at home due to school closures, underrepresented populations and those who reside in food deserts.

In 2020, the Food Bank of the Rockies distributed over 106 million pounds of food, equivalent to upward of 90 million meals, to individuals and families in need. This was a 43% increase in volume over 2019. In December 2020, Food Bank of the Rockies distributed the highest volume of food in one month in its history—over 5 million pounds of food, the equivalent of 285,000 meals every day.

Understanding that the pandemic is not over, and many neighbors will likely continue to face food insecurity for the foreseeable future, Food Bank of the Rockies pledges to keep rising to the challenge. It will continue to work to eliminate hunger by providing equitable, culturally relevant and nutritious food to millions of people across Colorado and Wyoming.

Energy-Saving Retrofit Award Winners

1st Place – Park Central

Park Central
Address: 1515 Arapahoe St., Denver, CO 80202
Building Type: Office
Square Footage: 633,640
Year Built: 1972
Owner: TR Park Central LLC
Management Team: Jones Lang LaSalle (JLL), Susan Roberts, senior general manager, and Darren Nickerson, senior chief engineer

Park Central is a 600,000-square-foot office complex located in the heart of downtown Denver that has prioritized energy efficiency over the last decade. The complex has achieved a LEED Platinum rating and has been Energy Star certified 10 times since 2009.

Funded by owner investments and Xcel rebates, the complex completed approximately $18 million of improvements that include several amenity renovations along with a number of large energy-efficiency upgrades. The energy-efficiency upgrades primarily targeted the complex’s HVAC system, resulting in a 5.3% energy use reduction from 2019-2020. Listed below is Park Central’s nomination, explaining the building’s HVAC system and recent upgrades performed.

Nomination: “The HVAC system at Park Central consists of a chiller plant with two newly installed state-of-the-art York Magnetic bearing chillers of 750- and 250-ton capacity each (project completed in 2020). A third chiller with 750-ton capacity serves as backup. All chillers operate with environmentally friendly Freon producing chilled water circulating throughout the building to each AHU located on each floor for cooling. Chilled water temperatures range from 43 to 51 degrees at any given time. All chilled water and condensing water pumps were replaced in 2020 as part of the chiller upgrade project. All automation controls were retrofitted to DDC as well.

“Each floor air handler is a minimum outside air unit with outside air provided by a mixed air handler system from each tower roof. Cool supply air is distributed on each floor by way of VAV boxes for zone cooling.

“Heating is provided via perimeter baseboard radiant heating only on floors 3 and above, with the lobby and second floors of each tower having a hot water heating coil on each air handler. The perimeter baseboard at the lobby and second floors is supported by electric reheat fans powered VAV’s. The boiler plant is a 15 million BTU capacity system using natural gas, which was converted from city steam in 2014. All primary and secondary heating pumps and motors were replaced in 2019.

“Economizing is on the water side provided by two plate and frame heat exchangers located in the chiller plant. The cooling tower consists of two 1,000-ton units sharing a divided base.

“Upgrades completed to date include retrofitting all remaining pneumatically controlled HVAC components to DDC. Those components include chilled water valves on each air handler, dampers on fire system fans, all lobby HVAC controls, and building outside air intake dampers. Additional upgrades include numerous automation system programming changes resulting in improved tenant comfort during all seasons. 2020 projects included testing and completing repairs to return all air handler fans and motors back to acceptable design specs where needed. This work includes replacing all drive sheaves and V-belts while rebuilding all air handlers. In 2021, VFD’s on each air handler were replaced.”

Susan Roberts, senior general manager, explained that “these energy-saving projects were identified by the property team in support of JLL’s sustainability goals through efficient building operations.”

In addition to JLL’s sustainability plan, projects were prioritized with tenant comfort and market appeal in mind. The on-site team is more than satisfied with the improvements at Park Central and are looking forward to tenant responses and energy savings post pandemic.
The Alliance Center
Address: 1536 Wynkoop St., Denver, CO 80202
Building Type: Office
Square Footage: 40,393
Year Built: 1908
Owner: 1536 Wynkoop LLC
Management Team: Chris Bowyer, director of building operations

A notable leader in Denver’s sustainability efforts is The Alliance Center, a coworking space, event venue and nonprofit located in downtown Denver. Founded in 2014, The Alliance Center has always pushed the envelope for sustainability in the built environment; the building has achieved a LEED Platinum rating and has been Energy Star certified three times since 2018.

This year, The Alliance Center took an innovative approach to reducing operating costs while reaping additional social and environmental gains. In partnership with Fermata Energy, Colorado Smart Cities Alliance, Colorado Carshare and the Regional Air Quality Council, The Alliance Center installed one of the first bidirectional electric vehicle chargers and advanced software technology to serve the building.

According to Chris Bowyer with The Alliance Center, “The system will use energy stored in the battery of a Nissan LEAF carshare vehicle to provide power to our building during peak demand periods, such as hot summer afternoons and cold winter mornings. This partnership of carsharing and vehicle-to-building (V2B) technology is one of the first of its kind in the world, putting all parties involved at the forefront of V2B and electric vehicle (EV) technologies.”

The system, installed in May, has indicated demand savings of over 6% and total invoice savings of slightly over 4%. Taking into account the building’s already high performance, these are considerable savings that will have a substantial impact on the building’s energy costs and carbon footprint. As a fully electric building, these values also have the potential to be significantly higher when the building’s energy consumption peaks in the winter months.

Aside from the estimated financial savings, the V2B technology has a number of environmental and social benefits. Through a carsharing model, the Nissan LEAF is available to the over 3,000 members of Colorado Carshare. The LEAF is estimated to replace nine to 13 individually owned vehicles, equivalent to the carbon dioxide emissions of 4,600 and 6,800 gallons of gasoline per year.

There is also potential for the V2B technology to increase the community’s reliance by powering “critical systems in emergency situations or demand side management events from local utilities,” the nomination stated. For example, in the case of a mass power outage, the energy stored in the vehicle’s battery could be used to power “portions of The Alliance Center building and providing a warming or cooling station for community members.”

The Alliance Center vehicle-to-building charger and carshare model began with a simple conversation, driven by collaboration and community partners with like-minded goals. The project was brought to life with funding received from the Regional Air Quality Council and Fermata Energy. As the impacts of this project continue to be revealed, it is hoped that this model serves as a catalyst for other commercial buildings in the community to consider sustainable solutions for increasing energy efficiency and resiliency.

Renewable Heating and Cooling (Electrification) Award Winner
1st Place - La Tela Condominiums

Community Leadership Award Winners
1st Place – Fusion Studios

Community Leadership Award Winners
2nd Place (Tie) – Denver Art Museum

Community Leadership Award Winners
2nd Place (Tie) – Food Bank of the Rockies
Energize Denver Awards

Energy-Saving Retrofit Award Winners
1st Place – Park Central

Energy-Saving Retrofit Award Winners
2nd Place – The Alliance Center

The 2021 Energize Denver Award winners after receiving their awards at the Colorado Real Estate Journal’s Property Management conference.