

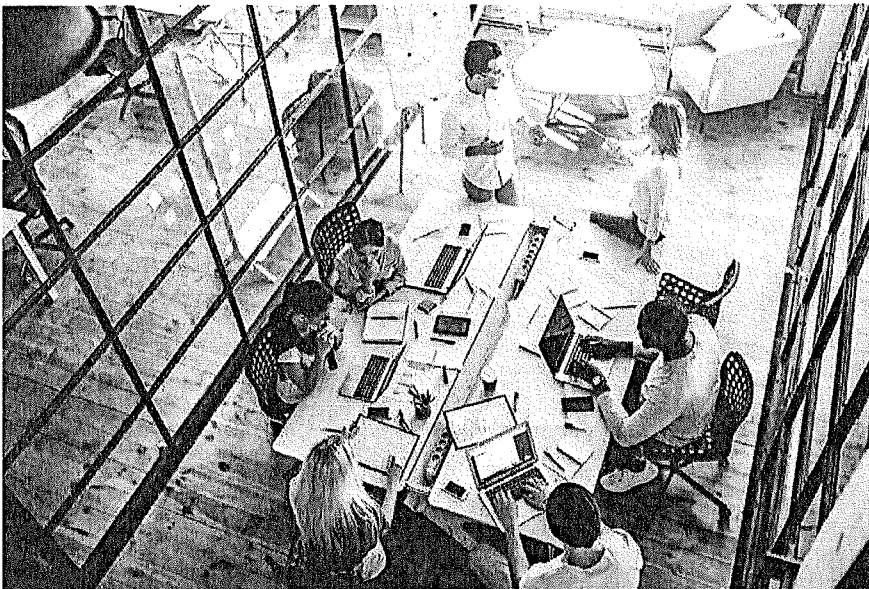
# ENERGY PERFORMANCE IN BUILDINGS

## HB21-1286

A

## BACKGROUND

Large commercial, multifamily, and public buildings account for roughly 15% of all energy used in Colorado. Every bit of energy saved in these buildings benefits tenants, property owners and managers, investors, and the environment. By measuring and tracking energy use in buildings, also known as benchmarking, building owners and tenants can better understand how their building's energy performance compares to similar buildings and identify opportunities to cut energy waste. Beyond benchmarking alone, we can increase the amount of energy savings, cost savings, and climate benefits by requiring less-efficient buildings to improve. With a building energy performance policy, we can improve our living and working spaces while helping Colorado lead the nation in transitioning to high-performing buildings.



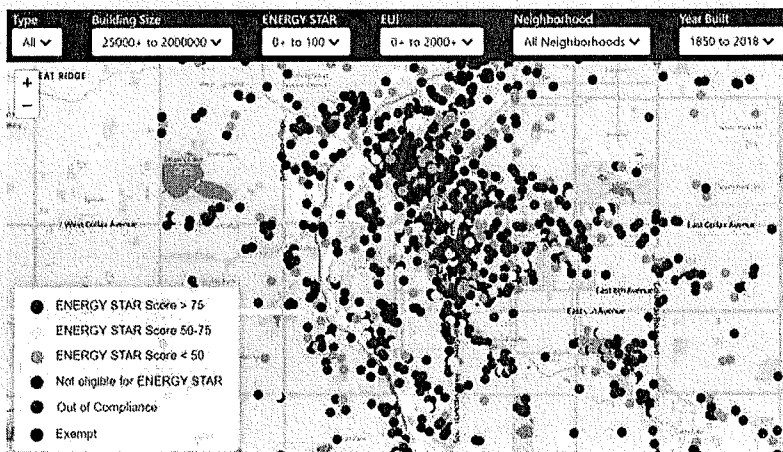
## ABOUT THE BILL

Based on successful policies already in place in Colorado cities and throughout the nation, this bill requires most large commercial, multifamily, and public buildings over 50,000 square feet to benchmark energy use and reduce emissions. Here's how it works:

- **Benchmarking:** Buildings measure their energy use and get a score compared to other buildings, which takes just a handful of hours the first year and less than an hour in subsequent years.
- **Easy data upload:** Major utilities provide user-friendly energy data.
- **Transparency:** The Colorado Energy Office puts benchmarking scores on a map similar to [energizedenver.org](http://energizedenver.org) so that investors, tenants, and the public can choose efficient properties.
- **Upgrades:** Less-efficient buildings make and improvements that lead to a 15-point ENERGY STAR score increase, a 15% energy use intensity reduction, or other options.
- **Assistance:** The Colorado Energy Office provides training and support for every step. Incentive programs and financing such as C-PACE and performance contracting allow building owners to make the improvements at zero cost.

Denver, Boulder, and Fort Collins all have benchmarking ordinances, saving millions of dollars for local property owners, commercial tenants, and apartment residents.

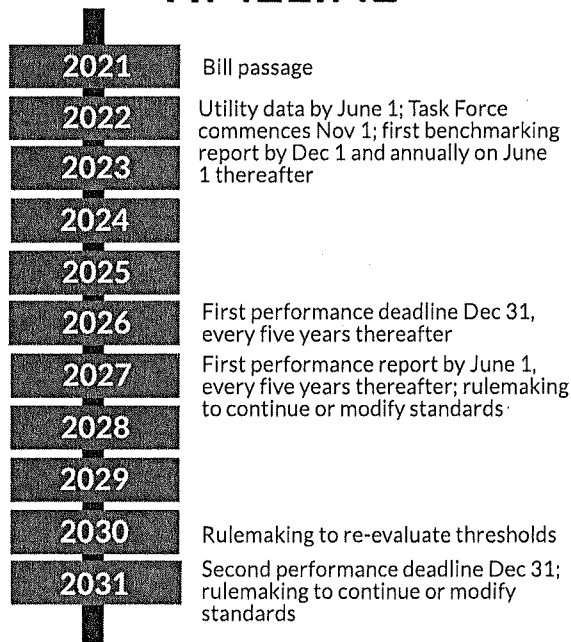
More than a third of large buildings in Colorado are already benchmarking, showing that it's unquestionably feasible while also showing a broad opportunity for the remaining two-thirds.



## WHO BENEFITS

- Tenants and small businesses who will save on monthly energy bills
- Building owners who can compare their building's energy use with similar properties, prioritize upgrades, and improve the value of their property
- Local governments wanting to reduce unnecessary spending and energy wastefulness, improve their community's building stock, and attract investment
- Businesses and workers skilled in energy efficiency retrofits, mechanical system upgrades, electrical work, engineering, recommissioning, and more
- Utilities who want additional value for key accounts, data-informed targeting for efficiency programs, and reduced peak demand
- All Coloradans working to prevent climate breakdown, improve air quality, and save water

## TIMELINE



## SAVINGS IN 2030

- \$447 MILLION IN ENERGY BILLS
- 3,200 GIGAWATT-HOURS OF ELECTRICITY
- 7,700 BILLION CUBIC FEET OF NATURAL GAS
- 1.0 MILLION METRIC TONS OF CO<sub>2</sub>  
(0.6 MMT FROM ELECTRICITY, 0.4 MMT FROM NATURAL GAS)

## FOR MORE INFO

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# ADDITIONAL FAQs for HB21-1286 ENERGY PERFORMANCE BUILDINGS

## PART 2: PERFORMANCE STANDARDS

**Q: Who do the performance standards provisions apply to?**

Large commercial and multifamily buildings over 50,000 square feet, plus public buildings upon renovations costing more than \$500,000 and affecting more than 25 percent of the square footage, with various exemptions and waivers.

**Q: Why are the performance standards necessary?**

Voluntary programs, incentives, rebates, training programs, and the like, while useful, have not had a strong enough impact on reducing carbon emissions. In fact, building energy use has been going up, not down, despite increased education, training, and incentives.

**Q: Why not just do the benchmarking policy?**

Benchmarking provides a strong and necessary foundation, and provides 40% of the expected CO2 savings from this policy, but we need the performance standards to achieve the additional 60%.

**Q: Do we have enough data for an effective performance policy?**

Yes. Not only do we have benchmarking data from thousands of buildings already benchmarking in Denver, Boulder, and Fort Collins, we also have decades of data from utility energy efficiency programs showing how buildings are performing and how energy efficiency measures can help.

**Q: What are the performance standard options?**

The policy is designed to be flexible and allow building owners to choose what path works best for them for each five-year performance cycle:

- Reach an ENERGY STAR score of 75 or higher
- Improve ENERGY STAR score by 15%
- Reach a sector-specific EUI
- Improve EUI by 15%
- Use renewable energy to offset some of the above requirements

**Q: What about new or already-high-performing buildings?**

New buildings are given a waiver for the next performance cycle, between 6-11 years. Already-high-performing buildings will automatically meet the standard.

**Q: Is this a new building code or land use code?**

No. This policy targets existing buildings, whereas building codes typically target new buildings. New buildings are given a waiver for 6-11 years.

**Q: Does this policy require expensive upgrades?**

Many buildings, if they don't meet the standards already, can comply with a simple lighting upgrade or recommissioning (i.e. equipment check-up). Adding or buying renewable energy is also an option. In addition, many energy-saving projects and renewable projects can avoid ANY capital expense by using future energy bill savings to pay for the project costs (through either C-PACE financing or performance contracting). Buildings facing financial hardship -- including COVID impacts -- are given a waiver.

**Q: Will performance standards raise the cost of housing?**

This policy lowers the overall total cost of housing by reducing energy bills, which are often the second-highest monthly bill after rent. High energy bills can be an especially large burden on low-income families, who often live in homes with older, less efficient appliances and pay a larger percentage of their income on energy.

**Q: What about historic buildings?**

Older buildings often perform equivalent to or better than newer buildings on energy use, since they often have a very robust construction that also maximize natural daylighting and airflow. Nevertheless, historic buildings that cannot meet the standards without damaging their structural or historic integrity only have to do recommissioning and then are given a waiver.

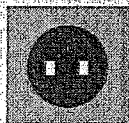
**Q: Does this policy require electrification?**

No. This policy is fuel-neutral, and targets overall building energy use. Most buildings will pursue so-called lower-hanging fruit like lighting, recommissioning, and operator training before upgrading their HVAC or domestic hot water systems. We hope that when those systems are replaced, typically at the end of their useful life, they are replaced with the most clean and efficient version that meets the building's needs.

**Q: Are there exemptions and waivers?**

Yes. Exemptions from the entire bill include facilities that are industrial and manufacturing, agricultural, storage without heating or cooling, and single family homes/duplexes/triplexes. Waivers for benchmarking include buildings that are facing financial hardship including COVID impacts, are not fully occupied, are new or otherwise do not have the full previous year's energy use, had a change of use, or are set for demolition. Waivers for the performance standards include all of the above plus affordable housing, condos, historical buildings, new buildings, and already high-performing buildings, subject to definitions and circumstances.

SAVES ENERGY



SAVES MONEY



CUTS CLIMATE  
EMISSIONS



PROMOTES SMART  
INVESTMENT



HELPS HOUSING  
AFFORDABILITY



# ADDITIONAL FAQs for HB21-1286 ENERGY PERFORMANCE BUILDINGS

## PART 1: BENCHMARKING

**Q: Who does the benchmarking provision apply to?**

Large commercial, multifamily, and public buildings over 50,000 square feet, with various exemptions and waivers.

**Q: What is benchmarking?**

Benchmarking simply means measuring, tracking, and comparing energy use across properties. Benchmarking helps building owners, investors, and tenants understand how their building's energy performance compares to similar buildings and identify opportunities to cut energy waste.

**Q: How do you benchmark?**

Benchmarking uses the free program ENERGY STAR Portfolio Manager, already in use by hundreds of thousands of buildings nationwide. Buildings input their square footage, operating hours, 12 months of data, and a few other fields, and the program calculates their ENERGY STAR score (which compares similar buildings to each other) and their Energy Use Intensity (energy use per square foot). Benchmarking typically takes about two to four hours the first year and less than an hour each following year, once basic building information is collected.

**Q: Is benchmarking already happening in Colorado?**

Yes, quite successfully. Denver, Boulder, and Fort Collins already require benchmarking, covering about a third of all large buildings in the state. An estimated additional 10 percent of buildings are voluntarily benchmarking, as a general best practice. These policies are already saving many many millions of dollars for local property owners, commercial tenants, and apartment residents. Nearly 40 cities and a couple states also have benchmarking policies.

**Q: Why should Colorado adopt a statewide program when cities are already passing similar policies?**

Statewide benchmarking will provide uniformity across Colorado and eliminate the need for adoption and implementation city-by-city. Also, a statewide approach could reduce the burden on businesses who would have to report energy use in multiple areas according to multiple local ordinances. The program will integrate as seamlessly as possible with the policies already in place in Denver, Boulder, and Fort Collins and use those success stories to guide a statewide process.

**Q: Why should Colorado make benchmarking a requirement rather than a voluntary program?**

Many of the benefits of benchmarking come from transparent information across markets, which can't happen effectively with benchmarking data from only a handful of voluntary buildings. Additionally, building tenants, who are most affected by a building's energy bills, deserve to be able to choose properties where they know their bills will be lowest. Required benchmarking helps inform these choices, as ENERGY STAR scores and energy use intensity make the building's efficiency visible and understandable.

**Q: What about cities that already have benchmarking ordinances?**

These can continue, and the Colorado Energy Office will coordinate the reporting to avoid unnecessary burdens on businesses. Other local governments are still allowed to adopt their own benchmarking or performance ordinances, which will be easier with the data and mapping infrastructure set up by the energy office.

**Q: Why are government buildings included in benchmarking?**

Citizens deserve to know that their tax dollars aren't being wasted in inefficient buildings.

**Q: How will building owners get the energy data to benchmark?**

The bill requires all medium and large utilities to provide building owners with aggregated whole-building energy data, either directly or manually uploaded into ENERGY STAR Portfolio Manager. A number of utilities in Colorado already offer this,

**Q: What about energy data privacy concerns?**

All of the tenants' energy use is rolled up into one monthly total (aggregated) so identification of individual usage is all but impossible. Buildings with three or fewer tenants will have to get data-sharing consent. This is the latest de facto standard for energy data privacy, already in place in Public Utility Commission rules and elsewhere across the country.

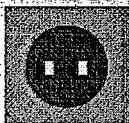
**Q: What about buildings with high-energy-use tenants?**

Each tenant's energy use is rolled together into whole-building data, which is then compared to similar buildings with similar tenant occupancy in the same market sector in ENERGY STAR Portfolio Manager. This means that ENERGY STAR scores are "normalized" nationwide for tenant behavior.

**Q: What about buildings with electric vehicles charging?**

EV charging stations and parking garages that are submetered are excluded from gross floor area in the calculations.

SAVES ENERGY



SAVES MONEY



CUTS CLIMATE  
EMISSIONS



PROMOTES SMART  
INVESTMENT



HELPS HOUSING  
AFFORDABILITY



# ENERGY PERFORMANCE IN BUILDINGS: HB21-1286

## TIMELINE

## PENALTIES

Bill passage

2021

Utility data by June 1; taskforce commences Nov 1; first benchmarking report by Dec 1 and annually on June 1 thereafter

2022

None (penalties waived)

2023

Up to \$500 one-time flat fee for non-compliance with benchmarking

2024

Up to \$2,000 one-time flat fee for non-compliance with benchmarking

2025

Same, continuing annually

First performance deadline Dec 31, every five years thereafter

2026

First performance report June 1, every five years; thereafter; rulemaking to continue /modify

2027

Up to \$2,000 one-time flat fee for non-compliance with performance standards

2028

2029

Rulemaking to re-evaluate thresholds

2030

Second performance deadline Dec 31; rulemaking to continue or modify standards

2031

2032

Up to \$5,000 one-time flat fee for non-compliance with performance standards \*

\* Daily accumulating \$0.02/sq ft fine removed by amendment, based on stakeholder feedback



**EEBC Provides Members**

the platform to Advocate for your business Initiatives,  
e opportunity to Influence policy/legislation outcomes,  
and receive news, information, and updates  
on initiatives and trends that can make a difference  
to your business' bottom line

**EEBC is the industry's voice  
to create business opportunities  
to grow your energy efficiency industry**

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Environmental, Energy, & Utility Law

**| EEBC MISSION**

EEBC is a 501 (c)(6) nonprofit statewide trade association that represents and advocates for businesses that provide energy efficiency, demand response, and beneficial electrification, products, and services in Colorado. EEBC supports energy efficiency policies and programs that creates sustainable workforce, increases cost-effective energy, improves the environment and public health, uphold the standards for safety, quality, and professionalism in the energy efficiency industry.

Dear Governor Polis and Colorado Legislators:

On behalf of the Energy Efficiency Business Coalition's (EEBC) trade association member businesses, we respectfully request your support of **HB21-1286 Energy Performance for Buildings**. HB21-1286 promotes the continued growth of the energy efficiency industry in Colorado.

EEBC is a statewide trade association comprised of member businesses representing the energy-efficiency industry's supply chain - businesses that design, sell, and install high-performance gas/electric products and services - across Colorado.

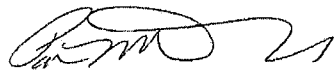
Colorado has 34,000 energy efficiency jobs across 6,000 energy efficiency businesses. These energy efficiency jobs comprise 9% of all construction jobs and 22% of all energy-sector jobs. More than three times the 10,000 fossil fuel industry jobs in the state. EEBC is proud to be part of the growing energy industry, companies that include engineering, architecture, data analytics, financing, commercial energy services, demand-side management implementation and evaluation, demand response, workforce training, and manufacturers, distributors, and contractors of energy efficiency products and services.

The Energy Performance for Buildings Act applies benchmarking and performance standards to [most] large commercial and public buildings in the state. Under the Act, these buildings will measure and report their energy use in a standardized way known as the Benchmarking and Building Performance standards will ensure that less-efficient buildings become more efficient over time.

For years, our businesses have been supporting building owners who choose to do what the Energy Performance in Buildings Act would require: measuring their energy use; making gradual Energy Efficiency improvements such as better lighting, tightening the building envelope with insulation/air sealing, or new HVAC systems; and tracking their progress over time. The building owners who have taken these actions are because they reduce climate-polluting emissions and reduce their operating costs while saving money on their utility bills each month. Reliable, lower utility bills are a benefit to pass on to disadvantaged communities. By standardizing these practices across the state, Colorado can ensure that all building owners are taking advantage of these opportunities. We can also better track building energy use across the state to achieve our 14 cities, state, and utilities' 2050 climate goals.

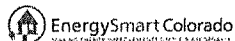
If we implemented benchmarking and building performance standards throughout the state, Coloradans would save a cumulative \$3.5 billion on their energy bills over 10-years. Because Colorado has a C-PACE financing program, many energy efficiency upgrades can pay for the project cost with no upfront costs and produce immediate savings to the building owners.

Please, support HB21-1286 Energy Performance for Buildings bill to assist businesses to increase energy efficiency jobs, reduce energy costs while cutting greenhouse gases. It will help Colorado's businesses grow and prosper, driving our local economy through job creation, resulting in a cleaner, stronger, and more energy-efficient Colorado.



Patricia Rothwell,  
EEBC Board President | Executive Director

EEBC MEMBER SUPPORT OF  
HB21-xxxx Energy Performance for Buildings



To: Members of the Colorado General Assembly, Governor Jared Polis  
From: City and County Elected Officials  
Date: May 5, 2021  
Re: HB21-1286 Building Energy Performance Policy

Dear Members of the Colorado General Assembly and Governor Polis:

As local government officials from across our state, we strongly support state policies that preserve a healthy and livable climate, improve the resilience of our building stock, increase transparency, reduce energy costs for our small businesses and multifamily rentals, boost local job creation, and improve our own buildings. Given these priorities, we are writing to strongly support HB-1286.

A building energy performance policy would help large buildings in our communities measure, track, and manage their energy use; allow commercial tenants to know and compare the energy performance of large buildings before they lease; lower energy bills for apartment residents and small businesses; and provide the impetus to improve lower-performing buildings. Every bit of energy saved in these buildings benefits us all, helping to save money in these unexpectedly budget-tight times. Energy efficiency has been shown time and time again to more than pay for itself in savings. A similar program has already successfully been implemented in Denver, Boulder, and Fort Collins—covering a third of our state’s large buildings—as well as more than 30 cities and multiple states across the country.

As local government leaders, we would like to see this policy implemented statewide, which is especially important for small communities who may not have the technical capacity or staff to bring this policy online themselves but understand the importance of climate mitigation and sustainability. For local governments specifically, we appreciate that this building energy performance policy would:

- Save costs for local governments that would like to adopt a benchmarking or building energy performance program in our own communities
- Provide maps and energy use scores across jurisdictional borders
- Assist us in making energy efficiency upgrades to aging facilities, at no cost to taxpayers, through performance contracting
- Make allowances for historical properties, affordable housing, financially constrained properties, and other special cases in our communities
- Allow special provisions for COVID-impacted buildings while still looking ahead to the future
- Integrate seamlessly with existing local benchmarking ordinances
- Continue to allow for innovations in local building and energy policy

As local government officials, we recognize the importance of not imposing any extra costs or burdens on our resource-constrained local government operations, not infringing on our local control, and supporting business recovery in our communities. We believe there is a way to maintain those protections while continuing to address the critical need to reduce the energy consumption throughout Colorado. This policy is one small but significant step we can take together. We urge you to join us in offering your full support to this policy.

Sincerely,

Jamie Harkins, Mayor of Lafayette  
Anite Seitz, Mayor Pro Tem of Westminster  
Jenny Willford, Mayor Pro Tem of Northglenn  
Ashley Stolzmann, Mayor of Louisville  
Nicole Johnston, Council Member, Aurora  
Laurie Anderson, Council Member, City and County of Broomfield  
Jean Lim, Council Member, City and County of Broomfield  
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Jessica Burley, Mayor Pro Tem of Frisco  
Josh Blanchard, Summit County Commissioner  
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Matt Scherr, Eagle County Commissioner  
Tim Howard, Superior Board of Trustees  
Paige Hennen, Superior Board of Trustees



May 5, 2021

Colorado General Assembly  
200 E Colfax Avenue  
Denver, CO 80203

Dear Governor Polis and Members of the Colorado Legislature,

As a group of companies, trade associations, service providers, investors, and business groups with operations, facilities, and business interests in Colorado, we write to support adoption of a commercial energy benchmarking policy for the state. Specifically, the passage of HB 21-1286 will help Colorado businesses and residents save money while reducing emissions, spurring innovation in building efficiency design and construction, and fostering economic growth.

A growing number of businesses and large energy consumers are setting ambitious sustainability goals. In fact, nearly half of Fortune 500 companies have set goals to reduce greenhouse gas emissions, procure renewable energy, and invest in energy efficiency because it makes economic sense.<sup>1</sup> The energy use at our owned and operated facilities is both a significant cost and major focus of corporate sustainability efforts. Building energy efficiency policies and programs such as benchmarking will help businesses meet these goals faster and more cost-effectively.

Building energy benchmarking — the process of tracking energy use to better manage performance — is a valuable tool to make cost-effective operational and capital investment decisions. Knowing how much energy a building uses helps identify opportunities to cut energy costs and make informed decisions when leasing or buying property. These savings free up significant capital that can be reinvested into our businesses, employees, tenants, and the communities in which we operate. Data gleaned from benchmarking also drives greater consumer awareness and consideration of building efficiency in the marketplace. This encourages building owners to see investment in energy efficiency as a business opportunity — helping them to stay competitive.

Building benchmarking policies and programs have proven to be highly effective in reducing energy consumption and driving economic development. Analysis has found that Denver’s benchmarking ordinance cut energy use in large buildings by 4.5% and saved \$13.5 million over the course of one year.<sup>2</sup> Recent estimates have found that investing \$340 million in building energy efficiency in Denver would

<sup>1</sup> Ceres. “Power Forward 3.0: How the largest U.S. companies are capturing business value while addressing climate change” April 15, 2017. <https://www.ceres.org/resources/reports/power-forward-3>.

<sup>2</sup> Department of Public Health & Environment. “Energize Denver Annual Report 2018” <https://www.denvergov.org/content/dam/denvergov/Portals/771/documents/EQ/Energize%20Denver/Denver%202018%20Benchmarking%20Report%20Final.pdf>

create 4,000 jobs and deliver \$1.3 billion in energy savings over 10 years.<sup>3</sup> Policies that provide the market with better information about building performance can also unlock demand for energy-efficient products—creating quality jobs and supporting local suppliers throughout Colorado. Enacting a statewide benchmarking policy is key to ensuring all Coloradans can reap these economic benefits.

Establishing a commercial energy benchmarking policy will help Colorado businesses make smarter investment decisions that will save money, encourage innovation, and help us meet our sustainability goals. This legislation would enhance the economic vitality, competitiveness, and growth of the state, ensuring Colorado's business community continues to thrive.

Sincerely,  
**Ameresco, Inc.**  
**Aspen Skiing Company**  
**Biohabitats**  
**Calico Energy**  
**Cree Lighting**  
**E2 (Environmental Entrepreneurs)**  
**Eaton**  
**Energy Management Solutions, Inc. (EMS)**  
**First Affirmative Financial Network, LLC**  
**Franklin Energy**  
**Lutron Electronics**  
**National Association of Energy Service Companies (NAESCO)**  
**National Electrical Manufacturers Association (NEMA)**  
**Owens Corning**  
**Perry Rose, LLC**  
**Polyisocyanurate Insulation Manufacturers Association (PIMA)**  
**Schneider Electric**  
**Uplight**

*For additional information or to connect with the signatories, please contact Emily Duff at Ceres ([duff@ceres.org](mailto:duff@ceres.org)) or Ellen Zuckerman at Schlegel & Associates ([ezuckerman@schlegelassociates.com](mailto:ezuckerman@schlegelassociates.com)).*

### **More information on the signatories**

**Ameresco, Inc.** is a leading independent provider of comprehensive energy efficiency and renewable energy solutions for facilities throughout North America and the United Kingdom, delivering long-term value through innovative systems, strategies and technologies. Ameresco's solutions range from upgrades to facility's energy infrastructure to the development, construction and operation of renewable energy plants combined with tailored financial solutions. Ameresco operates an office in Aurora, Colorado.

**Aspen Skiing Company** operates four ski resorts, four hotels, restaurants, retail stores and employee housing units. Aspen Skiing Company has invested in various clean energy projects, including four solar arrays, a micro-hydroelectric plant, and a \$6 million plant at the Elk Creek Mine to capture methane for

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<sup>3</sup> Ibid.

electricity generation. The company also developed the one of the first eleven Leadership Energy and Environmental Design Program, known as LEED, certified buildings and is now operating six.

**Biohabitats** applies the science of ecology to restoring ecosystems, conserving habitat, and regenerating natural systems to build resilience to climate change. We do this through engagement, assessment, planning, engineering & design, construction, and monitoring. The firm's Southern Rocky Mountain Bioregion works across Colorado and the west with a tightknit team operating out of Denver.

Founded in 2010, **Calico Energy** provides trusted technical products and services for utilities and their partners. Working across the energy sector, Calico has solved some of the industry's most complex energy data aggregation and usage system problems. Today, the company continues to pursue big challenges, providing strategic and technical solutions built to meet market needs. With a proven whole building benchmarking application and utility program expertise, Calico focuses on making meaningful progress toward a more sustainable future.

**Cree Lighting** is a market-leading innovator of Indoor, Outdoor, and Consumer Bulb LED lighting. We are uniquely positioned to innovate new ways in which lighting will serve as a platform for emerging technologies and capabilities that will enrich lives, improve society and safeguard our planet.

**E2 (Environmental Entrepreneurs)** is a national, nonpartisan group of business leaders, investors, and professionals from every sector of the economy who advocate for smart policies that are good for the economy and good for the environment. E2 members have founded or funded more than 2,500 companies, created more than 600,000 jobs, and manage more than \$100 billion in venture and private equity capital.

**Eaton's** mission is to improve the quality of life and the environment through the use of power management technologies and services. We provide sustainable solutions that help our customers effectively manage electrical, hydraulic, and mechanical power – more safely, more efficiently, and more reliably. Eaton's 2020 revenues were \$17.9 billion, and we sell products to customers in more than 175 countries. We have approximately 92,000 employees. For more information, visit [Eaton.com](http://Eaton.com).

**Energy Management Solutions, Inc. (EMS)**, is an independent provider of energy management services, uniquely qualified to help companies identify, prioritize, and implement strategies that will conserve energy, lower utility bills, and improve their bottom line. EMS works with businesses of all types and sizes in the United States and beyond, sharing proven energy-saving methods and tactics.

**First Affirmative Financial Network, LLC** is a financial advisory firm based in Colorado Springs with approximately \$1 billion under management and advisement. Since 1988, First Affirmative has been helping financial advisors and their clients create investment solutions designed to meet both financial and impact goals. First Affirmative is a Certified B Corp and was honored as a "Best for the World" Company in 2019 by B Lab, the parent organization for Certified B Corps.

**Franklin Energy** delivers flexible energy efficiency and grid optimization programs for utility, state, and municipality clients nationwide, leveraging over 25 years of experience.

**Lutron Electronics** designs and manufactures lighting controls and lighting control systems for both residential and commercial applications. Lutron's founder, Joel Spira, invented the first solid-state electronic dimmer in 1961. In 2010, his early prototypes and notebooks were inducted into the Smithsonian Museum of American History in Washington, DC. Today, the company is devoted to controlling both electric lighting and daylight, offering more than 15,000 lighting and window shade

products around the globe. Together, they save more than 10 billion kWh of electricity annually, saving consumers more than \$1 Billion each year.

**NAESCO** is the leading national trade association of the energy services industry. NAESCO numbers among its members some of the world's leading energy services companies. During the past twenty years, NAESCO member companies have implemented energy efficiency, demand response, renewable energy and distributed generation projects for government, industrial, commercial, institutional and residential customers, including several hundred million dollars' worth of projects in Arizona. Nationally, NAESCO member projects have produced: \$60 billion in projects paid from savings, \$65 billion in guaranteed savings, 570,000 person-years of direct employment, \$43 billion in infrastructure improvements in public facilities and 500 million tons of CO2 savings at no additional cost.

**Owens Corning** is proud to be a global building and industrial materials leader. Its three integrated businesses are dedicated to the manufacture and advancement of a broad range of insulation, roofing and fiberglass composite materials. Leveraging the talents of 19,000 employees in 33 countries, Owens Corning provides innovative products, manufacturing technologies, and sustainable solutions that address energy efficiency, product safety, renewable energy, durable infrastructure, and labor productivity. These solutions provide a material difference to the company's customers and make the world a better place.

**Perry Rose LLC** is the Denver-based company of Jonathan Rose companies. They have developed affordable and mixed use and mixed income housing developments in Denver and support the well-being of communities by creating environmentally, social and economically responsible projects. Perry Rose has developed and oversees management of over 300 housing units and 225,000 SF of commercial space. One of their 100% affordable housing developments, Aria Apartments, is designated LEED Platinum and received the Mayors Design Award in 2014 and the commercial grocery store at HGV Commercial was the first grocery store in the nation to receive LEED Gold designation.

For more than 30 years, **PIMA** has served as the voice of the rigid polyiso industry. PIMA is one of the foremost industry advocates for building energy-efficiency practices and policies. The Association represents the public policy interests of the polyiso industry at the local, national, and international levels to advance the message of high-performance building construction. PIMA's membership includes manufacturers of polyiso insulation, raw material suppliers to the industry, and businesses that provide testing services to manufacturers.

**Schneider Electric** is a global company providing energy solutions and automation digital solutions for efficiency and sustainability. Schneider Electric combines world-leading energy technologies, real-time automation, software and services into integrated solutions for homes, buildings, data centers, infrastructure and industries. Schneider Electric employs more than 140,000 people worldwide and is committed by 2030 to power its 100% of its operations with renewable energy (80% by 2020), to double energy productivity, to achieve net-zero operational emissions, and to help its customers save 120 million metric tons of CO2.

**Uplight** is the leading provider of end-to-end customer-centric technology solutions dedicated solely to serving the energy ecosystem. Uplight is headquartered in Boulder and also operates an office in Denver. More than 80 utilities around the globe use Uplight solutions to power their customer energy experience. Uplight is a certified B Corporation—the highest standard for social corporate responsibility. Uplight has the ambitious goal of reducing CO2 emissions by more than 100 million metric tons and saving consumers more than \$10 billion on their energy bills in the next 5 years.



## Energy Efficiency Financing

# Green Mountain ACE Hardware: Money Up Front and Money Back Moves Lighting Project Forward



We partner with HBC Energy Capital to make it easier for customers to finance — and ultimately finish — their energy efficiency projects.

Bob Macauley  
Xcel Energy Financing  
program manager

Green Mountain ACE Hardware in Lakewood, Colorado needed a lighting upgrade.

The 32,000 square foot flagship store had inefficient fluorescent T-8 lighting that needed to be replaced by something much more energy efficient.

Owner Todd Erwin knew an upgrade would save him energy and money over the life of the new equipment, but the timing for a capital cost wasn't quite right when he initially received information.

Fortunately for him, Xcel Energy created an Energy Efficiency Financing program which provided the perfect reason to move forward with the project.

### A smart solution

Local lighting contractor Wild Ideas Light Company was the first to work with Erwin.

"This is a big store with 20-foot ceilings in some areas and we knew we could double the light output by switching to high-efficiency lighting," explains Ian Osborn, Owner of Wild Ideas Light Company. "The floors are white but they started to look a bit dirty as the lighting aged."

Osborn recommended ENERGY STAR® rated LEDs with a hybrid tube to allow for smaller ballasts. He liked their reliability and the fact that they require very little maintenance. They were also eligible for Xcel Energy rebates.

"People don't believe it," explains Osborn. "They look at the numbers and think they can't be true. But we can give them better light, a brighter environment, an Xcel Energy rebate, and cut their energy use in half."

Erwin looked over the information and was waiting for just the right timing. Then he learned about a new financing program.



Project Highlights	
Project	Replace old lighting with high-efficiency LED lighting
Project Cost	\$81,000
Xcel Energy Rebates	\$22,400
Estimated Annual Energy Savings	155,568 kWh
Payback Term	5.1 years

Business Solutions Center **855.839.8862**

Colorado

"We redeveloped our financing program in 2016," says Bob Macauley, Xcel Energy Financing program manager. "We used to give people a list of lenders who could offer them financing and wish them well. We decided to formalize the program and partner with HBC Energy Capital, a division of the National Energy Improvement Fund (NEIF), to make it easier for customers to finish their energy efficiency projects."

The goal was to provide more value to the customer through a user-friendly process. The new program saves customers time they would otherwise spend determining whether they could complete a project. Now, Macauley and HBC Energy Capital do the legwork. Applicants simply access an online portal to enter top line information. HBC then matches the company's information with lenders who offer proposals to finance the project. There is no cost and no obligation.

"In this case, the situation was perfect because one of the options provided to Erwin was a cash flow positive proposal," explains Jeremy Epstein, HBC Energy Capital Vice President of Commercial Lending. "The energy cost savings associated with the project exceed the monthly finance payments. That means they were saving more than they were spending on a monthly basis. You can't ask for a better scenario than that."

The project estimate compiled by Epstein showed a five year plan with monthly payments of \$1,183. The estimated monthly savings of making the upgrade was \$1,330. That meant a positive cash flow each month of \$147.

The icing on the cake came in the form of what's called a progress payment. Rather than waiting until the project was fully installed to receive payment, Erwin received half of the money up front.

"The rebate was pretty surprising because it was more than a quarter of the total project cost," Erwin says. "To be able to finance it with money up front made the decision obvious."

"You no longer need to let these projects sit on the shelf when someone else's money can help you move it forward, and you can still have money in your pocket," adds Macauley. "The longer you wait, the more money you lose. It's the cost of doing nothing."

### Moving forward

With a lighting plan, rebates and financing all in place, Erwin had the new LED lighting installed over the course of two months.

"It was pretty evident that it was going to improve the shopping experience," he says. "It made the products pop and enhanced the visual aspect of the whole store."

Shoppers can see the difference. And Erwin now sees a process that makes great business sense. He'll consider other energy efficiency projects in the future knowing rebates and financing are all on the table.

For more information about Xcel Energy's rebate programs, visit [xcelenergy.com/Business](http://xcelenergy.com/Business) or call the Business Solutions Center at **855.839.8862**.



### Project Financing Estimate

Term	5 years
Monthly Savings	\$1,330
Monthly Payment	\$1,183
Net Monthly Positive Cash Flow	\$147

Contact HBC Energy Capital for fast, customized financing solutions for all of your commercial energy efficiency projects.

There are four ways to get started:

1. Request a custom finance estimate at [hbc.softlink.solutions/newestimate](http://hbc.softlink.solutions/newestimate)
2. Call **720.724.7673**
3. Email [hbcenergycapital@neifund.org](mailto:hbcenergycapital@neifund.org)
4. Visit [hbcenergycapital.com/programs/xcelenergy](http://hbcenergycapital.com/programs/xcelenergy)

# 1670 Broadway

Maximum Efficiency, Minimum Interruption

## SMART NEW SYSTEM WORTH THE INVESTMENT ON WALL STREET OF THE ROCKIES

### A collaborative approach

Efficiency was always a top priority at 1670 Broadway in Denver, but the engineering team and property manager at Cushman & Wakefield of Colorado, Inc. knew more could be done. They had implemented various lighting, motors, cooling and compressed air projects to operate more efficiently, but determined it was time for a more comprehensive approach. To get started, they turned to several energy expert resources, including their utility, Xcel Energy, Denver's Group 14 Engineering and Klok Group Engineering.

### Built for efficiency

1670 Broadway is a Class A Leadership in Energy and Environmental Design (LEED) gold certified, high-rise, office tower located in the central business district of downtown Denver, a financial hub also known as the Wall Street of the Rockies.

The tower is part of an investment portfolio advised by UBS Global Asset Management, which believes strongly in integrating sustainable initiatives whenever economically possible. It's not just policy for this building, UBS has a Global Sustainability Workgroup to develop and implement sustainability and responsible practices across its real estate businesses throughout the world.

The office tower boasts nearly 700,000 rentable square feet and an adjoining parking facility. At the time of construction in 1978, it was the tallest building in downtown Denver. It was built with efficiency and conservation in mind, but has been continually enhanced to incorporate new innovations to address ever-changing tenant needs. The goal has always been twofold: keep tenants comfortable, while containing operating costs.

No strangers to rolling up their sleeves and making improvements, the team began with a detailed Recommissioning study of all energy consuming systems in 2012. The study identified numerous low and no-cost measures in addition to capital improvements that would facilitate the owner's goal of achieving enhanced efficiency.

### Low-cost measures and tenant teamwork

"The whole building approach is such a smart way to go about improving efficiency because it achieves more global energy savings throughout the building," says Sharon Panas, Xcel Energy account manager. Panas helped the building engineering team through the process. "I commend them for taking this approach, even though it takes longer and involves more challenges. Their energy savings wouldn't be as great as they are had they done the work one project at a time."

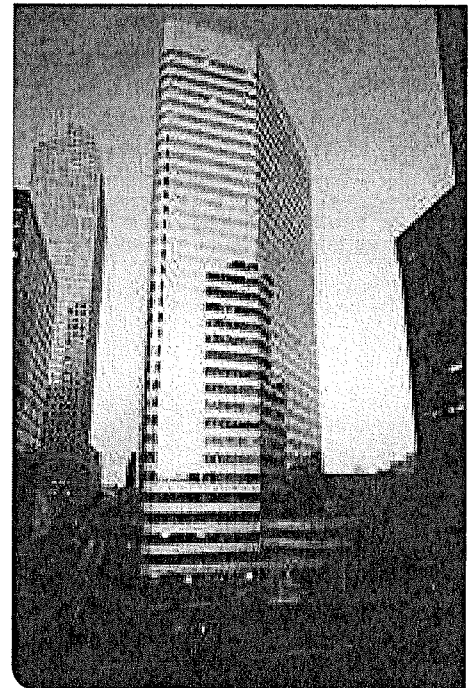
The work started with simple, no-cost and low-cost measures that required tenant cooperation. With tenant approval, the engineering team curtailed lighting and HVAC systems on the weekends; streamlined lighting zone controls; and limited elevator operation during off hours and weekends to two out of five operational cars. Those simple measures then lead to larger changes.

The Recommissioning study determined that a new energy management system would vastly improve the building's overall efficiency. "With full occupancy and various tenant needs that constantly change, we needed a system that allowed flexibility," says Mike Turzanski, Cushman & Wakefield director of engineering. "Many of our tenants work in the information technology space meaning a higher pull on energy load. They couldn't have any interruption to their services, so we had our work cut out for us."

"The system can handle complex programming and will continue to **adapt along with our changing needs**. It's a **tremendous asset to us** and will continue to help us keep our tenants comfortable."

Judy Purviance-Anderson

General Manager, 1670 Broadway



## New and improved EMS

The engineering team quickly determined which energy management system (EMS) would work the best, based on the ability to meet the requirements for an expandable, open protocol system to continue to meet the changing needs of 1670 Broadway's tenants. The system platform had to accommodate real time Web-based building controls and allow intercommunication with lighting, security, fire alarm and smoke control systems. Incorporating new direct to digital controls (DDC), was a must.

New equipment included a main server, workstations with monitors, printer, communication backbone and related routers, hardware, software and licenses to control and communicate to the tower's HVAC system. The system also provides static pressure controls, auxiliary lighting, damper controls and floor temperature controls.

To sweeten the deal, Xcel Energy offered a rebate of \$183,527, offsetting the cost of the new equipment and helping justify future efficiency upgrades. The future energy savings will help them pay back the project in less than three years.

"The new system allows us to deliver 'smart' operations through enhanced controls and continuing system commissioning," says Turzanski. "We also acquired more efficient mechanical scheduling and staging as well as demand programming limits which allow us to minimize demand costs."

"The system is very user friendly but the building requirements are not," says Judy Purviance-Anderson, general manager of the property. "Now we can accommodate and adapt to complex programming to deliver services to the tower and its occupants."

## Smart technologies

While working to make all of the systems communicate, Turzanski and his team decided to incorporate an analytic software tool. The software is a "smart" device, enabling the collection and analysis of various system data in real time. It alerts engineering when an electronic or mechanical component is operating outside of its programmed parameters. The result is a proactive response to potential challenges. It will also be used to continually recommission the system's performance to easily identify inefficient equipment behavior.

"The system can handle complex programming and will continue to adapt along with our changing needs," says Purviance-Anderson. "It's a tremendous asset to us and will continue to help us keep our tenants comfortable."

## Next steps

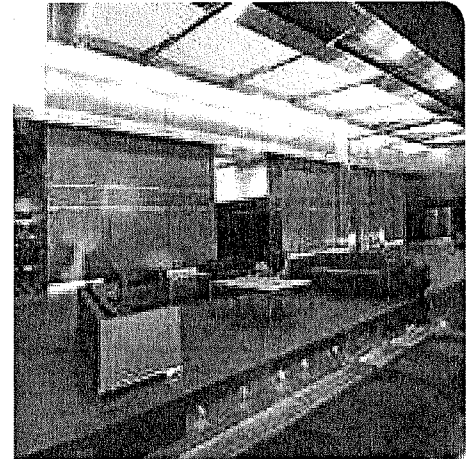
They're not done yet. Included in 1670 Broadway's capital plan is a new, expanded capacity, integrated flat plate heat exchanger, as well as a two-phase DDC retrofit for base building air distribution boxes. In layman's terms, that means they'll save even more energy while lowering their bills.

Turzanski says he'll continue to look for ways to save with Panas' help both in finding and facilitating Xcel Energy rebates. "We all win in the end: tenants get improved environmental conditions and lower bills, and we continue to reap the savings for years to come."

For more about Xcel Energy's energy efficiency programs and rebate offerings, visit [XcelEnergy.com/EMS](http://XcelEnergy.com/EMS).

## Get Your Energy-Savings Project Started

Not sure where to start? [Tell us about your project](#) and an energy efficiency specialist will be in touch to see if it qualifies for a rebate.



"Every month that we've had the system in place, **our ENERGY STAR® score has increased**, and we're still working to improve it further."

MIKE TURZANSKI,  
Director of engineering,  
Cushman & Wakefield

He adds that training his staff to properly use the system is paramount to future efficiency.

## Big savings

Six months following its completion in January 2014, the property already realized the following savings:

- **20% reduction in overall electrical use** or 1,116,000 kWh saved
- **25% reduction in overall district steam energy use** or one dekatherm of energy saved.

## The Prado Condominiums

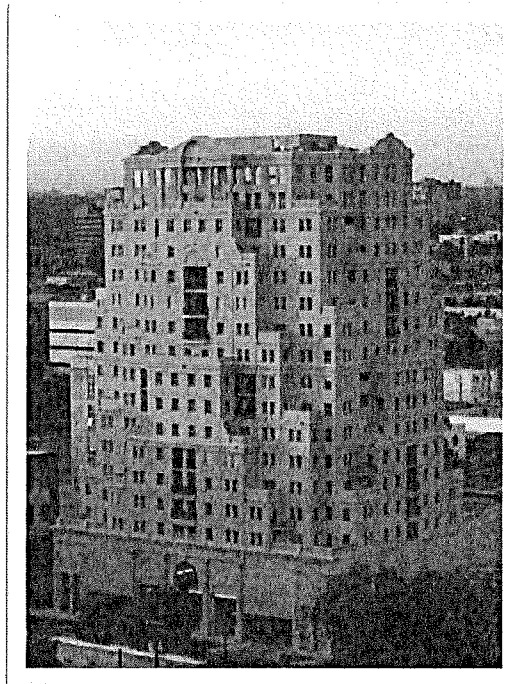


“Owners at the Prado love tracking our progress to become more energy efficient through smart efficiency upgrades. From 2014 to 2016 we cut the Prado energy bill by 38 percent, resulting in over \$50,000 in savings each year.”



**Nickie Greco,**  
CAM, CMCA®, AMS®  
Prado Community  
Association Manager

The Prado Condominiums’ energy costs were unexpectedly high when Nickie Greco took over management in 2015, so she decided to investigate energy saving measures. Her work has reduced The Prado’s electricity and gas costs from \$138,027 in 2014 to \$85,407 in 2016, **an incredible \$52,520, or 38 percent, in annual savings!** The building’s ENERGY STAR score has risen from 27 in 2014 to 67 as of October 2017.



*The Prado is located at 300 W 11<sup>th</sup> Avenue, in the heart of Denver’s Golden Triangle.*

The energy saving measures implemented by The Prado Condominiums include:

- **Lighting Upgrades** – Including LED lighting, motion sensors and dimmers. The estimated annual cost savings of \$16,164 will pay back the initial net cost of \$31,386 in just 1.9 years. Gexpro Energy Solutions and CES provided these lighting services.
- **Recommissioning.** The building systems were tuned up and optimized by MTech Mechanical. The measures include:
  - **Cooling Tower Motor and VFD** - Adding a Variable Frequency Drive (VFD) and motor package to the cooling tower provided more stability to the system and allowed set points to be added, providing a slower start to the system to meet water temperature needs. This \$10,015 initial investment is estimated to have led to \$19,500 in annual electricity savings.
  - **Set Points** - A control survey was performed on all aspects of the heating, cooling and ventilation systems. The investigation provided an in-depth understanding of the mechanical system’s set points, strengths and weaknesses. Adjustments were made to increase the efficiency of the equipment, reduce energy consumption and allow the equipment to operate at optimal levels.

- **Hot Water Storage Tank Insulation** – The hot water storage tank radiated enough heat to heat an entire two-story parking garage. Insulating the water tank reduced heat loss and lowered the tank’s energy usage.
- **Discovering and Servicing More than 30 Stand Alone Heaters** – Small heaters were previously installed in various locations above drops ceilings and in stairwells to help prevent the pipes from freezing in inclement weather. The heaters were set to run continuously year-round regardless of the temperature. All the heaters have now been serviced to function as efficiently as possible; they are turned off during the warmer months of the year and they have a temperature gauge to turn them on only when needed during the colder months.

**Energy Efficiency Measures’ Costs and Savings Summary:**

Project Name	Total Cost	Incentives / Xcel Rebates	Net Cost	Estimated Annual Savings	Simple Payback (Years)
Garage Lighting	\$13,913	(\$2,478)	\$11,435	\$3,163	3.6
Portico Lights	\$4,492	(\$1,445)	\$3,045	\$1,663	1.8
Hallway Lights	\$15,929	(\$6,388)	\$9,541	\$6,845	1.4
Elevator, Commercial Hallway, & Storage Lights	\$10,557	(\$3,192)	\$7,365	\$4,493	1.6
Recommissioning: Cooling Tower Motor VFD, Set Points	\$14,365	(\$4,350)	\$10,015	\$19,500	0.5



## Conservation Converts: Saint John's Cathedral Gets Rebates for Heating Upgrades



Our Xcel Energy representative and contractor were so diligent about explaining the process and getting the necessary information to file the rebate paperwork. I was really impressed with the level of customer service.

Tara Williams

Director of Finance and Administration

### Deferred maintenance

Maintenance needs fall down the priority list due to various circumstances — it happens to the best of buildings everywhere. At Saint John's Cathedral in Denver, a 104 year-old facility built when Denver was no more than a string of mining camps along the Platte river, the maintenance staff faced several issues. They needed to remove asbestos from under the cathedral and address boiler and steam trap problems. The boilers hadn't been touched in years. Mud inside steam traps and water bills that were higher than normal were clear indicators that things weren't operating efficiently. With a packed schedule full of church services, classes in the adjacent school and various activities hosted each week, slowing down wasn't an option.

The first order of business was obvious: begin collecting bids from contractors to get started on the repair process.

### A positive learning curve

The Department of Energy reports that heating and cooling can account for half of a building's utility bills. Cathedral staff knew they could be saving money. Through the process of selecting a contractor, Tara Williams, the Cathedral's Director of Finance and Administration and her staff learned that the energy efficiency work they were looking to complete was eligible for Xcel Energy rebates.

"Everyone who gave us bids told us there were dollars available, which helped us move the project up the priority list," says Williams.

Ultimately, they replaced 56 decades old steam traps and added pipe insulation. Both maintenance improvements were eligible for rebates and reduced the amount of energy they were wasting, which in turn reduced their overall usage and lowered their bill. The bonus is that they could now potentially invest the money saved into other efficiency work.



### Savings snapshot

Project	Replace 56 steam traps and add pipe insulation
Estimated project cost	\$22,000
Estimated annual energy savings	25,000 therms
Estimated annual cost savings	\$12,488
Xcel Energy rebate amount	\$8,450 (38% of total cost)
Payback term	Less than 2 years

"Those two steps made a big enough difference that we started thinking holistically about energy efficiency," says Williams.

Williams and her team decided to get an on-site energy assessment performed by Xcel Energy for a more comprehensive approach. An energy advisor conducted an audit of the facility and its energy use, and produced a detailed report including energy conservation opportunities with associated costs, paybacks, savings, and potential rebates.

"The assessment helped us create a priority list," says Williams, "and since the first round of repairs was mitigated by the rebates, it enabled us to do more work than we would have initially."

Williams was impressed with the entire process.

"Our Xcel Energy representative and contractor were so diligent about explaining the process and getting the necessary information to file the rebate paperwork," says Williams. "I was really impressed with the level of customer service."

Maintenance efforts paid off — the cathedral will save 25,000 therms of energy. According to the Environmental Protection Agency's Greenhouse Gas Equivalencies Calculator, that's the equivalent of taking 28 cars off the road.

### Rebalancing priorities

Now that they know the benefits of energy efficiency, Williams says they'll be more aggressive with their work.

"We're analyzing our entire system to extend the life of the boiler and make sure we're operating as efficiently as we can," Williams said.

She says the effort to use less energy aligns well with existing green initiatives like composting and recycling to reduce waste, and creating a community garden.

On the efficiency front, they're now looking at upgrading the lighting in office areas and in exit signs, as well as replacing an aging hot water boiler.

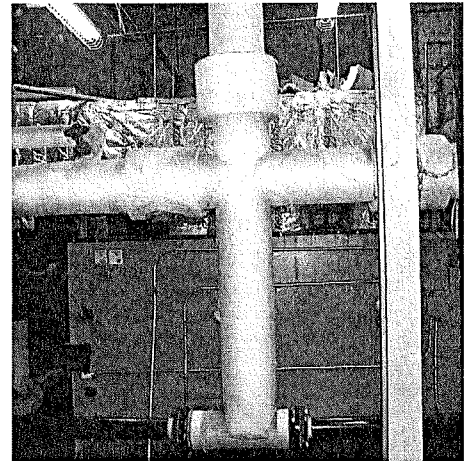
"We know the benefits of energy efficiency go beyond financial savings," says Williams. "It's also about being a responsible member of the community by lowering our environmental impact, which is important to us."

Other rebates available through Xcel Energy's Heating Efficiency program include:

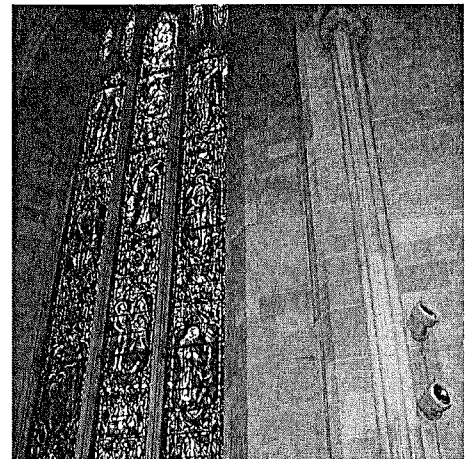
- Boiler and furnace installations
- Boiler tune-ups
- Water heaters
- Equipment improvement add ons — modular burner controls, outdoor air reset controls and stack dampers

### Learn how you can save energy and money with rebates from Xcel Energy.

Visit [xcelenergy.com/HeatingEfficiency](http://xcelenergy.com/HeatingEfficiency) or call our Business Solutions Center at 855.839.8862 to receive free energy efficiency advice.



*Pipe insulation makes the boiler operate more energy efficiently by allowing the pipes to better retain the hot-water heat.*



# Comfortable Kids, Higher Efficiency, Lower Bills

## BUILDING TUNE-UPS HELP DENVER PUBLIC SCHOOLS



“We knew something could be done that **wouldn’t have huge capital costs** because the equipment wasn’t old enough to need replacing.”

**JIM FAES**

Director of Sustainability,  
Denver Public Schools

### Comfort is key

Comfortable kids make better students. When Jim Faes, Director of Sustainability for Denver Public Schools heard that the students and staff at Castro Elementary School were sometimes too hot and sometimes too cold, he knew the building systems weren’t working the way they should. The building was too new to have problems, so he was determined to figure it out.

“The building had good bones,” Faes says. “We knew something could be done that wouldn’t have huge capital costs because the equipment wasn’t old enough to need replacing.”

With that, he set out to determine the best route to make his building perform at optimum levels.

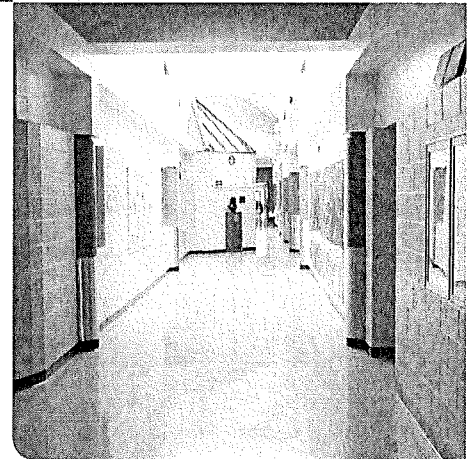
### Constant contact

He started with his Xcel Energy account representative, Melanie Gavin.

“We meet at least once a month to talk about different ways they can operate more efficiently,” explains Gavin. “In this case, it was obvious that a Recommissioning of the building was in order.”

With 150 schools in the Denver area, the school system is the largest in Colorado. Faes had worked with Gavin for years on various energy efficiency projects, including lighting, motors and heating and cooling equipment. When one project is completed, they use the rebates paid to invest in the next project, buying down the cost and improving the efficiency.

“Recommissioning is basically a tune-up of a building,” explained Gavin. “Many of the things we find are low-cost and no-cost fixes that will help bring the building back to an optimum performance level.”



The two-step process starts with a study of the building to determine where improvements can be made. The list of suggested measures is then given to the building manager, who chooses which items to implement. Xcel Energy funds a portion of the study to help offset the cost.

“The payback term for those low and no-cost measures is often less than five years,” Gavin explains. “We also offer rebates if they purchase new, higher-efficiency equipment, which further reduce their investment.”

Common areas reviewed in a typical Recommissioning study include:

Chilled Water Reset	Temperature Resets
DDC Controller Retrofit	VAV/VFD Retrofit
Airside Economizer	Lighting Control
Night Setback & Setup	Time of Day Scheduling
OSA Demand Ventilation	Pump VFD Retrofit
Supply Static Reset	Occupancy Scheduling
HVAC Equipment retrofits	Adaptive Controls
Energy Efficient Electric Motors	EMCS Control Strategies
Start Stop Optimization	Sub-Metering



At Castro elementary, the study identified several opportunities for energy savings including: a variable frequency drive retrofit and tune-ups for the chiller and air handling unit.

The energy savings in implementing these measures adds up to \$23,000 per year in electric savings and over \$1,000 per year in gas savings.

“It’s hard to argue against it because it makes good economic sense,” Faes says. “We’re the beneficiary of a higher performing building, a more comfortable building and reduced utility cost.”

The Castro elementary project received a rebate of \$10,900 for the study alone. If they choose to implement all of the recommended measures, they’ll get another \$37,095 in rebates. Another important factor Faes points out is the reduction in maintenance costs. He says that was just as important as the reduced energy use and operating costs.

### Grow more but use less

Faes is proud to report that though DPS is the fastest growing school district in the state of Colorado, with more students and more schools added over the last five years than other districts, their energy use has gone down. Gas consumption is down 16% and electricity use is down 3%. It’s all due to conservation initiatives and efficiency work.

Faes plans to continue to systematically identify and implement the Recommissioning process in the remaining buildings that perform poorly. His goal is to keep everyone comfortable, productive and focused on the primary purpose: education.

For more on Xcel Energy’s energy efficiency and rebate programs, please visit [xcelenergy.com/Recomm](http://xcelenergy.com/Recomm).