

**Green
Building
Alliance**

**ERIE 2030 DISTRICT
2020 PROGRESS REPORT**

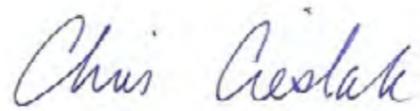
ERIE 2030 DISTRICT

This report celebrates the annual progress that Erie buildings have made toward reductions in energy use since the beginning of the Erie 2030 District in 2017.

Disruptions from COVID-19 revealed an important connection between buildings and community. Building design, construction, maintenance, and operations are intended to create safe and enjoyable spaces to gather—efforts which are often taken for granted. Our buildings provide spaces for us to meet, to work, to learn, and to live. Though the pandemic kept many of us from entering our buildings, it provided a unique opportunity for us to change how we engage with our community.

The change of leadership in the Erie 2030 District team during the pandemic meant building relationships virtually, quickly learning names and connections between partners throughout the Northwest region. Through intimate virtual Erie 2030 District Partner meetings and careful in-person visits, the community gave our new team a warm welcome. We hope to resume in-person events in Erie when it is safe to do so and continuing to strengthen our relationships with 2030 Partners virtually.

As we slowly reenter our commercial buildings, we do so with a new perspective and readiness for change. We look forward to emerging from this pandemic with a renewed respect for buildings and the professionals who build, operate, and maintain them. We look forward to a new era of creative solutions for prioritizing health in building operations. More than anything, we are grateful for our community of inspired leaders who promote and provide healthy, high-performing buildings.



Chris Cieslak
Vice President, Program Strategy & Impact
2030 District Senior Director



“

Guided by the collaborative support from GBA, our participation in the Erie 2030 District holds us accountable to a mission-aligned strategic commitment to the established energy and emissions goals.

”

Colin Hurley
Executive Director of Community Engagement
& Sustainability Manager
Mercyhurst University

A GROWING COMMUNITY OF EFFICIENT BUILDINGS

A strategic initiative of Green Building Alliance, the Erie 2030 District is an interdisciplinary private-public-nonprofit collaborative working to create a groundbreaking high performance building district. Buildings which have committed to the District strive to meet 50% reductions in energy use, water use, and transportation emissions from baselines. New construction and major renovation projects commit to the same water and transportation goals, while driving towards carbon neutrality.

The Erie 2030 District provides Partners the resources and technical assistance needed to own, manage, and develop high performance buildings. Partners can access a robust network of experts and information by leveraging Community and Resource Partners, Green Building Alliance members, and their local community of building professionals. These actions help keep Erie competitive and innovative and they reflect the collaborative nature of our region.

In 2017, Green Building Alliance began working with the City of Erie, Erie County, and a group of regional building owners to develop the Erie 2030 District. By the Fall of 2019, the District acquired enough Property Partners to officially become the 22nd Established 2030 District in the world. Currently, Erie has 17 Property Partners spanning public and private organizations that make up over 120 buildings and over 4.9 million square feet.

THE ERIE 2030 DISTRICT PROVIDES PARTNERS THE RESOURCES AND TECHNICAL ASSISTANCE NEEDED TO OWN, MANAGE, AND DEVELOP HIGH PERFORMANCE BUILDINGS.

2020 DATA

120 BUILDINGS COMMITTED

4.9M+ SQUARE FEET COMMITTED

13.0% ENERGY REDUCTION

\$2.1M DOLLARS SAVED

18M LBS OF CO_{2e} EMISSIONS AVOIDED



GLOBAL STRATEGY, LOCAL IMPACT

In 2019, building construction and operations accounted for 38% of global energy-related carbon emissions.¹ The 2030 District Challenge model sets specific reduction targets for buildings' energy and water use that aligns with the United Nations 2030 Agenda for Sustainable Development, a roadmap aimed to reduce carbon emissions in the built environment.

The Erie 2030 District follows the 2030 Challenge for Planning,² a framework created by Architecture 2030 to drastically improve buildings' environmental impact by 2030. New construction and major renovation projects commit to carbon neutrality by 2030, while existing buildings pursue 50% reductions in energy use below national baselines. Both new and existing buildings commit to 50% reductions in water use and transportation emissions below local baselines.

As part of the 2030 Districts Network, Erie joins the ranks of major cities such as New York City, Toronto, and Philadelphia, but has its own distinctive qualities. The Erie 2030 District represents a mid-sized city with a greater mix of property use types compared to its large metropolitan peers. These differences are something that should be celebrated and replicated. Expanding 2030 Districts to places like Erie provides education and promotes collaboration, while also introducing high performing building strategies across the country. The Erie 2030 District represents many mid-sized cities for whom taking action to increase the energy efficiency of their buildings can be transformational for the region.

MEASURING PERFORMANCE

The 2030 Challenge

To measure progress toward 2030 Challenge goals, the Erie 2030 District relies on comprehensive data collection and analysis. Individual property performance is aggregated to assess overall reductions in energy, water, and transportation emissions. For this year, the District has aggregated and is reporting on energy data, with local water and transportation baselines to be created in the future.

Each building's performance is determined by pairing contextual factors with metric-specific data.

Baseline & Performance Metrics

Determining a building's reduction in energy and water use requires an initial point of comparison, known as a baseline. Using the best available data, each building is assigned an initial baseline value, which considers various features depending on the metric. Unique use types, such as public event facilities, have custom baselines referencing their historic performance.

2030 CHALLENGE GOALS:
EXISTING BUILDINGS

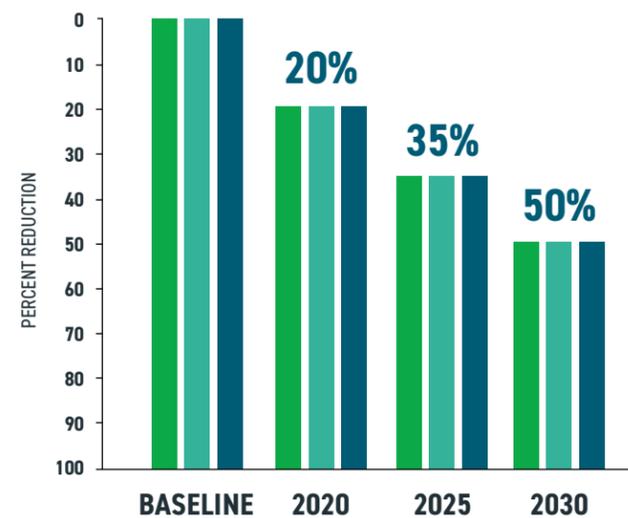


figure 1

2030 CHALLENGE GOALS:
NEW CONSTRUCTION & MAJOR RENOVATIONS

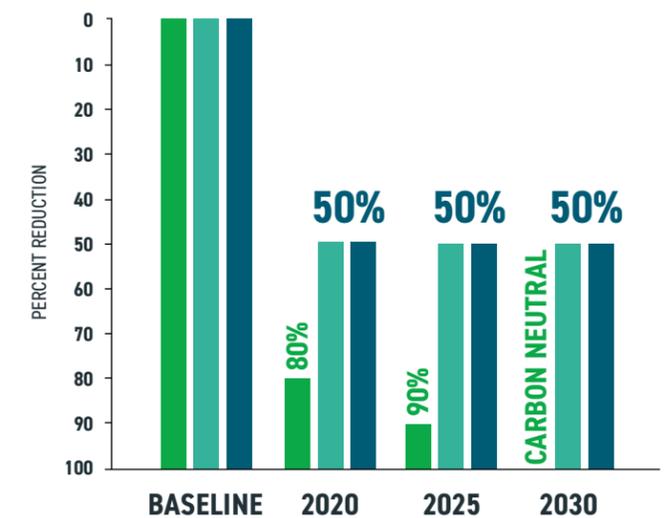


figure 2

ENERGY USE

WATER USE

CO₂ EMISSIONS FROM TRANSPORTATION

ENERGY BASELINE

BASELINE SOURCE 2003 Commercial Building Energy Consumption Survey (CBECS)

BASELINE CONSIDERATIONS

- Climate zone
- Building use type(s)
- Occupancy
- Weather

IMPACT METRICS Annual Weather Normalized Site Energy Use Intensity (EUI)

MEASUREMENT UNITS kBtu/square feet/year

TRACKING METHOD ENERGY STAR Portfolio Manager

REPORTING 2020 PERFORMANCE 60 buildings
3.7 million square feet

table 1

COVID-19 IMPACT

Some changes that arose from the pandemic are likely here to stay.

Though it is far too soon to predict the “new normal” of commercial building operations, below are some trends worth following.

Virtual work had been increasing in popularity for the past decade, and the COVID-19 pandemic further solidified this trend. The increase in remote work may cause changes to employee benefits, including the addition of utility bill reimbursement, but it will not change the need for collaborative office space.^{3,4}

COVID-19 has changed the conversation on common spaces and health in buildings. Indoor Air Quality was thrust into the spotlight as concerns surfaced regarding pathogen transmission through the air. The pandemic has forever raised the standards of air filtration and circulation, emphasizing high-performance ventilation, outdoor air exchangers, negative-pressure air handlers, and air sanitation strategies. These measures will benefit occupant health long into the future.⁵

Post-pandemic, there is a unique opportunity to promote safety, health, and efficiency in buildings. Implementing safety practices in buildings is an issue of equity, especially considering the cost-prohibitive measures required to safely operate community anchors like schools, senior centers, and churches.⁶ Federal legislation has been helping to fund these practices.

The March 2021 COVID-19 relief bill granted nearly \$170 billion to K-12 schools and colleges to install ventilation systems, purchase personal protective equipment, and implement social distancing practices to create smaller classes.⁷ Thoughtful distribution of funds can be used to reinvest in the health of buildings in neglected communities.^{8,9}

“THE PANDEMIC HAS FOREVER RAISED THE STANDARDS OF AIR FILTRATION AND CIRCULATION.”

ENERGY

A Year Unlike Any Other

In 2020, the Erie 2030 District reduced energy usage to 13% below the baseline, a slight increase from 14.8% in 2019. The District avoided over 8,000 metric tons of CO_{2e}* in 2020—equal to the emissions of over 740 homes.

The changes in energy use in 2020 are undoubtedly connected to COVID-19. Every use type was affected differently. Offices decreased energy use due to work from home policies, while energy use increased in healthcare because of the intensity and increase in patient loads, as well as the need for increased ventilation to help prevent transmissibility of the virus. Through analysis of the 2020 data, it was found that healthcare increased energy use by 4% whereas offices decreased 1–8%.¹⁰ Healthcare comprises a large portion of the Erie 2030 District’s square footage, and thus influenced the District’s marginal increase in energy use in 2020.

More than anything, the pandemic highlighted the importance of adaptable buildings. Partners expressed that buildings were not designed to be completely shut down. If only part of a building is occupied, often the entire building needs heated or cooled, and energy is wasted. Buildings with motion sensors, zoned mechanical systems, and demand-controlled ventilation that can adjust to changing occupancy are the way of the future.

*Carbon dioxide (CO₂) is the dominant greenhouse gas (GHG), but there are other GHG emissions such as nitrous oxide and methane. The value CO_{2e} standardizes all other GHG emissions to an equivalent amount of CO₂.

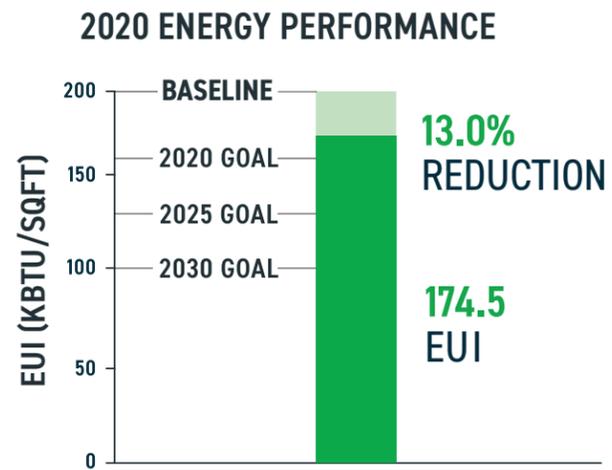


figure 3

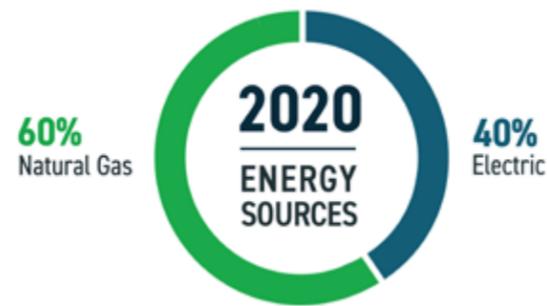


figure 4

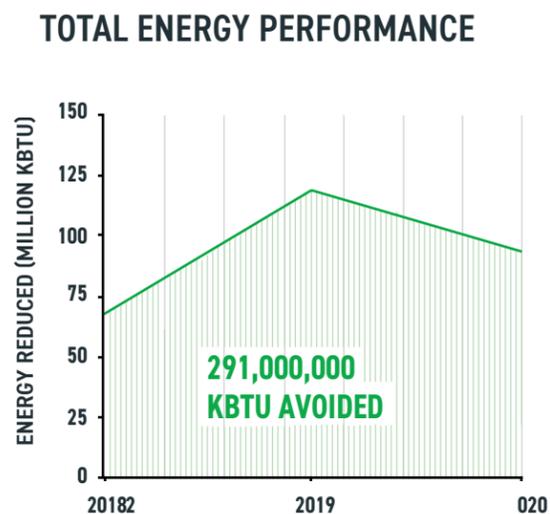


figure 5

73,000+
METRIC TONS CO_{2e} AVOIDED

\$5.8M+
DOLLARS SAVED

REDUCED TOTAL ENERGY USE BY
291M
KBTU

**CUMULATIVE
IMPACT**

SUSTAINABILITY LEADERS: THE BENEDICTINE SISTERS OF ERIE

Motivations:

Environmental stewardship, climate action, energy & cost savings

Social & Environmental Benefits:

Reduced greenhouse gas emissions, community education

Building Area Affected:

250,000 ft²

Project Team:

Sister Dianne Sabol, Director of Program and Facilities; Dan Welch, Building Maintenance; Sister Annette Marshall, OSB, Executive Director

What started as exploring a rooftop solar panel installation has evolved into an ongoing commitment to energy conservation throughout every building of the Benedictine Sisters of Erie. The Benedictine Sisters

are a founding Property Partner of the Erie 2030 District, embodying their call to environmental stewardship.

“We wanted to be a part of something that was going to make a big difference in Erie,” says Sister Annette Marshall about joining the District. “Big buildings have a huge carbon footprint, so we need to both do something and also model what can be done for others.”

Following an audit of their buildings, the Benedictine Sisters have focused their efforts on sealing the building envelope, installing efficient boilers, updating lighting, and educating the community on energy efficiency. They have pledged to cut their energy emissions by 2030 and become carbon neutral by 2050, a goal that aligns directly with the Paris Agreement.



Benedictine Sisters of Erie Neighborhood Art Center Building

COMMUNITY EXCELLENCE

A Legacy Of Environmental Stewardship: Kathy Dahlkemper

Throughout Kathy Dahlkemper’s eight years as Erie County Executive, she has striven to create a more vibrant Erie County for all residents. She created collaboration between county departments and community organizations and seized opportunities to bring sustainability initiatives to Erie County. Dahlkemper committed six County Government buildings to the Erie 2030 District and was a key player in bringing Commercial Property Assessed Clean Energy (C-PACE) to Erie County to provide commercial property owners low interest, long-term loans to finance energy efficiency, renewable energy, and water conservation projects.

Kathy Dahlkemper’s career has spanned local, state, and national positions of leadership. Dahlkemper was the first woman elected to represent Pennsylvania’s 3rd Congressional District in the U.S. House of Representatives in 2009 and has served in many national and state-wide leadership positions on issues of health, voting, women in politics, and sustainable economic development. Dahlkemper and her husband, Dan, live in the city of Erie and have five children and eight grandchildren.



Celebrating A Century: Tom Ridge Environmental Center

This year, the PA DCNR’s Tom Ridge Environmental Center (TREC) is celebrating 100 years of environmental education, research, and interactions between community and partner organizations.

To celebrate its anniversary, DCNR installed four electric vehicle (EV) charging stations throughout the 3,200-acre state park. Two are placed at the Tom Ridge Environmental Center, a silver certified LEED building, one at the marina, and one at Beach 8. Presque Isle is the 30th out of 120 PA state parks to introduce EV stations and is a part of DCNR’s initiative to meet the 2030 goals.



BRIGHT IDEAS: THE ERIE ART MUSEUM

Motivations:

Reducing energy, cost savings, technological innovation, ease of use

Social & Environmental Benefits:

Electricity use reduction, enhance guest experience

Building Area Affected:

82,000 ft²

Project Team:

Laura Domencic, Executive Director;
Kirk Oglevee, Manager of Facilities, IT, & Volunteer Coordinator

Erie Art Museum (EAM), one of the first LEED certified buildings in Erie, has embraced technological innovation to reduce their building’s energy consumption. The museum originally installed a building

automation system in 2010, but it needed significant and costly improvements. Using 63 occupancy sensors and wiring installed from the previous system, EAM updated its system with a Linux operating system using a QLC+ platform to measure environmental conditions and control lighting. Now lights are controlled via Bluetooth on a tablet and scheduled through Google Calendar.

“In order to have full control of our building’s energy consumption, we needed to monitor from a central point,” says Kirk Oglevee, the Manager of Facilities and the main designer of the new system. “The object is to integrate all data in the same network for machine learning to better track and predict building conditions in the future.”

The system also reports data on relative humidity, temperature, and CO₂, all which are essential for maintaining the art.



JOIN THE ERIE 2030 DISTRICT

A Network of Influence

The Erie 2030 District’s success stems from its close-knit and dedicated network of partners and sponsors. Partners are invited to bimonthly meetings that feature presentations from technical experts, service providers, and building owners which showcase successful projects. These sessions are framed through a regional lens in which Partners share best practices and challenges with other local public and private organizations. Partners gain direct access to policymakers, regional thought leaders, university researchers, and financial organizations.

Individual Technical Evaluations

GBA consults with Property Partners on a one-on-one basis to identify critical investments toward achieving their individual reduction targets. Partners receive a confidential annual performance report that analyzes their progress toward the 2030 Challenge goals. These reports highlight Partners’ current and former performance, while GBA staff provide context and ideas for specific building upgrades. Where possible, reports also compare a building’s performance to similar, anonymized local buildings.

Become a Property, Community, or Resource Partner

Distinguish your organization or school district by joining Erie’s most influential network of building owners and developers. Upon commitment to the 2030 Challenge goals, Property Partners gain access to technical meetings in addition to individualized property benchmarking and evaluation.



PARTNER ORGANIZATIONS

Community Partners:

Community Resilience Action Network of Erie (CRANE)
PA Sea Grant

Resource Partners:

Architecture 2030
Keystone Energy Efficiency Alliance (KEEA)



Green Building Alliance (GBA) advances innovation in the built environment by empowering people to create environmentally, economically, and socially vibrant places. GBA drives the market for healthy communities while equipping designers, manufacturers, developers, and policymakers to catalyze systemic change. GBA manages the Erie and Pittsburgh 2030 Districts, Pittsburgh being the largest 2030 District in North America. In 2019, GBA established Pittsburgh as the 2nd International Center of Excellence on High Performance Building in the world. GBA partners across Western Pennsylvania with strategic alliances including the Green Schools National Network, the United Nations, and the International Living Future Institute.

Property Partners:

Allegheny Health Network
Benedictine Sisters of Erie*
Cathedral of St. Paul**
City of Erie*
Emmaus Ministries Inc.*
Erie Art Museum
Erie City Mission*
Erie County*
First Presbyterian Church of the Covenant
Gannon University**
Mercyhurst University*
PA Department of Conservation and Natural Resources (DCNR)
PA Performing Artists Collective Alliance (PACA)
Professional Development Associates, Inc (Renaissance Center)
Sisters of St. Joseph of Northwestern Pennsylvania*
UPMC Hamot*
Whole Foods Cooperative

*Founding Property Partner

**Joined 2021



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