The Largest 2030 District in the World

The Pittsburgh 2030 District sets national standards for high performance building by committing landmark properties to 50% reductions in energy use, water consumption, and transportation emissions by 2030, while improving indoor air quality. As the largest 2030 District in the world, the robust network of 540 properties (representing more than 84.8 million sq ft) has saved $135 million and avoided over 1.2 million metric tons of CO$_2$ to date. In 2018, the District successfully integrated the 2030 Challenge into the City of Pittsburgh’s Climate Action Plan, while multiparcel sites like Hazelwood Green have voluntarily committed to 2030 Challenge goals.

The Pittsburgh 2030 District is a public-private partnership facilitated by Green Building Alliance (GBA).

Defining Standards for High Performance Building

The District drives market transformation by uniting 123 leading organizations in Pittsburgh’s high growth industries, creating unprecedented collaboration between sectors like healthcare, hospitality, higher education, and technology. Defined by Pittsburgh’s central business corridor, the District includes Downtown, the Northside, Oakland, and Uptown. In 2018, the District welcomed over 219 District Affiliates properties (representing 7 million sq ft) from across the region, building a broad coalition for change. GBA also successfully launched the Erie Emerging 2030 District, committing 51 buildings representing 2.5 million sq ft.
The Pittsburgh 2030 District is a founding member of the 2030 Districts Network, which connects 22 Established and two Emerging Districts around the world. Founded in 2012, Pittsburgh represents 18% of all committed square feet in North America, including Philadelphia, Seattle, and Toronto. The Pittsburgh 2030 District frequently advises cities pursuing building performance programs, and maintains a leadership position within the Network.

What are the 2030 Challenge Goals?
The Pittsburgh 2030 District follows the 2030 Challenge for Planning, a framework created by Architecture 2030 to drastically improve buildings’ environmental impact by 2030. With separate goals for new construction and existing buildings, the 2030 Challenge sets rigorous but achievable reduction targets in five-year increments. 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 regional baselines.

A Performance–Based Model
According to UN Environment, the urban built environment is responsible for 75% of annual global greenhouse gas emissions, while buildings alone account for 39%. In response, GBA adopted the 2030 District model, which sets specific reduction targets for buildings’ resource use. The 2030 Challenge aligns with the timeline outlined by the United Nations 2030 Agenda for Sustainable Development, in addition to key milestones in the Paris Climate Agreement. In 2017, Pittsburgh officially became a signatory to the Paris Agreement, while in 2019 Pennsylvania Governor Tom Wolf created the first state climate reduction goals based on the same timeline.

The model’s voluntary participation also stands in contrast to cities like New York and San Francisco, with mandated energy reductions written into building policy. While Pittsburgh has begun to include performance bonuses in individual neighborhood zoning, the city’s history of collaboration creates a strong network from which to advocate change. Property Partners, community organizations, utilities, designers, technology firms, and government officials find solutions to current obstacles, and ultimately realize tangible improvements regionwide.

As the largest privately-owned real estate development and services firm in Pennsylvania, Oxford Development has reduced energy and water costs across our entire portfolio with tools from the 2030 District. We remain on the cutting edge of sustainable technology, and continue to reach for increasingly advanced standards of performance.

STEVE GUY
PRESIDENT AND CEO
Oxford Development
To measure progress toward 2030 Challenge goals, the Pittsburgh 2030 District relies on comprehensive data collection and analysis, aggregating individual properties' performance to find District reductions in energy, water, and transportation emissions, in addition to improvements in indoor air quality. Each building's performance is determined by pairing contextual factors with metric-specific data, as reflected in Table 1. While property-level performance is held in confidence, the aggregate data set critically informs citywide policy and planning.

### 2018 PERFORMANCE

#### Baseline & Performance Metrics

Determining a building's resource reduction requires an initial point of comparison, known as the building's baseline. Using the best available data, each building is assigned an initial baseline value, which takes into account various features depending on the metric. In cases with specific use types, such as public event facilities, custom baselines are developed referencing documented past use.

**Baseline Type**

<table>
<thead>
<tr>
<th>ENERGY</th>
<th>WATER</th>
<th>TRANSPORTATION</th>
<th>INDOOR AIR QUALITY</th>
</tr>
</thead>
<tbody>
<tr>
<td>BASELINE TYPE</td>
<td>National Baseline</td>
<td>Local Baseline</td>
<td>Local Baseline</td>
</tr>
<tr>
<td>BASELINE CONSIDERATIONS</td>
<td>• Climate zone • Building use type(s) • Occupancy • Weather</td>
<td>• Building use type(s) • Building size</td>
<td>Location (Downtown or Oakland)</td>
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<tr>
<td>IMPACT METRIC</td>
<td>Annual energy use intensity (EUI)</td>
<td>Annual water use intensity (WUI)</td>
<td>Carbon emissions per person trip per year</td>
</tr>
<tr>
<td>MEASUREMENT UNITS</td>
<td>kBtu/square foot/year</td>
<td>Gallons/square foot/year</td>
<td>kgCO₂/person trip/year</td>
</tr>
<tr>
<td>TRACKING METHOD</td>
<td>ENERGY STAR Portfolio Manager</td>
<td>ENERGY STAR Portfolio Manager</td>
<td>2018 Make My Trip Count regional survey</td>
</tr>
<tr>
<td>REPORTING FOR 2018 PERFORMANCE</td>
<td>371 buildings, 74.5 million sq ft</td>
<td>295 buildings, 59.9 million sq ft</td>
<td>10% of Downtown and Oakland commuters</td>
</tr>
</tbody>
</table>
**ENERGY**

**A Cycle of Energy Reinvestment**

In 2018, properties improved their performance to 23.5% below baseline, surpassing the 2020 energy target set by the 2030 Challenge. With a combination of advanced energy efficiency and renewable energy purchasing, the District avoided 281,000 metric tons of CO2e, or the equivalent energy use of more than 25,000 homes. The more than $30.6 million in energy savings this year continue to be reinvested back into projects of all scales, including elevator retrofits, commissioning, and building automation system upgrades.

**WATER**

**Rising Water Rates Drive High Performance**

In 2018, Property Partners decreased water use to 18.6% below baseline, avoiding 267 million gallons of water. As with energy, the percent reduction does not capture the District’s complete impact. With 10 million sq ft of additional properties reporting, the District saved 33% more water than 2017.

The District’s water performance is particularly notable given the higher number of cooling-degree days in 2018. Unlike energy performance, District water use is not normalized for weather. There were 32% more cooling-degree days in 2018 than the prior year, requiring higher water use in cooling towers, which typically represent a sizeable portion of large buildings’ consumption.

**District Saves More than Double with Water Conservation**

Though the region has historically maintained a dependable watershed, significant increases in local water and sewage rates are compelling building owners to undertake sweeping conservation renovations. Organizations have implemented building-wide flush valve and fixture replacements, as well as larger investments in irrigation upgrades and stormwater reuse. As a result, in 2018 the District saved a combined $7.9 million in water costs, more than double the previous year’s savings. With rates expected to increase another 19% by 2020, properties will continue to find higher returns on investment for water reduction projects.

**Renewable Energy at the District Scale**

This year, the Pittsburgh 2030 District became the first in the world to capture districtwide renewable energy into performance calculations. Falling renewable energy prices and growing commitments to corporate social responsibility have led an increasing number of Property Partners to purchase 100% of their electricity from clean sources. In pursuing methodological accuracy, the District has begun to apply renewable energy purchases to total District reductions. This shift follows international trends toward district-scale energy procurement, and provides a clearer overview of collective savings. In 2018, Property Partners purchased more than 883 million kBtu of off-site renewable energy, representing 10% of all energy used. The District also partnered with Architecture 2030 to develop an updated baseline methodology, as reflected retroactively in Figure 5.

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**TOTAL WATER USE AVOIDED**

673,221,947 gallons

**TOTAL ENERGY USE AVOIDED**

9,689,751,373 KBTU
Over the last four years, the Make My Trip Count survey has been an extremely valuable data resource for the Port Authority, both as a way for us to share our accomplishments as well as a way for us to plan for the needs of our region’s bright future.

**Why Measure Transportation?**

The 2030 Challenge calculates transportation emissions by the reduction in CO₂. In Pittsburgh, vehicular traffic accounts for approximately 833,000 tons of CO₂, released into the atmosphere annually.⁵ As illustrated in Figure 8, the District’s emissions footprint is most greatly impacted by proximity to work and access to alternative transportation. Transportation also has an outsized impact on air quality, for which Pittsburgh has consistently ranked among the worst in the country.⁶ Through the release of chemicals like sulfur oxides, nitrogen oxides, and particulate matter, transportation is responsible for 18% percent of overall greenhouse gas emissions (about half of which is passenger vehicles) and 22% of the region’s air pollution.⁷

**Baselining Districtwide Change**

In 2018, the Pittsburgh 2030 District introduced a new transportation baseline for Oakland, creating a districtwide reference point to measure future emissions reductions. Compared to Southwestern Pennsylvania Commission’s modeling, the District measures the number of individual trips taken and their distance, in addition to transit modes used. Each ‘person trip’ is multiplied by emissions factors set by the Environmental Protection Agency, specifying the amount of CO₂ released based on vehicle class.

**A Diversity of Transportation Choices**

Based on the 2018 Make My Trip Count survey, Pittsburgh 2030 District Property Partners successfully reduced transportation emissions by 26%,⁸ surpassing the 2030 Challenge target for 2020. In 2018, nearly three times more workers chose to work from home, representing a 100% reduction in carbon emitted per trip. Equally of note, though driving alone remains the most common mode of commute, only 23% of drivers drive alone all the time, while 59% of people use public transportation at some point. Commuters’ choices avoided approximately 77,421,600 kilograms of CO₂.

**Mapping a Data-Driven Future**

Make My Trip Count has already directly informed critical infrastructure plans throughout Western Pennsylvania. Survey results shaped Pittsburgh’s Bus Rapid Transit plan, providing the basis for an additional line to Squirrel Hill. The data also provides the foundation for the City of Pittsburgh’s transportation demand management, while regional transportation authorities such as the Port Authority and Southwestern Pennsylvania Commission continue to incorporate the data into long-range transportation modeling.
In partnership with the University of Pittsburgh, the Pittsburgh 2030 District conducted a study on indoor air quality of eight buildings within the city. Of particular concern was the level of particulate matter (PM) in ambient air, identified by the Environmental Protection Agency and the World Health Organization to contribute to heart disease, upper respiratory infections, and several different types of cancer. The study tested PM levels in 16 interior and exterior locations within each site, then re-evaluated following the adoption of seven low-cost, minimally invasive actions, including the use of standalone air filters near emission sources, walk-off mats, window opening restrictions, no idling zones, and green cleaning programs, amongst others. Following these simple measures, the building reduced indoor PM concentrations by 79%, as illustrated by the decrease in indoor-to-outdoor particle ratio illustrated in Figure 11.

While some Pittsburgh 2030 District Partners have already implemented these practices, there is still significant opportunity for widespread adoption. For example, as shown from the results of a 2017 survey, only 65% of Partners’ buildings have walk-off mats in all entrances, while just over half have smoking bans near air intakes. Based on collected survey results, the District anticipates the release of a standard IAQ protocol in 2019.

The diversity of companies and organizations that make up the Pittsburgh 2030 District have helped us learn the best strategies to get creative with our sustainability plan.

ERIC BOUGHNER
CHAIRMAN
BNY Mellon Pennsylvania
158,000 POUNDS OF PM₁₀ AVOIDED

11M POUNDS OF SO₂ AVOIDED

1,283,000 METRIC TONS OF CO₂ AVOIDED

(CUMULATIVE TOTALS FROM 2012)

BUILDING FOR THE 21ST CENTURY

Building on Pittsburgh’s momentum, GBA launched the Erie Emerging 2030 District to catalyze the region’s post-industrial transition. Erie’s 2030 commitment competitively positions the city for economic growth, facilitating new investment to the region. Its 10 Property Partners will develop measurable strategies to overcome market barriers, while working toward aggressive sustainability goals. Explains Erie County Executive Kathy Dahlkemper, “The 2030 District not only recognizes those in Erie’s downtown who have made great strides in energy efficiency, it also positions those leaders as resources for others who have not yet made the same improvements. It reinforces that dynamic, collaborative environment that we are fostering in Erie County, while also helping to create a more vibrant, resilient downtown.”

The Pittsburgh 2030 District creates policies that transform the region’s development from its foundation. In 2018, the District successfully integrated the 2030 Challenge into the City of Pittsburgh’s Climate Action Plan, aligning performance targets with citywide commitments to energy reduction. Through the Uptown EcoInnovation District and Riverfront IV District zoning overlays, the District successfully linked development bonuses to measurable building performance for the first time in the city’s history.

$135 MILLION SAVED SINCE 2012

GBA also worked with some of Pittsburgh’s largest developers to create aggressive Institutional Master Plans. In collaboration with teams from the University of Pittsburgh, UPMC, and Duquesne University, staff developed measurable goals for energy and water use, transportation management, stormwater flows, green space, public art, and community engagement. As a result, the University of Pittsburgh requires all new developments to meet the rigorous 2030 Challenge, while UPMC has committed to aggressive energy targets in their newest project.

Accelerating Regional Transformation

The Pittsburgh 2030 District maps its advancement to Pittsburgh’s growth, incorporating transformative developments as they shape communities across the region. Following nearly a decade of focused recruitment, in 2018 the District launched the District Affiliate program, opening the 2030 Challenge to any development in Western Pennsylvania. District Affiliates represent pivotal leverage points in the broader regional market, and allow leading developers to commit their entire portfolio to reduction targets. The initiative has added over 219 properties (representing 7 million square feet) in strategic neighborhoods including Lawrenceville, the Strip District, and Hazelwood. While Affiliates’ performance is not factored into District reporting, properties continue to accelerate their progress through technical assistance and individual evaluations.

Catalyzing Economic Growth in Erie

1,000,000 METRIC TONS OF CO₂ AVOIDED

11M POUNDS OF SO₂ AVOIDED

(2012)
Engaging with peers in the industry has helped us realize how much there is to learn and improve, especially through the Partner Meetings. The commitment, leadership and resources that the 2030 District program brings are invaluable.

RIZWAN SYED
ENERGY MANAGER
Allegheny Health Network

Leveraging a Network of Influence
The Pittsburgh 2030 District’s effectiveness stems from its diverse network of partners and sponsors. Spanning more than 35 professional disciplines, this collaborative brings unprecedented transparency and connectivity to the city’s most influential sectors. Partners convene monthly in a closed-door meeting featuring presentations from technical experts, service providers, and building owners. The sessions provide space for peer inquiry and analysis, allowing partners to share challenges and best practices with market competitors. In more than 15 events throughout the year, partners also gain direct access to policymakers, utility companies, and financial organizations.

Individual Technical Evaluations
Beyond peer collaboration, Pittsburgh 2030 District Property Partners receive a confidential annual performance report that analyzes their progress toward 2030 Challenge goals. Reports can demonstrate the business case for key performance upgrades and present clear evidence to evaluate returns on investment. GBA works to consult with every Property Partner individually, identifying investments critical to achieving individual reduction targets. Where possible, reports also compare a building’s performance to similar, anonymized local buildings, and contextualize progress within relevant markets.

Become a 2030 District Affiliate
Distinguish your organization or school district by joining Pittsburgh’s most influential network of building owners and developers. Upon commitment to the 2030 Challenge goals, Property Partners gain access to closed-door technical trainings, in addition to individualized property benchmarking and evaluation. For companies outside District boundaries, any existing, newly constructed, or emerging property in Western Pennsylvania can now become a Pittsburgh 2030 District Affiliate. Affiliates commit to the same goals, while benefiting from the District’s network and expertise. Deduction totals are not included in overall calculations. Building professionals can also delve further into the 2030 Challenge through the quarter annual Bridge to 2030 educational series.
Green Building Alliance (GBA) advances innovation in the built environment by empowering people to create environmentally, economically, & socially vibrant places. As Pittsburgh’s founding authority on sustainable design, GBA drives the market for healthy communities while equipping professionals, policymakers, and educators to catalyze systemic change. GBA serves the 26 counties of Western Pennsylvania, with strategic partners across the world.

DISTRICT AFFILIATES
Allegeny County
AssGND Pittsburgh
A.W. Beattie Career Center
Butler Area School District
Chatham University
City of Pittsburgh
Environmental Charter School
Hazelwood Green
HIll House Association
Hart Technologies
Oxford Development
Pittsburgh Hot Sox
Reconstruction Church
Shade Side Academy
Waldorf School of Pittsburgh
Wendy Capital
YWCA

COMMUNITY PARTNERS
AIA Pittsburgh
Allegeny Conference on Community Development
Allegeny County Health-Department
Allegeny County, County Executive
Pittsburgh
AON Building
Bike Pittsburgh
Building Owners & Managers Association of Pittsburgh
Catharsis for Pennsylvania's Future
City of Pittsburgh, Office of the Mayor, William Peduto
Conservation Consultants, Inc.
Group Against Smog and Pollution
Healthy Ride
International Facility Management Association, Pittsburgh-Chapter
International Living Future Institute
Isaac Smith, LEED Green Associate, GPRO

PROPERTY PARTNERS
808 Penn Lofts
ALCO Parking
Allegeny Center Alliance Church
Allegeny County
Allegeny Health Network
ALSAB
Ansaldo STS
Arconic
Avenu
Belleville Presbyterian Church
Benedum Trees
Blind & Vision Rehabilitation
Benedum Towers
Benedum Trees
Bellefield Presbyterian Church
Avenu
Arconic
Allegheny Health Network
Church
Allegheny Center Alliance
808 Penn Lofts
YWCA
Waldorf School of Pittsburgh
Shady Side Academy
Resurrection Church
Oxford Development
Hill House Association
Hazelwood Green
Environmental Charter School
A.W. Beattie Career Center
ASCEND Pittsburgh
Allegheny County

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