PITTSBURGH 2030 DISTRICT PROGRESS REPORT

PITTSBURGH 2030 DISTRICT®
DOWNTOWN - OAKLAND

GREEN BUILDING ALLIANCE

2015

About the Pittsburgh 2030 District

The Pittsburgh 2030 District is an internationally recognized, locally driven, voluntary initiative that encourages business owners and facility managers in Downtown Pittsburgh and Oakland, a neighborhood of Pittsburgh, to work collaboratively toward aggressive 50% reductions in energy use, water consumption, and transportation emissions (below baseline) by the year 2030 – to save money and to increase each buildings' operational efficiency. Participants, who include Property Partners, Community stakeholders, and Resource organizations, are committed to the measured building performance goals of the 2030 Challenge. Part of an international 2030 Districts Network, the Pittsburgh 2030 District, which represents 438 buildings and over 68.2 million square feet of commercial real estate, is a public-private partnership convened by Green Building Alliance (GBA). Other local efforts, including "p4 Pittsburgh" and the Pittsburgh Climate Initiative, are considering alignment with 2030 District goals in order to meet the targets identified at COP21. In 2015, the Pittsburgh 2030 District received the International Downtown Association's (IDA) *Achievement Award for Economic and Business Development.*

The Pittsburgh 2030 District Progress Report

High performing buildings have proven track records of simultaneously increasing business and property profitability, enhancing real estate asset values, reducing environmental impacts, and improving occupant health. This annual Progress Report summarizes the Pittsburgh 2030 District's 2015 progress toward attaining the bold building performance goals pursued by its participants. The report includes the following:

- Overview of the Pittsburgh 2030 District property characteristics
- **Energy and water use reductions** for Downtown Pittsburgh and Oakland
- **Transportation emissions baseline** details and reductions
- Information on development of a District-wide **indoor air quality (IAQ)** protocol
- Updates on other Pittsburgh 2030 District efforts

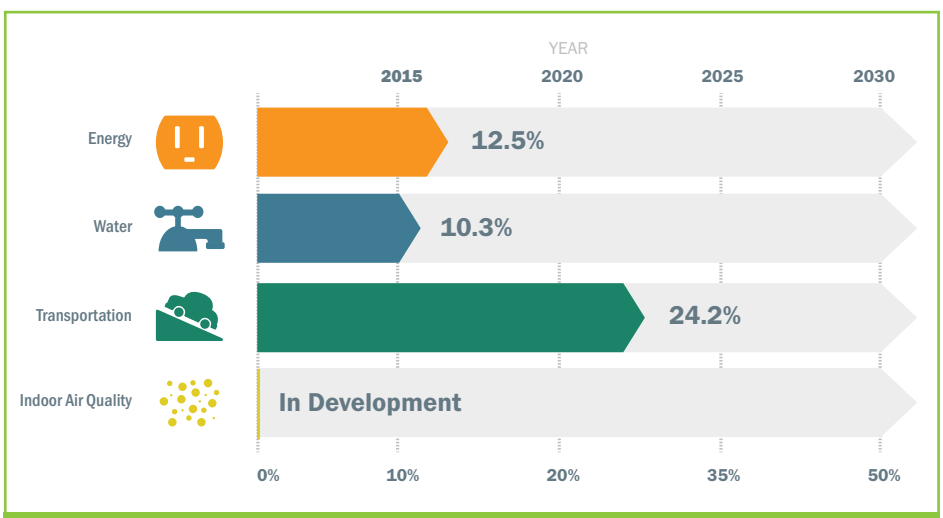


Figure 1. District progress as of year-end 2015

About GBA

Green Building Alliance (GBA) is a nonprofit organization that inspires the creation of healthy, high performing places for everyone. One of the oldest regional green building organizations, GBA was founded in 1993, was the first U.S. Green Building Council (USGBC) affiliate and is now a USGBC chapter. Headquartered in Pittsburgh and serving the 26 counties of Western Pennsylvania, GBA advances its mission through four primary initiatives: Pittsburgh 2030 District; Green & Healthy Schools Academy; Education, Outreach, and Technical Assistance; and Policy and Advocacy efforts.

BY THE NUMBERS

Commitments:

85
Property Partners

438
Committed Properties

68.2
Million Square Feet

44
Community and Resource Partners

45
One-on-One Meetings with Property Partners

32
Educational Events and Presentations

Performance:

69.0%
of the District committed (by square feet)

12.5%
Energy Reduction

10.3%
Water Reduction

24.2%
Transportation Emissions (CO_2) Reduction

EXECUTIVE SUMMARY

2015 was an exceptional year for the Pittsburgh 2030 District, adding 6.7 million square feet (including the early-2015 expansion into the Bluff), 57 buildings, 12 Property Partners, 3 Community Partners, and 2 Resource Partners to those already committed.

Property Partners are making great strides in achieving the aggregated step-down reduction goals, exceeding the 2015 target of -10% in energy, water, and transportation emissions. Total reductions snapshot:

- Energy: ↓ **12.5%** below baseline
- Water: ↓ **10.3%** below baseline
- Transportation Emissions: ↓ **24.2%** below baseline
- **438** Committed Properties
- **68.2** Million sq ft of Commercial Real Estate
- **85** Property Partners

The Pittsburgh 2030 District excelled in energy, water, and transportation emission reductions, showing significant improvements across the board. Meeting the 2020 energy reduction goal a full 5 years early, the Downtown boundary continues to implement energy strategies with tremendous impacts. Water reduction efforts are paying off, advancing toward the next target after reaching the 2015 goal last year. In its 2nd year of energy reporting, Oakland has already shown swift responsiveness to the opportunities available for savings. This report details water reduction numbers for Oakland for the first time; this new information will encourage Partners to implement both standard and innovative methods of reducing consumption.

We have ambitious goals for 2016, including exploration of a potential boundary expansion and continued recruitment of uncommitted properties. We continue to assist all buildings in understanding the many financial, educational, and environmental benefits of participation in the Pittsburgh 2030 District.

2030 Districts Network

The Pittsburgh 2030 District is part of a national network of city Districts called the "**2030 Districts Network.**" Originally formed by Architecture 2030, the 2030 Districts Network has been established to expand support for existing and emerging 2030 Districts, and is coordinating the effort to create and help interested cities to form Districts, linking District resources in cities across North America. In 2015, the Pittsburgh 2030 District became more actively involved in the 2030 Districts Network via one of six seats on the New Governance Task Force (NGTF).

The multi-purpose vision of the 2030 Districts Network is to:

- Identify, recruit, and support new cities to adopt the 2030 District model
- Onboard interested cities, moving each from "Emerging" to "Existing" Districts
- Activate peer exchange across Districts by storing and sharing information and data
- Leverage the aggregated purchasing power of the District partners to secure reduced costs for products and services

- Create national partnership relationships
- Influence national policy on energy efficiency, water use, and transportation infrastructure in the built environment

Across North America, **269 million square feet of real estate** have committed to a 2030 District. Over 68 million square feet, or 25% of the properties participating across all city districts, is in Pittsburgh. Given the Pittsburgh 2030 District's leadership among Established cities and strategic mid-Atlantic position, the Pittsburgh 2030 District frequently acts as a resource for other 2030 Districts, Emerging Districts, and cities interested in forming new 2030 Districts.

The Pittsburgh 2030 District Performance Measures

In addition to committing to specific energy, water, and transportation emission reduction goals, property owners and facility managers agree to share annual building performance information with the Pittsburgh 2030 District and GBA. Individual data is aggregated to provide this summary of District-wide progress toward each goal, with property-level specifics held in confidence.

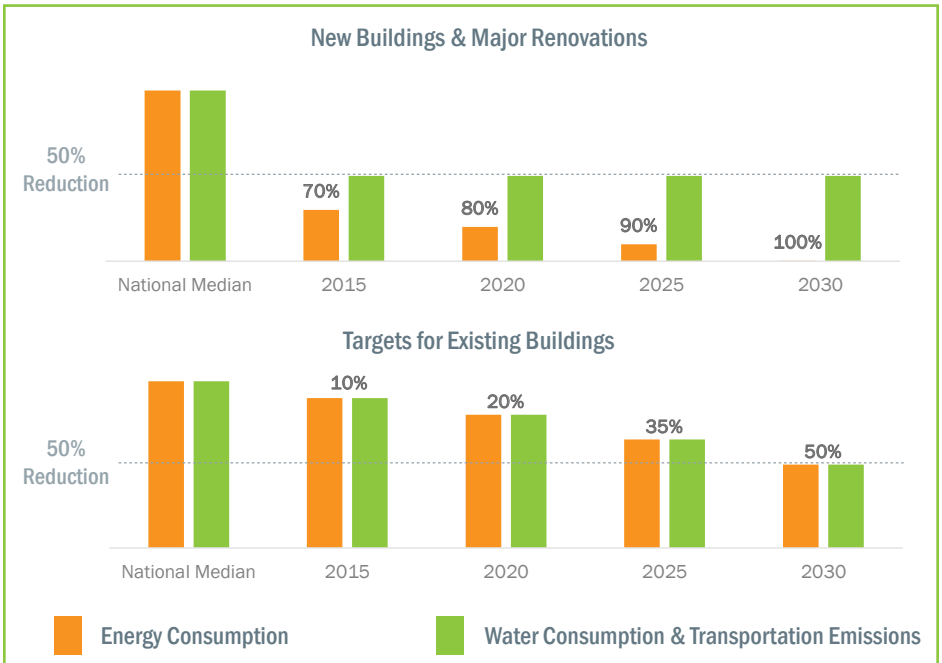


Figure 2. 2030 Challenge Goals

The Pittsburgh 2030 District is comprised of two boundaries - one in Downtown Pittsburgh and another in Oakland, a neighborhood of Pittsburgh, which are the second and third largest commercial business districts in the Commonwealth of Pennsylvania. These two boundaries include a potential total of 939 buildings or 98.4 million square feet. Figure 3 shows the number of committed buildings and square feet as compared to the entire District's potential.

2030 District Cities

The 2030 Districts Network consists of 12 Established Districts: Albuquerque, Cleveland, Dallas, Denver, Grand Rapids, Los Angeles, Pittsburgh, San Antonio, San Francisco, Seattle, Stamford, and Toronto. There are 5 additional Emerging Districts: Ann Arbor, Detroit, Ithaca, Portland (ME), and New York City.

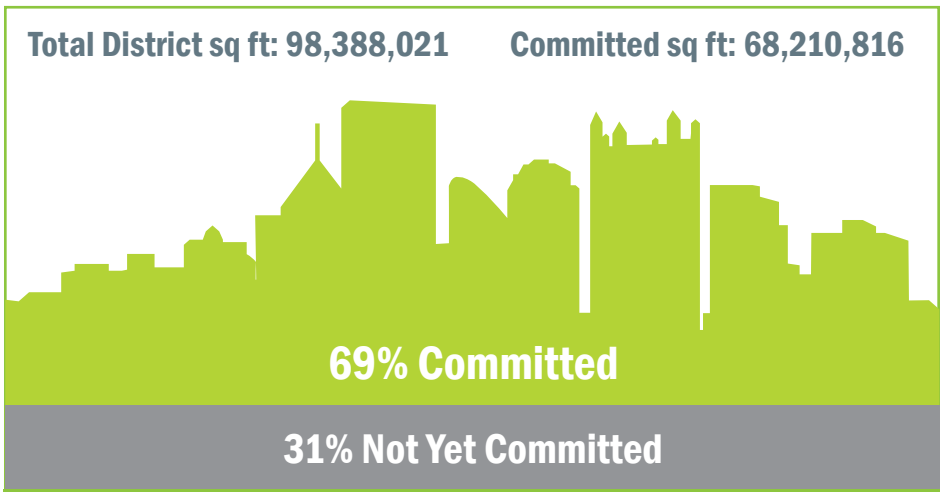


Figure 3. Square feet committed to 2030 District goals as of December 2015

The Pittsburgh 2030 District has over 25 distinct building use types, each with a unique energy and water use intensity baseline. Building use type is important for comparison between buildings and measurement of progress. For example, a hospital has a greater kBtu per square foot, which is its energy use intensity, or "EUI," than an office building, resulting in a higher EUI baseline for reduction. When looking at the two Pittsburgh 2030 District boundaries, building use type plays a significant role in where energy and water is most used. Figures 4 and 5 show the difference in building use type between the two boundaries.

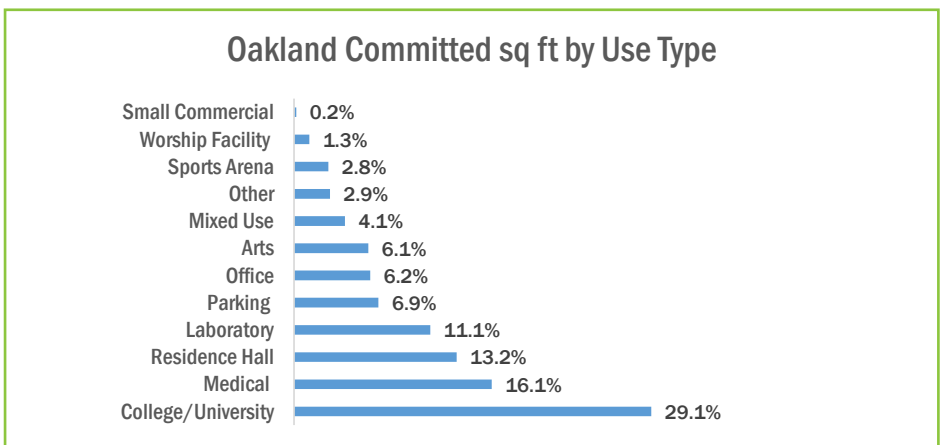


Figure 4. Oakland committed use types

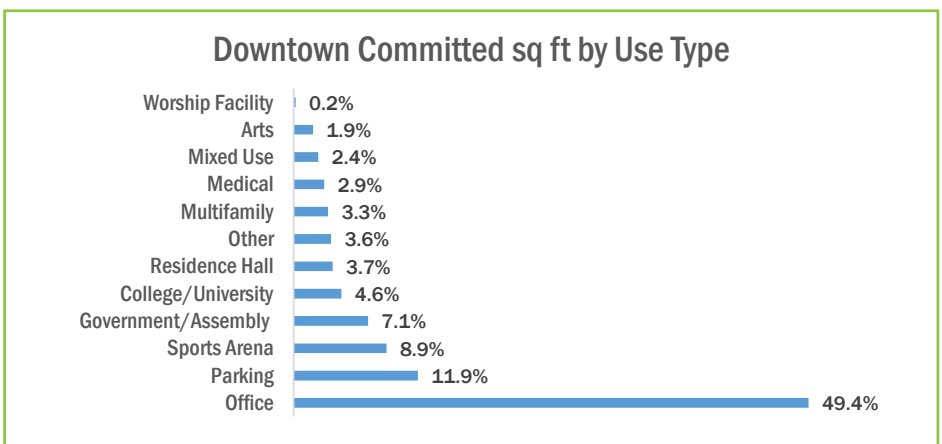


Figure 5. Downtown committed use types

Energy

The Pittsburgh 2030 District works with each participating Property Partner to establish a property-specific EUI baseline using EPA ENERGY STAR's Portfolio Manager and the 2003 Commercial Building Energy Consumption Survey (CBECS).[1] Each baseline is a measure of the national median average for that building use type, taking into account current use(s), operational characteristics, and Pittsburgh's climate zone.

For the 2015 performance year, 266 properties (57.7 million square feet) shared their annual energy consumption. Each property's total energy consumption was aggregated to provide the Pittsburgh 2030 District progress for 2015. The total reported square footage represents 85% of participating properties.[2]

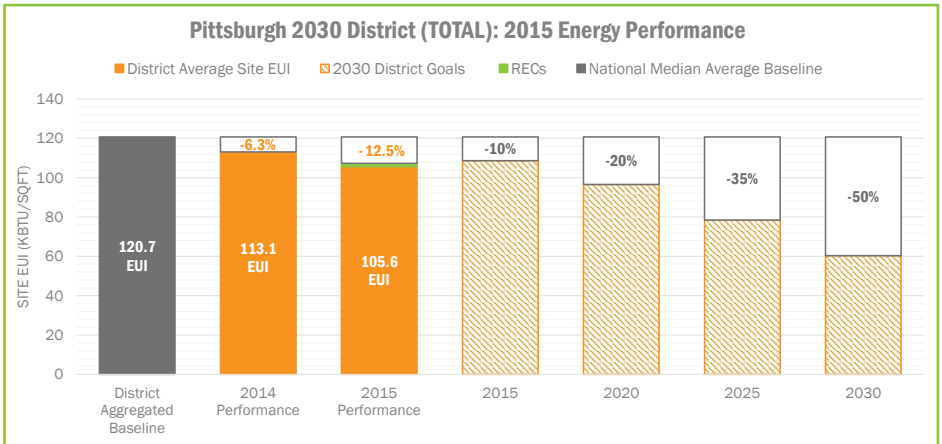


Figure 6.

Figure 6 summarizes the Pittsburgh 2030 District's 2015 progress toward its energy reduction goals. The District EUI is the total site energy consumption reported (6,093 million kBtu) divided by the total square footage of aggregated properties (57.7 million square feet). This results in an average site EUI of **105.6**, which represents a **12.5%** reduction from the baseline – **exceeding the 2015 reduction goal** of 10% and equivalent to 868 million kBtu avoided. Additionally, 11 Property Partners reported the purchase of Renewable Energy Certificates (RECs), accounting for 1.3% of the 12.5% energy reduction, or 93.6 million kBtu.

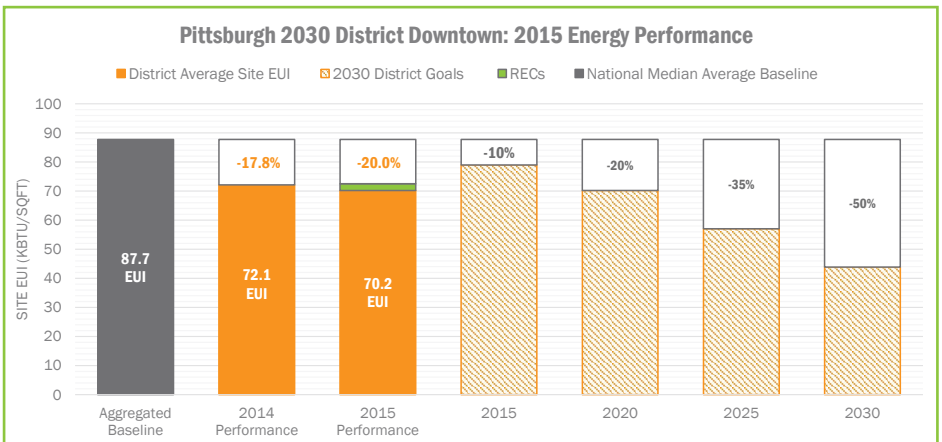


Figure 7.

Figure 7 illustrates Downtown's 2015 energy performance. In its 3rd year of participation, with 121 buildings submitting data, Downtown has surpassed the 2030 Challenge's incremental 2015 goals and achieved the 2020 goal with a reduction of 20% reduction below baseline.

Defining EUI and WUI

Just as cars gauge performance with mpg (miles per gallon) and baseball pitchers use ERA (earned run average), buildings can utilize Energy Use Intensity (EUI) and Water Use Intensity (WUI) as a performance metric. EUI and WUI each measure a building's annual energy or water use normalized by its gross square footage.

A snapshot of building performance over one year's time, EUI and WUI can help a building benchmark against itself and others, especially as improvements are made. The Pittsburgh 2030 District's energy baseline is the national median site EUI. Site energy is the amount of energy shown on a building's utility bills. The water baseline is based on Pittsburgh's historical consumption data and can also be found on the utility bills for a building.

Small Commercial

Nationally, 90% of commercial buildings are small (<50,000 sq ft) and consume 20% of all energy in the U.S.[3] Through a U.S. Department of Energy grant, GBA engaged 14 small commercial properties as Demonstration Partners, each of which targeted a 20% reduction in energy use in 2015.

Through these efforts, participants' experiences will be shared locally and with the national 2030 Districts Network to inform and inspire other small commercial properties here and across the country as they take measurable actions to become more energy efficient.

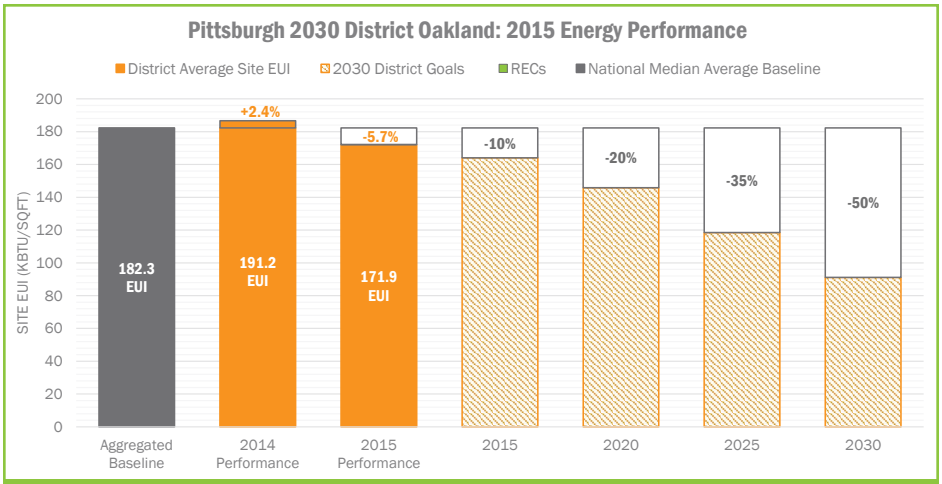


Figure 8.

Figure 8 demonstrates the Oakland boundary's 2nd year of energy reporting. 145 buildings are included in the aggregated District performance of 5.7% reduction below the baseline. With a significantly higher EUI baseline (due to building types in that boundary), Oakland has the potential for considerable energy reductions prior to 2030.

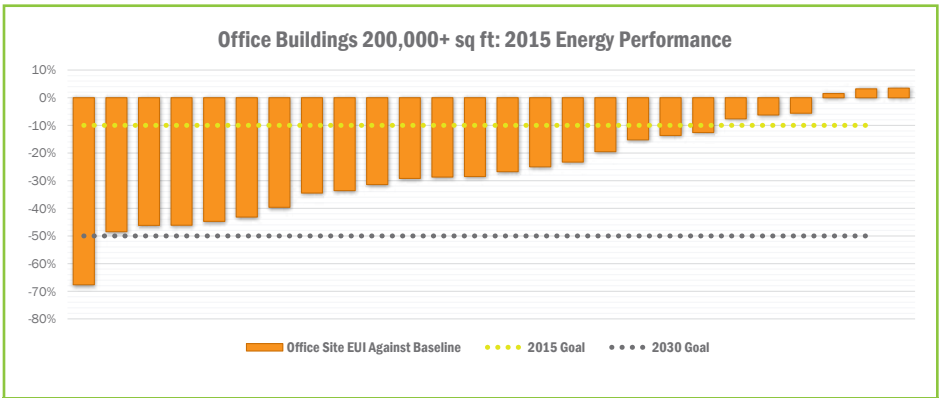


Figure 9.

Figure 9 illustrates that, as a group, large office buildings are making significant progress toward the 50% energy reduction goals. There are 26 office buildings larger than 200,000 sq ft (including government offices) reporting in the Pittsburgh 2030 District. As a cohort, large office properties are 28% below the baseline, with 77% operating at or below their 2015 reduction targets (-10%), and 62% beyond their 2020 energy reduction targets (-20%). Of the reporting large office buildings, 12% are performing above their national median average, indicating continued areas of opportunity for the Pittsburgh 2030 District efforts and education.

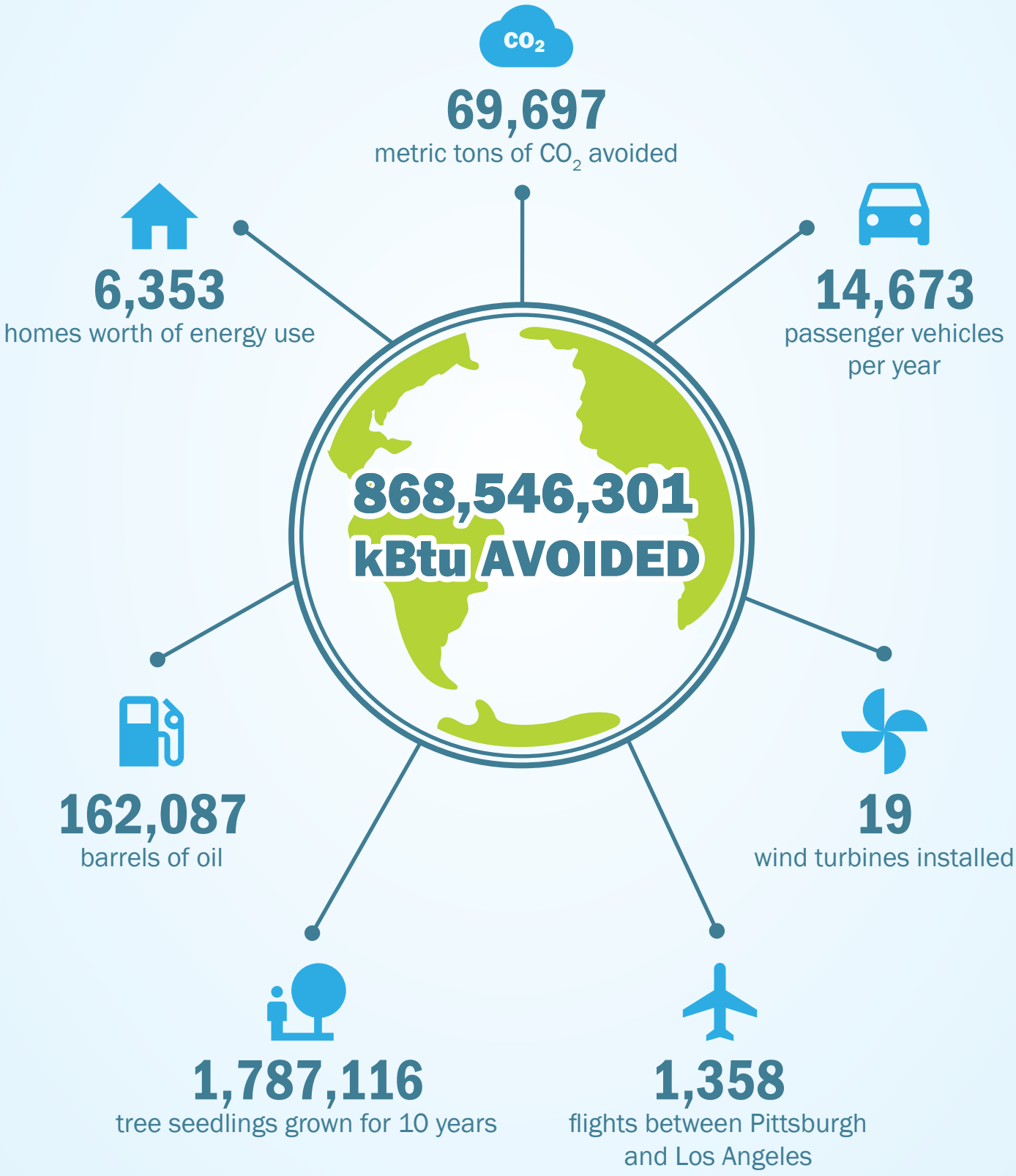
Property Partners

3609 Forbes Oakland Partners LP
(IGA on Forbes)*
808 Penn Lofts, LLC
ALCO Parking
Alcoa
Allegheny County
ALSAB, LP + Blush
Ansaldo STS
Bellefield Presbyterian Church
Benedum Trees
BNY Mellon
Braskem America
Bridgeside Point II – The Ferchill Group
Burns and Scalo
Carlow University
Carlyle Condominium*
Carnegie Library of Pittsburgh
Carnegie Mellon University
Carnegie Museums
Catholic Diocese of Pittsburgh
CBRE, Inc.
Central Catholic High School
City of Pittsburgh
Clayfisher Studios
Dollar Bank
Drs. Werrin & Gruendel PC*
Duquesne University
Epiphany R.C. Church
Fairmont Pittsburgh
First Presbyterian Church
Forwood Group
Gateway Towers Condominium
General Nutrition Centers
General Service Administration
Gidas Flowers*
Healthcare Trust of America
Henderson Brothers
Highmark
Highwoods Properties
Iron City Ventures
JDM Properties + Glenmore Ave Associates*
Jones Lang LaSalle

Kossman Development Co.
Meyer's Management
Mike Wu
Millcraft Investments
Murland Associates LLP
Neighborhood Legal Services*
Newmark Grubb Knight Frank
no wall productions & we do property management, inc.
Oakland Planning and Development Corp. (OPDC)
Oakland Real Estate Co.*
O'Loughlin Company
Osterling Business Partners
Oxford Development Company
Pittsburgh Allegheny County Thermal (PACT)
Penn Ave Renaissance
Peter's Pub
Phipps Conservatory and Botanical Gardens
Pittsburgh Athletic Association
Pittsburgh Cultural Trust
Pittsburgh Gateways
Pittsburgh Parking Authority
Pittsburgh Parks Conservancy
Pittsburgh Penguins
Pittsburgh Pirates
Planned Parenthood
PNC Financial Services Group
Point Park University
PSSI/Pittsburgh Steelers
Rodef Shalom Congregation
Soldiers & Sailors Memorial Hall & Museum Trust, Inc.
Specialty Luggage
Sports & Exhibition Authority of Pittsburgh & Allegheny County
St. Nicholas Greek Orthodox Cathedral
St. Paul Catholic Church
Tiversa
TREK Development Group*
University of Pittsburgh
UPMC
Western Pennsylvania School for Blind Children
Winghart's Whiskey & Burger Bar*
Winthrop Management LP
Wood Street Commons
WQED Multimedia
Wyndham Pittsburgh University Center

** Small commercial program participants*

The Pittsburgh 2030 District Energy Reduction Impact



City of Pittsburgh Performance Benchmarking Legislation

The City of Pittsburgh is formalizing legislation, anticipated in 2016, which will require energy and water benchmarking and public disclosure in non-residential buildings larger than 50,000 square feet, enabling building stakeholders and tenants to gain a better understanding of a building's performance. Implementation will begin with buildings in the City's portfolio, with other qualified buildings reporting in the following year. Buildings of all sizes are welcome to voluntarily participate. Benchmarking has several benefits:

- Improves energy performance and financial management at the building, district and city-wide levels
- Creates energy security by reducing stress on the energy grid during peak times
- Obtains higher rents and sales prices for high performing buildings
- Enables strategic decision-making and planning based on market transparency

Building owners will use the EPA's ENERGY STAR Portfolio Manager web site to report energy and water consumption. This online tool is already in use by the Pittsburgh 2030 District Property Partners to report the annual consumption and share their property's information. The Pittsburgh 2030 District can serve as a compliance mechanism for participating partners.

Water

Unlike energy, a national water use intensity, or "WUI," does not exist for the commercial building sector. Between 2012 and 2014, the Pittsburgh 2030 District worked with the Pittsburgh Water and Sewer Authority (PWSA) to establish a District water baseline for the Downtown boundary using historic water consumption information. In 2015, an Oakland-specific water baseline was developed and integrated into the existing Downtown water baseline, creating a localized Pittsburgh 2030 District water baseline.

In 2015, the Pittsburgh 2030 District finalized the water baseline for the entire District. GBA estimated that if all 939 buildings in the District were operating at baseline, the entire Pittsburgh 2030 District would use over 2 billion gallons of water annually. Additionally, WUI baselines for 15 different use types[4] were established for measured performance against the baseline.

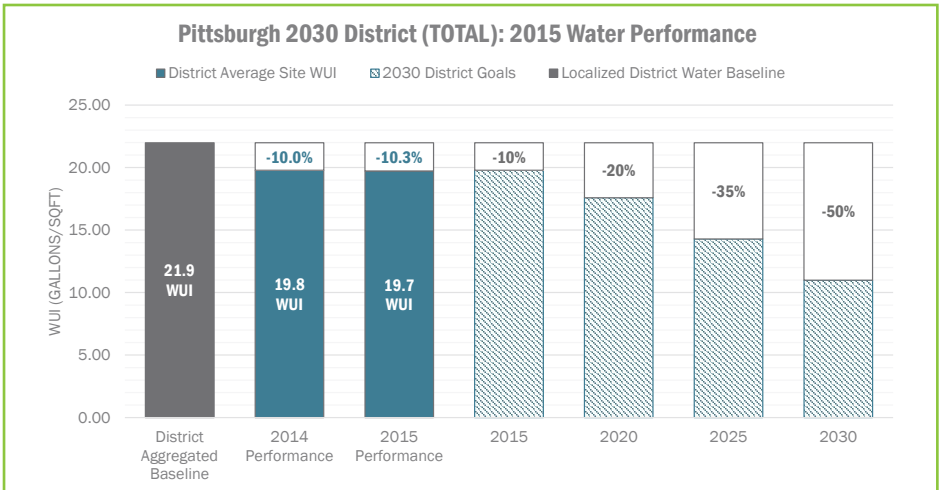


Figure 10

For the 2015 performance year, 177 properties representing 60% of committed square feet[5] shared annual water consumption. As shown in Figure 10, this results in a site WUI of **19.7**, representing a **10.3% reduction** below the baseline, equivalent to 624 homes annual water use.

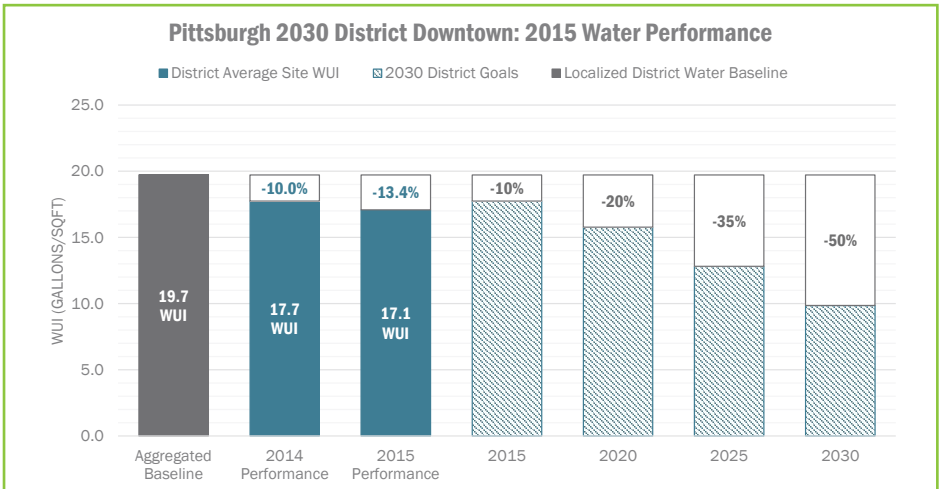


Figure 11

Figure 11 illustrates Downtown's 2015 water performance. In its 2nd year of water reporting, Downtown surpassed the 2030 Challenge's incremental 2015 goals with a reduction of 13.4% below baseline with 86 buildings contributing information on water consumption.

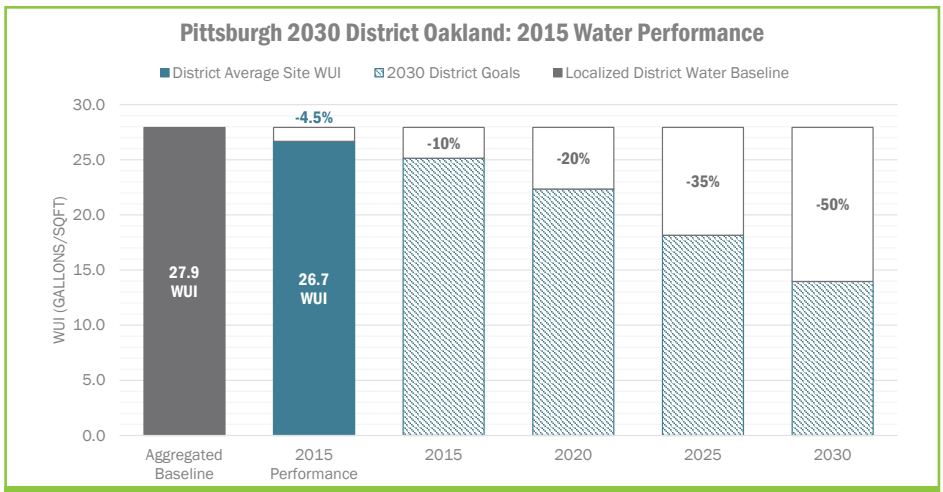


Figure 12.

Figure 12 demonstrates the Oakland boundary's 1st year of reported water consumption data; 91 buildings are included in the aggregated District performance of 4.5% below the baseline.

The Pittsburgh 2030 District is closely monitoring water use within both boundaries, especially given the water metering changes and challenges experienced in both Downtown and Oakland in 2015.

Transportation

In partnership with the Southwestern Pennsylvania Commission (SPC), GBA determined the Pittsburgh 2030 District transportation emissions baseline for Downtown Pittsburgh in 2015. The modeled baseline established an average mode split by person trips with associated air emissions from commuter transportation to and from Downtown Pittsburgh. SPC's "Regional Travel Demand Model,"[6] which estimates commuter trips into and out of the District's Downtown boundary from the 10-county Southwestern Pennsylvania region, specified air emissions impacts for each mode of transportation.

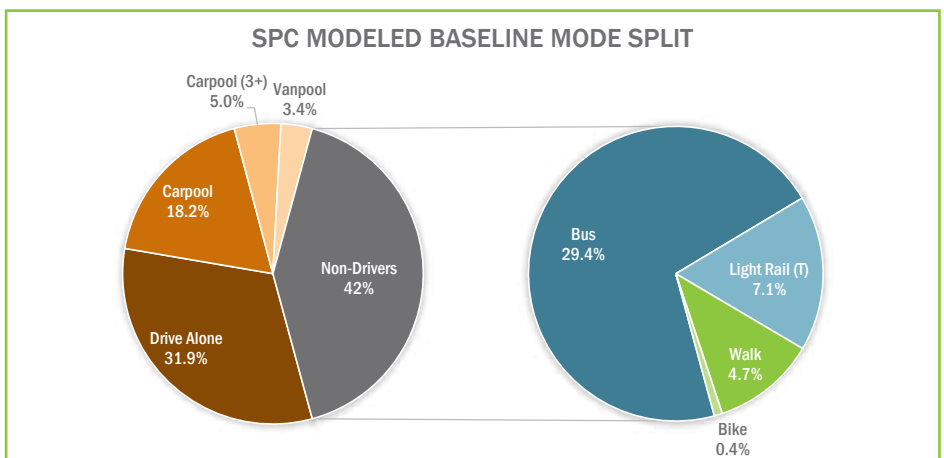


Figure 13.

The baseline mode split in Figure 13 represents over 6 million person trips and associated mode choices. It is important to remember that each mode has specific CO_2 emission levels, as depicted in Figure 14. For example, a single occupancy driver emits 4.5 kg of CO_2 per trip, whereas a person trip in a bus emits 1.6 kg of CO_2.

About Make My Trip Count

The *Make My Trip Count* (MMTC) commuter survey, conducted in September and October 2015 by GBA, the Pittsburgh 2030 District, and 10 other regional transportation stakeholders, asked respondents a series of questions related to zip code of residence, destination location, and mode(s) for making the commute to and from work or school. More than 20,710 responses were successfully completed and analyzed for measured performance against the modeled SPC baseline.

The MMTC commuter survey was imperative to determining the Pittsburgh 2030 District's transportation emission reductions. The SPC-modeled baseline serves as the measure from which the Pittsburgh 2030 District (Downtown boundary) will reduce transportation emissions in the form of CO_2 per person annually.

CO_2 Emissions by Mode

kg per person trips

Drive Alone	4.49
Carpool	3.61
Carpool (3+)	3.54
Vanpool	3.41
Light Rail (T)	2.05
Bus	1.58
Walk	0.00
Bike	0.00

Figure 14.

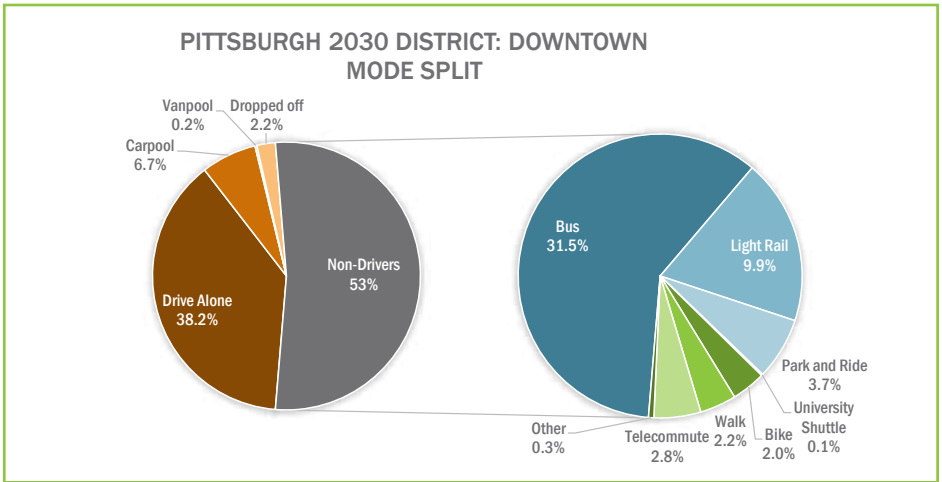


Figure 15.

The *Make My Trip Count* commuter survey recorded 9,598 Downtown responses, of which 7,801 responses are from buildings committed to the Pittsburgh 2030 District. These responses and associated trips determine the Pittsburgh 2030 District Downtown mode split, shown in Figure 15.

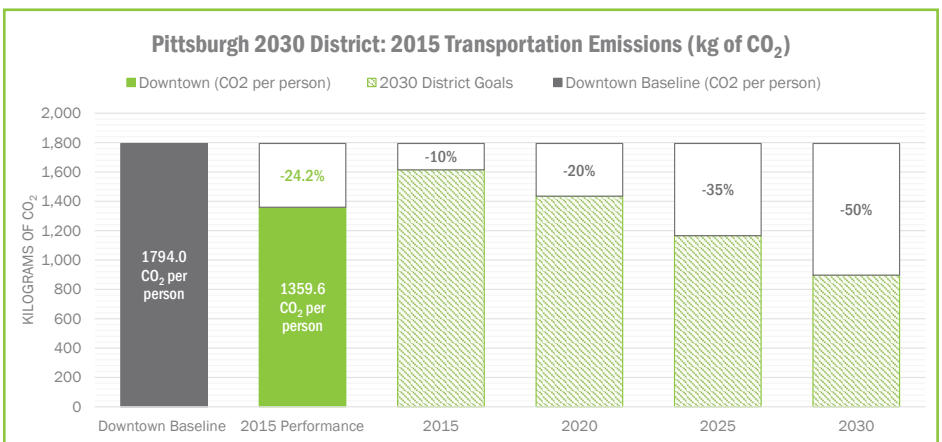


Figure 16.

For 2015, the Pittsburgh 2030 District is reporting emissions against the baseline for commuters traveling to Pittsburgh 2030 District Downtown committed buildings only. Figure 16 displays CO_2 emission reductions against the baseline, split by person trips annually. The Pittsburgh 2030 District Downtown boundary demonstrated a reduction of **24.2% below the baseline**, surpassing the goal set for 2020.

Pittsburgh Green Garage Initiative

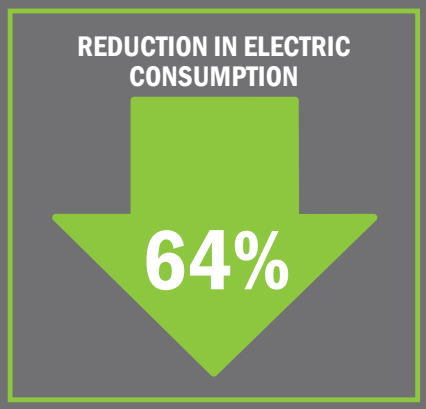
In 2014, the Sports & Exhibition Authority of Pittsburgh and Allegheny County (SEA) and the Stadium Authority of the City of Pittsburgh (SA) upgraded lighting in three parking garages: the North Shore Garage, the David L. Lawrence Convention Center Garage, and the West General Robinson Street Garage. The project was the catalyst to amend City codes that prevented the use of high-efficiency lighting and controls in parking structures.

The scope of work included:

- Retrofitting 1,356 existing fixtures with LED and motion-sensor controls
- Daylighting with photo sensors on perimeter fixtures
- Installing motion sensors in stairwells and restrooms

By the Numbers:

- $1,138,000: total project cost for three garages
- $206,920: Act 129 Rebates
- 64% reduction in electric consumption at the West General Robinson Street Garage[7]
- 3.5 year payback, estimated



Indoor Air Quality

To help address indoor air quality (IAQ) in District buildings, GBA and the Pittsburgh 2030 District partnered with the University of Pittsburgh's Mascaro Center for Sustainable Innovation to determine a standard protocol for IAQ measurement, tracking, and benchmarking. The goals of the IAQ pilot are to:

- Establish an IAQ baseline for individual buildings
- Evaluate both direct and indirect impacts of energy reductions on IAQ, which will include both changes to the characteristics of the building, and the life cycle energy impacts on regional outdoor air quality
- Develop IAQ goals and strategies for improvements in IAQ metrics

Six Pittsburgh 2030 District Property Partners participated in a 2014-2015 IAQ pilot, which included on-site testing, HVAC equipment evaluation, and follow-up recommendations for improvement. This approach supports development of a scalable IAQ protocol, which will be standardized for the entire Pittsburgh 2030 District, and will eventually be adopted by other 2030 Districts within the 2030 Districts Network worldwide.

The testing protocol was modeled on the EPA's *Building Assessment Survey and Evaluation*.[8] Each evaluation included a site visit, selection of a target study area and monitoring location, characterization and sampling of the building, and data analysis. An occupant satisfaction survey was also administered. Participants in the initial pilot program included academic, large office, nonprofit, and municipal government buildings. Testing will continue throughout 2016; the initial 6 pilot sites will be revisited, and new site evaluation will begin.

Value of the Pittsburgh 2030 District for Partners

Participation in the Pittsburgh 2030 District has quantifiable benefits for property developers, building owners, and facility managers:

- Demonstrated financial savings
- Increased property value with measurable return on investment
- Focused spending on smart, efficient improvements
- Competitive advantage and ability to attract valuable customers and tenants
- Improved employee productivity, comfort, and health
- Diversified marketing and PR opportunities
- Access to Partner-only meetings, events, and educational opportunities

All Partners receive invitations to bi-monthly Partner Meetings, which create an educational and collaborative environment where best practices are shared and connections are made. The Pittsburgh 2030 District provides Property Partners with centralized access to financing opportunities and incentives, reporting on building performance relative to the baselines, and confidential peer-facility comparisons, along with recognition of property participation in all publicized lists and maps.

To join the Pittsburgh 2030 District, email pittsburgh@2030districts.org.

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[1] U.S. Energy Information Administration (200). 2003 Commercial Building Energy Consumption Survey (CBECS), http://www.eia.gov/consumption/commercial/data/2003.*

[2] In addition, though they reported 2015 energy consumption to GBA, 21 reporting properties are not included in the summaries below for one of two reasons: 1) Inaccurate baseline due to nonstandard use type OR 2) Data inconsistencies (i.e., gaps in 2015 utility consumption, missing tenant information, or unavailability of all utility meters).

[3] U.S. Department of Energy. (2013). Energy Department Invests to Save Small Buildings Money by Saving Energy. www.energy.gov/articles/energy-department-invests-save-small-buildings-money-saving-energy. (SEE SMALL COMMERCIAL SIDEBAR)

[4] Green Building Alliance. (2015). the Pittsburgh 2030 District Water Baseline. February 2015. www.go-gba.org/pittsburgh-2030-district-releases-water-baseline-report.

[5] Though they reported 2015 water consumption to the Pittsburgh 2030 District, 34 reporting properties are not included in the summaries below for one of two reasons: 1) Inaccurate baseline due to nonstandard use type OR 2) Data inconsistencies (i.e., gaps in 2015 utility consumption, missing tenant information, or unavailability of all utility meters).

[6] Southwestern Pennsylvania Commission. (2016). "About Us." www.spcregion.org/about.shtml

[7] Results for the North Shore Garage and the DLCC Garage cannot be accurately calculated due to metering configuration and changes in occupancy.

[8] https://www.epa.gov/indoor-air-quality-iaq/building-assessment-survey-and-evaluation-study

Community Partners

AIA Pittsburgh
Allegheny Conference on Community Development
Allegheny County, County Executive, Rich Fitzgerald
ASHRAE - Pittsburgh
Bike Pittsburgh
Building Owners & Managers Association of Pittsburgh
Citizens for Pennsylvania's Future
City of Pittsburgh, Office of the Mayor, William Peduto
Conservation Consultants, Inc.
Design Center
Envision Downtown
Green Building Alliance
Group Against Smog and Pollution
Healthy Ride – Pittsburgh Bike Share
International Facility Management Association, Pittsburgh Chapter
International Union of Operating Engineers, Local 95
Master Builders Association of Western Pennsylvania
NAIOP Pittsburgh
Oakland Business Improvement District (OBID)
Oakland Planning and Development Corp. (OPDC)
Oakland Task Force
Oakland Transportation Management Association (OTMA)
Pennsylvania Environmental Council
Pittsburgh Climate Initiative
Pittsburgh Downtown CDC
Pittsburgh Downtown Partnership
Pittsburgh Green Innovators
Pittsburgh Parks Conservancy
Riverlife Pittsburgh
SmartPower
Student Conservation Association
Sustainable Pittsburgh
ULI Pittsburgh
VisitPittsburgh

Resource Partners

Architecture 2030
Duquesne Light
Encentiv Energy
Energlogics Networks
People's Natural Gas
Pittsburgh Allegheny County Thermal (PACT)
Pittsburgh Water & Sewer Authority
Southwestern Pennsylvania Commission
Urban Redevelopment Authority of Pittsburgh

COMPILED BY:

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