What is the Philadelphia 2030 District?
Philadelphia 2030 District

- Energy
- Water
- Transportation
- Stormwater

- Dollars
- Carbon emissions
- Air quality
- Comfort
- Resilience
District Network

22 established districts and growing

philadelphia

pittsburgh

ithaca

cleveland

san francisco

detroit

lorie

grand rapids

san antonio

arabqueque

ann arbor

stamford

portland

dallas

tucson

burlington

seattle

san diego

nyc
2030 Challenge for Planning
Existing Buildings

- Reduction
- Energy Consumption
- Water Consumption
- Transportation Emissions
- Stormwater

*Transportation emissions reductions will be shared in a future report.

*Districtwide Greened Acres.
2030 Challenge for Planning
New Construction & Major Renovations

- Reduction
- Energy Consumption
- Water Consumption
- Transportation Emissions
- Stormwater

*Using no fossil fuel GHG-emitting energy to operate

*Districtwide Greened Acres.

<table>
<thead>
<tr>
<th></th>
<th>2020</th>
<th>2025</th>
<th>2030</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reduction</td>
<td>80%</td>
<td>90%</td>
<td>50%</td>
</tr>
<tr>
<td>Energy Consumption</td>
<td>50%</td>
<td>50%</td>
<td>50%</td>
</tr>
<tr>
<td>Water Consumption</td>
<td>50%</td>
<td>50%</td>
<td>50%</td>
</tr>
<tr>
<td>Transportation Emissions</td>
<td>80%</td>
<td>50%</td>
<td>50%</td>
</tr>
<tr>
<td>Stormwater</td>
<td>80%</td>
<td>50%</td>
<td>50%</td>
</tr>
</tbody>
</table>

CARBON NEUTRAL*

100 GREENED ACRES*
The goals of the Philadelphia 2030 District are more nuanced than simply a percent reduction by the initiative’s end date. Each metric area has its own data source, baseline, and means of measurement. Detailed baseline and measurement guidance documents can be found on our website.
Why Philadelphia?
Challenge: Reduce Carbon Emissions in Philadelphia

Sources of Carbon Emissions in Philadelphia

- 79% Buildings and Industry
- 17% Transportation
- 3% Waste

Citywide Goal: 80% Reduction in Citywide Carbon Emissions by 2050
Energy Benchmarking

- 320+ Million Square Feet
- 2700+ Buildings Reported
- Represents 20% of total citywide square footage
- 55 Median Energy Star Score
- 85% Compliance Rate

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Who’s involved?
Partner Type

PROPERTY PARTNERS
Building owners and/or managers that commit property to meet the district goals. Must constitute at least 40% of district participants.

COMMUNITY PARTNERS
Government, non-profit and civic organizations that provide support and expertise for the district.

RESOURCE PARTNERS
Energy services companies, utilities, and professional firms that provide expertise, deliver services, and sponsor the district.
District Participation

23,255,664 total square feet committed to the district

17.3% total square feet of eligible buildings in district committed

49 committed buildings from 17 property partners
How are we doing?
Progress Toward Goals

*Districtwide Greened Acres.

• 2030 District Goals
How are partners meeting the goals?

- Property Partners are meeting the goals of the Philadelphia 2030 District through:
  - sophisticated operations,
  - robust tenant engagement,
  - and strategic investments in conservation and efficiency
Energy
## Energy Metric

<table>
<thead>
<tr>
<th>Baseline Type</th>
<th>National Baseline</th>
</tr>
</thead>
<tbody>
<tr>
<td>Baseline Source</td>
<td>2003 Commercial Building Energy Consumption Data</td>
</tr>
</tbody>
</table>
| Baseline Considerations | • Climate zone  
                          • Building use type(s)  
                          • Occupancy |
| Goal Metric         | Annual Site Energy Use Intensity (EUI) |
| Metric Units        | kBtu/square foot/year |
| Performance Level   | Individual building-level goal |
| Tracking Method     | ENERGY STAR Portfolio Manager |
| Reporting 2019 Data for 2020 Annual Report | • 46 Buildings  
                                           • 20,170,675 Sq ft |
### Energy Progress

#### Districtwide Performance

<table>
<thead>
<tr>
<th>Metric</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Site EUI Reduction from Baseline</td>
<td>↓ 30.7%</td>
</tr>
<tr>
<td>kBtus Avoided</td>
<td>707,863,356</td>
</tr>
<tr>
<td>Metric Tons of Avoided Carbon Dioxide Equivalent</td>
<td>68,312</td>
</tr>
<tr>
<td>Cost Savings</td>
<td>$16,794,638</td>
</tr>
</tbody>
</table>
Aggregate Energy Reduction

- Baseline: 114.4
- 2020 Goal: 91.5
- Current: 79.3
- 2030 Goal: 57.2
Energy Reduction By Property

- Properties performing better than baseline
- Properties performing worse than baseline

2020 Goal
2030 Goal
## Annual Changes to Property-Level Energy Reduction

<table>
<thead>
<tr>
<th>Buildings exceeding the 2030 Goal (50%+ reduction from baseline)</th>
<th>2017</th>
<th>2018</th>
<th>2019</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>6</td>
<td>7</td>
<td>8</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Buildings exceeding the 2020 Goal (20%-49% reduction from baseline)</th>
<th>2017</th>
<th>2018</th>
<th>2019</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>16</td>
<td>14</td>
<td>18</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Buildings performing above baseline (0%-19% reduction from baseline)</th>
<th>2017</th>
<th>2018</th>
<th>2019</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>5</td>
<td>8</td>
<td>7</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Buildings performing below baseline</th>
<th>2017</th>
<th>2018</th>
<th>2019</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>13</td>
<td>16</td>
<td>13</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Total buildings reporting</th>
<th>2017</th>
<th>2018</th>
<th>2019</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>39</td>
<td>43</td>
<td>46</td>
</tr>
</tbody>
</table>
Meeting the Goals

**Improved building performance:**
- lowers operational costs,
- improves indoor air quality and tenant comfort,
- and enhances resilience to the effects of climate change.

**Strategies to meet goal:**
- Existing buildings
  - Benchmark energy use
  - Conduct an audit or retrocommissioning
  - Take advantage of rebates and incentives
- New construction
  - Design your building to meet the 2030 Challenge for Planning goals
  - Take advantage of rebates and incentives
Water
## Water Metric

<table>
<thead>
<tr>
<th>Baseline Type</th>
<th>Local Baseline</th>
</tr>
</thead>
<tbody>
<tr>
<td>Baseline Source</td>
<td>2016 Philadelphia Citywide Benchmarking Data</td>
</tr>
<tr>
<td>Baseline Considerations</td>
<td>• Building use type(s)</td>
</tr>
<tr>
<td>Goal Metric</td>
<td>Annual Water Use Intensity (WUI)</td>
</tr>
<tr>
<td>Metric Units</td>
<td>gallons/square foot/year</td>
</tr>
<tr>
<td>Performance Level</td>
<td>Individual building-level goal</td>
</tr>
<tr>
<td>Tracking Method</td>
<td>ENERGY STAR Portfolio Manager</td>
</tr>
<tr>
<td>Reporting 2019 Data for 2020 Annual Report</td>
<td>• 45 Buildings • 22,432,772 Sq ft</td>
</tr>
</tbody>
</table>
# Water Progress

## Districtwide Performance

<table>
<thead>
<tr>
<th>Metric</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reduction Districtwide</td>
<td>29.1%</td>
</tr>
<tr>
<td>Gallons of Water Avoided</td>
<td>145,547,683</td>
</tr>
<tr>
<td>Cost Savings</td>
<td>$566,180</td>
</tr>
</tbody>
</table>
Aggregate Water Reduction

- 23.6 (Baseline)
- 18.9 (2020 Goal)
- 16.8 (Current)
- 11.8 (2030 Goal)
Water Reduction (WUI) By Property
## Annual Changes to Property-Level Water Reduction

<table>
<thead>
<tr>
<th></th>
<th>2018</th>
<th>2019</th>
</tr>
</thead>
<tbody>
<tr>
<td>Buildings exceeding the 2030 Goal</td>
<td>9</td>
<td>12</td>
</tr>
<tr>
<td>(50%+ reduction from baseline)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Buildings exceeding the 2020 Goal</td>
<td>10</td>
<td>13</td>
</tr>
<tr>
<td>(20%-49% reduction from baseline)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Buildings performing above baseline</td>
<td>5</td>
<td>10</td>
</tr>
<tr>
<td>(0%-19% reduction from baseline)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Buildings performing below baseline</td>
<td>15</td>
<td>10</td>
</tr>
<tr>
<td>Total buildings reporting</td>
<td>39</td>
<td>45</td>
</tr>
</tbody>
</table>
Meeting the Goals

Using water efficiently in a building results in both:
• direct operational cost savings,
• and related energy savings.

Strategies to meet goal:
• Existing buildings
  • Benchmark water use
  • Take advantage of existing resources
• New construction
  • Use existing beyond-code resources to design your building to meet the 2030 Challenge for Planning goals
Transportation Emissions
# Transportation Emissions Metric

<table>
<thead>
<tr>
<th>Baseline Type</th>
<th>Local Baseline</th>
</tr>
</thead>
<tbody>
<tr>
<td>Baseline Source</td>
<td>2006-2010 Census Transportation Planning Products Program (CTPP) Data with Delaware Valley Regional Planning Commission (DVRPC) Distance Matrix Data</td>
</tr>
</tbody>
</table>
| Baseline Considerations | • Origin and destination  
                          • Longest traveled mode  
                          • Local emissions factor by mode |
| Goal Metric         | Carbon Emissions Per Commuter Per Year                                        |
| Metric Units        | \( \text{kgCO}_2/\text{commuter/year} \)                                      |
| Performance Level   | District-wide goal of 591 \( \text{kgCO}_2/\text{person/year} \)              |
| Tracking Method     | Updated CTPP and DVRPC Distance Matrix Data and Future District Survey         |
| Reporting 2019 Data for 2020 Annual Report | Districtwide commuter data |
## Transportation Emissions Progress

<table>
<thead>
<tr>
<th>DISTRICTWIDE PERFORMANCE</th>
</tr>
</thead>
<tbody>
<tr>
<td>☑ 12.8% Reduction from Baseline</td>
</tr>
</tbody>
</table>
Aggregate Transportation Emissions Reduction

- Baseline: 1,181 kg CO2/person/year
- Current: 1,030 kg CO2/person/year
- 2020 Goal: 945 kg CO2/person/year
- 2030 Goal: 591 kg CO2/person/year
# Emissions Factors by Mode

<table>
<thead>
<tr>
<th>Mode</th>
<th>lbs CO$_2$e per PMT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Single-occupancy vehicle</td>
<td>.96</td>
</tr>
<tr>
<td>Carpool</td>
<td>.96/occupant number</td>
</tr>
<tr>
<td>Bus</td>
<td>.64</td>
</tr>
<tr>
<td>Subway</td>
<td>.351</td>
</tr>
<tr>
<td>Regional rail</td>
<td>.376</td>
</tr>
<tr>
<td>Bicycle</td>
<td>0</td>
</tr>
<tr>
<td>Walk</td>
<td>0</td>
</tr>
<tr>
<td>Other (including work from home)</td>
<td>Varies</td>
</tr>
</tbody>
</table>
Changes to Transportation Emissions

Baseline 2006-2010

- Single-occupancy vehicle
- Carpool
- Bus
- Subway
- Regional rail
- Bicycle
- Walk
- Other (including work from home)

Current 2012-2016

- Single-occupancy vehicle
- Carpool
- Bus
- Subway
- Regional rail
- Bicycle
- Walk
- Other (including work from home)
Meeting the Goals

Transportation is the second largest source of carbon emissions in Philadelphia.

**Discouraging single-occupancy vehicle commuting in the Philadelphia 2030 District:**
- reduces transportation emissions and
- improves quality of life issues including improving air quality and travel times.

**Strategies to meet goal:**
- Building owners/managers
- Employers
- Institutions
Stormwater Management
# Stormwater Management Metric

<table>
<thead>
<tr>
<th>Baseline Type</th>
<th>Local Baseline</th>
</tr>
</thead>
<tbody>
<tr>
<td>Baseline Source</td>
<td>2018 Philadelphia Water Department (PWD) GSI Project Data</td>
</tr>
</tbody>
</table>
| Baseline Considerations| • Greened Acres by project phase  
                        | • Total impervious surface districtwide |
| Goal Metric            | Verified Greened Acres |
| Metric Units           | Greened Acres |
| Performance Level      | Districtwide goal of 100 Greened Acres |
| Tracking Method        | Updated PWD GSI Project Data |
| Reporting 2019 Data for 2020 Annual Report | Districtwide public and private projects |
# Stormwater Management Progress

## Districtwide Performance

<table>
<thead>
<tr>
<th>Verified Greened Acres</th>
<th>Greened Acres Goal</th>
</tr>
</thead>
<tbody>
<tr>
<td>50.1</td>
<td>100</td>
</tr>
</tbody>
</table>

[greenbuildingunited.org]
Meeting the Goals

The Philadelphia 2030 District aligns with the goals of *Green City Clean Waters (GCCW)*, the City of Philadelphia's plan to reduce stormwater pollution entering its combined sewer system through the use of green stormwater infrastructure (GSI.)

**Strategies to meet goal:**
- New Construction Regulatory Compliance
  - Review PWD Stormwater Regulations
  - Evaluate eligibility for development bonuses and incentives
  - Consult case studies
- Existing Building Retrofits
  - Evaluate eligibility for programs and incentives
  - Consult case studies
- Non-compliance strategies
  - Consult PWD’s GSI Infrastructure Tools
Data Limitations
Data Limitations – Property Level

Year-to-year aggregate percent changes are not always clear indicators of progress
• The aggregate data set changes every year
• Properties self-report
• 2020 was an unusual year for building energy and water use
Data Limitations – Districtwide

Neither transportation nor stormwater management have a building-level goal
• Progress indicative of districtwide trends, not just district participants
  • Commuters for transportation
  • Public and private projects for stormwater management

Annual districtwide data are not always available nor are they clear indicators of progress
• Transportation data published every 5 years
• Stormwater data available annually, but our data only reflects verified projects
• 2020 was an unusual year for commuting and construction
If there are so many limitations, then why do we aggregate and publish the data annually?

• To maintain privacy
• To demonstrate the scale of our impact
• To track progress long-term
  • Supplement with year-over-year performance at the property level to inform our short-term progress and strategy