

#GreenworksPHL



GREENWORKS

A VISION FOR A SUSTAINABLE PHILADELPHIA

**Pennsylvania Climate Change Advisory Committee Meeting
Municipal Energy Master Plan + Clean Energy Vision
February 5th 2018**

Greenworks Visions At a Glance

VISION 01



All Philadelphians have access to healthy, affordable, and sustainable food and drinking water

VISION 02



All Philadelphians breathe healthy air inside and outside

VISION 03



All Philadelphians efficiently use clean energy that they can afford

VISION 04



All Philadelphians are prepared for climate change and reduce carbon pollution

VISION 05



Philadelphians benefit from parks, trees, stormwater management, and healthy waterways

VISION 06



All Philadelphians have access to safe, affordable, and low-carbon transportation

VISION 07



All Philadelphians waste less and keep our neighborhoods clean

VISION 08



All Philadelphians benefit from sustainability education, employment, and business opportunities





City of Philadelphia – Energy Office

- Part of the Office of Sustainability
- Mission and Scope:
 - Strategic Energy Procurement
 - Energy Data Management, Analysis and Tracking
 - Education and Technical Expertise
 - Development and Implementation of projects and programs
- Work across all levels of City government and with all three funds (General, Aviation and Water)





City of Philadelphia Climate Commitments

- Meet requirements of Paris Climate Agreement (reduce carbon emissions 26-28% by 2025)
- Meet global standard for long-term carbon reductions (reduce carbon emissions 80% by 2050)
- Meet pledge of Mayors for Clean Energy (transition Philadelphia to 100% clean energy)

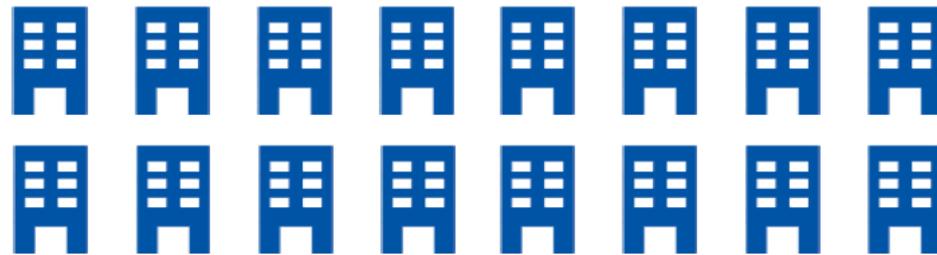
WE ARE STILL IN





Philadelphia's Carbon Footprint

Buildings and Industry: 79% of carbon emissions



Transportation: 17% of carbon emissions



Waste: 3% of carbon emissions



= 5% of carbon emissions

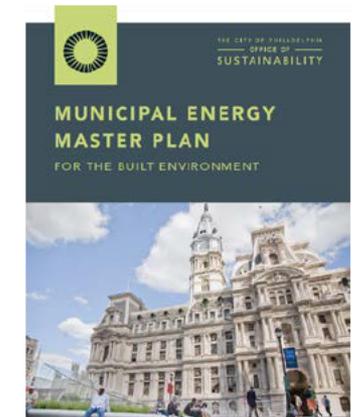




Office of Sustainability

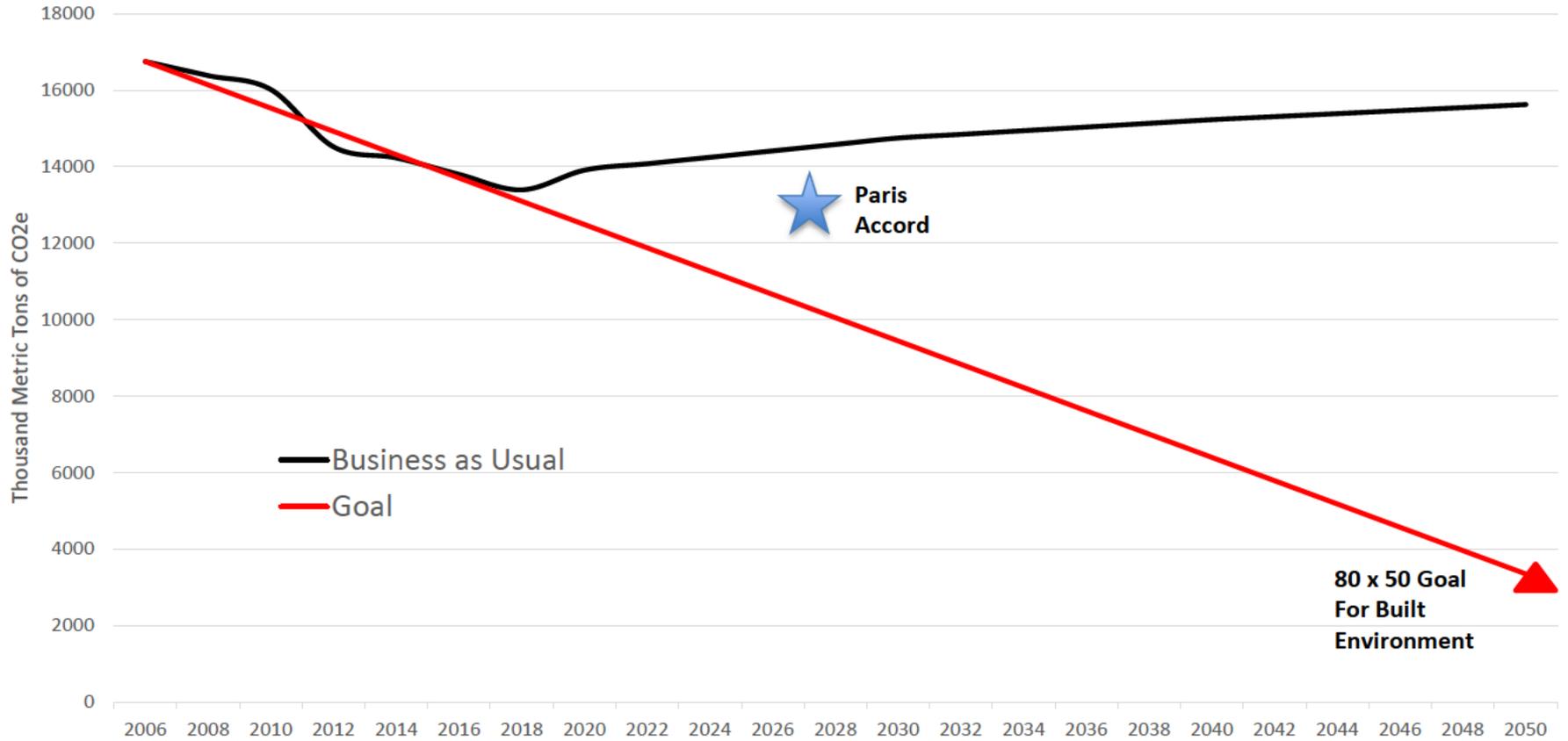
- Citywide Energy Vision for Built Environment
 - Scope: Buildings and Industry
 - Framework for 2050 goal
 - Public comment open period

- Municipal Energy Master Plan for Built Environment
 - Scope: General Fund Buildings and Street Lights
 - New 2030 Goals





Philadelphia's Carbon Emission Goals Vs. Business As Usual





Powering Our Future: How We'll Get There



Clean Electricity Supply

Citywide Solar

Energy-Efficient Homes and Businesses

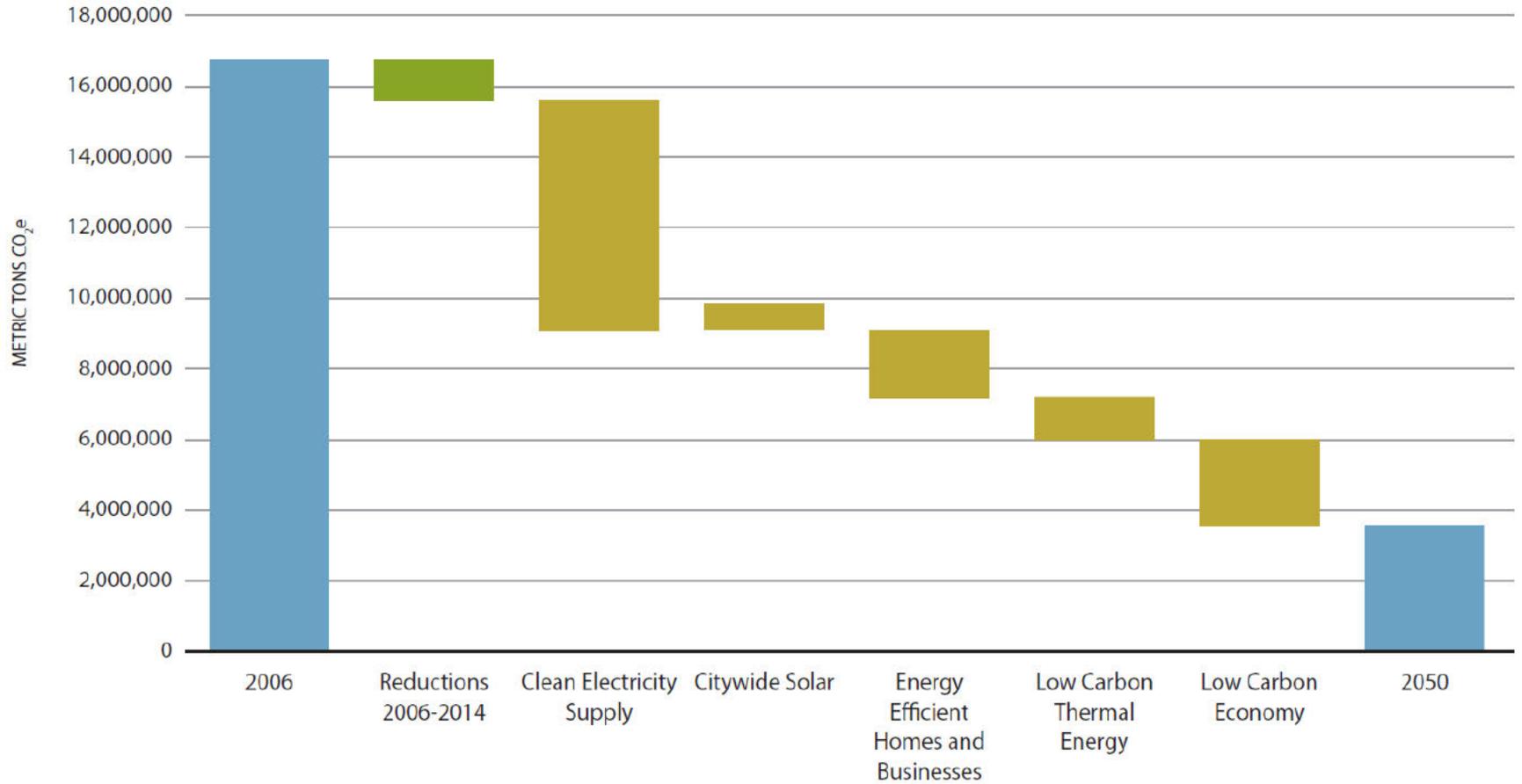
Low-Carbon Thermal Energy

Low-Carbon Economy





Potential to Reduce Carbon Pollution in Philadelphia's Built Environment





Powering Our Future Playbook

- 1) Clean Electricity Supply
- 2) Citywide Solar
- 3) Energy-Efficient Homes and Businesses
- 4) Low-Carbon Thermal Energy
- 5) Low-Carbon Economy



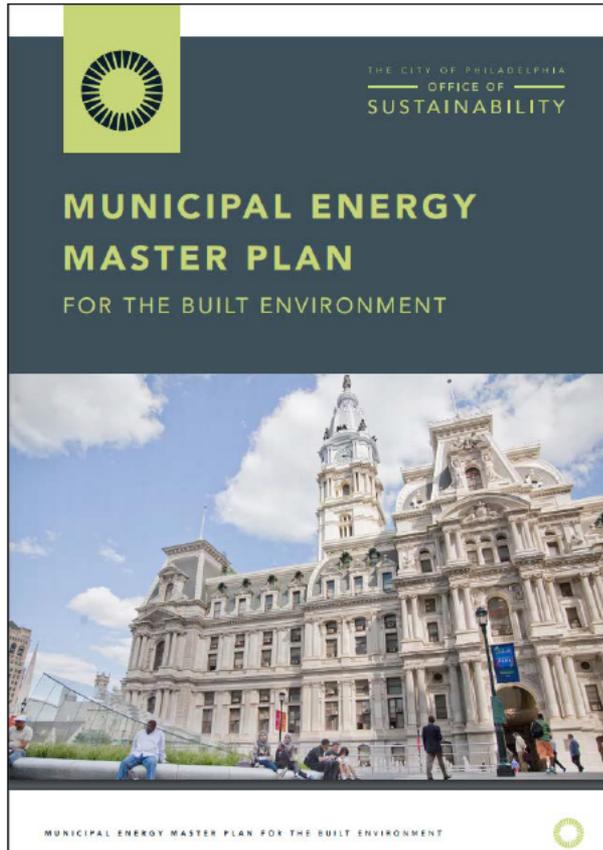
Example Playbook Actions

City: Expand requirements for existing buildings as part of energy benchmarking and disclosure program.

Residents and businesses: Use existing programs through PECO and PGW to improve home and office efficiency.

State: Enable Philadelphia to update building energy codes.





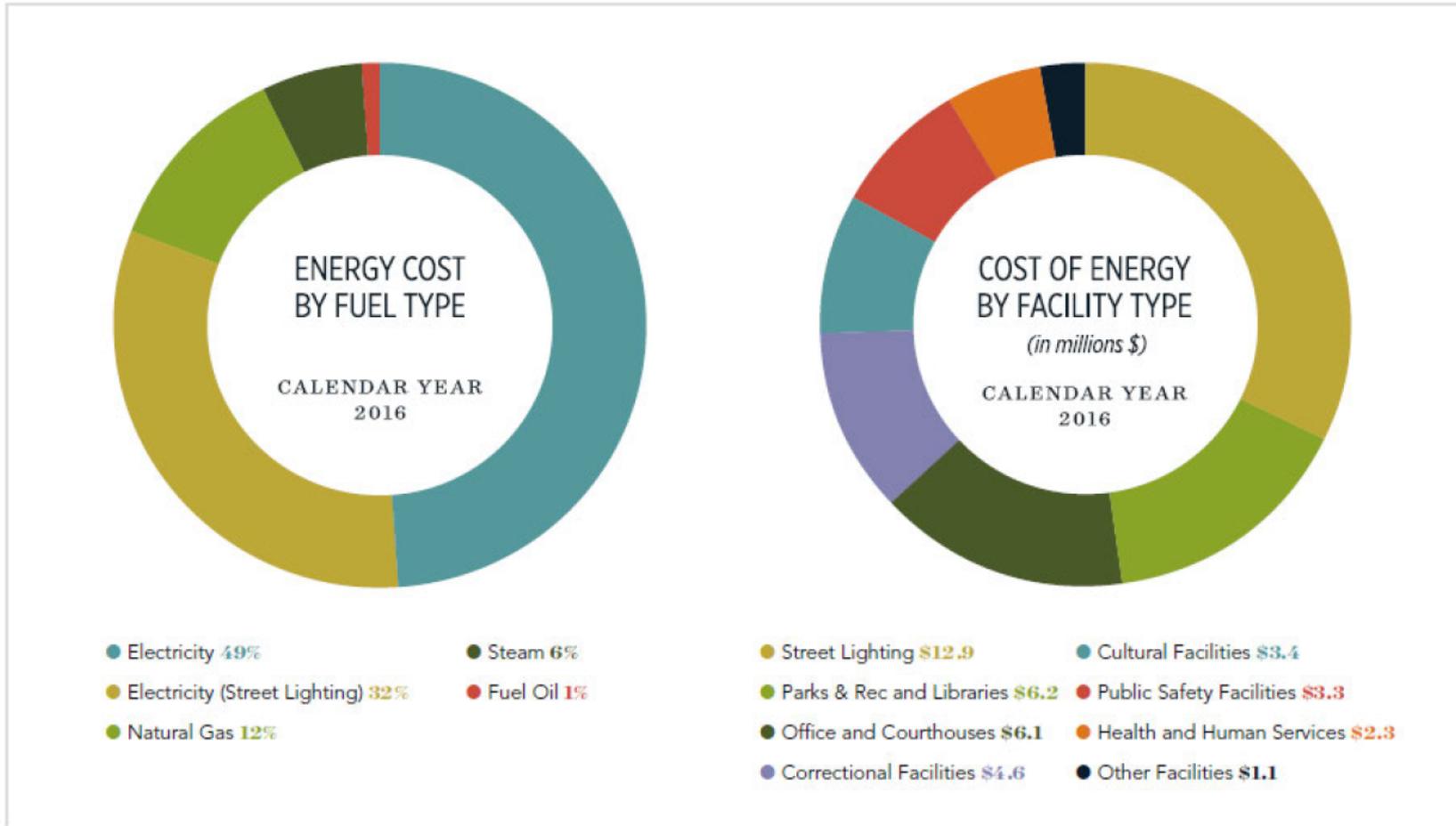
Elements of success

- People
- Technology
- Systems Change





Where we are today:





New Goals:



Reduce greenhouse gas emissions from the City's built environment 50 percent by 2030



Reduce the City's built environment energy use 20 percent by 2030



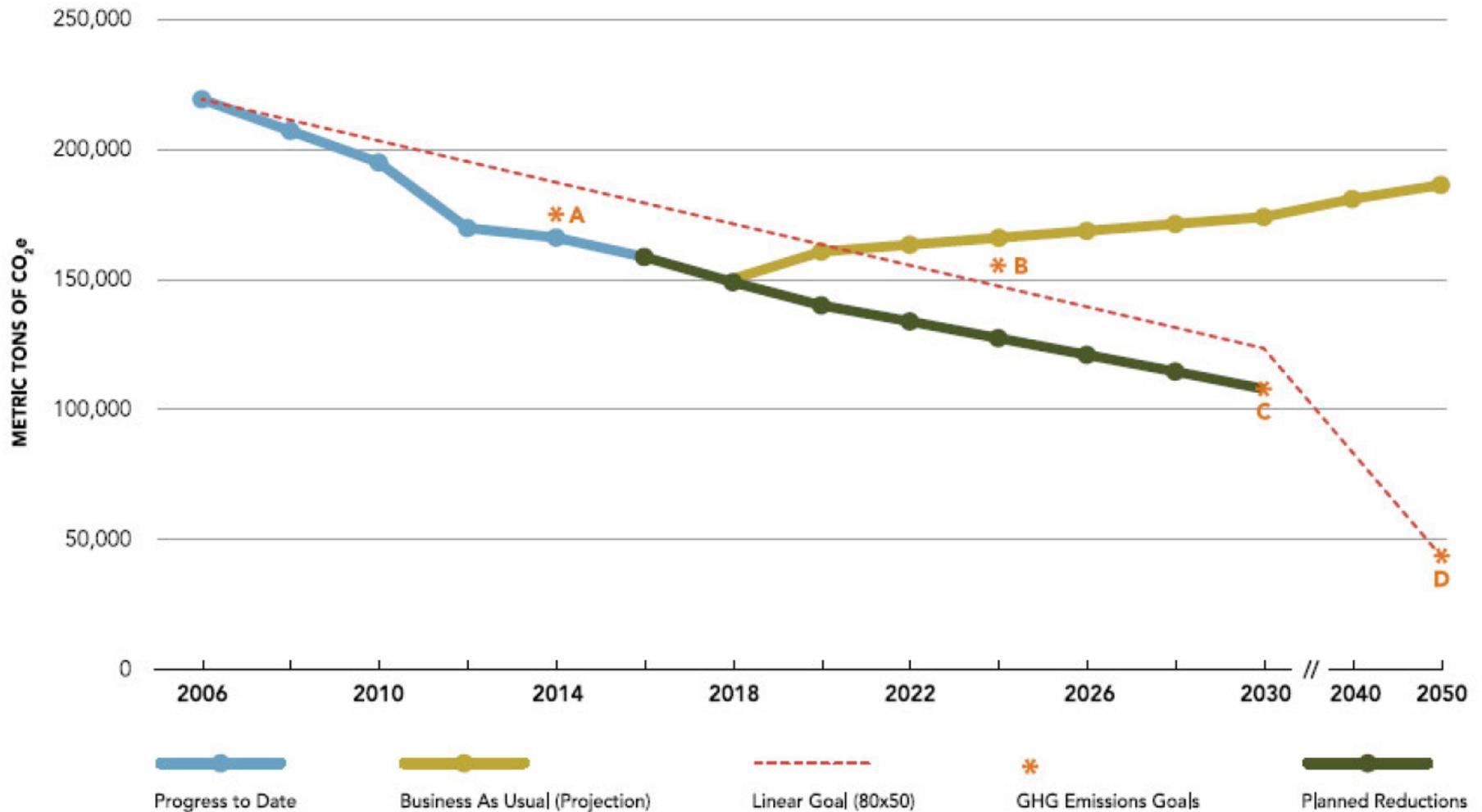
Generate or purchase 100 percent of all electricity for the City's built environment from renewable resources by 2030



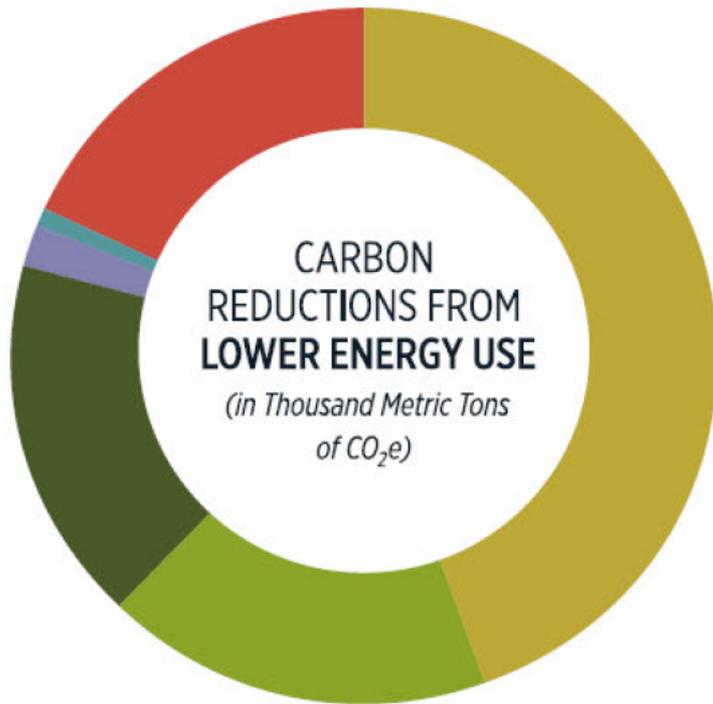
Maintain or reduce the City's built environment cost of energy



PROJECTED GREENHOUSE GAS EMISSIONS FOR THE CITY OF PHILADELPHIA'S BUILT ENVIRONMENT







- LED Street Lighting **13.7**
- Building Controls and Retrocommissioning **5.4**
- LED Lighting and Occupancy Sensors **5.2**
- HVAC Improvements **0.6**
- Building Envelope Improvements **0.3**
- Policy, Program, and System Changes **5.5**

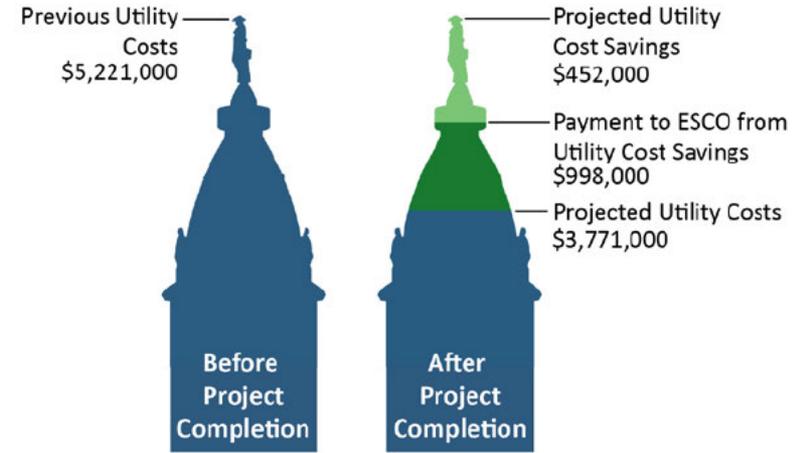
Carbon Reductions based on 2014 grid composition





Lower Energy Use: Opportunities

- Improve Operation Practices
- Energy Performance Contracts
- LED Street Lighting
- Capital and Rebuild Projects
- Energy Efficiency and Sustainability Fund
- SmartCityPHL Energy





Upcoming Project: Philadelphia Museum of Art

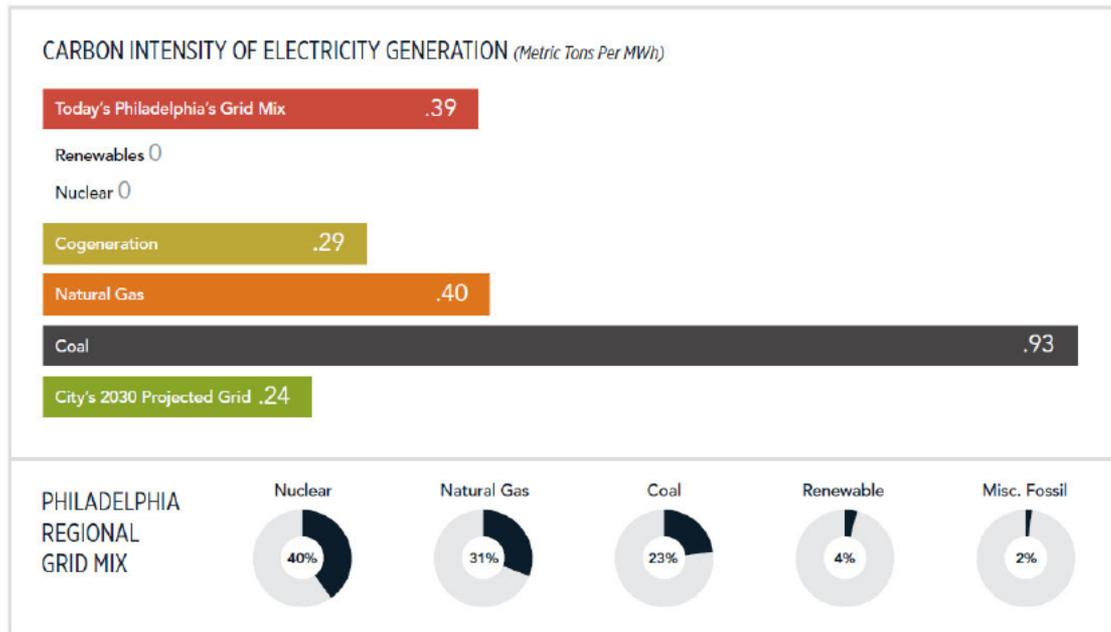
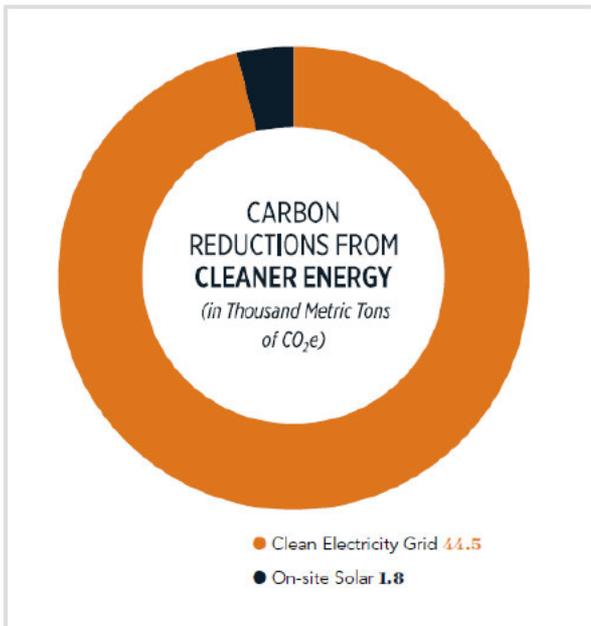
- **Energy Efficiency Improvements in the Building:**
 - LED Lighting
 - Upgraded Controls
 - Steam System Improvements
- **Uses Energy Performance Contracting to Finance Project and pay capital cost from savings**
- **Performance Guarantee provided by Project Partner, Johnson Controls**
- **Collaboration with City and PEA**
- **Construction starting soon**





Clean Energy Supply: Opportunities

- Purchasing Clean Energy
- On-Site Clean Energy Generation

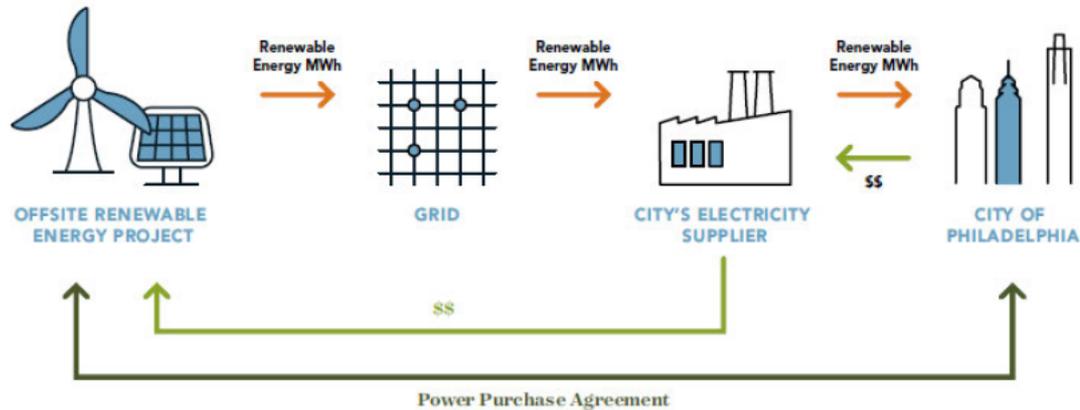




Upcoming Project: Power Purchase Agreement

- RFP open for Renewable Energy Purchasing from a utility scale wind, solar or other renewable energy project in the region.
- City seeking to contract for 20-40% of its electricity to come from the project
- City expects pricing competitive with current sourcing options

OFFSITE POWER PURCHASE AGREEMENT



THE CITY OF PHILADELPHIA
— OFFICE OF —
SUSTAINABILITY

GREENWORKS
PHILADELPHIA

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