

# Philadelphia Gas Works Business Diversification Study

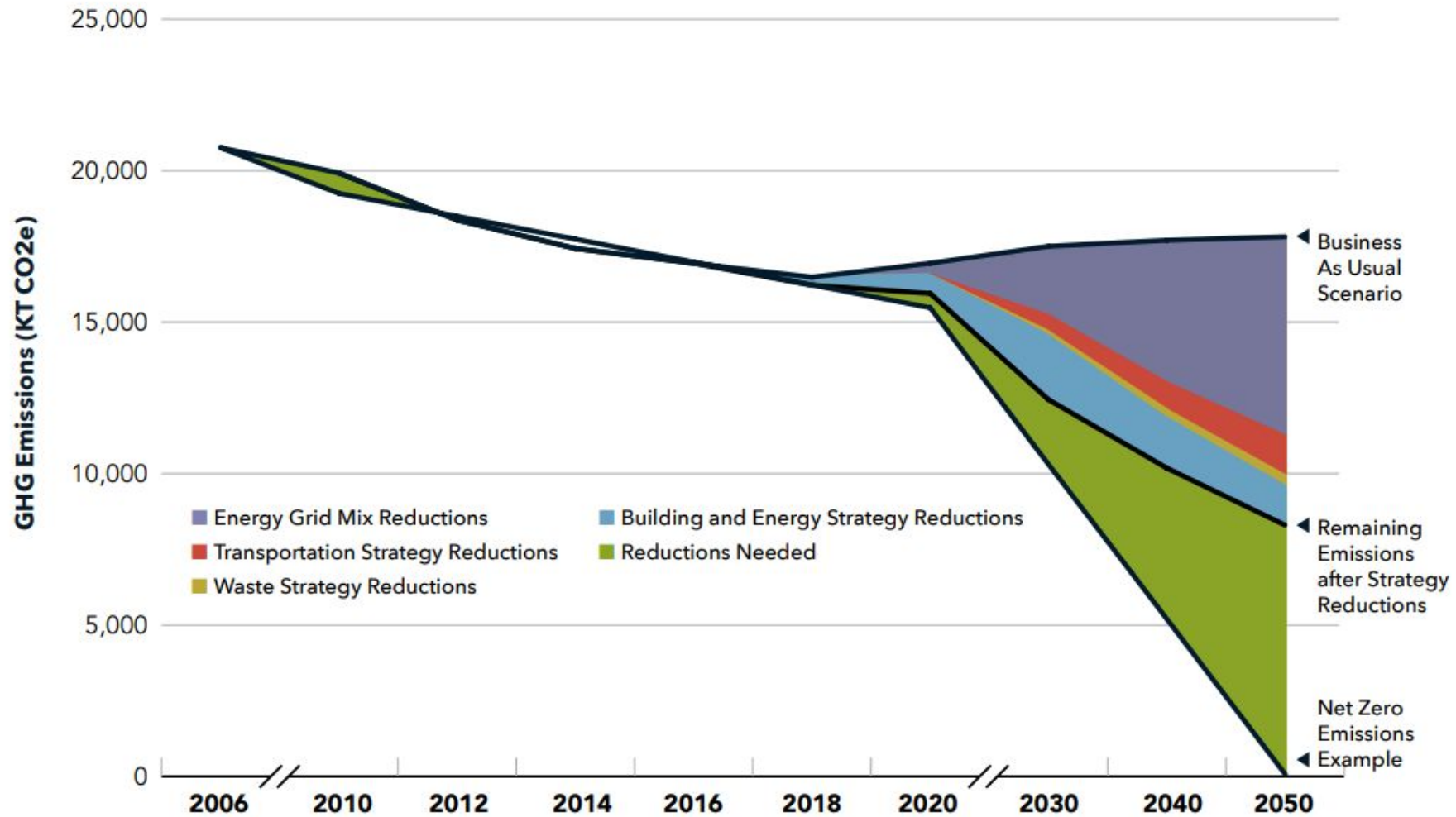
Identifying Opportunities for PGW to  
Thrive in a Lower Carbon Future



Energy+Environmental Economics



# The City's carbon neutrality goal requires transitioning away from fossil fuels such as natural gas



Source: City of Philadelphia (2021). Philadelphia Climate Action Playbook.



# What challenges does PGW face in transitioning to a lower carbon future?

In a low-carbon future, PGW will need to identify strategies that both reduce greenhouse gas emissions and safeguard ratepayer interests. This challenge has not been fully addressed for gas utilities elsewhere in the U.S. Challenges include:



*Aging Gas Infrastructure*



*Uncertainties in gas demands*



*Providing and retaining jobs*



*Health, safety and equity challenges*



# The purpose of this study

## *Key purpose of this project*

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To examine technological pathways to **reduce greenhouse gas emissions from heating, cooking and other uses for natural gas** in line with the City's climate and air quality goals and to evaluate the impact of those pathways on PGW's current business model and its customers;



To identify **near-term business strategies** for PGW that help to sustain jobs and maintain customer affordability



To identify near-term **promising pilot projects** for PGW that have the potential to reduce greenhouse gas (GHG) emissions, benefit low-income customers and result in long-term workforce opportunities.



# Working Group Members

- **Mike Carroll- Deputy Managing Director, Office of Transportation, Infrastructure and Sustainability**
- **Jim Engler- Mayor's Chief of Staff, Member of Public Facilities Management Corporation**
- **Derek Green- City Councilmember, Chair of Gas Commission**
- **Joseph Goldman- Executive Vice President and Acting Chief Financial Officer, PGW**
- **Raquel Guzman- Senior Vice President, Legal and General Counsel, PGW**
- **Keith Holmes- President, Local 686, Utility Workers of America**
- **Christine Knapp- Director, Office of Sustainability**
- **Emily Schapira- Executive Director, Philadelphia Energy Authority**
- **Seth Shapiro- Chief Operating Officer, PGW**
- **Greg Stunder- Vice President, Regulatory and Legislative Affairs, PGW**
- **Leigh Whitaker- Chair, Public Facilities Management Corporation**



# This Study has gauged input from stakeholders through three engagements prior to this townhall



## Stakeholder Workshop

- **Workshop Participation**
  - 70+ invitees sent Fact Sheet and Registration Link
  - 58 registrants; 43 attendees + OOS/E3/ESI/PAI project team
- **Live Polling & Discussions in breakout rooms**



## Online Survey

- **Open 3/24 Wed – 4/12 Mon**
  - 391 total responses; 259 completed responses (submitted all pages)
  - 10 Questions
    - 6 multiple choice w/ open-ended option; 4 open-ended
    - >1,000 open-ended comments

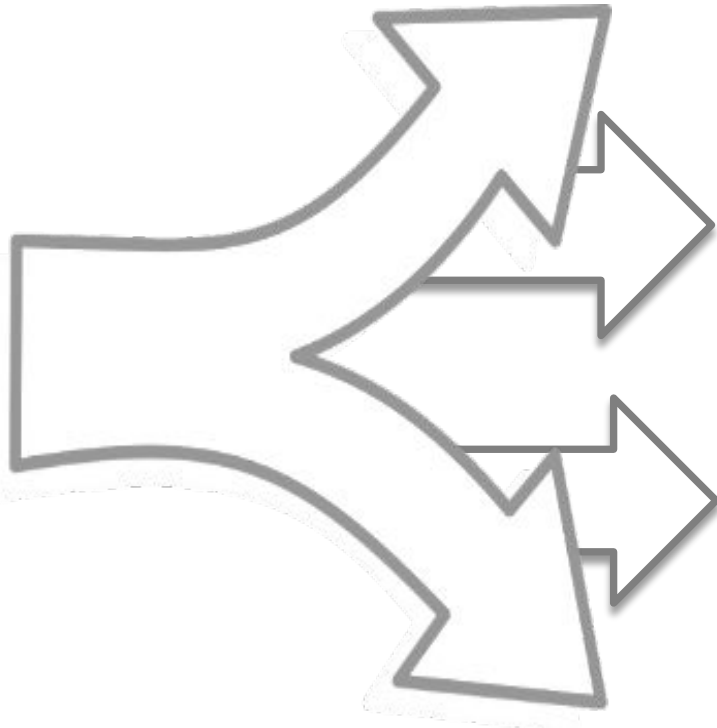


## Energy Burden Conversations

- **Conversations organized by the Office Of Sustainability in partnership with the Philadelphia Association of Community Development Corporations (PACDC)**
- **6 of the most energy burdened communities; 3 focus group discussions per community**



# Achieving net-zero emissions is challenging, but technologically feasible with a mix of options



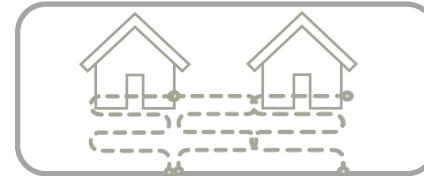
## Decarbonized gas

Utilities inject biomethane, hydrogen or Synthetic Natural Gas (SNG) into the gas pipeline



## Hybrid electrification

Customers adopt heat pumps paired with a gas furnace to bolster heating in winter periods



## Networked Geothermal Systems

Utilities operate a shared network of pipes delivering heat and cooling through centralized supply



## Electrification

Customers disconnect from the gas distribution system and adopt electric heat pumps, dryers, cooktops and stoves.

Energy efficiency is a foundational component to all viable pathways





# Each decarbonization scenario results in both positive and negative impacts

Decarbonization scenarios	Quantitative	Qualitative	Quantitative	Quantitative & Qualitative
	Impact on GHG emissions	Impact on air quality	Impact on affordability	Impact on revenues & workforce
Decarbonized gas	Reduces emissions	No significant change	Pressures long-term gas costs	Current system maintained
Electrification	Reduces emissions	Improves air quality	Mixed, depending on customer	Large revenue reduction
Hybrid electrification	Reduces emissions	Improves air quality	Lowest impact option	Current system maintained
Hybrid electrification with Geo MicroDistricts	Reduces emissions	Improves air quality	Dependent on cost allocation	Additional workforce opportunities



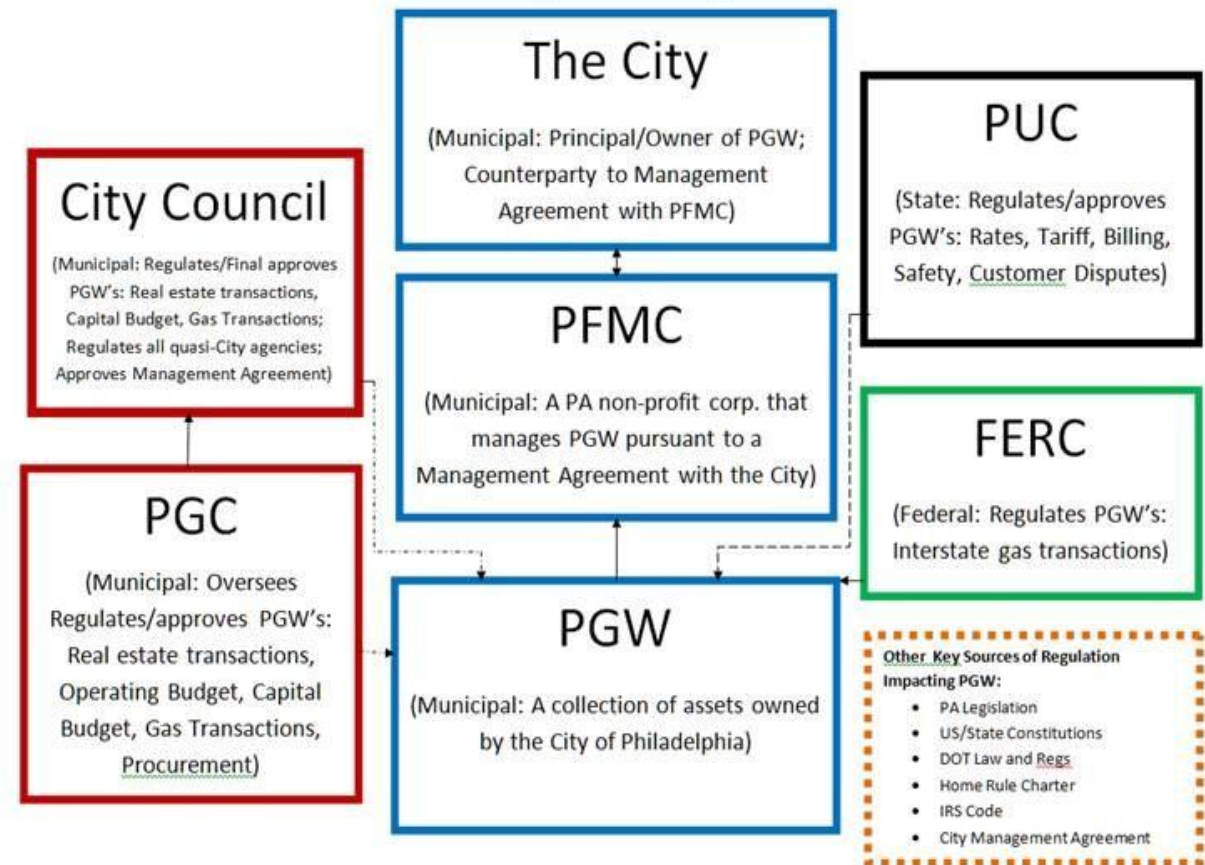


# PGW's operations are guided by a complex set of city, state, and federal laws and regulations

Regardless of the greenhouse gas reduction pathways pursued, PGW's existing legal and regulatory structure and cost recovery mechanism does not position the utility to:

- Support achievement of the City's carbon neutrality goal
- Meet its financial obligations
- Address energy burdens and air quality concerns,
- Maintain the size of its existing workforce in the long-term.

Therefore, as PGW's needs and role evolve, so too must its regulatory landscape.





# The project team considered a variety of different alternative business models for PGW

	Business Model	PGW playing a role in....
<i>Options as extension of current business</i>	RNG operations	Operating or procuring Renewable Natural Gas (biomethane, hydrogen, etc).
	District Heating	Distributing heat from geothermal heat pumps to buildings that are connected to a shared infrastructure.
	Weatherization	Facilitating and/or installing building energy efficiency & weatherization services.
	LNG & CNG supply	The operations and sales of Liquefied Natural Gas (LNG) or Compressed Natural Gas (CNG) to regional customers
<i>Potential new business models</i>	Strategic electrification	The customer transition to electrification (i.e. installation/maintenance of heat pumps).
	Heat as a Service	Selling heat to customers under the provision of agreed room temperatures at certain times for a fixed fee, instead of charging for energy use on a per-unit basis.
	Utility-led financing	The facilitation of investments in customer-side energy upgrades, for instance through tariffed on-bill financing.
	Load aggregator	Enable or provide demand response services to reduce winter-time peak demands and provide other electric grid services
	Microgrids	Facilitating integrated energy systems consisting of interconnected loads.
	Community solar	Installing and operating shared solar systems.



# Next Steps- Pilot Project Recommendations

<u>Pilot Recommendations</u>	<u>Next steps</u>
<b>A weatherization program with novel financing opportunities aimed at low/moderate income homes</b>	Opportunity to use federal funds to support a new program?
<b>A feasibility study for networked geothermal systems</b>	OOS working with ACCC team to find funds for this Study, but may also need to tap into City or PGW funds
<b>A local decarbonized gas program</b>	OOS working with PEA to discuss PWD cogen facility which may lead to additional project possibilities



# Next Steps- Additional recommendations

<u>Additional recommendations</u>	<u>Next steps</u>
<b>Define mid-term GHG reduction targets for PGW</b>	Letters to PUC, Gas Commission, PFMC to ask for their leadership in setting goals and holding PGW accountable
<b>Consider ways to better align legal and regulatory constraints with achieving the City's climate goals</b>	Consider new appointments to boards; began conversation with Law Dept about reviewing regulatory structures
<b>The City, together with PGW, should collaborate on a GHG Implementation Strategy for Philadelphia's buildings</b>	OOS updating Powering Our Future Action Plan; collect data from Built to Last pilot; join Electrify Cohort; sign on to White House CEQ Building Performance Standard Coalition
<b>The City should work closely together with PGW to conduct a PGW Workforce Impact Study</b>	Met with Local 686 to confirm their involvement,. ACCC partners are lined up, need to identify local project partner/s



# Summary

- Business-as-usual is not a viable path
- This is an analysis, not a plan
- It's a complex issue and will take time to create real change, but work can and needs to begin now
- There is no silver bullet, but a combination of actions will be necessary
- There are trade-offs with any decision so there will need to be efforts to mitigate downsides, such as affordability
- Market conditions outside of City or PGW decision will be a big factor