



CLIMATE BUSINESS PLAN

OFFICE OF THE ATTORNEY GENERAL

AltaGas

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A Message from Randy Crawford



President
and Chief
Executive Officer

- Our Climate Business Plan provides a sensible path forward. Collaborating with the District to implement the steps toward decarbonization gives us the opportunity to continue to leverage our resilient, vast and established energy delivery and storage system to reduce emissions while providing affordable and reliable energy.
- Our Plan promotes customer energy efficiency and savings, builds and maintains a modern infrastructure for today and tomorrow, and introduces carbon-free fuels, such as renewable natural gas (RNG) and hydrogen.
- Looking 30 years into the future means that we have to do our best to anticipate what's ahead. While many factors are unknowable over that long timeframe, there are emerging, disruptive and breakthrough technologies that are showing tremendous promise and are expected to impact everything from sourcing to distribution, to how effectively we use energy in the future.

The Climate Business Plan

- Demonstrates that a ‘fuel neutral’ approach, which includes natural gas as well as electricity, transportation fuels, etc. is **the most cost-effective** way to reach the District’s GHG emissions reduction targets (50% by 2032 and carbon neutral by 2050).
- The Plan evolves Washington Gas’ business, including decarbonizing the mix of gases delivered, an expanded focus on high-efficiency equipment, adoption of CHP, et al.
- The Plan preserves the vital role of the natural gas delivery infrastructure, continuation of PROJECT *pipes* replacement, enhanced leak detection and response, etc.

Aligns With and Supports DC Public Service Commission Vision* for Modernizing the District's Energy Delivery System

SUSTAINABLE

Meets the GHG reduction targets on time

WELL-PLANNED

Preserves energy availability during both normal and peak demand conditions

SAFE & RELIABLE

99.9%

Leverages the reliability of our natural gas system

SECURE

Protects against service interruptions by having multiple systems rather than relying on one

AFFORDABLE

\$2.7 B

Less than electrification

INTERACTIVE

Advanced leak detection, internet of things, monitoring, etc. included in the plan

NON-DISCRIMINATORY

non-prescriptive approach allows opportunities presented by future innovations and technological advances

* Adopted February 14, 2018

Washington Gas: A Recognized Climate Leader

“WGLH demonstrates consistent values with the District when it explicitly acknowledges and embraces the scientific findings of the Intergovernmental Panel on Climate Change, considers emission reductions to be a matter of corporate policy, and has exceeded its targets for GHG emission reductions, which in turn exceed those required by regulation or mandate.”

-- Asa S. Hopkins, Merger testimony, September 29, 2017



Washington Gas's Vital Role Today and in the Future

- **Preserving Affordability** - 27 percent of the District population District is eligible for the Low-Income Housing Energy Assistance Program (LIHEAP). Today direct gas use is \$879 less than electric. CBP is lowest cost pathway to meet District's 2050 reduction goals..
- **Maintaining Resilience** during increasingly frequent and severe weather-related events due to Climate Change, through a **Diverse and Reliable Energy Portfolio**
- **Protecting the Vulnerable from Cold Weather** - 17 percent of District residents over 65 live below the poverty line. Older adults are particularly affected by energy poverty and cold weather, according to NIH. The Centers for Disease Control and Prevention (CDC) found: "cold-related deaths are more prevalent than heat related."
- **Enabling Renewable Power** – The reliability of natural gas direct use and power generation and the ability of our vast infrastructure to function as a huge, low cost battery back-stops the intermittency of renewable electricity.
- **Leveraging Innovation** – By offering a 'fuel neutral' framework the Plan allows for and encourages a wide range of innovation and new technology.

The Climate Business Plan

An optimized strategy for reducing natural gas emissions in support of the District's climate goals.

Offers an objective analysis of alternative pathways to carbon reduction

Illustrate the costs, effectiveness and impacts of multiple scenarios including impacts on affordability, reliability, resilience, equity identified as essential elements of the District's energy planning

Provides recommendations

The CBP demonstrates how and why the public interest is best served by an energy portfolio that retains the benefits of natural gas and its infrastructure

- Most affordable to customers
- Cost-effective decarbonization options
- Unmatched reliability
- Provides **both** energy and storage
- Supports DC's mandated 100% reliance on renewable electricity by 2032

Outlines tactics, required policies and potential timeframe to achieve reductions

Four Scenarios Evaluated

Summary of Scenarios, Benefits and Costs

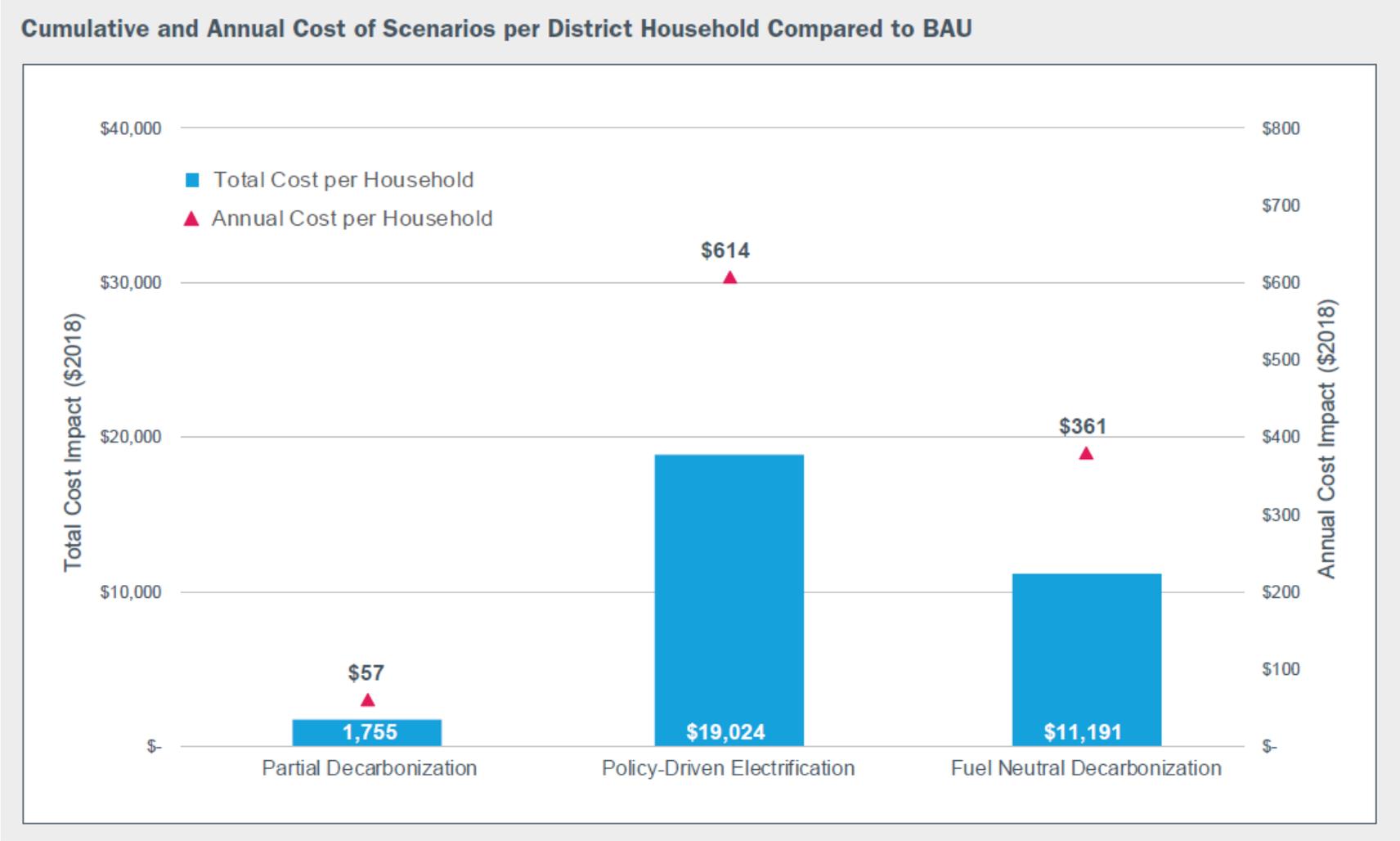
	2050 GHG reduction since 2006	Additional cumulative cost (above BAU)
Business as Usual (Reference Case) Based on the 100 percent renewable portfolio standard (RPS), retains natural gas	75%	-
Partial Decarbonization BAU plus: <ul style="list-style-type: none"> moderate market penetration of EVs increased energy efficiency modest decarbonization of gas supply including introduction of RNG and certified gas 	82%	\$603 Million
Policy-Driven Electrification BAU plus: <ul style="list-style-type: none"> requires homes and businesses using natural gas to convert to electricity electrification of all new construction aggressive market penetration of electric vehicles small volume of offsets (not included in costs) 	100%	\$6.5 Billion
Fuel Neutral Decarbonization BAU plus: <ul style="list-style-type: none"> aggressive energy efficiency programming including gas heat pumps moderate introduction of dual fuel heating systems substantial decarbonization of gas supply introduction of renewable natural gas, certified gas, and green hydrogen leverages new and emerging technologies aggressive market penetration of electric vehicles small volume of offsets (not included in costs) 	100%	\$3.8 Billion

Only considered pathways that reached the GHG emissions targets

... but the cost difference is dramatic

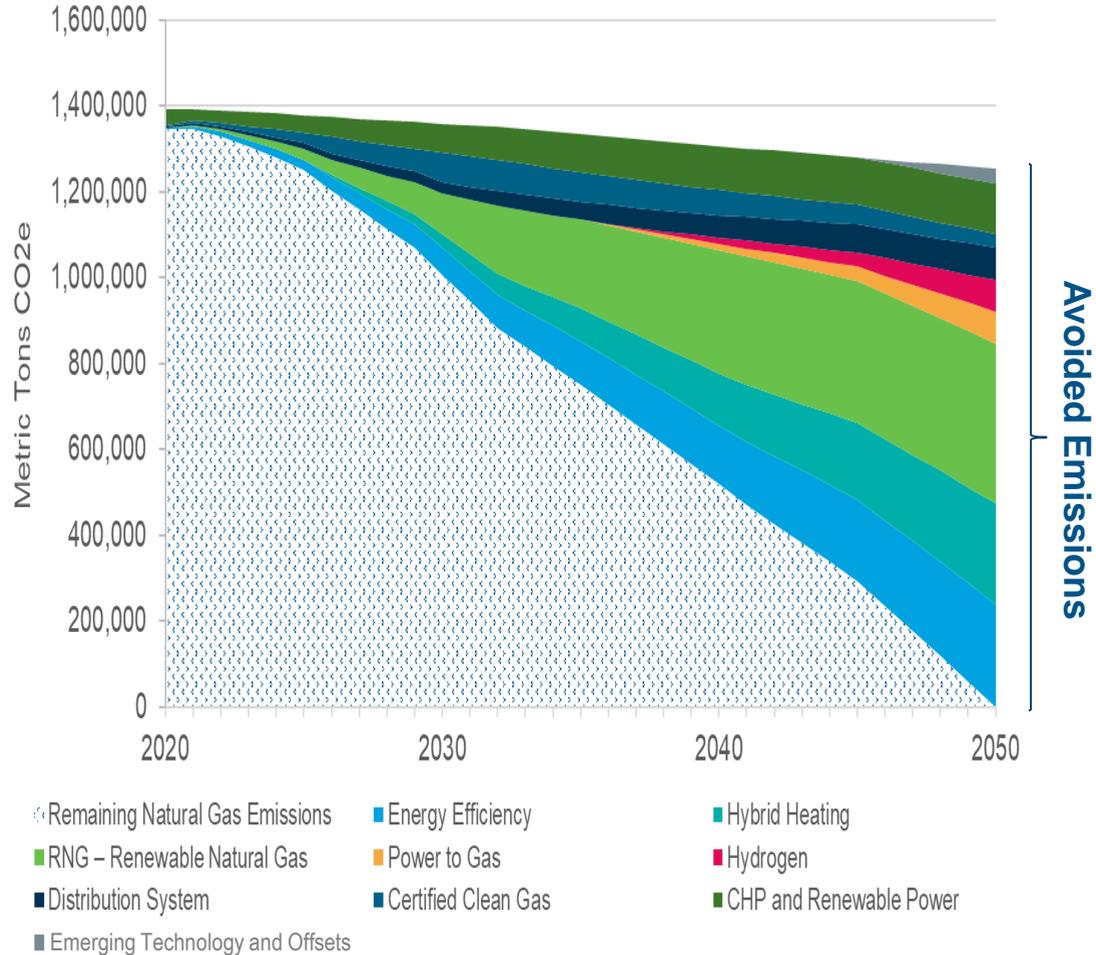
\$2.7 Billion less for Fuel Neutral

Cumulative and Annual Cost of Scenarios per District Household



Climate Business Plan GHG Reductions Over Time

Emission Reductions Attributable to Natural Gas Sector



Energy Efficiency

- Behavioral programs/"smart" devices
- Building shell and appliance improvements
- New technologies -- gas heat pump heat/hot water

Low/No Carbon Gas

- RNG – Renewable Natural Gas, P2G, hydrogen blending, certified gas

Hybrid Heating

- Advanced technology under development; needs scaling
- Substantially reduces throughput; retains meters

CHP and Distributed Generation Offsets / Emerging Technologies

- Direct Air Capture
- Necessary to get to 100%

Climate Business Plan GHG Reductions By Tactic

Detailed Estimated Climate Business Plan Emissions Reductions*	2032	2050
1) End-Use		
Energy Efficiency (including Behavioral Programs and Gas Heat Pumps)	4%	14%
CHP and Distributed Energy Systems	5%	5%
Dual Fuel Systems (Hybrid Heating)	3%	13%
Emerging Technology and Offsets	0%	4%
Total End-Use Reductions	12%	36%
2) Transmission and Distribution		
Distribution (Emissions reductions including second phase of PROJECTpipes)	2%	4%
Total Transmission and Distribution Reductions	2%	4%
3) Sourcing and Supply		
Certified Gas Production (of geological gas) and Transmission	4%	2%
Renewable Natural Gas (RNG)	9%	21%
Power-to-Gas and Green Hydrogen	0%	8%
Total Sourcing and Supply Reductions	13%	31%
Total Climate Business Plan Emissions Reductions	27%	71%
+ Net emissions reduction from natural gas achieved 2006 - 2017	27%	27%
+ Net change in Business as Usual emissions after 2017	-3%	2%
= Total Reduction in GHG Emissions against Business as Usual*	50%	100%

*Numbers do not sum due to rounding

Plan Highlights

End Use

Energy Efficiency

- Expand DC SEU programs
- Develop WG programs that support
 - Behavioral demand reductions
 - High-efficiency appliances
 - Building envelope upgrades
 - Deep penetration of gas heat pumps
 - Demand response IOT automation
 - CHP deployments
 - Electric /Gas Hybrid Heating
- Explore approaches, such as Energy-As-A-Service, to ease financial burden
- Reduce economic disincentives through decoupling / RNA adoption
- Accelerate advanced technology development / adoption via partnerships & pilots with National Labs/OEMs

Distribution

Despite comparatively low emissions, odor, noise and disruptions due to repairs, planned construction, and proactive pipeline replacement programs make fugitive emissions the most visible GHG source to people living in our communities.

- Prioritize Accelerated Pipeline Replacement Programs projects based on GHG emissions using data analytics
- Promote advanced leak detection and enhanced response solutions
- Recover gas during maintenance, repair and replacement projects using drawdown compressors
- Evaluate the efficacy of several promising airborne and vehicle based methane detection systems

Sourcing and Supply

Certified Gas provides

- Low cost emissions reduction
- Ready now strategy ~ 1–2% reduction
- Pending study with RMI to validate emissions reductions

RNG

- Purchase / distribute RNG and other low carbon fuels including biogas, power-to-gas, and hydrogen
 - 13% by 2032; 58% by 2050
- Seek regulatory approval to pass on additional costs
- Evaluate equitable socialization of cost across customer base
- Encourage marketers to provide additional opt-in RNG offering
- Facilitate development of and access to non-fossil supply

Climate Business Plan – Decarbonizing Gas to Support DC Climate Goals

- Provides a compelling case (superior cost, reliability, resilience, safety, etc.) for continuation of our service to customers for the next 30 years (and beyond).
- Includes the **continuation of our 40-year Accelerated Pipeline Replacement Program** (PROJECT *pipes*).
- Relies on **Energy Efficiency** to meet the targets (12% of reductions by 2032, 36% by 2050)
- “Energy efficiency is ‘by far’ the largest source of jobs in the energy sector, including construction, production/manufacturing, installation, maintenance and repair.”
 - Climate Business Plan p.11 (citing Alliance to Save Energy fact sheet)
- Prepares us with a framework for analysis and actions as other jurisdictions in our service area consider setting their own climate goals.

Next Steps

- Climate Business Plan filed on March 16, 2020.
- Merger commitment requires biannual (every 6 months) public meetings to report Plan progress
 - Brief key stakeholders; gather input and questions
 - Sponsor public Technical Conference to review plan and key assumptions
 - Introduce initial slate of decarbonization proposals to advance the Plan
- We expect high level engagement from the public and advocates, especially environmental groups opposed to maintaining natural gas service in the District.

Productive stakeholder dialogue that leads to collaboration is key to action that helps the District pursue a decarbonization approach that meets the GHG reduction goals and ensures the long-term well-being of the District, its residents, businesses and institutions.