NATURAL GAS

Energy
Opportunity

Lori S. Traweek
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American Gas Association
1812: A Baltimore artist named Rembrandt Peale added gas lighting to his museum in Baltimore, MD.

1918: The creation of the American Gas Association

1925: AGA founded the AGA Laboratories in Cleveland, Ohio

1946: AGA began 72 consecutive years of participation in what is now the International Builders' Show

1970 AGA moved from New York to Washington, DC

#AGA100Years
Local Commitments to “Clean Energy”

190 Mayors have signed the Sierra Club 100% renewable energy pledge.
As the Grid Decarbonizes
Conversion of fossil-fuel based residential heating loads and other appliances can reduce CO₂ emissions
Defining the Role of Natural Gas
Promoting the Benefits of Natural Gas Use Today and in the Future

YourEnergyAmerica.com

CookingWithGas.org
Natural gas utilities develop comprehensive plans and manage assets, operations and contractual portfolios.

Physical firm natural gas supply arrangements, firm natural gas transportation contracts and firm natural gas storage provide customers and communities with the safe, reliable delivery of natural gas.

The natural gas pipeline network is predominantly underground and protected from extreme weather events.

Built-in redundancies through pipeline interconnections and back-up mechanisms mean a singlepoint failure on the system would typically have a localized effect, if any.
A Great Place to Work

Natural gas utilities have a large and dynamic workforce and are focused on enhancing diversity that reflects the communities they serve.

- **Next Level Leadership Women’s Program**
- **AGA Scholarship Program**
- **Center for Energy Workforce Development**
- **Veterans in Energy**
Commitment to Responsible Operation

Proposed Natural Gas Sustainability Initiative
- Voluntary Reporting Metrics Initiative
- Expands EEI template for power generation
- Addresses utility-owned natural gas operations
- Seeks to engage full natural gas supply chain
Safety is our Foundation

Natural gas utilities spend $24 billion annually to enhance the safety of natural gas distribution and transmission systems.
Natural gas pipelines, which span all 50 states with diverse geographic and operating conditions.

Natural gas utilities implement security programs and actively engage in voluntary actions to help enhance security.

AGA members are implementing the Transportation Security Administration (TSA) Pipeline Security Guidelines as well as utilizing available security standards, models, guidelines and information sharing resources.
Defining a Natural Gas Pathway for a Low Carbon Future

Advance Emerging Technologies

~100

Innovative Gas Technologies for Residential / Small Commercial identified in Enovation Partners’ global search

25-40%

GHG reduction potential on a customer basis by integration of these technologies and other efficiency practices

Source: Enovation Partners
Combining emerging natural gas technologies in the residential sector creates multiple pathways for customers to reduce GHG emissions. The following are the areas where natural gas technologies can be applied:

- **Space Cooling**, up to 45% reduction
  - Gas heat pump

- **Space Heating**, up to 40% reduction
  - Gas heat pump

- **Cooking**, minimal change
  - Gas stove
  - Gas oven

- **Building Efficiency**, 10-45%
  - IoT based thermostat
  - Building Envelope

- **Water heating**, up to 55%
  - Absorption heat pump

- **Laundry**, 55%
  - Gas dryer
  - Ozone washing

25-40% GHG reduction potential on a customer basis
Natural Gas
It’s Renewable, Too

The combination of new near-zero emission natural gas engine technology and RNG provides the single best opportunity for the U.S. to achieve immediate and substantial nitrogen oxide and greenhouse gas emission reductions in the on-road heavy-duty transportation sectors.
Encouraging a Fact-Based Discussion
Implications of Policy-Driven Electrification of Residential and Water Heating

Key Questions the Study Addresses

• Would policy-driven residential electrification actually reduce emissions?

• How would policy-driven residential electrification impact natural gas utility customers?

• What would be the impacts on the Power Sector and Transmission infrastructure?

• What would be the overall cost of policy-driven residential electrification?
What has been overlooked?

Equipment Cost Differential

U.S. Peak Month Energy Use 2014 - 2016

Electric Infrastructure Investments Required To Serve the Incremental Peak Load

Residential: 531 Trillion BTU
Commercial: 441 Trillion BTU
Industrial: 272 Trillion BTU

Electricity: 1,070 Trillion BTU
Natural Gas: 893 Trillion BTU
Residential Electrification can be a Much More Expensive Approach to Reducing Emissions than other Available Alternatives

Emissions Reductions Costs for Alternative Approaches to Reducing CO2 Emissions

- Transportation - Fuel Efficiency Measures: $-345 to $5
- Power Sector GHG Credits (2018): $4 to $16
- Renewable Natural Gas: $15 to $86
- New York Social Cost of Carbon: $47 to $72
- Transportation - Low Carbon Fuel Standard: $75
- Residential Electrification: $572 to $806
Key Messages

1. **Natural gas is a critical residential energy source:** Residential natural gas demand in January is more than twice electricity demand in July.

2. **Total GHG reduction potential from policy-driven residential electrification is small:** From 1 to 1.5% of US GHG Emissions in 2035.

3. **Policy-Driven Electrification will be burdensome to customers:** Average residential household energy costs (utility bills and equipment/renovation costs) increase by 38 to 46% - National average of $750 to $910 per year in direct consumer costs.

4. **And to the economy:** The total increase in energy costs range from: $590 Billion to $1.2 Trillion (real $2016).

5. **With significant impacts (and costs) on the electric sector:** $150 to $425 billion in investment in new generating and transmission assets.

6. **Policy-driven residential electrification would be a very costly approach to emissions reduction:** $572 to $806 per Metric Ton of CO2 reduced - very high relative to other GHG reduction options.
Common Ground

• A Cleaner Energy Economy
• Customer Focus
• Cost (and Reliability) Matters
• Regional Approach
• Keeping Natural Gas in the Ground is Not Rational