Grid Guide to

Future of **Heat** in **Downstate New York**

October 2021

Grid Guide to Podcast Series
https://www.nationalgrid.com/investors/events/grid-guide

Within this podcast, several of National Grid's New York business leaders discuss the future of heat in downstate New York with a focus on the company's plans to help enable the 'net zero' energy transition. The podcast also covers the long-term need for the gas network and how both gas and electricity have key roles to play in future heating requirements.

New York State Environmental Commitments:

New York target for
NET ZERO
by 2050

New York pledge for
70%
Renewable energy by 2030

New York pledge to reduce greenhouse gas emissions by
85%
by 2050

Downstate New York

1.9m
gas customers

Pathways for Decarbonisation

A study of New York City

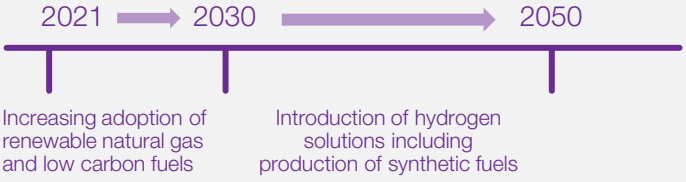
Co-authored by the New York City Mayor's Office, National Grid and Con Edison, the study fully analyses options, trade-offs and cost implications of achieving carbon neutrality.

This was a first of a kind, bottom up study for the future of heat that explores pathways in which NYC could achieve carbon neutrality across all sectors.

The study explores 3 main pathways and concludes that a diverse energy solution will be needed for heat that encompasses both gas and electric heating.

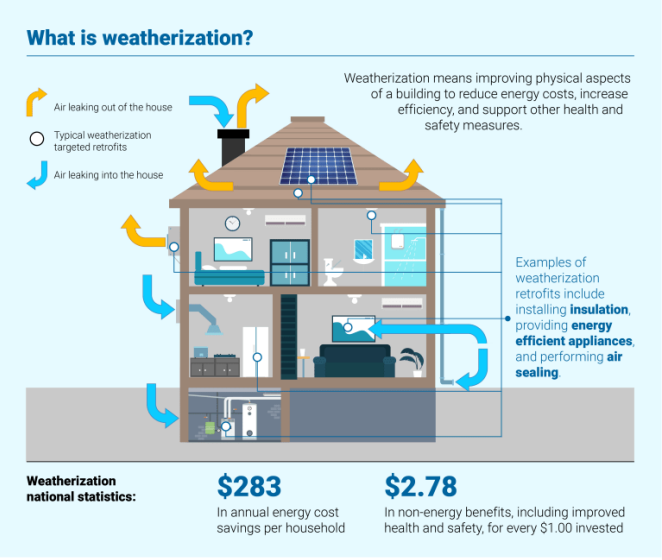
Key Findings for the Future of Heat:

1. The gas network has an enduring role in energy transition
2. Gas and the current network will have an integral role in decarbonisation
3. There is a need for a new policy framework to enable the integration of low carbon gases and hydrogen into the gas network



2050 Scenario - The Future of Gas

- The current gas network infrastructure is required and will be utilised to transport both natural gas and low carbon gas in the longer term to ensure the future supply of heat is affordable and reliable
- The decarbonisation agenda means that longer term, hydrogen and renewable natural gas (RNG) from biogenic sources will grow as part of the overall gas supply
- Biogenic renewable gas sources are available now and are being explored by National Grid
  - Four feedstocks: wastewater, food waste, livestock manure and landfill gas
- Hydrogen—from 2030
  - Blended scenarios analysis is ongoing and currently being explored whereby hydrogen will be mixed with other molecules to create synthetic fuels
- Gasification technology will enable additional feedstocks to generate low carbon gases, including agricultural residues, wood waste and energy crops



National Grid's Weatherisation Program
'Total Home Comfort'

Weatherisation is a key example of an incentive National Grid is implementing as part of its work targeting demand side management solutions.

National Grid's latest Downstate Rate Agreement delivers important progress on the Future of Heat

- Overriding aims from the 3 year agreement with the Public Service Commission
  1. To provide safe and reliable energy
  2. To contribute to a cleaner energy future that is aligned with state decarbonisation goals
- NG have committed to:
  - Leak prone pipe replacement across the existing network to reduce methane emissions
  - Reducing gas use longer term
- As a result here and now:
  - National Grid are examining alternative heating options, sharing such analysis and comparative tools with consumers
  - Investing into non-traditional infrastructure solutions
    - RNG connections i.e Newtown Creek Brooklyn Plant
    - RNG interconnection incentives to connect customer projects
    - Studies into hydrogen blending
- Implementing educational programs to enable customers to efficiently manage energy usage
- Pursuing geothermal loop technology opportunities to increase reliability

A Distributed Energy Infrastructure Solution —The preferred solution

- This solution will combine limited enhancements to gas infrastructure with incremental demand side programs to meet growing customer energy demand.
- PA-Consulting group backed portfolio approach to ensure market gaps are mitigated
- Focuses on demand side management solutions such as weatherisation and energy efficiency programs which are underpinned by 4 key themes:

1	2	3	4
Incremental energy efficiency	Incremental demand response	Heating electrification	Annual non pipes alternative solicitation

- Additional investment cases are to be made to receive additional funding for National Grid's demand side management programs, enabling the Distributed Energy Infrastructure Solution to close 100% of identified future market gaps and maintain gas demand at 2026 Levels.

Further information

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