Decarbonization Strategies to Achieve Net Zero by 2050

NGA Market Forum

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New Jersey Resources

Critical Policy Perspective to Achieve Building Decarbonization Goals

Safety, reliability and affordability are our prime objectives when delivering heat to customers

Public policy must allow for innovation, encourage technology advancements, address reliability and building stock challenges

Regulatory frameworks should support broad solutions to spur market competition, ensure reliability and achieve emission reduction targets

As technology advances, opportunities will continue to emerge to drive down costs like the federal Green Hydrogen shot

Adopting a broad building decarbonization strategy using the existing pipeline infrastructure reduces emissions more quickly, more affordably and more reliably than a single electrification strategy

Using the **already permitted, built and paid for pipeline infrastructure accelerates and lowers costs** of the clean energy transition

The pipeline distribution system is a **clean energy storage solution** that transports flexible, clean fuels to meet seasonal and peak demands

Beneficial building electrification is a **viable solution when it delivers measurable emissions reductions** and supports customer affordability

Strong regulatory support for **EE, RNG, Green Hydrogen and CCUS** will help ensure meeting climate objectives

Our Decarbonization Leadership

2020

Achieved 50% reduction in NJ operational emissions since 2006

2030

Target of 60% reduction in NJ operational emissions since 2006 by 2030

RNG
Hydrogen Blending
Carbon Capture
Carbon offsets
Energy Efficiency
EVs

2050

Setting an ambitious new goal

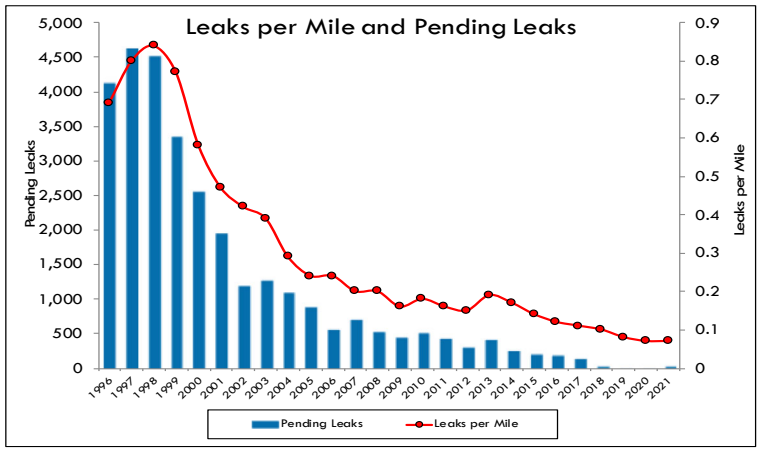
Net-Zero NJ Operations by 2050

Putting Sustainability into Action

NJNG High-integrity, environmentally responsible assets

- More than $230 million in energy efficiency investments that maximize energy conservation
- More than $2.3 billion invested in infrastructure over the last decade
- Lowest leaks per mile in NJ
- Fully replaced cast iron; expect to replace bare steel in early 2022
- 99% of system plastic or protected steel

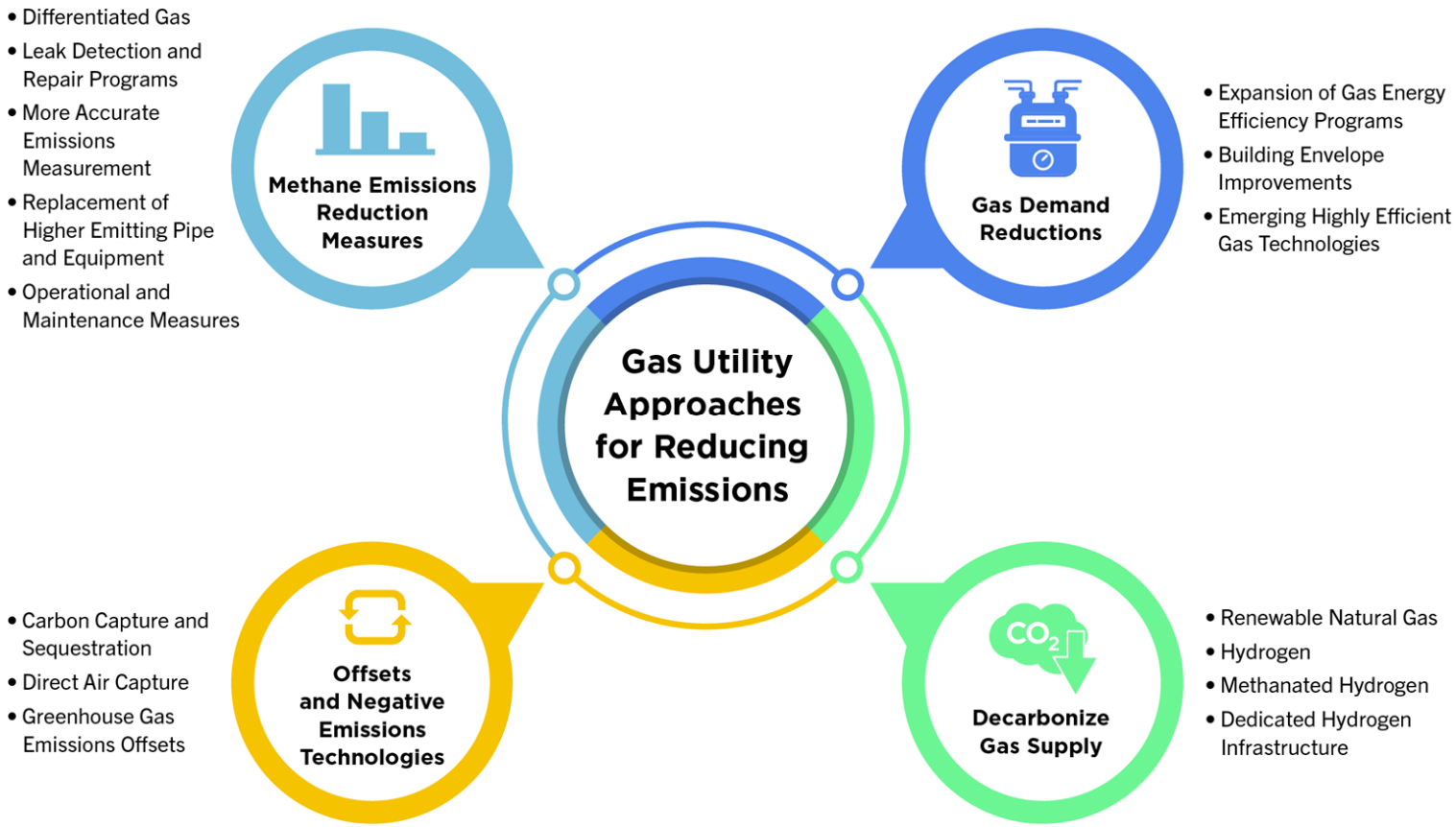
Most Environmentally Sound System in the State



NJR is committed to achieving New Jersey's Clean Energy Future objectives.

How do we achieve the vision

Local Distribution Companies have multiple decarbonization options to pursue that provide low-cost solutions to emission-reduction targets compared to single, costly equipment changeouts for residents and businesses relied upon by a single, forced electrification solution/scenario.



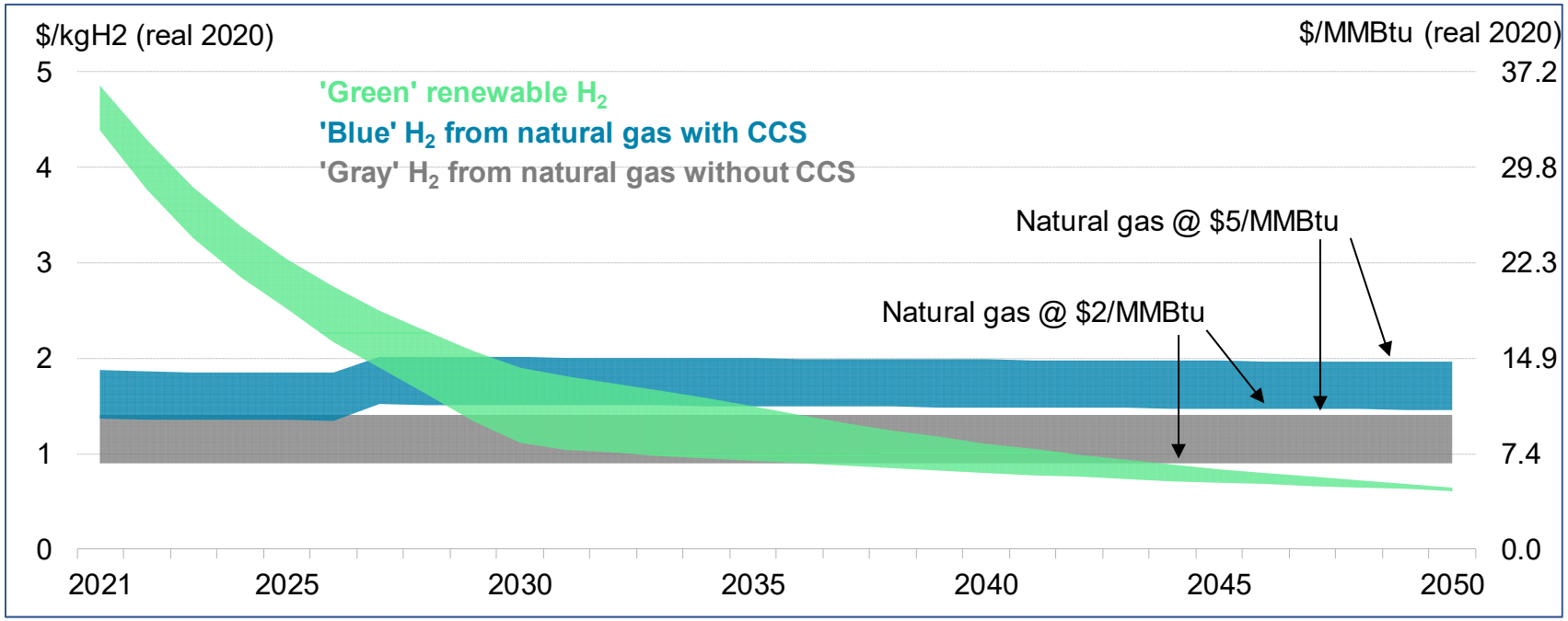
Hydrogen: Future flexible fuel that drives down cost and ensures reliability

- **Vision Coming into focus**
  - Cheaper to produce than natural gas in many regions of US by 2035
  - Curtailed renewable power reduces hydrogen production costs
  - Leveraging 3 million miles of US pipeline infrastructure to deliver clean molecules
- **Rapid Policy Support**
  - 26 countries now have Hydrogen strategy with 70 GW goals for Hydrogen production
  - Hydrogen gets major federal policy support
    - ❖ Hydrogen Shot Initiative
    - ❖ $9.5 billion allocated to Hydrogen as part of the Bipartisan Infrastructure Bill
    - ❖ Build Back Better currently contemplates a Production Tax Credit that could be a game changer

DOE Hydrogen Shot

  - HyDeploy Study in the UK successfully blended 20% hydrogen with zero adverse impact to end use customers HyDeploy
- **Projects and Capital are following**
  - Over $300 billion in project investments announced globally
  - 26 gas utility blending projects underway

Average U.S. levelized hydrogen production costs to 2050



Source: BloombergNEF. Note: The 45Q tax credit for carbon capture and storage (CCS) is applied as it currently stands, with an expiration in 2026. Renewable power prices are sourced from Levelized Cost of Electricity 1H 2021 (web | terminal), which assumes falling hurdle rates.

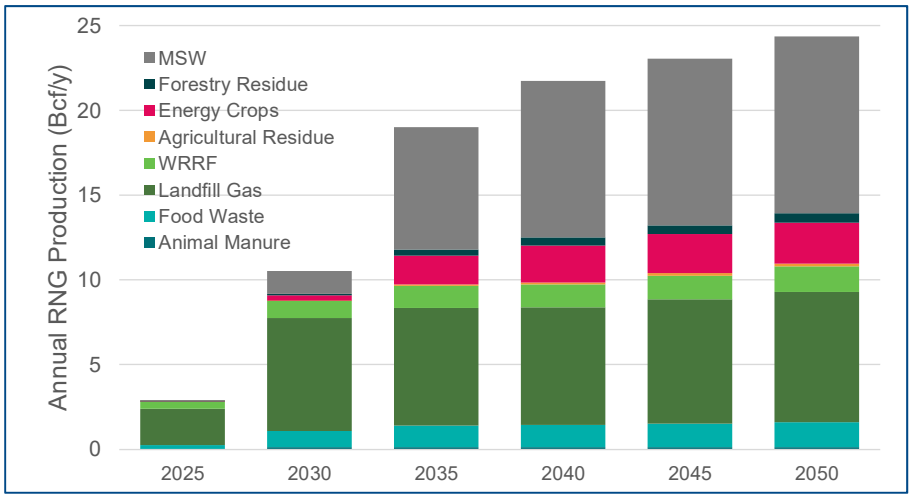
- Leveraging curtailed renewable energy in off-peak hours can significantly improve the economics of hydrogen production and the gas infrastructure is the perfect storage asset for this valuable commodity

The Biden Administration is putting in place mechanisms through the DOE and tax incentives to drive investment in this sector and reduce the cost of this zero-carbon fuel

NJ and Regional RNG Resource Potential to 2050

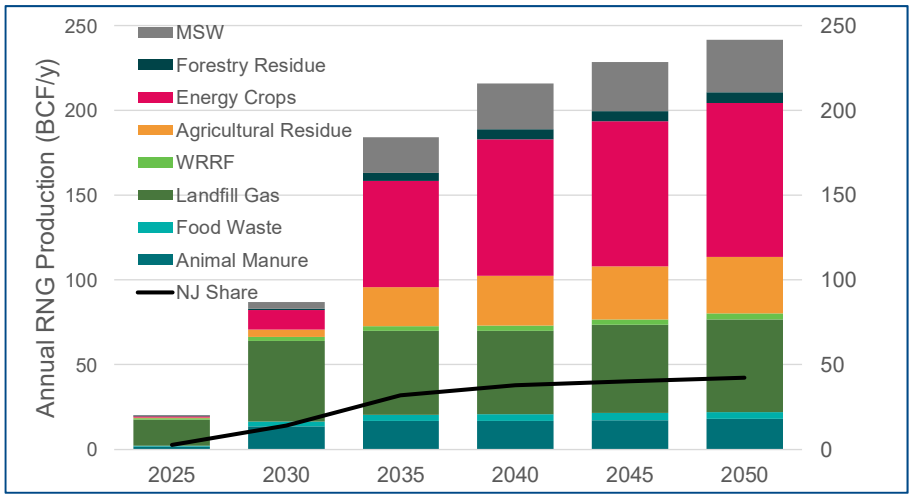
- NJ's largest feedstocks for RNG are landfill gas and municipal solid waste, surrounding three state region provides ten times the in-state potential

Achievable Deployment in New Jersey



25 BCF/Yr Potential By 2050

Achievable Deployment in Region



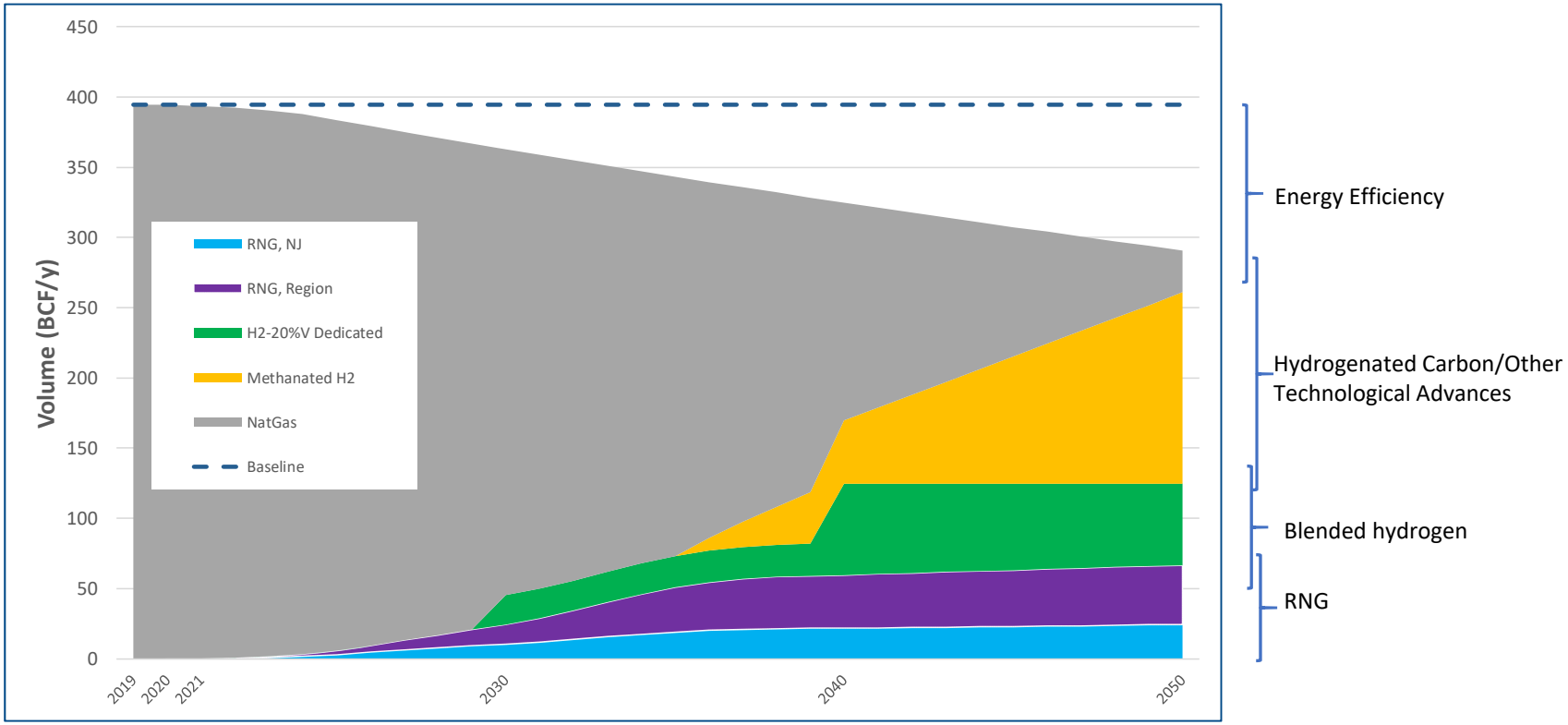
Almost 250 BCF/Yr Potential By 2050

- Projects under review would repurpose **flared biogas** and transform it to RNG; reducing NJ emissions, which aligns with Non-Pipe Solutions recommended by London Economics

NJNG has been actively pursuing potential opportunities in the RNG space and the sector is actively seeking to repurpose medium-btu biogas to create RNG

Achieving Clean Energy Targets by 2050

One Achievable Illustrative Scenario to Achieve 80X50 Targets



- Through a combination of Energy Efficiency, RNG, Blended Hydrogen and other advanced technologies we can achieve the 2050 Climate Targets.

Reducing 400 BCF/yr of natural gas (2019) to less than 40 BCF/yr (2050) with energy-efficiency and zero carbon fuels reduces natural gas emissions by 80%

Decarbonization - Quicker, More Affordably and with Greater Reliability

By the year 2050, we believe that New Jersey will be able to serve its heating customers with a carbon neutral fuel supply.

To accomplish this, the home heating infrastructure that you know today for its delivery of natural gas will transition to carbon-neutral and zero emission fuels like renewable natural gas and hydrogen.

In doing so, we will help reach New Jersey's climate goals…

- **More quickly…**
- **More affordably…**
- **With greater reliability than other approaches…**

And in a way that complements the state's renewable energy ambitions for wind and solar.

Federal public policy support is incenting a decarbonization pathway of low to zero carbon fuel alternatives that will benefit customers if embraced by State policies.