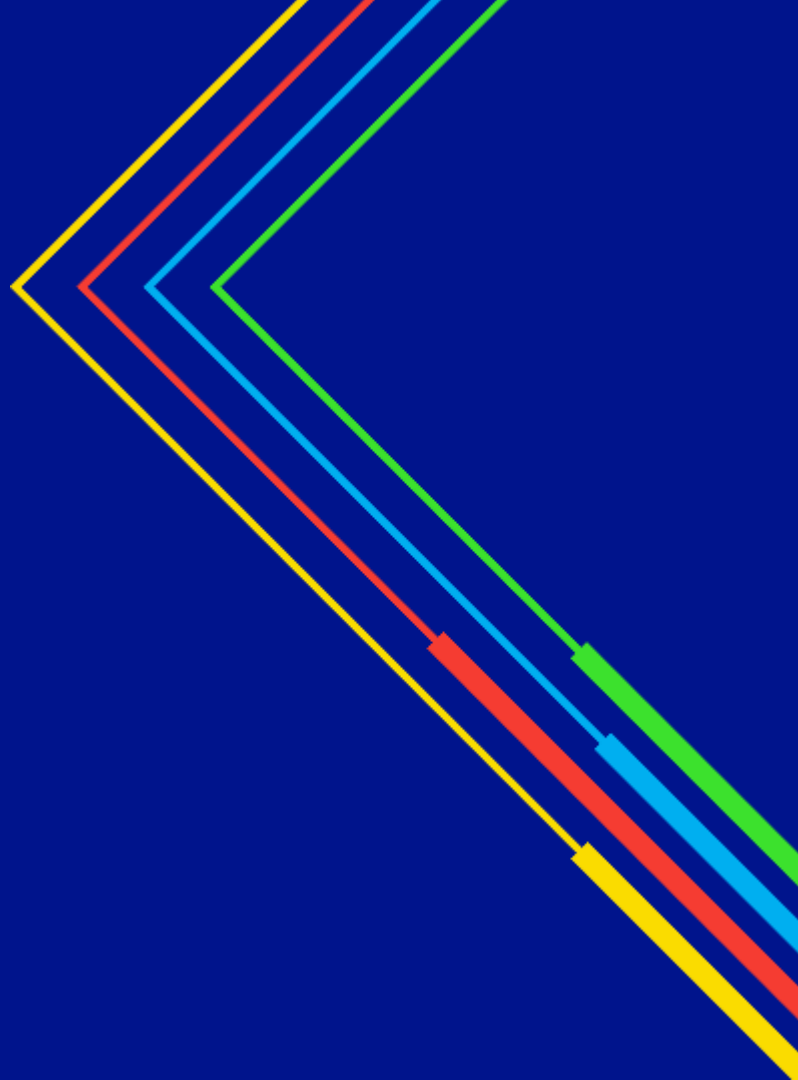# Hydrogen Hub Vision

July 2022

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Vision Statement

Green hydrogen will play an important role in the decarbonization of the Northeast. It is a critical, cleaner residential heating fuel, an energy resource for industrial customers that are hard to decarbonize, and a carbon-free fuel for power generation. These uses will allow for a balanced and resilient decarbonization approach, requiring fewer new assets and ultimately minimizing the impact on customer energy bills, all while achieving regional net zero goals. Incorporation of hydrogen into the energy mix will begin to ramp up throughout the decade and eventually scale to meet the needs of the communities we serve.

We envision providing five H2 use cases that will bring value to the region

Residential Heat

Two approaches decarbonizing different sections of the network that enable our zero-fossil goals

Commercial & Industrial

Power Generation

A range of options for dispatchable power, depending on the needs of the region

1. **Hydrogen blending into the gas network** to supplement renewable natural gas as a clean residential fuel

2. **Islanded, 100% hydrogen buildings or neighborhoods** to transition residential and community buildings in specific sections of the network to clean fuel

3. **C&I hydrogen clusters** anchored by one or more large customers to provide clean hydrogen to hard-to-decarbonize industries

4. **Hydrogen-fueled peaking capacity** to provide cost-effective power when it's needed most, as a complement to intermittent renewables

5. **Hydrogen-fueled combined cycle generation** to provide consistent, efficient power and stability for a high-renewables grid

Residential Heat

Hydrogen blending into the gas network

Clean residential fuel to supplement renewable natural gas, eliminating 265,000 tons of CO_2 per year by 2030

- Electrification, energy efficiency, and hybrid heat-electrification cases create significant reduction in heating fuel needs by 2050

- Gas network is wide-reaching and provides decarbonized fuel to many customers via existing network & customer appliances; low cost means easy win for customers

- Improves air quality with reduced fossil use

- Maintains and upskills utility plumbing and electrical trade jobs
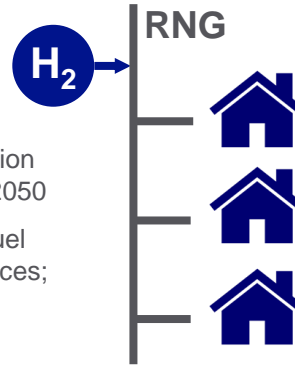
Islanded, 100% hydrogen buildings or neighborhoods

Fast-track to decarbonization for facilities such as low- and medium-income apartment complexes, hospitals, and government buildings

- Intended to utilize a large portion of existing infrastructure, leading to bulk decarbonization for a group of customers

- Provides resilience to critical loads

- Enables hydrogen for transportation fuel as an adjacent benefit

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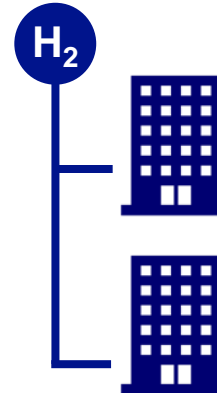
Commercial & Industrial

C&I hydrogen clusters

Dedicated 100% hydrogen networks anchored by one or more hard-to-decarbonize customers

- Enables decarbonization for large industrial carbon emitters in hard-to-decarbonize industries like concrete and steelmaking

- Allows large emitters to remain in the Northeast, maintaining jobs and enabling expansion where public policy requires decarbonization

- Replaces dirtier stored fuels such as diesel used in back-up generators or cogeneration plants where electric grid doesn't fully serve the customer load
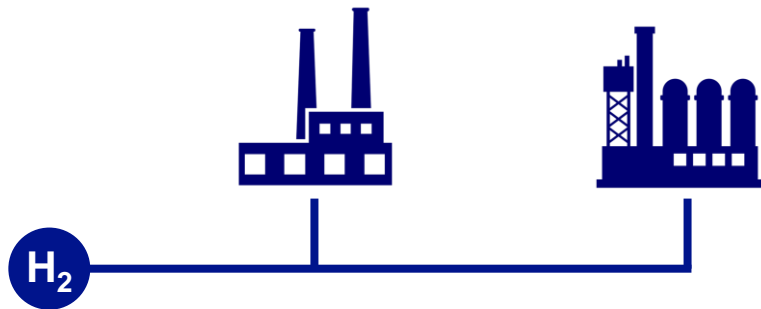
Power Generation

Hydrogen-fueled peaker or combined cycle generation

Clean, dispatchable power generation scaled to match the needs of the region, providing 100 to 500 MW by 2030

- Dispatchable green power complements renewables & battery storage to provide reliability and least-cost solutions, resulting in lower electricity rates

- Improves local and regional air quality with CO_2 emissions eliminated

- Creates construction jobs & maintains existing highly-skilled work force

- Maintains tax revenue for host communities

- Efficiently uses land by housing significant capacity in a small parcel

- Repurposes existing power generation sites and assets like interconnections, reducing need for new build

- Creates synergies with other external hub components (H_2 production) by driving early bulk demand use cases

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