

Our Plan: National Grid Net Zero by 2050

Climate change is the greatest challenge facing the world, our country, and our region. National Grid supports our states' goals in reducing greenhouse gas emissions economywide. We recognize that decarbonizing our electric and gas systems will require resolving many questions and seeking new partnerships, technologies, energy policies, utility regulatory models, and transformative investments. Though we do not have all the answers, we are eager to collaborate on solutions and to step up in addressing these challenges.

We aim to achieve net zero greenhouse gas (GHG) emissions by 2050, including our own operations and emissions that result from the sale of electricity and gas to our customers. We have developed a framework to achieve this by focusing our work on ten areas through 2050 and beyond:

- **Reducing demand through energy efficiency and demand response;**
- **Decarbonizing the gas network with renewable natural gas and hydrogen;**
- **Reducing methane emissions from our own gas network while working with the industry to reduce emissions through the entire value chain;**
- **Integrate innovative technologies to decarbonize heat;**
- **Interconnecting large scale renewables with a 21st century grid;**
- **Enabling and optimizing distributed generation;**
- **Utilizing storage;**
- **Eliminating SF6 emissions;**
- **Advancing clean transportation; and**
- **Investing in large scale carbon management.**



1. Reducing Demand Through Energy Efficiency and Demand Response

We will double down on our nation-leading energy efficiency programs for our customers' homes and businesses. All three of our states, New York, Massachusetts, and Rhode Island, consistently rank in the top five for energy efficiency programs per the American Council for an Energy-Efficient Economy. Additionally, for our gas business, we have already included non-pipe solutions, like energy efficiency and demand response, to address local gas supply constraints.

2. Decarbonizing the Gas Network with Renewable Natural Gas and Hydrogen

We will transition away from delivering traditional geologic natural gas to our customers to providing them with low- and zero-carbon renewable natural gas (RNG) and hydrogen. We will scale utilization of RNG from sustainable biomass feedstocks (e.g., wastewater, landfills, food waste, livestock manure, and other), looking for the most readily scalable and affordable supplies for our customers.

We have successfully been injecting RNG into our gas system since 1981, and we believe that it is time for this renewable resource to get the same policy support and recognition as renewable electricity. Further, we see hydrogen playing a major role in the next few decades. Production of hydrogen from renewable electricity is the lynchpin that sits between the two networks, and in the coming years, we will lay the foundation for hydrogen by continuing studies and pilots, focusing on producing and blending it into our existing gas network, and developing a transition plan that will lay out the changes required in the existing gas infrastructure. We believe that hydrogen can transform the energy industry, and it's time to start the groundwork to integrate hydrogen into the overall energy system – which is why, in New York, we are excited to be participating in a hydrogen blending study, in conjunction with NYSERDA and Stony Brook Institute. The project will explore the performance and use of our existing gas infrastructure to integrate and store renewable hydrogen into our system.

3. Reducing Methane Emissions

We are committed to reducing methane across the value chain. This means reducing the methane leaks from our own gas network. It also means working with the broader natural gas industry to reduce upstream methane emissions from the geologic natural gas we deliver to our customers, as we transition to RNG and hydrogen. In the Northeastern U.S., we have some of the oldest pipelines in the country, and our aggressive leak prone pipe replacement work has led to a 15% reduction in methane emissions from distribution mains over the past five years with replacing 400 miles of pipe per year. It will continue to be a focus in coming years. Additionally, we are working with the production sector as well as other segments of the gas business, through collaborative efforts like ONE Future, the Natural Gas Supply Collaborative, and the Natural Gas Sustainability Initiative, to reduce methane emissions across the entire value chain and address other environmental and social sustainability issues.

4. Integrate innovative technologies to decarbonize heat

Under any heating sector decarbonization pathway, we know that there is a role for electrification. Heat pumps have a major role to play in helping the Northeast transition away from its substantial reliance on oil and propane – expensive and high-carbon emitting fuels – utilized extensively for heating. Likewise, we will explore how an affordable and achievable decarbonization pathway will leverage: hybrid gas-electric heating systems; targeted “right-sizing” of the gas network leading to transitioning some customers to heat electrification; and deployment of a new energy delivery network to complement today’s gas and electric networks in the form of geothermal district energy systems.

5. Utilizing Large Scale Renewables with a 21st Century Grid

Large-scale renewables resources, including solar, onshore wind, and offshore wind, will play an integral role in the low-carbon future. We support these abundant and cost-effective resources, and we are excited to facilitate the connection of these clean resources to our communities. We recognize the need for transmission investment which is indispensable to delivering output from these renewables.

6. Enabling and Optimizing Distributed Generation

We believe that distributed generation can provide numerous benefits to both our customers and the overall energy system. With high amounts of DG coming on to our network, we are rising to the challenge to facilitate the many required interconnections to our distribution system while continuing to ensure its reliability. We are looking to further invest in grid modernization to enable more DG to connect which will be complimented by investments in advanced meter infrastructure – which will not only benefit our DG customers, but all customers.

7. Utilizing Storage

As we build and interconnect large scale renewables, we will make significant investments in storage technologies to address the intermittency challenges associated with renewable energy. By 2050, we need to integrate storage into an energy system that is highly reliable and completely seamless from a customer’s perspective to meet their energy demand at all times for various end-uses, including charging electric vehicles. We have already successfully installed a battery storage project on Nantucket Island and two batteries in Long Island to help meet peak demand and our states’ clean energy goals. We will continue to explore future storage deployment opportunities, including maximizing the value of storage through market participation and maximizing customer benefits through fully integrating storage into our grid design to capture its reliability value.

8. Eliminating SF6 Emissions

Sulfur hexafluoride (SF6) is used in electric networks for its insulating properties; unfortunately, it is a very potent greenhouse gas. Since 2000, we have reduced our SF6 emissions by over 80%. We have committed to installing no new equipment using SF6 by 2028 and reducing total leaks by 50% by 2030. We have an ambition to eliminate all SF6 gas from our assets by 2050. We are working to find new technologies and solutions to achieve this target through work with partners from across the sector to identify, develop, and implement SF6-free solutions at the earliest opportunity.

9. Advancing Clean Transportation

Transportation contributes to approximately 40% of the greenhouse gas emissions in the Northeastern U.S. – more than any other sector – and we are dedicated to assisting our states and customers in reducing those emissions. Externally, we will continue to proactively promote both electric vehicle (EV) adoption and EV charging infrastructure, preparing for “make-ready” investments to reinforce the grid and facilitate infrastructure where we have agreement with our regulators, for the benefit of our customers and communities. Internally, we will convert to a 100% electric fleet by 2030 for our light-duty vehicles while also pursuing the replacement of our medium- and heavy-duty vehicles with zero carbon alternatives.

10. Investing in Large Scale Carbon Management Technologies

Recognizing that there will be limitations to utilize electrification and gas decarbonization, potentially requiring the continued use of some geological natural gas, to meet our net zero goals by 2050, we plan to integrate carbon capture technologies and carbon offset programs to help eliminate any remaining emissions.