

**EXH. JJJ-9
DOCKETS UE-22 ___/UG-22 ___
2022 PSE GENERAL RATE CASE
WITNESS: JOSHUA J. JACOBS**

**BEFORE THE
WASHINGTON UTILITIES AND TRANSPORTATION COMMISSION**

**WASHINGTON UTILITIES AND
TRANSPORTATION COMMISSION,**

Complainant,

v.

PUGET SOUND ENERGY,

Respondent.

**Docket UE-22 ___
Docket UG-22 ___**

**EIGHTH EXHIBIT (NONCONFIDENTIAL) TO THE
PREFILED DIRECT TESTIMONY OF**

JOSHUA J. JACOBS

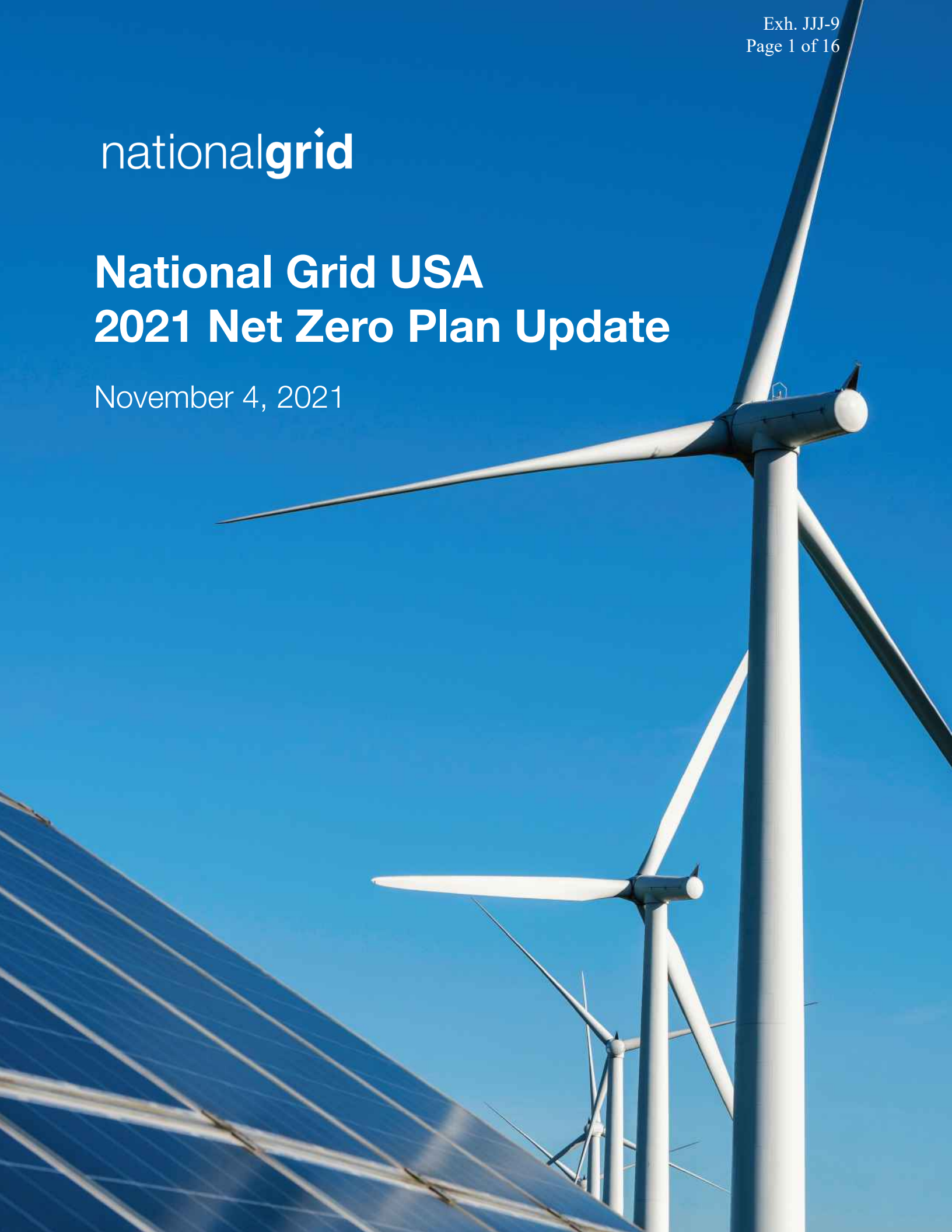
ON BEHALF OF PUGET SOUND ENERGY

JANUARY 31, 2022

national**grid**

National Grid USA 2021 Net Zero Plan Update

November 4, 2021





**A Message from
Badar Khan, President
of National Grid USA**



The impacts of extreme weather and climate change are becoming more severe. In recent years we have seen floods in New York City and more frequent, stronger hurricanes hitting the East Coast. The need for action has never been more urgent. As a country and a region, we are in the critical decade for drastically reducing emissions. At National Grid, we believe that our size gives us great responsibility to act and build a 21st century, climate-focused, clean energy company. To that end, we are decarbonizing our operations and helping our states, communities, and customers achieve a net zero energy future as quickly as possible.

As a clean energy company, we are committed to setting meaningful environmental targets and meeting them. We have partnered with the Science Based Targets initiative (SBTi), a non-profit coalition that drives climate action in the private sector by enabling companies to set emissions targets. We are proud to say that we are the only investor-owned utility in North America who has achieved external SBTi verification for both our direct and indirect greenhouse gas emissions (Scopes 1, 2, and 3). As the owner and operator of energy networks that deliver power and heat to 20 million people in the Northeast U.S., National Grid's regulated businesses (NGUSA) proudly embraces the vital role it plays both in providing the infrastructure we need today and building the infrastructure we need for a cleaner energy future – *a future that will offer new, lower-carbon products and services to our customers.*

In just the one year since National Grid announced its net zero carbon commitment in October 2020, we have already taken significant steps to meet our shared climate goals:

- **We have set more aggressive targets.** Our GHG emissions reduction targets now include the gas and electricity which we sell to our customers. Most companies do not include these indirect emissions in their net zero commitments because they cannot be directly controlled, but we are taking on this responsibility. By accounting for these emissions in our net zero target, we enable our customers and the States where we operate to be a part of the solution to a problem that needs all hands on deck.
- **We are considering every customer.** Fairness, affordability, and equity will continue to be central to our strategy for addressing climate change, ensuring that every customer has access to affordable and reliable energy, and that we all share the benefits of a net zero future.
- **We have identified grid upgrades needed to deliver more renewable electricity.** We have begun planning for electric system upgrades required to deliver up to 6,200 megawatts (MW) of new renewable energy in New York and Massachusetts, and we have solicited up to 1,600 MW of new off-shore wind resources together with our peer utilities in Massachusetts. For reference, 1 MW of clean energy can supply around 600 average homes.
- **We are quickly scaling our clean transportation options and recommending new options.** We are delivering on our Electric Vehicle (EV) programs to install 20,000 EV charging ports across our three states. We have also proposed new programs in Massachusetts to deploy an additional 30,000 charging ports in Massachusetts at residential, public, workplace, and fleet locations. Collectively, this will be the largest EV program in the US outside of California. We are committed to ensuring all of our customers have equitable access to the benefits of clean transportation: 46% of all our installed chargers are in environmental justice communities and the new Massachusetts proposal also contains cost sharing for electric school buses in environmental justice communities.
- **We are finding solutions for cleaner heating.** We have set targets to reduce the greenhouse gas emissions related to our gas supply. One solution is to capture methane from current local emission sources, like landfills and wastewater treatment plants, and use such gases to displace the geologic gas in our networks. We have also secured funding from the U.S. Department of Energy, in conjunction with other partners, to test the blending of hydrogen produced from renewable electricity into our gas networks and understand its potential to further replace geologic gas. We have proposed a new geothermal district energy demonstration program in Massachusetts to test the potential for this low-carbon heating and cooling solution for our gas companies.

Identifying new ways to significantly lessen the impacts of climate change is ingrained within our leadership and across every aspect of our business; from how we plan our networks to how we decarbonize our communities to how we serve our customers. Recognizing the urgency of the challenge in front of us, innovation is key. We are committed to finding a way to ensure fair, affordable, and equitable clean energy for our customers and our communities so that no customer is left behind as we transition to a clean energy future. While the challenge ahead of us is expansive and significant, we are optimistic. By bringing policymakers, regulators, non-governmental organizations, innovators, businesses, communities, and customers to the table, we believe that by working together we can – and will – build a net zero energy future that is a model for the nation and the world.

Badar Khan

U.S. President, National Grid

Our Target: Greenhouse Gas Emissions Reduction

Decarbonization pathways: 4 big shifts needed in our energy systems by 2030

1. A transformation of the transport sector, by electrifying 20% or more of all vehicles;
2. Accelerating the zero-carbon electricity transition, by ramping up renewable electricity deployment to achieve 80-100% zero-carbon electricity supply;
3. A transformation of the building sector, by doubling the rate of efficiency retrofits; and
4. Decarbonizing the heating sector, by converting nearly all the region's 5 million oil-heated buildings to cleaner solutions, such as heat pumps, and by increasing the amount of low carbon fuels in our networks.



United Nation's Intergovernmental Panel on Climate Change (IPCC) report¹ makes it clear that we need to significantly reduce carbon emissions by 2030 if we are going to avoid the worst impacts of climate change. This makes the next ten years "the critical decade" for this global challenge, and as a company we are acting with a shared sense of urgency. As of 2020, National Grid US has successfully reduced our Scope 1 and 2 greenhouse gas emissions by 67% from our 1990 baseline. For five consecutive years, we have achieved an 'A' grading (the highest) for our response to the CDP, an international non-profit organization helping companies disclose their environmental impact. To ensure we are doing enough to address global climate change, we have also partnered with the Science Based Target initiative (SBTi) to determine what targets we would need to meet to do our part in keeping the Earth's temperature below the 2 degree Celsius threshold, or approximately 3.6 degrees Fahrenheit, to avoid the most catastrophic impacts of climate change. We are proud to be the only investor-owned utility in the US to have SBTi-verified targets. and believe that this partnership is a model for how energy companies across America can lead on this critical issue.

Our emission targets are aligned with those of the states in which we operate, and we will continue to support them in meeting their respective 2030 climate goals. To help reduce car emissions, National Grid plans to install roughly 50,000 charging ports by 2025 to support large-scale vehicle electrification. We have also identified nearly \$5 billion in electric transmission and distribution infrastructure upgrades needed to enable our states' 2030 targets for zero-carbon electricity. In the next 5 years we plan to reach over 850,000 megawatt-hours of electricity savings and 5.7 million dekatherms of gas savings through energy efficiency, including installations of electric heat pumps to more than 45,000 customers in the next few years. By 2030, we aim to reach at least 30 million dekatherms of our gas supply from carbon-neutral renewable natural gas from sustainable feedstocks — enough to meet the demands of roughly 240,000 average residential homes. National Grid is proud to support our states in this critical decade as we push ourselves to reduce greenhouse gas emissions in an effective, fair, and urgent manner.

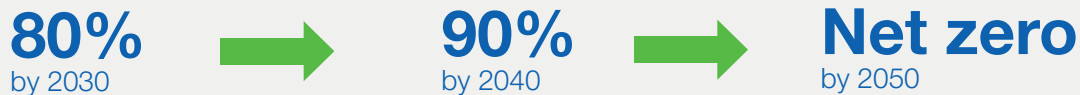
¹ <https://www.ipcc.ch/assessment-report/ar6/>

Helping Set and Meet Emission Targets

Greenhouse gas emission reporting can be broken out by Scopes. As defined by the U.S. Environmental Protection Agency (EPA), Scope 1 emissions are **direct** emissions that occur from sources that we control or own, and Scope 2 emissions are **indirect** emissions related to our electricity consumption and energy losses in our electric grid (line loss). Scope 1 and 2 emissions are often grouped together when making emission reduction commitments. Scope 3 emissions are the result of activities from assets that we do not own or control, but which we can **indirectly** influence.²

Our Direct and Indirect GHG Emission Targets

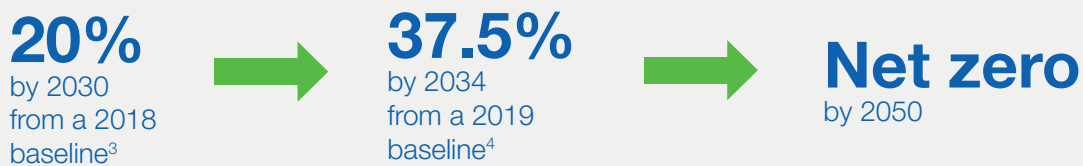
(Scope 1 and 2) From a 1990 Baseline



At National Grid, we also understand our impact as a seller of natural gas and electricity to our customers, and we recognize the importance of our role in helping reduce the emissions of these sold products. That is why, **in October of 2020, we expanded our ambitions to strive for net zero emissions inclusive of these indirect emissions from our gas and electric sales.** It is not common for companies to include Scope 3 emissions in their greenhouse gas reduction efforts, or in their net zero targets; however, as a utility our Scope 3 emissions cannot be ignored and we look forward to helping reduce these emissions.

Our Indirect Emissions Targets Including Electricity & Natural Gas Sold

(Scope 3)



National Grid plc Group Commitments

National Grid plc is one of the world's largest investor-owned energy utilities, committed to delivering electricity and gas safely, reliably, and efficiently to the customers and communities we serve in the US and UK. Our full set of global responsible business commitments, including environmental, community, economic, people, and governance topics can be found in our 2020/2021 Responsible Business Report: <https://www.nationalgrid.com/responsibility/responsible-business-report>.

² <https://www.epa.gov/climateleadership/ghg-inventory-development-process-and-guidance>

³ Global target (inclusive of National Grid US, National Grid UK, and National Grid Ventures)

⁴ Global SBTi verified target

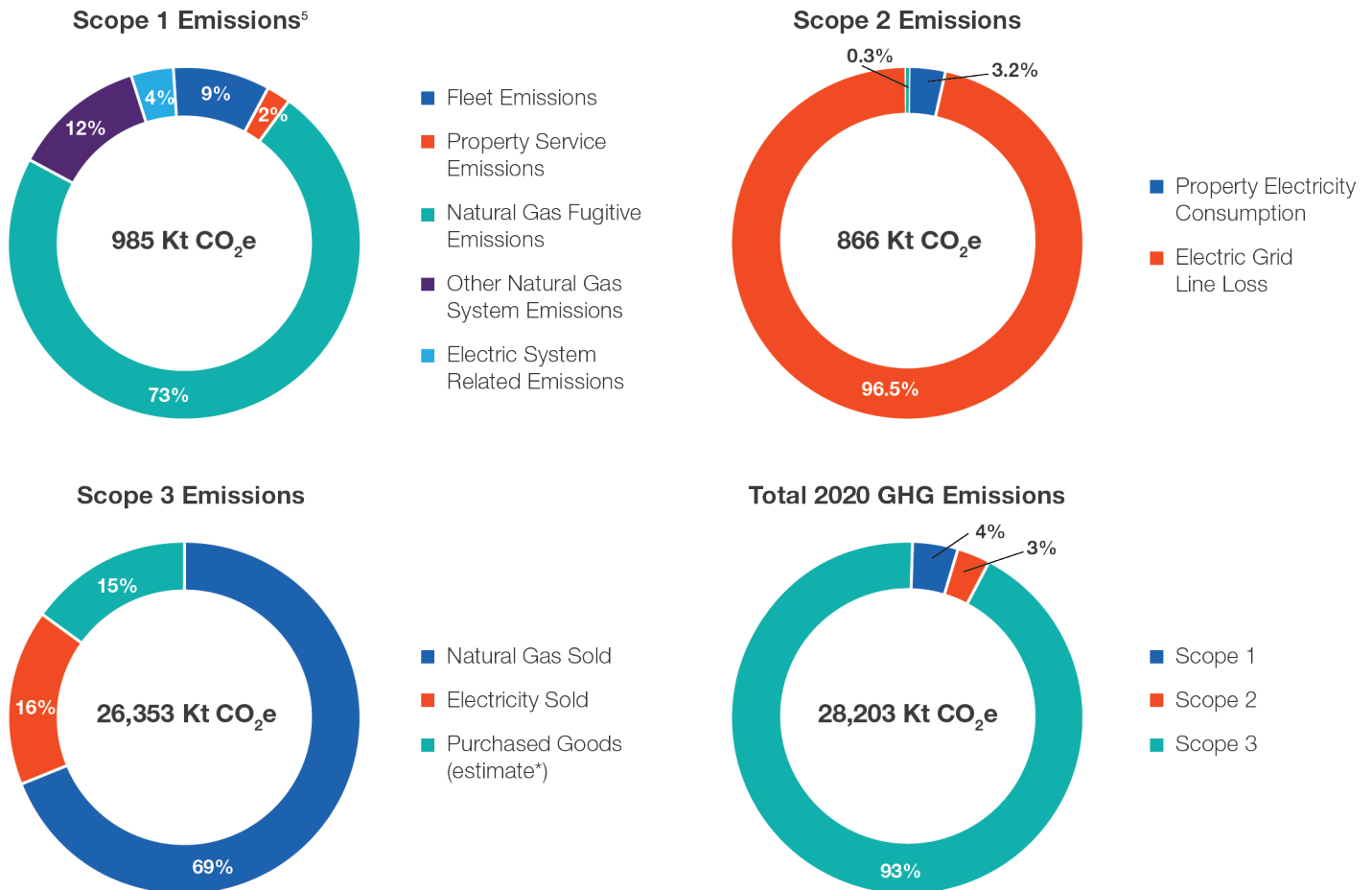
Our Strategy: Meeting the Challenge of the Critical Decade

To ensure we meet our 2030 GHG emission reduction targets and our states' climate policy goals, we are advancing our emission accounting techniques and committing to public transparency. We are also working with our communities to ensure an equitable transition that enables all of us to meet the challenge, and we are progressing plans to reduce direct and indirect emissions across our full breadth of emissions sources.

Reporting our Emissions

Our largest direct Scope 1 emissions are from the fugitive gas system emissions, which includes the methane that escapes as we deliver natural gas to our customers. Our largest Scope 2 emissions are from the electric losses of our electric delivery systems. Most of our indirect, Scope 3 emissions are from the use of our sold gas. We also have material indirect emissions associated with the electricity we sell and relating to our supply chain of purchased goods.

Table 1: 2020 NGUSA Emissions in metric tons



*Current calculation for purchased goods may be refined

⁵ National Grid Ventures' Long Island fossil generation emissions of approximately 3,000 kt of CO₂e in 2020 are not included in the Scope 1 emissions shown above. As of April 2021, these resources are managed separately from the NGUSA regulated businesses.

Related National Grid Group Initiatives in the US

National Grid Ventures (NGV) is the competitive division of National Grid plc, with non-regulated operations in the UK, Europe, and US. It operates outside of National Grid's core regulated businesses in the UK and US where it develops, operates, and invests in energy projects, technologies, and partnerships to accelerate the development of our clean energy future.

In the US, NGV's carbon-free renewable generation produced energy that displaced other US generation that would have otherwise emitted an estimated over 700,000 tons of CO₂e in 2020.

In the US Northeast, NGV has several projects that are either now or will soon reduce greenhouse gas emissions from other Northeast carbon-emitting sources. NGV teamed with NextEra Energy Resources, Inc. (NextEra) to develop and own two operating battery energy storage facilities on Long Island that provide 10 MW of stored energy on eight hours of every summer day, displacing gas and oil-fired peaking generation that would be otherwise typically be dispatched during those hours. NGV and NextEra are also in the construction phase of a 23 MW solar facility on Long Island.



Building a Net Zero Future: Our Plans & Progress

Over the next decade, continued rapid progress of large-scale renewable buildout, together with acceleration of energy efficiency (especially building weatherization) is critical to achieve reductions across our direct and indirect emissions. To further support our region’s decarbonization efforts, while improving future energy reliability, we must utilize low-carbon and cleaner fuels in our gas network to complement our heat electrification initiatives. These vital initiatives will help meet our customers’ heating needs in sectors that are hard to decarbonize such as large industry, heavy transport, and heating. We believe that investing in innovation and increased scaling of clean energy technologies will help reduce costs, increase accessibility, and most importantly, help us meet our net zero goals during this critical transition decade.

This section provides details on the pillars of our net zero strategy, including targets and achievements to-date.

Table 2: Pillars of our GHG Reduction Strategy

GHG Reduction Pillars	Primary Emission Source Reduced
Reducing demand through energy efficiency and demand response	Sold gas Sold electricity
Interconnecting large-scale renewables with a 21st century grid	Sold electricity Electric line losses
Enabling and optimizing distributed generation	Sold electricity Electric line losses
Eliminating SF6 emissions	Electric system
Advancing clean transportation	Company fleet & regional vehicle emissions
Reducing methane emissions	Fugitive natural gas
Decarbonizing the gas network with renewable natural gas and hydrogen	Sold gas
Supporting efficient electric and hybrid-electric heating options for customers	Sold gas Sold electricity
Further reducing indirect emissions from operations	Purchased goods and services and other Scope 3 categories
Pursuing carbon management practices	All

Reducing demand through energy efficiency and demand response

Electric and gas energy efficiency and demand response are foundational elements of the pathway to net zero. By 2030, we'll need to double the rate of energy efficiency retrofits across our region, while focusing additional efforts in particular locations where reducing peak energy consumption can reduce the need for new infrastructure.

Targets

- By 2030, we plan to reduce energy consumption in our company facilities by 20% from a 2019 baseline through energy efficiency measures.
- Our New York efficiency programs are on track to nearly-double the level of gas and electric savings from 2020 to 2025, reaching more than 3.6 million dekatherms (Dth) of natural gas and 525,000 megawatt-hours (MWh) of electric energy savings. At least 20% of all program spending will be dedicated to serving income-eligible customers, including no-cost home insulation.
- In Massachusetts, our programs plan to deliver 1.7 million Dth of natural gas savings and 196,000 MWh of electric energy savings per year by 2024. At least 20% of all gas program spending and at least 10% of all electric spending will be dedicated to income-eligible customers. By 2024, the portfolio will deliver 460,000 metric tons of carbon dioxide equivalent (MTCO_{2e}) reductions.
- In Rhode Island, our programs plan to deliver 440,000 Dth of natural gas savings and 132,000 MWh of electric energy savings by 2023.

Achievements to Date

- Our customer energy efficiency programs rated in the top 5 in the United States per the American Council for an Energy-Efficient Economy — Massachusetts was #2, Rhode Island was #4, and New York was #5 — as of December 2020.
- In 2020, despite the impacts of the COVID-19 global pandemic, our U.S. programs achieved 3,553,960 Dth of natural gas savings and 1,228,778 MWh of electric savings and included more than 21,000 virtual home energy audits.
- In Central New York, National Grid has partnered with the New York State Energy Research and Development Authority (NYSERDA) to launch a residential energy savings pilot using advanced metering. The pilot's innovative business model is designed to demonstrate the potential for market-based financing for energy efficiency to help deliver the next level of scale in this sector.
- We have launched a ground-breaking plan in our Downstate New York region, to address rapidly-growing customer heating demand through alternatives to new infrastructure, including intensive building weatherization (such as insulation), demand response (reducing customers' peak period gas use), heat electrification, and other potential market solutions.



Case Study

National Grid has a key role in enabling renewable electricity delivery and we are proud to partner with the New York Power Authority (NYPA) to deliver the first-ever “Priority Transmission Project” in support of New York’s Climate Leadership and Community Protection Act of 2019. The Smart Path Connect project will upgrade over 100 miles of existing transmission lines – almost exclusively within existing right-of-way – and replace or upgrade approximately 10 substations along the project path.



The project is expected to be in service by the end of 2025 and will deliver:

- 1,000 MW increase in renewable energy flow across New York
- Over 1 million tons of CO₂ avoided each year
- Over \$400 million in transmission congestion savings annually
- Benefits to state and local economies by creating hundreds of clean energy construction jobs

Interconnecting large-scale renewables with a 21st-century grid

We are partnering closely with our states to meet large-scale renewable policy targets by enabling the deployment of cost-effective zero-carbon generation resources, including first-in-the-nation offshore wind projects. We are working to accelerate electric transmission infrastructure build-out to provide more system capacity for renewables while making long-term commitments to new energy projects through power purchase agreements or other mechanisms that help project developers secure necessary financing.

Targets

- We aim to develop and construct nearly \$5 billion in necessary transmission and distribution upgrades to help meet the renewable targets in our states, including up to \$4 billion in NY for up to 5,000 MW of new renewable capacity and up to \$700 million in Massachusetts for up to 1,200 MW of capacity.
- Through power purchase agreements in Massachusetts, along with other electric utilities, we are supporting clean energy adoption to help achieve a statewide target of 4 gigawatts (GW) of offshore wind energy by 2027.

Achievements to Date

- We have contracted for more than 5,000 gigawatt hours (GWh)/year of large-scale renewables for our Massachusetts customers (for example with hydropower from Hydro Quebec and offshore wind power from Vineyard Wind and Mayflower Wind) and about 1,550 GWh/year of resources for our Rhode Island customers (e.g., Revolution Wind). In March 2021, we issued a joint request for proposal (RFP) with Eversource and Unitil for up to 1.6 GW of offshore wind for our Massachusetts customers.
- We have signed a joint development agreement with the New York Power Authority (NYPA) for co-investment in the Smart Path Connect transmission project to enable the delivery of approximately 1 GW of large-scale renewable generation in accordance with the NY Climate Leadership and Community Protection Act (CLCPA).

Enabling and optimizing distributed generation

We are interconnecting significant amounts of distributed generation (DG) on both customer rooftops and through “community” or shared solar farms. We are committed to maximizing the benefits of these local zero-carbon resources for all, while ensuring a more equitable customer participation in solar energy programs that benefits customers across all income levels.



Targets

- We are working to enable New York’s CLCPA statewide 10 GW goal for distributed solar by 2030.
- We are supporting implementation of 3,200 MW of distributed solar statewide in Massachusetts under the SMART I and II programs.
- We are targeting up to 95 MW of Massachusetts shared solar capacity for enrollment by income-eligible customers under the SMART II program.

Achievements to Date

- As of September 2021, we have interconnected approximately 23,200 renewable DG projects totaling approximately 900MW in New York, approximately 67,000 projects totaling over 1,500 MW in Massachusetts, and 11,800 projects totaling 382 MW in Rhode Island. Across our three service territories, we have interconnected the 2nd largest amount of large-scale, non-residential solar of any utility in the U.S.
- In New York, we are helping grow participation in community DG through a novel customer billing solution we developed and proposed to our regulators.
- In New York and Massachusetts, we have proposed new solar programs to increase access for our income-eligible customers (i.e., New York Solar for All and Massachusetts Community Shared Solar).

Eliminating SF6 emissions

Sulfur hexafluoride, or SF6, is a potent greenhouse gas that has a global warming potential of 22,200 times that of CO2 over a 100-year period. It is currently used for insulation and to interrupt current in high voltage substation equipment. We have already drastically reduced SF6 leaks from our system, and we are working with partners from across the sector to identify, develop, and implement SF6-free solutions at the earliest opportunity.

Targets

- We are drastically reducing SF6 emissions from our global operations 50% by 2030 from a 2019 baseline.
- We will completely eliminate SF6 from our assets by 2050.

Achievements to Date

- We have reduced our SF6 emissions by more than 80% since the year 2000.
- We piloted a non-SF6 69 kilovolt (kV) vacuum circuit breaker in 2012 and have since installed an additional twelve 69 kV vacuum circuit breakers. In vacuum circuit breakers, circuits are broken in a vacuum which helps to interrupt the current and prevent arcing which could damage the equipment.
- We have partnered with The Electric Power Research Institute (EPRI), a US-based non-profit research and development organization, for the monitoring and evaluation of SF6 alternatives.

Case Study

National Grid is hiring additional SF6 Engineers to supervise our current SF6 inventory, aggressively reducing existing equipment leaks, and working with manufacturers on SF6 alternatives. We recently solicited circuit breaker manufacturers for available SF6 alternatives, and as a result, we have ordered a newly introduced 115kV vacuum circuit breaker for delivery in 2023. By letting manufacturers know utilities are in the market for more environmentally friendly solutions, we hope to not only reduce our direct emissions, but to also advance the U.S. market to offer more sustainable options for all buyers.

Advancing clean transportation

Empowering the growth of EVs requires a stable and reliable charging infrastructure. National Grid is facilitating the equitable access to clean transportation choices by building a reliable network that will benefit all customers and empower an EV market that is vital to eliminating automobile emissions.



Targets

- We are installing at least 20,000 charging ports by 2025, with the potential of installing an additional 30,000 by 2025.
- We have allocated \$1.25M of shareholder funding to help support disadvantaged communities in upstate New York by providing the incremental cost of replacing 5 diesel school buses with electric school buses.
- We have committed to convert to an 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. This includes our purchase of one of the world's first electric backhoes and testing of one of Ford's first E-Transit vans.

Achievements to Date

- We have installed 3,283 charging ports in New York, Massachusetts, and Rhode Island with over 45% located within environmental justice and disadvantaged communities.
- In partnership with the city of Beverly, Mass., and Highland Electric, we are piloting one of the first school bus V2G projects on the East Coast. This past summer the bus discharged nearly 3 MWh of electricity stored in its battery system to the regional electric grid over the course of 30 events.
- We have conducted an industry study with Hitachi ABB on fleet electrification opportunities and the grid requirements for serving medium and heavy-duty vehicles such as buses, delivery vans, and freight trucks.
- We have deployed the first utility pole-mounted chargers on the East Coast in partnership with the town of Melrose, Mass., and have proposed to expand the offering to 10 additional communities in the state.

Reducing methane emissions

We are committed to reducing methane across our entire gas supply chain including our own gas pipelines, downstream/production processes, and upstream emissions. We continue to work with external partners including the EPA to determine the best ways to identify, account for, and address leaks in our gas distribution systems. As a member of the EPA's Methane Challenge and their ONE Future initiative, programs that promote companies to put out externally shared reduction targets, we are benchmarking our progress with other companies as we work towards a common goal of reducing methane emissions across the entire natural gas value chain to less than 1% by 2025.

Target

- We are reducing our methane emissions of our distributions mains by 17% in the next 5 years and by 23% by 2030 through the replacement of leak prone pipe (LPP).
- Our strategic LPP program should result in over 90% emission reductions in our distribution mains by its completion in the 2040s from our 1990 baseline.

Achievements to Date

- Our emission intensity was well below 1% at 0.22%. We have achieved these reductions through extensive work on leak detection and repairs.

- Our aggressive LPP replacement work led to a 15% reduction in emissions in our distribution mains over five years with replacing 400 miles of pipe per year.
- As a member of the EPA's Methane Challenge, we continue to offer public transparency on our mains' leaks and replacement efforts.

Decarbonizing the gas network through innovation: renewable natural gas and hydrogen

Low-carbon fuels like renewable natural gas (RNG) and green hydrogen (hydrogen produced exclusively from renewable sources) are a key part of building an integrated, reliable net zero energy network of the future. National Grid plans to utilize RNG from existing sustainable biomass feedstocks across the Eastern United States such as biogas created from wastewater treatment plants, landfills, food waste, livestock manure, and others. We are also researching and analyzing how renewable hydrogen production from generation of large-scale renewable resources like offshore wind can be supplemented into our gas networks as a zero-carbon fuel.

Targets

- We are currently facilitating over a dozen customer requests to produce and interconnect about a total of 10 million dekatherms/year of RNG. This amount of RNG would be equivalent to meeting the annual demand of approximately 80,000 homes in the northeast that use natural gas for heating. It also equates to displacing nearly 53,000 metric tons of CO₂ from the abatement of geologic natural gas.
- We intend to have over 30 million dekatherms of our gas supply come from RNG by 2030, three times the amount in the current queue and equivalent to 5% of our annual delivered gas supply.
- We are spending \$1.35 million dollars annually to assist RNG interconnections to our gas network in our downstate New York region and an additional \$2 million for interconnections in our upstate New York region.

Achievements to Date

- We established RNG interconnection guidelines to support interested providers and to facilitate RNG growth in our states.
- We launched a hydrogen blending study with NYSERDA and Stony Brook University to research and analyze the technical, environmental, and safety details of delivering hydrogen through our pipelines.
- Pending final regulatory approval, we will partner with Standard Hydrogen Corporation to construct a 1MW electrolyzer system that will produce and store green hydrogen and will make use of the inherent flexibility of hydrogen.
- We are members of the Low Carbon Resources Initiative (combined effort led by both the Electric Power Research Institute [EPRI] and the Gas Technology Institute [GTI] non-profit research organizations) which is a five-year initiative to develop and demonstrate key clean energy technologies and decarbonization solutions including green hydrogen, bioenergy, and renewable natural gas.

Supporting efficient electric and hybrid-electric heating options for customers



Heat pumps, both air-sourced and ground-sourced (or geothermal), have a critical role to play in helping the U.S. Northeast meet our climate goals. Currently, we offer incentives to our customers in Massachusetts and New York for installing heat pumps to reduce reliance on oil, propane, inefficient electric baseboard, or natural gas heating equipment. For cold climates like ours, we are also exploring how electric heat pumps can supplement efficient gas heating to create a hybrid system that combines deep emission reductions while ensuring necessary peak winter performance and reliability for our customers.

Targets

- By 2024, our Massachusetts' electric efficiency programs aim to enable almost 28,000 households and over 30 million square feet of commercial and industrial (C&I) buildings to fully or partially convert to electric heat pumps.
- From 2020 to 2025, our upstate New York electric efficiency programs aim to enable more than 18,000 heatpump installations, with additional installations in the downstate New York region supported by our gas operating companies in collaboration with the local electric utilities.
- Starting in 2022, we will begin evaluation of at least 5 segments of gas distribution network as candidate sites for 'non-pipeline alternative' projects in each of our New York operating companies, testing the potential to convert customers to electric heat pumps and geothermal district heating in lieu of replacing gas infrastructure.

Achievements to Date

- In 2020, our Massachusetts electric energy efficiency programs supported 6,575 heat pump installations, including 125 fully-electrified heating installations.
- In 2020, our upstate New York energy efficiency programs supported 1,967 heat pump installations.
- Building on our successful 2019 demonstration of a shared residential geothermal network in Long Island, we proposed a geothermal district energy demonstration in Massachusetts to continue testing the potential of this low-carbon heating solution for our gas business.

Improving Operations: Reducing indirect emissions from operations

Across all our operations, National Grid is determined to find better and smarter ways to manage our internal operations and business practices to help reduce our emissions. This includes waste reduction, employee commuting, and our company's purchased goods which entail everything from office paper to large pieces of sub-station equipment.

Targets

- Supplier engagement continues to be a priority within our supply chain operations to reduce our purchased goods emissions. We work with our suppliers to guide them toward setting carbon reduction targets and we have an internal target of having 75% of our top 250 suppliers to have active carbon reduction targets by 2030. This aids us in reaching our carbon reduction goals for Scope 3 emissions as well as enables sustainable operations in the field/site work.
- As part of our SBTi commitment, we are looking to better calculate our purchased goods' emissions and we hope to gain a better understanding of how our purchasing choices impact our Scope 3 emissions.

Achievements to Date

- Since 2020 we have implemented a policy where all major construction products must consider a cost of carbon in their investment decision. This work includes analyzing both electric and gas material purchases and the civil work required to complete the project. By working with our vendors to understand our indirect construction emissions, we can include such metrics in our selection processes, and we can push the industry to reduce their emissions.
- Our employee EV program offers our employees up to \$5,000 back on an electric vehicle purchase or lease and has seen tremendous success. Since the program launched in April 2018, 585 employees have taken advantage of the EV financial incentives — from shareholder, not customer, funds. We have installed 190 charging ports at 36 National Grid facilities and will be adding more charging infrastructure for our employees in the future. We own and manage 177 Level 2 stations across our jurisdictions, as well as 3 DC fast charging stations in Massachusetts.

Pursuing innovative carbon management practices

To meet our net zero ambition by 2050, we anticipate needing to pursue innovative large-scale carbon management technologies like carbon capture and storage and carbon offsets to help eliminate remaining, difficult to curtail emissions.

We will collaborate with a broad group of industry, government, and academic partners to

- Pursue carbon offsetting options that deliver multiple benefits and;
- Identify and investigate which carbon capture and sequestration (CCS) technologies are most appropriate for various emission sources.

Ensuring Fairness, Affordability, and Equity

Not all customers are equally affected by the costs of their monthly energy bills or changes in household circumstances. Helping our most economically vulnerable customers with tailored programs that meet their individual needs and enhanced services that improve their daily lives is an essential part of National Grid's commitment to energy equity – ensuring that all our customers and communities can afford to have the clean energy they and their families need.

Currently, we offer a range of solutions for low- and moderate-income customers, including income-eligible monthly bill credits, payment plans, forgiveness programs, grant programs, and personalized support. Many of our income-eligible customers can see particular benefit from the energy savings programs we offer. Across our service territories, income-eligible customers can obtain many residential efficiency upgrades – from weatherization to replacement appliances – at no-cost. We have also recently proposed new energy equity programs to ensure that no customer is left behind in the clean energy transition by increasing access to low-carbon energy technologies in targeted communities, from community-shared solar to electric vehicle charging access to zero-emission school bus incentives.

Many of the communities we serve also face inequitable environmental impacts, whether from localized sources of emissions, or the impacts of climate change. Fairness, affordability, and equity will continue to be central to our strategy for addressing climate change, ensuring that every customer has access to affordable and reliable energy, and that we all share the benefits of a net zero future.

Case Study: “Project C” (New York)

In September 2021, National Grid launched Project C across our New York business. It is a comprehensive endeavor expanding upon our long, proud legacy of community involvement by thinking beyond our conventional energy services to help create a more equitable future for every customer and neighborhood we serve. We'll achieve this by connecting our communities to clean and sustainable energy, caring for our neighborhoods and their revitalization, compassionately addressing the challenges our customers face (including social justice and equity), and training the workforce that'll help build New York's clean energy infrastructure.

Right now, we are focused on three important initiatives. Our Neighborhood Investment Program will help revitalize communities by fostering energy, education and community development projects.

We are also partnering with local organizations to offer technical support to small businesses – funding the essential economic development needs of partner organizations. Through our Adopt A Park program, we'll help restore greens spaces to their natural beauty.

[continued >](#)

Case Study: “Project C” (New York) *continued*

By collaborating with our customers, community partners, stakeholders and so many others, we’ll ensure we deliver a clean, fair, resilient and affordable energy future to all and inspire positive change now and for generations to come.



Conclusion

To meet the climate challenges of this critical decade, National Grid is redefining its mission to meet our broad energy and environmental responsibilities. We will enable our customers to reduce their emissions through energy efficiency and demand response programs, continued distributed generation interconnections, and increased access to electric vehicle charging stations and electric fleet conversion support. Our electric and gas supply systems will transform to provide lower carbon electricity and lower carbon gas to customers with continued reliability and safety. We will embrace and empower the growth of renewable energies while also taking the critical steps to ensure energy equity and reliability for all.

While the future energy challenges are significant, we believe that through collaboration and cooperation, innovation and new technologies, we can and will achieve a net zero energy future. There is no mistaking the fact that the transition will pose challenges and will demand all of us to constantly envision new strategies on how to best meet our diverse customers energy needs. We fully embrace this challenge. As part of this commitment, we will remain open to potential solutions that may not exist or may not seem relevant today but offer the hope of building the cleaner and more reliable energy future we all want.

National Grid will remain honest and transparent about our progress, acknowledging when challenges or new opportunities arise. We will also listen to those who have different views, and will work collaboratively with all those who share our concerns for climate change and energy equity.

All of the 17,640 hard-working people at National Grid US are proud to collaborate with New York, Massachusetts, and Rhode Island and we look forward to meeting the target with an essential focus on this critical decade.