CLEAN ENERGY

Greenhouse Gas Emissions Continue to Soar

Despite the growth of clean-energy resources, GHG emissions and atmospheric concentrations of greenhouse gases continue to soar. The 2018 Intergovernmental Panel on Climate Change's special report, *Global Warming of 1.5 °C*, indicates that in order to produce clear benefits to people and natural ecosystems, it is advisable to avoid more than a 1.5 °C average warming. To accomplish this, overall global CO_2 emissions must decline by roughly 50 percent from current levels by 2030, with moderately negative (i.e., -110 percent) net reductions by 2050.

These reductions will be absolutely necessary if the worst impacts from climate change are to be avoided.

Decarbonizing the System

Decarbonization is the reduction of carbon dioxide emissions through the use of low-carbon power sources in order to achieve a lower output of greenhouse gases into the atmosphere. Reducing greenhouse gas emissions from the electricity-generation system will be important as more products and energy uses switch to electric. Keeping clean electricity affordable during the coming decades of rapid decarbonization is particularly important for low- and moderate-income consumers, as is the reduction/elimination of emissions. Fossil fuel use, including for electricity generation, often has a disproportionate impact on environmental justice communities.

Policies to avert the climate crisis through reduced GHG emissions must prioritize the reduction of local emissions of co-pollutants to address environmental injustices. Careful planning is required to ensure that existing pollutant generation is replaced with clean-energy resources, and that new fossil fuel projects and fossil fuel expansions are not located in overburdened communities. Careful planning must also consider the entire regional electric system, so that the Garden State's energy transition does not result in increased emissions—or "leakage"—in power plants located outside of the state.

Accelerate Decarbonization Through a 100% Clean Energy Standard by 2035

New Jersey policy makers recognize the critical need to decarbonize the state and the region to promote clean air and mitigate climate change. New policy tools and regional approaches to dramatically expanding the development of renewable resources within the regional electric grid, extending from Illinois to Virginia, have been explored and require finalization. New Jersey's 2019 Energy Master Plan called for a Clean Energy Standard (CES), a mechanism that would encourage increased sales of clean electricity on the market, to augment or replace the Renewable Portfolio Standard (RPS). After more than two years of policy exploration and development, technical conferences with national experts, and stakeholder input, it is time to mandate the adoption of a Clean Energy Standard.

Why a Clean Energy Standard is Necessary

An addendum to the existing RPS, New Jersey's CES would greenlight more aggressive clean-energy requirements for operation in order to generate additional reductions in GHG emissions in New Jersey and the wider regional grid. The current Renewable Portfolio Standard and Renewable Energy Credit market were important policy tools to begin the buildout of solar and wind resources, but they lack key features needed to reduce emissions at higher levels of renewable deployment. Based on the most recent findings of the Intergovernmental Panel on Climate Change, the new CES should require that 100 percent of all electricity sold be from clean electricity sources by 2035, with net negative emissions by 2050. At the same time, the CES should be structured so as to provide strong ratepayer protections against excessive costs, and to maximize benefits to New Jersey's in-state workforce.

How the Clean Energy Standard Would Work

Under the CES, each new or existing generating resource in the region that emits zero carbon (i.e., wind, solar, nuclear, and hydroelectricity) will be eligible to sell one Clean Electricity Attribute Credit for each megawatt-hour of electricity generated. All New Jersey load-serving entities who sell electricity to retail customers would be required to procure enough Clean Electricity Attribute Credits to meet the required share of clean electricity. Various types of Renewable Energy Credits used to meet existing RPS requirements would also count toward the CES requirement.

Every Clean Electricity Attribute Credit, like every regional Renewable Energy Credit, will represent one measured, verified, and real megawatt-hour of clean electricity that has been injected into the regional electric grid.

Because the grid cannot hold or store more electricity than is generated, each injection of a clean megawatt-hour displaces another megawatt-hour from an existing regional generator. A Clean Electricity Attribute Credit therefore demonstrates this displacement of existing generation, as well as the avoidance of the carbon-based emissions that would have been emitted. However, there is no guarantee that this displacement of existing generation will take place in communities disproportionately affected by local fossil-generation resources due to the electricity market and the disproportionate existence of existing fossil fuel infrastructure. Therefore, policies that encourage the displacement of fossil fuel combustion in lieu of clean-energy generation in and around overburdened communities should be prioritized under the CES. This will spur highly sustainable development in such communities.

New Jersey's CES Can Do the Following:

- Be structured to provide new clean electricity projects with a predictable multiyear revenue stream from the sale of Clean Electricity Attribute Credits. These additional, relatively stable revenues will directly support new investment in a variety of in-state and regional clean-energy resources needed for New Jersey and other PJM states with clean-energy goals to aggressively reduce emissions. Furthermore, since projects would compete to sell CAECs, the resulting competition will tend to select the best-managed projects, resulting in the most affordable mix of clean-energy resources being continually developed.
- Support a reliable clean grid. The CES will go beyond the limited incentives for wind and solar energy provided by the RPS and offer incentives for the entire mix of clean resources needed to maintain a reliable electric grid. A properly designed CES can support the rapid development and efficient deployment of flexible resources, such as transmission-scale energy storage systems (see Assembly Bill No. 5267 of the 2024–2025 legislative session) and

always-available clean firm resources (e.g., green hydrogen, new types of long-term storage, and potentially new, safe, and economical nuclear technologies) that will be essential for reliability and low costs during extended weather extremes.

- Support a mix of New Jersey and regional resources that ensures that energy is affordable and sufficiently supplied to all customers. Such a mix is critical for electrification goals. New Jersey has relied on regional clean-energy resources to meet RPS targets from the outset, a policy that was necessary to reduce the impact on electric rates. In 2020, regional resources provided 75 percent of New Jersey's RPS credits, while requiring only 12 percent of the total spent to meet the RPS target.
- Initiate the development of a large-scale, competitive regional clean-electricity credit market. Ensuring low-cost compliance with such an aggressive CES will require a highly competitive, regional market for clean-energy credits. New Jersey is well positioned to lead the development of such a market in collaboration with other clean-energy states and with PJM. This market will help keep costs low for consumers and maximize the amount of GHG emissions abated per dollar spent. Not only will it ensure a competitive price for clean-energy credits, but it could also further lower the development cost of new clean-energy projects by providing a multiyear revenue commitment to developers of clean-energy projects. With a more secure revenue stream and a much higher demand for CECs (and the clean megawatt-hours they represent), more clean projects can be financed and built in the near term and at lower cost, which is critical to averting the growing climate crisis.
- Create around 24,000 new family-sustaining union jobs in the next decade for roles building, operating, and maintaining electricity generators; an additional 10,000 jobs in large-scale solar energy; and about 7,000 jobs in offshore wind energy.

POLICY RECOMMENDATIONS

- Ensure that the administration and advocates work with the legislature to develop legislation for a Clean Energy Standard for New Jersey, requiring that 100 percent of all electricity sold be from clean electricity by 2035 and -110 percent (i.e., no emissions plus 10 percent of current emissions permanently removed from the atmosphere) by 2050.
- Build off of existing stakeholder processes, such as NJBPU's RPS process, to inform the development of legislation and implementation.
- Utilize agency expertise and resources to answer technical questions in the development of a CES.
- Allow for external and internal stakeholders to design the implementation of any program, including in the consideration of sources and budget.
- Set the target to achieve high levels of reduction of greenhouse gas emissions in overburdened communities while keeping electricity rates affordable for customers. Include savings from mitigating climate change and its public health implications in any cost-benefit analysis.
- Create and implement more policies that will reduce emissions through the electrification of vehicles, the improvement of building energy efficiency, and the rapid electrification of buildings. New approaches will be needed to reduce emissions from power plants located in New Jersey.
- Enact a CES to maximize in-state job growth and create jobs in the clean-energy economy. Ensure an equitable transition to clean energy through the creation of the Office of Just Transition.
- Fight attempts to ban clean energy at the state level.

Promote Responsibly Developed Offshore Wind

New Jersey residents are experiencing firsthand a fundamental altering of the natural world caused by the climate crisis. Homes, communities, and wildlife are all being threatened by historic floods and extreme weather, and natural systems and habitats are being lost. Simply put, climate change requires bold and urgent action.

Offshore wind provides many benefits, including generating electricity without emitting carbon dioxide, replacing fossil fuel–powered power plants, driving local investments and job creation, and potentially creating ocean habitat.

In September 2021, the prior administration signed an executive order increasing the state's goal for offshore wind energy generation to 11,000 megawatts (MW) by 2040. The New Jersey Board of Public Utilities approved the following offshore wind applications:

- **2019:** Ocean Wind (1,100 MW)
- **2021:** Atlantic Shores Offshore Wind Project 1 (1,510 MW)
- **2021:** Ocean Wind II (1,148 MW)
- **2024:** Leading Light (2,400 MW)
- **2024:** Attentive Energy Two (1,342 MW)

New Jersey is one of the states at the epicenter of the burgeoning offshore wind industry on the east coast of the United States. The geography of the state positions New Jersey to become one of the major hubs for this industry. With this opportunity comes a responsibility to ensure that offshore wind is developed with high standards for environmental and natural resource protection in order to protect recreational and commercial fishing and tourism industries. Offshore wind development and construction offers the promise of significant economic activity and jobs, which must be shared equitably across New Jersey's communities. While recognizing recent

events both at the state and federal levels that have impacted the progress of offshore wind, it is critical to take a longer-term view of this important industry.

Offshore wind development presents an unparalleled opportunity to collect research data about the ocean and its inhabitants. Never before have resources been available to track wildlife movements up and down the eastern seaboard ten or more miles from the shoreline. Having physical structures in the water creates a huge opportunity to expand scientific research and monitoring of coastal ecosystems. Therefore, monitoring equipment must be a component of every project, preceding, during, and after construction.

PRIMARY CONCERNS

- A new federal administration injects uncertainty into the offshore wind sector in the near term.
- Orsted's 2023 announcement that it would no longer pursue Ocean Wind I and II projects creates uncertainty surrounding New Jersey's future offshore wind capacity.
- Species of concern and New Jersey's commercial and recreational fishing industries should be protected through good planning and siting of turbines, cables, and onshore landings.

POLICY RECOMMENDATIONS

- Continue a whole-government approach to support offshore wind development, including the Wind Institute for Innovation and Training at the New Jersey Economic Development Authority, and to support workforce development.
- Continue efforts and participation under the Research and Monitoring Initiative and the Regional Wildlife Science Collaborative for Offshore Wind, which support regional research and monitoring of marine and coastal resources during offshore wind development, construction, operation, and decommissioning.
- Continue the regular adaptive solicitation and review process to create a pipeline of projects to meet New Jersey's aggressive clean-energy goals.
  - ✓ Regularly review and update solicitations to incorporate best practices that address potential wildlife impacts or other environmental concerns, and to incorporate new knowledge gained from previous solicitations, current projects in various stages of development, and other states.
  - ✓ Require strong environmental and natural resource protections that focus on avoidance as a precondition of any approved project.
  - ✓ Use the best available data to avoid sensitive habitats to the maximum extent possible in both state and federal waters.
  - ✓ Look holistically at all aspects of offshore wind development—including port, inland, and near-shore activities—when reviewing potential impacts to the environment and marine life.
- Bring focus and action on transmission needs and potential community benefits during the next four years.
- Require monitoring and open-source data (as feasible) before, during, and after construction to expand scientific knowledge of ocean ecosystems, and use that data for future projects.
- Support additional offshore wind leases rather than oil and gas leases.
- Fight attempts to ban clean energy at the state level.

Advance Clean, Affordable, Well-Sited Solar Energy

According to the Solar Energy Industries Association, "New Jersey is ranked 10th in the United States for total cumulative installed solar photovoltaic (PV) capacity as of the third quarter of 2024." Specifically, New Jersey has more than 5 gigawatts of installed solar PV capacity from over 210,000 individual solar PV installations. The state's 2019 Energy Master Plan envisions continued growth in New Jersey solar power as part of the least-cost pathway to achieve both 100 percent clean energy and the Global Warming Response Act's targets. The analysis underlying the Energy Master Plan provided the insight that New Jersey—as a small, densely populated state with relatively expensive solar and other renewable energy resources—will benefit from relying on a mix of in-state renewable development coupled with imports of clean-energy resources from the region.

The state must pursue a judicious mix of low-cost regional clean-energy resources that maximizes the reduction of GHG emission, and in-state solar energy, which can achieve additional community and economic benefits, such as reducing peak load during high demand. The Clean Energy Act of 2018 requires the state to use competition in the procurement of in-state solar power as a way to help drive continuing cost reductions in these resources, which would support greater deployment.

A key piece of providing solar options to low- and moderate-income customers and renters is through the Community Solar Project. Community solar refers to a solar array where output is virtually divided among multiple participants, known as subscribers. Subscribers are not directly connected to the solar array, which means that access to renewable electricity is opened to more community members who may have previously been unable to transition to solar power due to associated costs, an unsuitable roof, or lack of roof control. Additionally, subscribers receive guaranteed savings on their electric bills when they participate.

Local solar generation also provides important benefits, including cleaner air, reduced health costs, and local jobs.

PRIMARY CONCERNS

- New Jersey needs a suite of policies that will continue to ensure growth in the state's solar resources, along with continued reductions in its cost, all the while ensuring that ratepayer expenditures on clean-energy resources result in the maximum reduction in CO2 from all state and regional power plants.
- Solar projects in New Jersey must be sited in a manner that does not conflict with the state's long-standing commitment to open-space and farmland preservation, nor result in the clearing of forests that sequester carbon or provide a myriad of other benefits. While there may be some role for large in-state solar development, sound siting criteria are needed to prevent such projects from taking place on New Jersey farmland or on currently forested sites, as this type of PV placement directly conflicts with both farmland preservation and carbon reduction goals.
- Individual access to solar energy where people live is unequal, either because they rent, because of financing concerns, or because of the upfront costs.

POLICY RECOMMENDATIONS

- Increase the amount of New Jersey solar generation, as informed by actual costs, to develop a budget that is designed to maximize GHG-emission reductions and achieve cost-effective local benefits. The Community Solar Program should remain a priority program within the total clean-energy budget, and at least half of community solar generation should serve low- and moderate-income households.
- Ensure that any NJBPU solar-power incentive programs prioritize projects on rooftops, brownfields, landfills, parking lots, or marginal lands, and that incentives are not provided for solar projects on prime farmland prioritized for preservation or for projects that would clear forests. Communities and developers should use NJDEP's Solar Siting Tool when planning for solar installations.
- Incentivize new, solar-ready residential development.
- Incentivize the coupling of medium- and large-scale solar arrays with battery storage.
- Defend and implement the recent federal award of $156 million under the US Environmental Protection Agency's Solar for All initiative. The award is anticipated to enable the state to deploy more than 175 MW of solar energy to benefit 22,000 overburdened households.

Create a 21st-Century Electric Grid

In 1882, New Jersey and New York shared the distinction of having built the country's first modern, commercial electric-power distribution system to service individual customers. While that is a fact to be proud of, the downside is that there have been no significant technological upgrades to the system since then. Updates are way past due. What is more, most distribution lines in the United States (and most likely in New Jersey) were built over 60 years ago. Updates to the distribution system are critical to energy conservation, bringing new clean-energy projects online. As the state moves toward a clean-energy future, such updates are also critical to cost savings and to the future prevention of and response to outages.

Without modernization of the distribution grid, consumers will face higher costs, brownouts and blackouts will become more prevalent, and the adoption of clean energy will plateau or drop.

Additionally, as New Jersey brings more clean distributed energy resources (DERs) and demand-side response opportunities online—including solar power, energy efficiency, electric vehicles with flexibility to manage charging, and battery storage—the state will require an electric distribution system that can leverage the benefits these technologies provide.

The new, clean DER technologies being deployed fundamentally change the way customers and utilities interact with the grid. Consumers become more aware of their usage patterns and utilities have better insight into vulnerabilities and opportunities in the system. New Jersey will have to transform from a traditional one-way system (that merely provides electricity to customers) to a bidirectional system that uses smart, state-of-the-art technologies in order to provide customers and utilities with more real-time information. Currently, the distribution grid needs to evaluate DER installation on a case-by-case basis to determine whether a particular circuit can handle additional load. This leads to situations where new DERs cannot be interconnected to the distribution system without costly upgrades to the system.

A "smarter" grid also informs consumers of energy use. When combined with time-varying rates, the grid will inform consumers of the least expensive times to charge cars and run appliances. This is especially important for consumers with high energy burdens, which circumstances are often influenced by the quality of housing stock and income. A recent report found that Black households spend 43 percent more of their income on energy costs than white households, and Hispanic households spend 20 percent more than white households. Providing better access to local, affordable, and clean sources of energy, combined with information on individual households' energy usages and costs, has the opportunity to significantly reduce consumer energy burdens.

Implementing grid modernization in New Jersey not only will achieve the benefits already outlined—energy cost savings, energy conservation, resiliency—but also has the opportunity to create well-paying local jobs throughout the state. The process of grid modernization will make certain jobs obsolete (e.g., meter reading), but with job training or other mechanisms, new jobs can be created (e.g., installing smart meters and sensors).

	OUTDATED GRID	MODERN GRID
Flow of Energy	One way, with energy flowing from power plants to homes and businesses.	Multiple ways, allowing people to make, move and sell their own energy.
Customer Control	Next to none, other than manually turning lights and appliances on and off.	Customers can preset and control – via smartphones or tablets – how and when their homes or businesses use energy or they can contract with a third party.
Automation	Utility employees physically check meters monthly to measure usage. Utilities may only know of an outage if a customer reports it.	Sensors continuously track usage and can detect and resolve problems quickly.

PRIMARY CONCERNS

- If the grid is not modernized, customers will face higher costs and clean-energy projects will not be able to interconnect with the grid.
- The current grid is not prepared to handle new clean-energy DERs.
- Increased electricity use by data centers/AI is hampering efforts to reduce overall electricity use.

POLICY RECOMMENDATIONS

- Move forward with a grid modernization plan that identifies the most beneficial and cost-effective projects to modernize New Jersey's electric distribution system, integrates energy storage systems, increases the capacity of the system to interconnect with distributed energy resources (e.g., solar power), and improves the resilience of the system against hazards associated with climate change, including extreme heat and flood risk. (See Senate Bill No. 258 of the 2024–2025 legislative session.)
- Set standards for advanced metering infrastructure, which is one of the best tools New Jersey has to modernize its grid. Advanced metering infrastructure refers to electric meters that can communicate wirelessly with the distribution network in real time to provide customers and utilities information on electricity usage, outages, and other more granular information on what sections of the grid are stressed. Deploy advanced metering infrastructure in 10 percent of all households by 2050 and ensure secure communication networks between customers and utilities to transfer data.
- Require any new AI data centers to power themselves with renewable energy, combined with battery storage, that does not take existing renewable energy off the public grid.
- Continue efforts to reform the regional grid (i.e., PJM Interconnection) to speed up resource-interconnection timelines for clean-energy electric storage systems, such as batteries. Require long-term transmission planning, which also protects New Jersey consumers and ratepayers by addressing rising costs. Additionally, encourage PJM to consider energy reliability through additional factors, including approving complementary clean-energy and energy-storage projects to ensure that these resources are not undervalued in respect to reliability.
- Monitor and enforce provisions of the Second Triennium Energy Filings from the state's utilities for demand response programs. The New Jersey Board of Public Utilities approved the filings on October 30, 2024, and they include new demand response programs to reduce customer peak-electricity demand and lower stress on the grid.
- Design rates that maximize benefits for customers to use DERs. The Board of Public Utilities and electric utilities should work together to design time-varying rates that incentivize customers to consume energy off-peak when the grid is less stressed. Using time-varying rates—which include peak-time rebates, critical peak pricing, and time-of-use rates—would result in more expensive electricity rates during the time of day when there is more demand on the grid, and lower rates when there is less demand on the grid. Consider ways to insulate low-income customers from experiencing significantly higher bills as a result of changing the rate design.