NEW JERSEY ENERGY MASTER PLAN

2024





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Executive Summary

New Jersey's 2024 Energy Master Plan (EMP) serves as a long-term strategic roadmap for meeting the state's climate and clean energy goals—including an 80% reduction in economy-wide greenhouse gas (GHG) emissions by 2050, as mandated by the Global Warming Response Act (GWRA), and the target of 100% clean electricity sales by 2035, as established in Executive Order No. 315. This edition of the EMP builds on the 2019 EMP, incorporating the latest advancements in technology, policy, and programming to create a cost-effective, sustainable energy future. The 2024 EMP includes an accounting of progress made on the State's carbon reduction strategies, a summary of stakeholder feedback collected throughout the EMP process, and an updated Integrated Energy Plan (IEP) based on economy-wide energy system modeling of New Jersey's pathways for meeting near and long-term climate and energy goals.

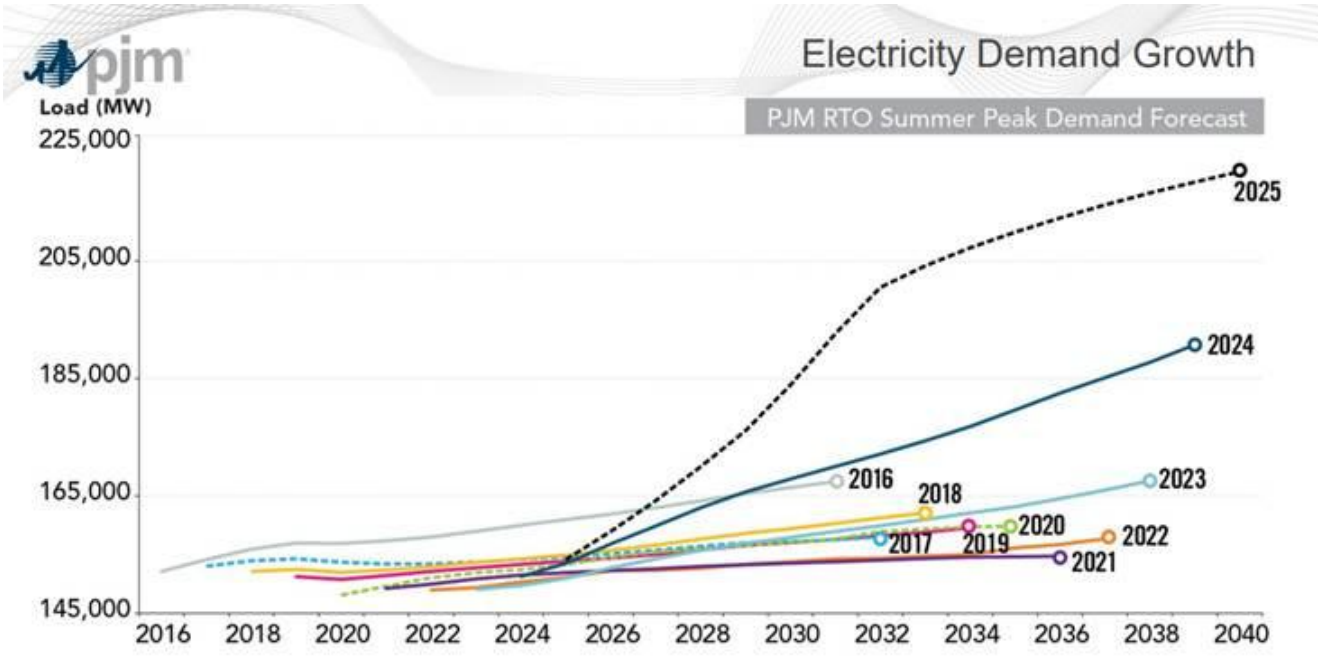
The development of the EMP spanned from early 2024 through late 2025. To support this effort, the New Jersey Board of Public Utilities (BPU) and the Office of Climate Action and the Green Economy (OCAGE) engaged a consulting team comprised of Energy and Environmental Economics (E3), ILLUME Advising, and BW Research. E3 conducted quantitative modeling that informed the IEP, ILLUME Advising supported stakeholder engagement, and BW Research contributed insights from quantitative modeling on workforce and the green economy. This team conducted extensive stakeholder engagement, policy and progress analysis, and comprehensive quantitative modeling that concluded in March, 2025.

The 2024 EMP was developed during a period of rapid change and growing complexity in the U.S. energy landscape. For the first time in two decades, national electricity demand is increasing annually—a trend expected to accelerate. In addition, New Jersey is navigating significant shifts within the PJM regional electricity market, including evolving resource adequacy rules and market design changes that are influencing electricity costs statewide. At the federal level, ongoing uncertainty around the long-term availability and timing of clean energy funding, permitting processes, and regulatory support—particularly for large-scale infrastructure like offshore wind and transmission—poses challenges for project development and long-term planning. This edition of the EMP therefore emphasizes the pillars of planning and decarbonization that would apply in a range of futures. As the energy landscape continues to evolve, ongoing tracking of policy shifts, market developments, and implementation progress will be essential to maintaining alignment with New Jersey's clean energy and climate goals.

Changing Energy Landscape

New Jersey and the surrounding region are experiencing rapid changes in the energy sector. For the first time in 20 years, electricity demand is increasing at a significant rate in the PJM footprint, directly impacting the affordability and reliability of the energy supply. The PJM system experienced its system peak in 2006 at167 gigawatts (GW). Between then and 2023, the average peak load in the system was 152 GW, representing an overall negative growth rate. During this period of time, several uneconomic power plants in New Jersey and PJM retired due to decreasing demand. In contrast, the most recent PJM load forecast estimates 32 GW of additional peak demand by 2030 and 58 GW by 2035. According to PJM's Independent Market Monitor, 30 of the 32 GW of projected load growth by 2030 is associated with large load data center construction in the PJM region accounting for 94% of total projected demand growth. Due to projected demand far outstripping the

rate that new generation can come online, PJM is predicting as much as a 24 GW shortfall in generation supply by 2030.

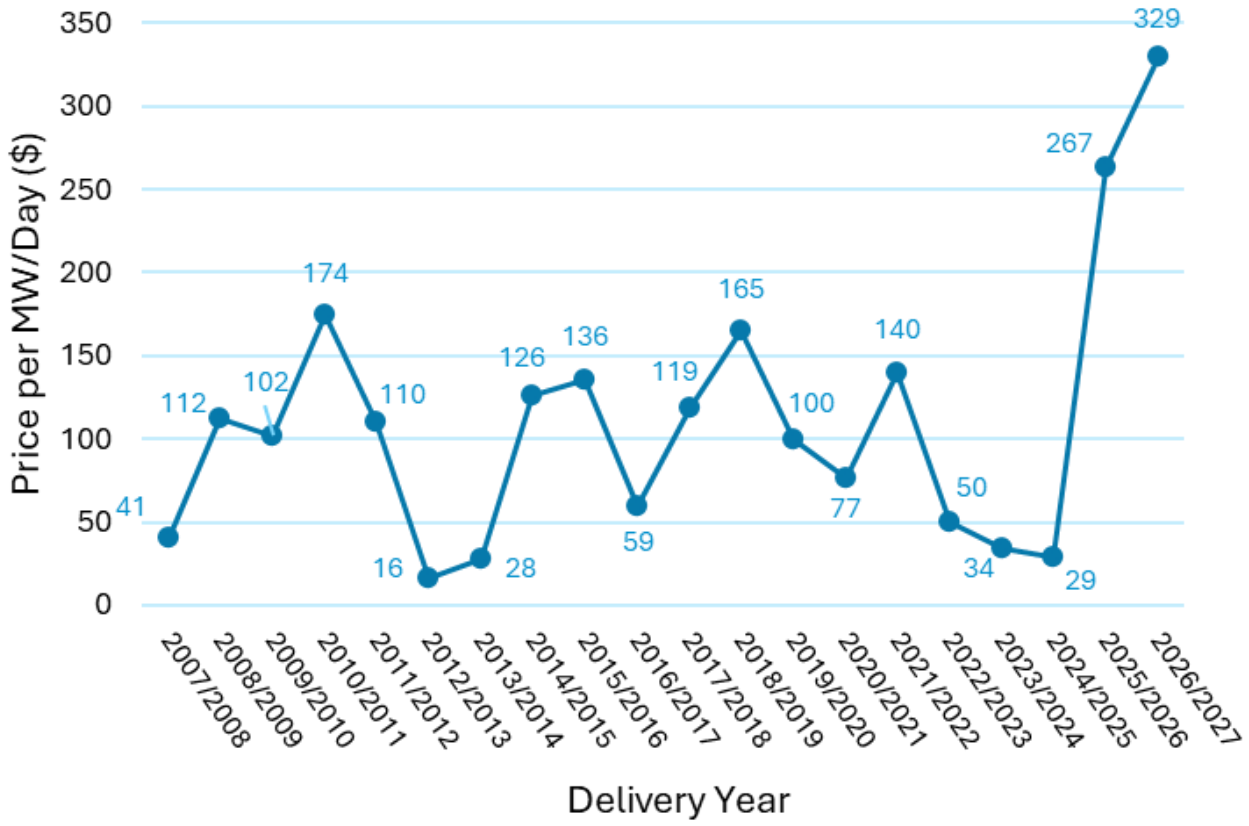


Source: PJM RTO Summer Peak Demand Forecast[1]

As shown in the above figure, between 2016 and 2023 PJM load forecasts were largely flat, sending a market signal to generators to retire. However, beginning in 2024, the load forecast increased drastically. This trend in load projections is reflected in the PJM Capacity Market, which directly impacts customer prices in New Jersey. From the 2018/19 Auction through the 2024/2025 auction prices declined from $167 per MW/Day to a historic low of $28.92 per MW/Day (Figure 1). However, due to rapidly increasing demand and stagnant supply, PJM capacity prices hit historic highs in the last capacity auctions, with the last auction held in July 2025 resulting in $16.1 billion of new costs allocated to PJM ratepayers, including $2.0 billion of new costs to New Jersey families and businesses.

[1] U.S. House Of Representatives Committee on Energy & Commerce, Subcommittee on Energy Testimony of Asim Z. Haque Sr. Vice President -Governmental and Member Services PJM Interconnection. (2025, March 5).

Figure 1. PJM Historical Base Residual Auction Clearing Prices (RTO-Wide)



Whether capacity market prices stabilize, increase, or decrease, will be influenced by several concurrent policy initiatives at PJM that, while outside the scope of the 2024 EMP modeling, are nonetheless crucial for New Jersey. New load from data centers will enter the PJM system rapidly, and PJM can create new mechanisms to help accelerate the deployment of new resources. However, to the extent that new load enters the system before matching new generation, PJM must also ensure the new load enters the system flexibly to protect ratepayer costs and grid reliability. New Jersey and all stakeholders in PJM will need to work collaboratively to meet this challenge. The ongoing Large Load Critical Issue Fast Path charge at PJM is the most direct process addressing the issue, but load forecasting, interconnection processes, and market structure must also broadly be considered. PJM should also provide states with a more direct say in developing resource-adequacy solutions by reforming its governance structure and filing rights at the Federal Energy Regulatory Commission. Outside of PJM processes, for its part, New Jersey must look inwards to promote new generation resources to meet the challenge in a manner that protects ratepayer affordability and its energy-policy objectives.

In the coming years, New Jersey will have to remain focused on energy affordability. However, there is no silver bullet addressing affordability, because energy pricing is the product of a multitude of factors ranging from global energy markets all the way down to the local distribution system. Therefore, the State should pursue a range of affordability measures including leveraging federal funds where available, reforms at PJM, investments in long-term assets like power generation, the transmission system, and the distribution system, utility regulatory reforms, programming that reduces bills for residents and businesses, and direct bill relief.

No Regrets Strategies

This edition of the EMP endorses several broad near- and mid-term strategy recommendations that the State should begin to pursue immediately and achieve before 2035 to advance the affordability, energy, environmental, and economic goals of New Jersey. These recommendations are even more important to pursue following developments in 2025 related to federal incentive rollbacks and significant cost escalation in PJM. In the context of the EMP, "No Regrets Strategies" means actions that are necessary to implement on any path to meeting state energy and climate goals. These actions provide benefits to the State, offer flexibility and optionality for the future, and grow the State's clean energy economy while simultaneously enhancing the reliability and affordability of the energy system.

+ **Accelerate Clean Energy Deployment:** Any future aligned with the state's economic, energy, and climate goals will require accelerated clean energy generation—solar, wind, advanced nuclear, green hydrogen, and battery storage. Doing so will reduce electricity imports, boost in-state generation, grow clean energy jobs (42,400 net new jobs projected), increase resource diversity, and support long-term cost stability**.** This includes doubling down on the state's successful solar programming, while at the same time expanding programming to deploy battery storage projects, clean firm generation options, virtual power plants, as well as exploring the potential for advanced nuclear resources in the state.

+ **Expand Decarbonization and Efficiency Programs:** Energy efficiency and building decarbonization are essential across all scenarios. Since 2018, billions have been invested through utility-led programs. New Jersey's Strategic Roadmap for Building Decarbonization, released in November 2025, outlines strategies and national best-practices such as a one-stop-shop, heat pump targets, utility planning reforms, and workforce development to ensure success. Importantly, New Jersey's energy efficiency programming must continue to serve as a delivery system for long-term bill reduction for participating residential and commercial customers. Not only does more efficient equipment provide lower bills for program participants, it reduces overall electric demand thereby taking pressure off the wholesale power market and reducing emissions from both the power and buildings sectors.

+ **Ensure a reliable and modern grid:** New Jersey needs reliable electric infrastructure that is equipped to serve increasing loads. The 2022 Grid Modernization Study recommends proactive planning, streamlined interconnection, and policy reforms. Since then, BPU has adopted the first set of regulatory changes aiming to improve transparency and speed of interconnection for distributed energy resources. Distribution planning and rate structures must adapt to a more interactive, flexible grid, while transmission coordination through PJM remains critical. This includes the successful implementation of FERC Order 1920. Electric reliability will also remain central to New Jersey's energy future, ensuring that as the state transitions to a more electrified and clean energy economy, residents, businesses, and essential services can depend on a stable, uninterrupted supply of power—even during periods of peak demand, extreme weather, or changing system conditions.

+ **Stay the Course on Transportation Electrification:** New Jersey has made strides in advancing transportation electrification through programs like Partnership to Plug In, which coordinates efforts across multiple agencies to accelerate zero-emission vehicle (ZEV) adoption and expand charging infrastructure. The State's strategy has included consumer incentives, utility investments, regulatory streamlining, and public-private partnerships. New Jersey is closing in on its statutory target of 330,000 light-duty electric vehicles by the end of 2025. Programs such as Charge Up NJ, It Pay$ to Plug In, and

EV Tourism have helped put over 260,000 light-duty EVs on the road and deployed 5,000+ charging ports statewide. To meet the goal of 2 million light-duty EVs by 2035, the state must continue scaling these efforts while removing barriers to access in underserved communities. More recent programs have also focused on harder to reach market segments such as financing for fleet electrification, charging incentives for multi-unit dwellings, and medium- and heavy-duty vehicle and charging incentives.

+ **Ensure Energy Affordability, Equity, and Environmental Justice:** The State of New Jersey is committed to making affordability and equity a central pilar of climate and energy programs. The Energy Equity and Affordability Report recommended expanding bill assistance, piloting time-of-use rates that offer lower-cost charging during off-peak periods and lowering upfront costs of energy efficiency, heat pumps, and EVs for low- and moderate-income customers. Several of these actions have already been implemented.

+ **Enhance Regional Coordination and Advocacy:** New Jersey must continue to actively engage with PJM and neighboring states to ensure grid reliability, affordability, and accelerate clean energy integration. New Jersey recently joined with 10 other PJM States to sign a Statement of Intent to create a formal PJM Governor's Collaborative to jointly address key challenges facing the region. That work must continue and expand in the coming years. Additionally, the State should continue to take steps to have more formal involvement in the PJM decision-making process to ensure that its policy objectives are reflected in PJM's market rules and policies.

+ **Drive Innovation and Workforce Development:** Strategic workforce investments are vital for long-term success. The 2025 *Growing Green Jobs* report notes a 12% increase in the green economy workforce since 2021 and projects approximately 14,300 to 42,400 net new workers will be needed in New Jersey's broader energy economy, primarily in the green economy between 2022 and 2035. Existing initiatives include clean energy training hubs, apprenticeship expansion, and funding wraparound services for trainees in overburdened communities, all of which should continue to meet this growing demand.

Beyond these No Regrets Strategy recommendations, the EMP takes stock of New Jersey's progress since 2019 and provides recommendations for the future that build upon the state's successes to date.

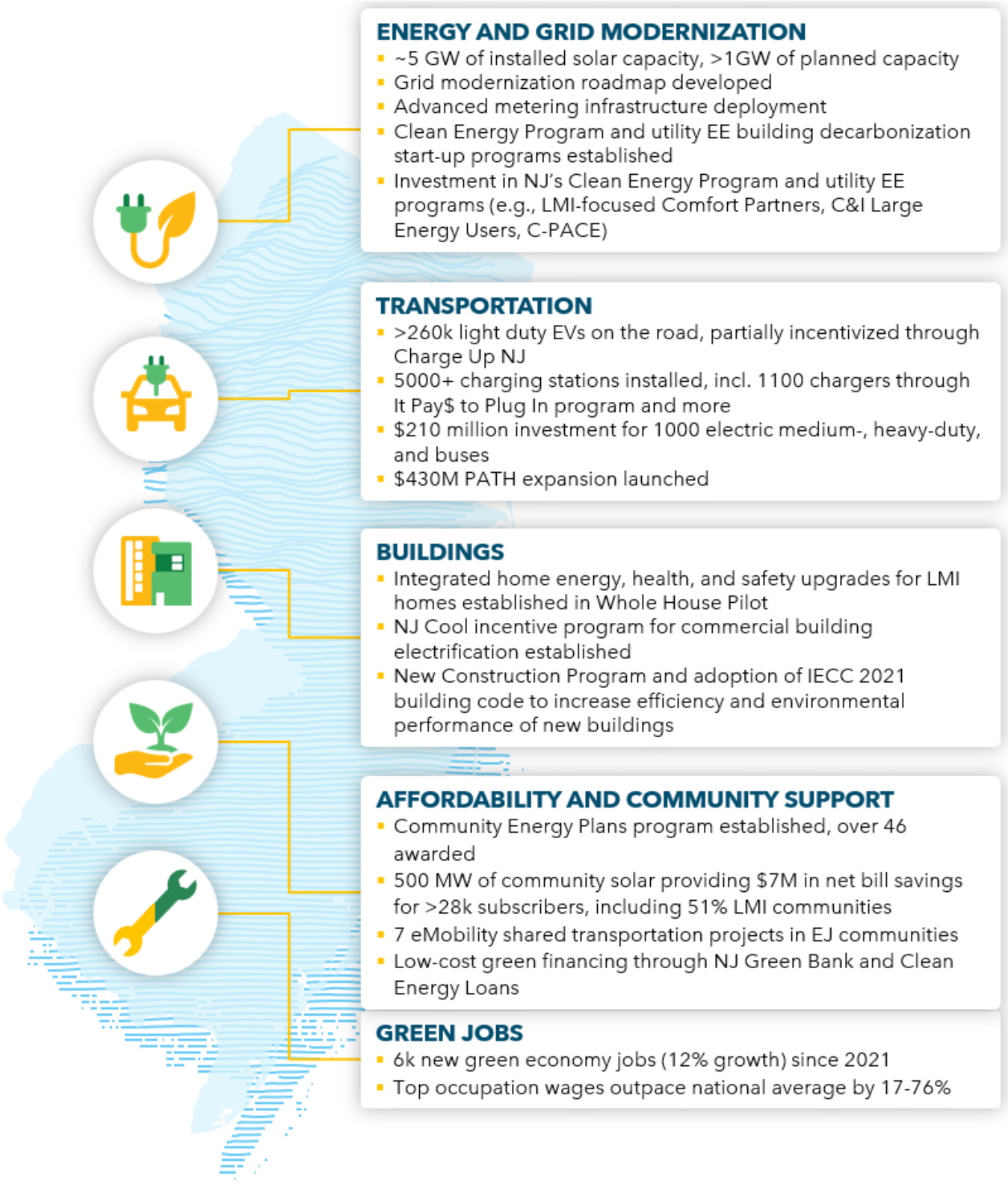
Delivering on the 2019 Energy Master Plan

Since the release of the 2019 EMP, New Jersey has created or expanded dozens of programs that make meaningful investments in its communities, businesses, and people to grow the clean energy economy, reduce climate and air pollution, and meet the state's climate goals.

The state has installed over 5 GW of solar capacity, with another 1 GW in the pipeline, with new legislative targets committing the state to an additional 3 GW of community solar and 2 GW of battery storage by 2030. New Jersey was an early mover on offshore wind (OSW) and worked across agencies to solicit several projects. However, economic and federal headwinds have substantially delayed OSW deployment. Despite this delay the State remains committed to achieving its OSW goals to capture the potential economic and environmental benefits OSW deployment represents for the State. More than 260,000 electric vehicles are now registered, aided by the Charge Up NJ program, and over 5,000 EV charging ports have been deployed. Public transit and freight electrification have also advanced, with investments in over 2,250 electric buses, trucks, and port vehicles.

Additionally, utility-led energy efficiency programs are annually achieving over 2% of electric load reduction and 0.75% reduction in natural gas consumption. Through the Community Energy Plans Programs significant investment has been made to support clean energy initiatives in low- and moderate-income communities, reinforcing New Jersey's commitment to equitable and sustainable energy progress.

Figure 2. Snapshot of New Jersey's Climate Mitigation Progress and Programming



Putting No Regrets Strategies into Action

Achieving the State's overarching No Regrets policy goals requires specific programmatic actions across a number of sectors ranging from transportation, the power sector, buildings, workforce, and environmental justice. As the 2024 IEP makes clear, there are several pathways to decarbonize the state's economy, and the State will have to make decisions over the coming years and decades on the specific pathway to pursue. However, regardless of those future decisions, there are several programmatic recommendations the state can implement in the near-term that reflect robust stakeholder input and result in broad societal and economic benefits to New Jersey.

- **Buildings:** Implement the Strategic Roadmap for Building Decarbonization, building a whole-of-government approach to decarbonization programming that provides best-practices in energy efficiency and building decarbonization program design to affordably and equitably reduce emissions from the buildings sector.
- **Energy System:** Advance the Clean Electricity Standard, scale up in-state renewable energy and storage, and modernize transmission and distribution infrastructure. Moreover, the State should consider additional steps to increase its ability to procure a broader array of energy resources to serve New Jersey.
- **Innovation Economy:** Promote pilot projects and partnerships that accelerate clean tech deployment and commercialization.
- **Transportation:** Continue progress under the EV Roadmap and Partnership to Plug In, expanding EV infrastructure and adoption, including for medium- and heavy-duty fleets.
- **Grid Resilience:** Enhance grid planning and flexibility through proactive distribution upgrades, demand-side technologies, and community resilience investments.
- **Workforce:** Launch workforce hubs, career pathway tools, and targeted training to prepare New Jersey's workforce for the clean energy economy.
- **Equity and Justice:** Continue to operationalize recommendations from the Energy Equity and Affordability Report and ensure program access and benefits reach overburdened communities.

Conclusion

The 2024 edition to New Jersey's Energy Master Plan reaffirms the viability and urgency of implementing "No Regrets" strategies—actions that deliver broad benefits under all modeled pathways and position the state to cost-effectively meet its clean energy, climate, and equity goals. These strategies, including accelerating clean energy deployment, expanding electrification and energy efficiency, modernizing the grid, and ensuring affordability and environmental justice, form the backbone of the state's energy policy regardless of future uncertainties or technological preferences.

Critically, the EMP recognizes that achieving public policy objectives—such as reducing emissions, enhancing reliability, lowering consumer costs, and creating equitable economic opportunities—does not hinge on one specific technology or pathway. Instead, the plan promotes a flexible, adaptive framework that allows New

Jersey to evolve its strategies in response to emerging data, innovation, market conditions, and stakeholder feedback.

Looking ahead, the EMP identifies key areas that require continued exploration and policy development, including the long-term role of hydrogen and low carbon fuels, implications of rising electricity demand from sectors like data centers, regional transmission dynamics, and the pace of clean technology deployment. Addressing these challenges will demand transparency, collaboration, and openness to new solutions.

Ultimately, the path to 2050 is not static. New Jersey's approach must remain grounded in rigorous analysis, aligned with its core public policy goals, and guided by an inclusive process that ensures all residents benefit from a cleaner, fairer, and more resilient energy future.

Chapter 1: New Jersey's Path to 2050

New Jersey's 2024 Energy Master Plan (EMP) serves as a long-term strategic roadmap for meeting the state's climate and clean energy goals—including an 80% reduction in economy-wide greenhouse gas emissions by 2050, as statutorily mandated by the Global Warming Response Act (GWRA), and the target of 100% clean electricity sales by 2035, as established in Executive Order No. 315. The EMP does not offer one single path to meet the state's 2050 targets; instead, it identifies several options that provide the state with flexibility to meet its clean energy and climate goals utilizing a broad array of technologies and energy resources.

The core objective of the EMP planning process is to identify the pathways and policies to achieve New Jersey's energy needs and climate ambitions in the coming years and decades. In contrast to the 2019 EMP, the 2024 EMP does not identify a single "least-cost pathway." Instead, it identifies several options that should be sincerely considered by current and future decision-makers to stay the course on New Jersey's statutory commitments while being flexible enough to meet challenges that may be unforeseen at the time of its development.

The core policy options contained in the 2024 EMP reflect the State's commitment to developing a flexible and adaptable framework for achieving the goal of a clean, affordable, and reliable energy system that meets the state's ambitious climate commitments. As New Jersey, and other states, have experienced in 2024 and 2025, the energy system is evolving rapidly as shifting federal priorities change the economics of different energy supply options, and the rise of large load data centers pushes the PJM region into a new era of rapidly rising energy demand following a 20-year period of relatively flat load.

No Regrets Strategies

New Jersey has multiple viable pathways to achieve 100% clean electricity sales and 80% GHG reductions by 2050. The EMP identifies 'No Regrets' strategies with broad, near- and long-term benefits that do not limit future decision-making flexibility and provide meaningful benefits to the state regardless of the larger national policy environment or ebbs and flows of our regional energy market.

1. Accelerate Clean Energy Deployment

To meet the 100% Clean Electricity Standard (CES) goal by 2035, New Jersey must adopt policies and programs that accelerate the in-state deployment of diverse clean electricity resources to meet its climate targets, electricity needs, and reduce electricity imports. Clean energy resources include renewable energy generation such as wind, solar, and hydropower as well as low-carbon resources such as advanced nuclear, battery storage, virtual power plants, green hydrogen fuel cells, and linear green hydrogen electric generators. Increasing the deployment of these resources will help achieve the following public policy priorities:

+ **Grow in-state Electric Generation:** All modeled mitigation scenarios show a significant increase in in-state electricity generation, helping to move New Jersey toward energy independence in the electric sector.

- **Grow the Clean Energy Economy:** Supplemental modeling by BW Research shows a net job gain of 42,400[2] over the next decade in a scenario where the State rapidly increases its clean energy deployment and achieves its climate goals. The study identified 12 priority occupations necessary to meet New Jersey's green economy goals, all of which have higher wages than the national average. Electricians are projected to see the largest growth in new jobs, followed by Plumbers, HVAC Mechanics and Installers and Solar Installers.
- **Increase Resource Diversity:** Currently the overwhelming majority of New Jersey's electric generation is comprised of just two resources, natural gas and nuclear. Under all modeled IEP scenarios, the diversity of electricity resources increases. Resource diversity plays a critical role in creating a more reliable grid, as well as less volatile energy prices.
- **Provide electricity bill stability:** To support electric bill stability as a public policy goal, New Jersey must recognize and manage the shift in cost structure that comes with the clean energy transition. As the state moves away from fossil fuels—which carry volatile, commodity-based costs—and toward renewables and electrification, more of the energy system's costs become fixed and predictable. This shift can help reduce consumer exposure to fuel price swings and generally supports long-term rate stability. In addition, energy efficiency investments that reduce consumption, and rate design reforms that fairly allocate costs while encouraging smart energy use will give ratepayers a greater degree of control over their energy costs.

New Jersey has a history of programming designed to deploy clean energy resources, largely authorized by the Clean Energy Act of 2018 and the Solar Act of 2021. For example, over the past several years the NJBPU has significantly expanded solar programming to include grid connected solar, community solar, and dual-use solar, while at the same time cutting the $/MWh subsidies to less than half, and in many cases, less than a third so that more solar resources can come online at a lower cost. New Jersey should leverage its expertise with these types of incentive programs to significantly expand the types and amount of clean energy generation in New Jersey. Additionally, in 2018 New Jersey began its Zero Emission Certificate (ZEC) program for its nuclear power plants to maintain this highly reliable, zero-emissions source of electricity generation. With this investment, New Jersey was able to "bridge" the nuclear fleet to new federal tax credits and sunset ratepayer subsidies. This investment by New Jersey is paying off in the form of additional generation capacity in a very tight wholesale electric market.

The most effective tool the State has to reduce electricity sector emissions through clean energy deployment is a technology neutral Clean Electricity Standard. A CES, as called for by Governor Murphy in EO 315, requires that utilities purchase an increasing share of clean electricity for their customers until it matches 100% of annual consumption in 2035. Like New Jersey's current Renewable Portfolio Standard (RPS) under the Clean Energy Act of 2018, a CES does not require existing fossil generation to retire. Instead, it provides a mechanism to incentivize clean energy development through a tradable credit for each MWh of clean electricity generated by a qualifying facility.

Each of the modeled achievement scenarios in the IEP includes a CES. In contrast, the only scenario without a CES is the "current policy scenario," which results in the highest growth of electricity imports and least job growth

[2] Note: Includes both direct and indirect employment in the energy economy and its supply chain, as well as the induced employment supported by workers in the energy economy.

of any scenario. Therefore, regardless of the specific pathway New Jersey follows, or the impact of uncertainties on the market, implementing a CES would provide substantial benefits to the state.

2. Expand Electrification and Efficiency Programming

No matter the pathway that New Jersey pursues to meet its climate goals, robust energy efficiency and building decarbonization programming is required to achieve GHG reductions, energy affordability, peak-load reductions, economic and job growth, and substantial public health benefits. Since the passage of the Clean Energy Act of 2018, the New Jersey Board of Public Utilities and the State's regulated electric and natural gas utilities have invested heavily in energy efficiency and decarbonization programming, and are estimated to have reduced annual electricity usage by 3.9 million megawatt hours, annual natural gas usage by 10.9 million MMBtu, customers' utility bills by $988 million, and annual GHG emissions by 2.27 million metric tons (equal to removing 480,000 cars from the road) between July 2021 and December 2024. Recognizing the benefits of building decarbonization, in 2022 Governor Murphy directed OCAGE, in partnership with key executive agencies, to produce a comprehensive *Strategic Roadmap for Building Decarbonization*, released in November 2025 that provides a whole-of-government approach to building decarbonization in New Jersey. The Roadmap provides dozens of recommendations on program design to make the State's programming more effective.

3. Ensure Energy Affordability, Equity, and Environmental Justice

New Jersey's cumulative impact law passed in 2020 states that "all New Jersey residents, regardless of income, race, ethnicity, color, or national origin, have a right to live, work, and recreate in a clean and healthy environment; that, historically New Jersey's low-income communities and communities of color have been subject to a disproportionately high number of environmental and public health stressors." In rectifying the impact of the energy system on these communities and New Jersey's residents at large, there are three cross-cutting topics that New Jersey must address in its energy and environmental programming.

Energy Affordability

Providing affordable energy to residents is a key priority of the EMP. Meeting this affordability goal requires that the State integrate affordability and equity goals across all its programming. Most recently, the NJBPU looked at the issue of affordability for low- and moderate-income (LMI) customers in its *Energy Equity and Affordability Report*, released in December 2024 which recommended the following:

Bill Assistance Programs:

- **New Jersey may consider expanding targeted outreach** to increase participation in its Universal Service Fund ("USF") program, potentially through coordinated efforts between the Board, utilities, and local agencies. The state may also continue to assess the funding needs of the program and monitor the bill impacts on non-participating customers.
- **The state could explore the development of new bill assistance programs** specifically designed for moderate-income households that currently fall outside the eligibility of existing programs.
- **New Jersey may also review the current USF discount cap per household** to evaluate whether increasing the cap could provide additional relief to eligible customers without creating unintended cost shifts.

Alternative Rate Design:

- **New Jersey may review the existing inclining block rate structure** and examine alternative rate designs that more closely align with the underlying costs of providing electricity service.
- **The state may consider piloting time-varying rates**, particularly in conjunction with the rollout of advanced metering infrastructure (AMI), with the goal of expanding availability once full AMI deployment is achieved.
- **New Jersey may continue to monitor the potential benefits of income-tiered fixed charges**, while recognizing that existing bill assistance programs like USF are currently achieving comparable affordability outcomes. No immediate changes are being proposed at this time.

Lowering Upfront costs of the Energy Transition

In addition to keeping energy bills affordable, reducing the upfront costs associated with clean energy technologies—particularly for LMI households—will make those technologies more accessible to all residents. These upfront costs can be a significant barrier to adopting electric vehicles, heat pumps, solar panels, and energy efficiency upgrades. To address this, incentive programs, including rebates for high-efficiency equipment, point-of-sale discounts, and no-cost or low-cost installations for income-eligible residents, can make technologies more accessible. Beyond incentives for households (especially low- and moderate-income customers), encouraging market transformation through mid-stream (e.g., installer) or upstream (e.g., manufacturer) accelerator programs can be used to drive the costs of end-user equipment down.

Enhancing access to community solar, offering deeper incentives for energy efficiency retrofits, and layering financial support through state and federal funding can ensure LMI communities benefit from the clean energy transition. By prioritizing accessible financing and program design, New Jersey can make equitable participation a cornerstone of its climate strategy.

Remain Committed to Environmental Justice

New Jersey's energy transition must continue to prioritize environmental justice by addressing the historical and ongoing burdens placed on overburdened communities. The state's 2020 environmental justice law affirms that all residents have the right to live, work, and recreate in a clean and healthy environment—regardless of income, race, ethnicity, or national origin. To uphold this commitment, the state should embed equity into every stage of planning and implementation, from community engagement to program design and evaluation. This includes prioritizing clean energy investments in disadvantaged communities, ensuring meaningful participation in decision-making processes, and aligning programs with the specific needs of vulnerable populations. By advancing policies that actively remediate cumulative environmental harms and promote equitable access to clean energy benefits, New Jersey can ensure its climate goals are achieved in a just and inclusive manner.

4. Ensure a reliable and modern grid

In addition to increasing the amount of clean energy generation in New Jersey, modernizing New Jersey's transmission and distribution infrastructure is a critical action New Jersey must take in any future that meets the state's climate goals. At a minimum, New Jersey must ensure that its transmission and distribution system is reliable, resilient, and capable of serving projected increased electric load. However, while these minimum actions are necessary, they alone are not sufficient to create a 21st century electric grid.

Distribution Grid Modernization

At its core, grid modernization is a proactive approach to upgrading and managing the electric distribution system. It combines traditional infrastructure—like poles, wires, and substations—with advanced technologies, digital tools, and an updated regulatory framework to make New Jersey's grid smarter, more resilient, more reliable, and more interactive. A modernized grid will be essential to address reliability and affordability challenges precipitated by rapid load growth driven largely by the proliferation of AI data centers and beneficial electrification.

To support this transformation, the New Jersey Board of Public Utilities (BPU) released a Grid Modernization Study in 2022, identifying key policy recommendations to reduce barriers and improve the interconnection of clean energy technologies. Since the study's release, the BPU has convened multiple stakeholder meetings to explore these challenges and has begun implementing regulatory reforms that enable the grid to support distributed energy resources and increased electrification.

Over the coming years, New Jersey should continue to advance a set of coordinated policy and technology actions that enable a more dynamic, flexible, and customer-centric grid. These actions include:

- Reforming rate design to support demand-side flexibility and compensate distributed energy resources fairly;
- Updating net metering rules to reflect grid impacts and value contributions;
- Expanding behind-the-meter storage and enabling integration through real-time data and smart inverters;
- Enhancing grid access and transparency through hosting capacity maps and proactive interconnection planning;
- Streamlining permitting processes for distributed energy projects; and
- Investing in advanced distribution management systems (ADMS) and digital infrastructure for monitoring and automation.

By modernizing its distribution grid, New Jersey can better integrate clean energy, manage peak demand, reduce outages, and empower consumers and businesses to play an active role in the clean energy transition.

Transmission Infrastructure

Transmission infrastructure will be essential to meeting growing electricity demand and integrating large-scale clean energy resources like offshore wind, nuclear, and grid scale solar and storage. While the transmission system is primarily regulated at the federal level through the Federal Energy Regulatory Commission (FERC) and operated regionally by PJM Interconnection, the New Jersey Board of Public Utilities (BPU) plays a critical coordinating and advocacy role. The BPU helps ensure that New Jersey's energy priorities are represented in regional transmission planning. Through proactive engagement in PJM's stakeholder processes and coordination with neighboring states, the BPU advocates for timely and cost-effective transmission investments. These efforts include supporting regional transmission planning with other states in the Northeast as well as like-minded states in the PJM region, pursuing coordinated offshore wind transmission, facilitating interconnection for in-state renewables, and aligning grid expansion with state clean energy targets. The BPU's leadership is crucial to ensuring that transmission infrastructure keeps pace with New Jersey's energy transformation while maintaining system reliability and affordability.

5. Stay the Course on Transportation Electrification

To date, much of the progress on transportation electrification in the state has been due to New Jersey's Partnership to Plug-In, which is a collaborative initiative led by the NJBPU, the Department of Environmental Protection (NJDEP), and the Economic Development Authority (NJEDA). This partnership aims to accelerate the adoption of zero-emission vehicles (ZEVs) across the state by coordinating infrastructure development, policy implementation, and public engagement. The overarching goal is to register 330,000 ZEVs in New Jersey by 2025, contributing to the state's broader objective of achieving 80% economy-wide emission reductions by 2050 and improving air quality in New Jersey. The EMP supports the Partnership's strategies as key pillars of transportation electrification.

Key Strategies of the Partnership to Plug-In:

- **Infrastructure Expansion**: Develop a comprehensive statewide network of EV charging stations, including DC Fast Chargers and Level 2 chargers, to ensure accessibility and convenience for EV users.
- **Incentive Programs**: Implement financial incentives such as rebates and grants to encourage the purchase of EVs and the installation of charging infrastructure by residents, businesses, and municipalities.
- **Public Awareness and Education**: Conduct outreach campaigns to inform the public about the benefits of EVs, available incentives, and the locations of charging stations, aiming to increase consumer confidence and adoption rates.
- **Policy and Regulatory Support**: Collaborate with lawmakers to establish supportive policies and regulations that facilitate EV adoption, including streamlined permitting processes and building codes that accommodate charging infrastructure.
- **Equity and Accessibility**: Ensure that EV programs and infrastructure development consider the needs of all communities, including low- and moderate-income areas, to promote equitable access to clean transportation options.

6. Enhance Regional Coordination and Advocacy

To support an affordable, reliable, and equitable clean energy transition, New Jersey must continue to actively engage in regional and federal advocacy efforts. The state plays a critical role in shaping energy policy through its participation in the PJM Interconnection, FERC, and multi-state coalitions. Continued engagement ensures that regional transmission planning, reliability investments, and wholesale market reforms align with New Jersey's policy goals and protect ratepayer interests.

New Jersey collaborates with peer states through forums such as the **OPSI**—a key body that represents state regulatory perspectives in PJM's stakeholder processes. OPSI allows New Jersey to advocate for transparency, just and reasonable rates, and long-term planning that supports New Jersey's energy goals. Additionally, New Jersey is part of the **Northeast States Collaborative on Offshore Wind**, which promotes regional coordination on transmission, procurement, and supply chain development for offshore wind. The state recently joined other states in a legal challenge defending offshore wind development, demonstrating its commitment to ensuring regional energy infrastructure reflects economic and climate priorities.

Through these coordinated actions, New Jersey can influence policies that safeguard affordability, drive infrastructure investment, and strengthen system reliability—while also ensuring the voices of its residents and ratepayers are represented at the federal and regional levels.

7. Drive Innovation in Workforce Development

New Jersey is advancing a forward-looking strategy to build an inclusive, resilient green workforce that supports its energy and climate goals. Central to this approach is the expansion of high-quality, family-sustaining jobs that are accessible to all residents, with a strong emphasis on creating opportunities in overburdened communities. The state is actively promoting local hiring and targeting job growth in key clean energy sectors.

To ensure workforce readiness, New Jersey is investing in robust training infrastructure and career pathway development. This includes partnerships with labor unions, community colleges, universities, and technical training providers to align workforce development programs with emerging industry needs.

Equity is a cornerstone of the state's strategy. New Jersey is implementing targeted outreach and support services to reduce barriers to entry for residents in underserved communities. These efforts ensure that training and employment opportunities in the green economy are equitably accessible and responsive to community needs.

The State is also fostering public-private partnerships to reinforce its workforce goals. Employers are encouraged to sign the Corporate Green Workforce Development Pledge, a commitment to supporting a diverse and inclusive workforce. Collaborations with industry leaders help direct investment into local communities and advance New Jersey's broader sustainability and equity goals.

New Jersey is investing in programs and infrastructure that support scalable training and placement models. Programs like NJ BRIDGE and the Green Workforce Training Grant Challenge fund community-based and other organizations that provide hands-on experience and support systems for workers entering green industries. These comprehensive efforts position New Jersey as a national leader in cultivating a workforce that is prepared for and empowered by the clean energy transition.

To catalyze innovation and expand impact, the State continues to drive investments in cutting-edge research and technology development in the green economy. Initiatives including fellowship programs that foster student-led research and thought leadership at NJ universities, grants to startups such as the Cleantech Seed Grant Program, and public-private partnerships including Hax LLC, the Newark based center for hard-tech climate focused early-stage companies, collectively leverage New Jersey's world-class resources and expertise to accelerate the innovation economy.

These efforts are part of New Jersey's broader commitment to building a resilient, inclusive, and diverse green economy that offers equitable opportunities for all residents while advancing the state's clean energy goals.

Insights from parallel studies

To support informed policymaking, New Jersey agencies have commissioned multiple in-depth studies, including the *Strategic Roadmap for Building Decarbonization*, *Offshore Wind Strategic Plan*, the *Energy Equity and Affordability Report*, *Growing Green Jobs* and the forthcoming *NJ Zero Emission Vehicle Roadmap*. While

the EMP offers an economywide, long-term vision for achieving carbon reduction goals, these sector-specific studies provide detailed analysis and recommendations to guide the state's clean energy transition.

New Jersey Affordability and Rates Report (December 2024)

The *Energy Equity and Affordability Report* examines how to make New Jersey's energy programs more inclusive and affordable, particularly for low- and moderate-income households. It recommends expanding bill assistance programs, reforming rate structures, and addressing barriers to participation in clean energy programs. The report highlights the need for affordability benchmarks, such as an energy burden ceiling, and promotes policy solutions that ensure vulnerable communities are not left behind in the clean energy transition.

New Jersey Priority Climate Action Plan (PCAP) and Comprehensive Climate Action Plan (CCAP) (March 2024 and Planned December 2025)

The PCAP, submitted in March 2024 under the U.S. EPA's Climate Pollution Reduction Grant program, outlines twelve near-term, implementation-ready actions aimed at achieving a 50% reduction in greenhouse gas (GHG) emissions by 2030. These actions span six priority areas: transportation electrification, building decarbonization, industrial emissions reduction, grid decarbonization, waste management, and cross-cutting measures such as equity and workforce development. The forthcoming CCAP (expected in December 2025) will build on this foundation by offering a comprehensive roadmap for achieving an 80% reduction in emissions by 2050.

New Jersey Building Decarbonization Roadmap (November 2025)

The *New Jersey Building Decarbonization Roadmap* outlines a comprehensive strategy to transition the state's buildings toward low-carbon, all-electric systems. It emphasizes accelerating heat pump adoption, improving energy efficiency, updating building codes, and enhancing public awareness. The roadmap also stresses the importance of equity, workforce development, and regulatory reform, ensuring that all residents—including those in overburdened communities—benefit from healthier, more efficient, more affordable, homes and workplaces while contributing to the state's 2050 climate goals.

New Jersey Offshore Wind Strategic Plan (September 2020)

The *Offshore Wind Strategic Plan* provides a detailed framework to develop up to 7,500 MW of offshore wind capacity by 2035. It addresses key issues such as environmental protection, workforce and supply chain development, port infrastructure, and grid integration. The plan also includes community engagement strategies to ensure equitable participation in offshore wind investments

The short- and medium-term outlook for offshore wind is uncertain. However, fundamental factors like the excellent wind resource along the coast, the shallow bottom allowing the cheaper and time-tested fixed-bottom placement of turbines, and large load centers close to the shore, continue to exist. Given the continuing deployment of offshore wind in other states and regions, and the increasing evidence of the positive contribution it provides to reliability, particularly in combination with solar, offshore wind should remain part of the State's generation options.

New Jersey Zero Emission Vehicle Roadmap (Forthcoming)

New Jersey's *EV Roadmap* presents a strategic vision to accelerate electric vehicle adoption statewide. It includes clear targets for EV market growth, expansion of public and residential charging infrastructure, and

incentives to promote equitable access. The roadmap supports emissions reductions, cleaner air, and economic development by integrating EV planning with grid readiness, transit electrification, and consumer education. It also aligns with broader state goals for climate mitigation and clean transportation transformation.

Growing Green Jobs (September 2025)

New Jersey is actively advancing a comprehensive strategy to develop a diverse, inclusive, and skilled green workforce, aligning with its clean energy and climate objectives. The updated 2025 *Growing Green Jobs* report by the New Jersey Council on the Green Economy in collaboration with the Governor's Office of Climate Action and the Green Economy (OCAGE), outlines key recommendations and initiatives to support this transition and builds upon prior green jobs reports produced by the Council.

Together, these studies form the technical and policy foundation that complements the Energy Master Plan's vision—ensuring that New Jersey's climate action is not only ambitious and effective, but also affordable, equitable, data-driven, and implementation-ready.

Chapter 2: Evolution of Decarbonization Policy in New Jersey

The 2019 EMP proposed a set of comprehensive strategies to achieve 100% clean energy by 2050. Subsequent state policies have built on this foundation, accelerating and strengthening targets, enhancing incentives, and addressing emerging challenges in the clean energy landscape. The following sections detail how, in recent years, the policy landscape in New Jersey has evolved, providing context on progress toward meeting the goals set out in the 2019 EMP.

This introduction offers a few key examples of policy developments, and the section below provides a more comprehensive accounting of the policies and regulations adopted at the state level to illustrate the evolution of decarbonization policies and regulations in New Jersey. The chapter highlights several key policies, opportunities, and challenges at the federal level that have both strengthened and hastened New Jersey's ability to act on its 2050 carbon emissions goals. In particular, the availability of financial and permitting support at the federal level has significantly changed the landscape as it relates to clean energy deployment in the near- and mid-term. This chapter also includes a detailed accounting of New Jersey's progress on programs and initiatives since 2019.

In recent years, New Jersey has made meaningful progress toward meeting its clean energy goals. In 2020, the New Jersey Legislature passed the Environmental Justice Law directing the New Jersey Department of Environmental Protection (NJDEP) to consider the cumulative impacts, both environmental and public health, of pollution from industrial, commercial, and governmental facilities on overburdened communities. This law recognizes the legacy of energy infrastructure's disproportionate negative impacts on these communities. The law requires that facilities engage in meaningful dialogue with communities to further the law's environmental justice goals, contributing to New Jersey's goals of facilitating an equitable transition to clean energy.

In 2021, Executive Order No. 221 (EO221 of 2021) established the Governor's Office of Climate Action and the Green Economy (OCAGE) to coordinate climate change-related policymaking across executive branch departments and agencies. The Climate Office works to ensure that climate and green economy policy decisions are consistent with the Administration's goals, including those set out in the 2019 EMP. In addition, the Climate Office monitors the implementation of the Administration's climate policy and green economy agenda.

Investment in clean energy has increased as the State has taken significant steps to achieve and expand its decarbonization goals. Accelerating the State's transition to clean energy generation, Executive Order No. 315, issued in February 2023 (EO315 of 2023), called for the necessary market mechanisms and State programs to achieve 100% of the electricity sold in the state to be from clean sources by January 1, 2035. Crucially, this standard does not require the retirement of the state's fossil fuel resources. Instead, it is a mechanism to increase investments in in-state clean electricity resources like renewable energy, nuclear, battery storage, and emerging technologies, which in addition to advancing state's pursuit of its climate goals, also helps address the significant need for additional generation capacity in the PJM region

Table 1 details state-level policies and regulations, showcasing the progression of decarbonization efforts in New Jersey since 2018.

Table 1: Chronological Evolution of Decarbonization Policy in New Jersey

Policy	Description	Decarbonization Target(s)
Clean Energy Act, P.L. 2018, C.17	The Clean Energy Act expands the State's renewable energy and energy efficiency programs through multiple actions: + Establishes an ambitious Renewable Portfolio Standard (RPS), requiring that an increasing proportion of energy sold in the State comes from qualifying renewable energy sources; + Accelerates the solar RPS and establishes a Community Solar Energy Pilot Program; + Codifies the administration's offshore wind goals and re-establishes an expired offshore wind manufacturing tax credit; + Requires utilities to implement energy efficiency programs reducing both electricity and natural gas usage; + Codifies the administration's energy storage goals.	**Renewable Portfolio Standard (RPS):** 21% Class I[3] by 2020 35% Class I by 2025 50% Class I by 2030 2.5% from Class II[4], effective on passage of CEA (2018) **Solar RPS:** Minimum proportion of power sales to be supplied by solar, reaching 5.1% by 2020 and then scaling back annually until reaching 1.1% in 2033. **Community Solar:** 50MW solar generation added per year following a three-year pilot. **Energy Efficiency Mandates:** At least 2.15% annual reduction in electricity usage and 0.75% reduction in natural gas usage. **Energy Storage:** 600 MW by 2021 2000 MW by 2030
An Act amending and supplementing the 2007 Global Warming Response Act, P.L. 2019, C.197	Legislation enforcing the emissions reductions targets set in the Global Warming Response Act and enabling short-term actions to meet the goal.	80% emissions reductions by 2050 (below 2006 levels)

[3] Class I renewable energy sources include solar technologies, photovoltaic technologies, wind energy, fuel cells powered by renewable fuels, geothermal technologies, wave or tidal action, methane gas from landfills, or a biomass facility, so long as the biomass is harvested sustainably. PJM Environmental Information Services (PJM EIS), *New Jersey Program Information*, https://www.pjm-eis.com/program-information/new-jersey.

[4] Class II renewable energy sources include resource recovery facilities and small hydroelectric facilities (less than 30 MW). Ibid.

Policy	Description	Decarbonization Target(s)
NJ Electric Vehicle Law, P.L. 2019, C.362	Legislation creating an incentive program for light-duty electric vehicles (EV) and at-home charging infrastructure.	**Statewide EV Goals:** 2025: 330,000 registered plug-in electric light-duty vehicles 2035: 2 million registered plug-in electric light-duty vehicles, 2040: 85% all light-duty vehicles sold or leased are EV **State Fleet EV:** 2025: 25% State owned, non-emergency vehicles are EV 2035: 100% State owned, non-emergency vehicles are EV **EV Charging Infrastructure:** 2025: 400 fast charging stations at 200 locations 2025: 15% all multi-family properties are equipped for electric vehicle charging 2025: 20% of all franchised overnight lodging establishments equipped for EV 2030: 30% all multi-family properties equipped for EV charging **Public transport**: 2024: 10% of NJ TRANSIT new bus purchases are zero-emission buses. 2032 and after: 100% of NJ TRANSIT new bus purchases are zero-emission buses.
Regional Greenhouse Gas Initiative, P.L. 2019, C.328	Legislation codifying the State's participation in the Regional Greenhouse Gas Initiative, a cap-and-trade CO2 program across several Northeastern states.	3% annual regional reductions in emissions of greenhouse gases through credit trading system.
Executive Order No. 92 (Nov. 2019)	An order increasing the State's offshore wind energy generation goal to 7,500 MW by 2035.	7,500 MW of offshore wind generation by 2035 [please refer below to larger goal established by Executive Order No. 307]

Policy	Description	Decarbonization Target(s)
Environmental Justice Law (Sept. 2020)	Directs the New Jersey Department of Environmental Protection to consider the cumulative environmental and public health impacts on overburdened communities when reviewing applications for certain facilities.	Specific target not established.
Executive Order No. 221 (Feb. 2021)	Establishes the Governor's Office of Climate Action and the Green Economy (OCAGE) tasked with coordinating the policy making processes of the State's Executive Branch departments and agencies in matters relating to climate change and green economy issues.	Specific target not established.
NJ Assembly Bill 3352 P.L.2021, c.290	Legislation requiring the Department of Community Affairs in consultation with the Department of Environmental Protection to adopt rules and regulations requiring newly constructed warehouses to be 'solar-ready,' including solar hot water systems.	All warehouses constructed on or after July 1, 2022 will be solar-ready buildings.
Advanced Clean Trucks Program and Fleet Reporting Requirements (Dec. 2021)[5]	A rulemaking adopting the Advanced Clean Trucks Program, requiring manufacturers of vehicles over 8,500 pounds gross vehicle weight rating to participate in a credit/deficit program intended to increase the percentage of zero-emission vehicles.	Model Year/Class 2b-3/Class4-8/Class7-8 Tractors[6] 2025/7%/11%/7% 2030/30%/50%/30% 2035 and beyond/55%/75%/40%
Solar Act of 2021, P.L. 2021, C.169	Instructs NJBPU to double the growth of existing solar programs.	3,750 MW solar generation by 2026

[5] In February 2025, the EPA transmitted California's Clean Air Act waivers for Advanced Clean Cars II and Advanced Clean Trucks to Congress for review under the Congressional Review Act. Pending congressional action on these rules, the future of these rules remains uncertain. Congressional Record, 119th Cong., 1st sess., vol. 171, no. 36 (February 24, 2025), https://www.congress.gov/119/crec/2025/02/24/171/36/CREC-2025-02-24.pdf; Congressional Record, 119th Cong., 1st sess., vol. 171, no. 38 (February 26, 2025), https://www.congress.gov/119/crec/2025/02/26/171/38/CREC-2025-02-26.pdf.

[6] Class 2b: four tired truck or van between 8,501 and 10,000 lbs.; Class 3: <6 tires between 10,000-14,000 lbs.; Class 4: <6 tires, 14,000-16,000 lbs.; Class 5: <6 tires 16,000-19,500 lbs.; Class 6: <6 tires, 19,500-26,000 lbs.; Class 7: <6 tires, 26,000-33,000 lbs.; Class 8: <10 tires, >33,000 lbs. Marie McNamara, "Understanding California's Advanced Clean Truck Regulation," RMI, June 27, 2023, https://rmi.org/understanding-californias-advanced-clean-truck-regulation/.

Policy	Description	Decarbonization Target(s)
Executive Order No. 307 (Sept. 2022)	Directs all necessary actions to promote and realize the development of offshore wind energy to meet the goal of 11,000 MW offshore generation by 2040.	11,000 MW of offshore wind by 2040
Executive Order No. 315 (Feb. 2023)	Directs the State to advance clean energy market mechanisms and other programs to meet clean energy targets and calls for the EMP to include specific proposals for both short- and long-term strategies.	100% of the electricity sold in the State to be derived from clean sources by January 1, 2035
Executive Order No. 316 (Feb. 2023)	Directs the State to advance building electrification through retrofitting and construction of buildings with electric space heating and cooling and electric water heating systems. Directs the Climate Office to develop a strategic roadmap to building decarbonization and commits support for energy efficiency programs, such as Comfort Partners and the NJ Whole House Program, in addition to other State and Federal programs.	By December 31, 2030, zero-carbon emission space heating and cooling installed in: 400,000 homes 20,000 commercial spaces and/or public facilities 10% of low-to-moderate income households will be made electrification-ready through the completion of necessary electrical system repairs and upgrades.
Executive Order No. 317 (Feb 2023)	Directs the NJBPU to collaborate with stakeholders and develop strategies for natural gas utilities to meet a 50% reduction in greenhouse gas emissions by 2030 (below 2006 levels). Strategies are to consider cost, support for well-paying jobs (including union jobs), and low-cost market mechanisms for reducing emissions including adopting a "clean heat standard." Strategies are also to consider the needs of customers reliant on natural gas and ensure the electric grid's readiness for increased electrification.	50% reduction in GHG emissions below 2006 levels by 2030 for natural gas utilities.

Policy	Description	Decarbonization Target(s)
Advanced Clean Cars II (Dec 2023)[7]	The Advanced Clean Cars II rule requires vehicle manufacturers to make zero-emission vehicles an increasing proportion of their annual new passenger car and light-duty truck sales in New Jersey, beginning with model year 2027, ramping up to 100% by 2035.	Model Year/Percentage of New Vehicle Sales Requirement: 2027/43% 2030/68% 2035 or later/100%

Evolution of Federal Context since the 2019 EMP

Since the publication of the 2019 EMP, there was a period of unprecedented federal investments announced in clean energy and infrastructure, providing new funding, regulatory support, and guidance to accelerate the State's decarbonization goals while centering justice and equity in clean energy investment. However, the future of these investments is uncertain due to ongoing federal discussions regarding the allocation and disbursement of IRA and BIL funds. New Jersey remains committed to leveraging available federal resources to pursue the State's clean energy goals while ensuring equity and resilience for all its communities. Below, we outline the key federal policies supporting New Jersey's current efforts.

Justice40 Initiative (2021)

In January 2021, the Biden Administration established the Justice40 Initiative, setting federal commitments to tackle the climate crisis equitably. It directed that 40% of the overall benefits from certain federal investments flow to disadvantaged communities. The initiative closely aligned with New Jersey's environmental justice efforts, such as the Environmental Justice Law, which centers environmental justice in the State's energy generation planning. On January 20, 2025, the Trump Administration rescinded the Justice40 Initiative through Executive Order 14148.[8] Despite its recission, New Jersey remains committed to ensuring environmental justice communities receive the benefits of state clean energy programming.

Bipartisan Infrastructure Law (2021)

The Bipartisan Infrastructure Law (Infrastructure Investment and Jobs Act) was passed to strengthen the nation's resilience to climate change, advance environmental justice, address toxic pollution, expand access to clean water, upgrade the nation's energy infrastructure, and support transportation systems, including electric vehicle infrastructure. The Bipartisan Infrastructure Law has resulted in over 60,000 projects to date; key funded

[7] In February 2025, the EPA transmitted California's Clean Air Act waivers for Advanced Clean Cars II and Advanced Clean Trucks to Congress for review under the Congressional Review Act. Pending congressional action on these rules, the future of these rules remains uncertain.

[8] Exec. Order No. 14148, *Initial Rescissions of Harmful Executive Orders and Actions*, 90 Fed. Reg. 8237 (January 28, 2025), https://public-inspection.federalregister.gov/2025-01901.pdf?1737985517.

programs are outlined in Table 2 below. As of November 2025, the future of these programs remains uncertain due to federal actions that may impact Bipartisan Infrastructure Law funding[9] (Table 2).

Table 2: Bipartisan Infrastructure Law Funded Programs

Program	Description
Charging and Fueling Infrastructure Program	Provides funding to strategically deploy publicly accessible electric vehicle charging infrastructure and other alternative fueling infrastructure.
Energy Efficiency and Conservation Block Grant Program	Provides grant funding to support states, local governments, and Tribes in implementing strategies to reduce energy use, to reduce fossil fuel emissions, and to improve energy efficiency.
Energy Efficiency Revolving Loan Grant Program	Provides grants to States to establish revolving loan funds to fund energy efficiency audits, upgrades, and retrofits.
Grid Resilience and Innovation Partnerships (GRIP) Program	Invests in enhanced grid flexibility to improve the resilience of the nation's power system in the face of extreme weather and climate change[10].
Rebuilding American Infrastructure with Sustainability and Equity (RAISE)[11]	Provides grant funding for 148 projects across all 50 states to improve road safety and revitalize communities by creating economic opportunities.
Reconnecting Communities and Neighborhoods	Allocates funding for removing, retrofitting, or mitigating transportation facilities that pose barriers to mobility, access, or economic development through grants and technical assistance.

[9] EO 14154 paused disbursement of all IRA and BIL funding pending agency review and alignment with the Trump Administration's policies. Exec. Order No. 14154, *Unleashing American Energy*, 90 Fed. Reg. 8353 (January 29, 2025), https://public-inspection.federalregister.gov/2025-01956.pdf.

[10] The US Department of Energy program description no longer references climate change.

[11] The grant program has been renamed the "Better Utilizing Investments to Leverage Development (BUILD) Grant Program.

Inflation Reduction Act (2022)

The Inflation Reduction Act (IRA) was a historic commitment to build a new clean economy powered by American innovators, workers, and manufacturing, creating quality jobs and cutting the pollution fueling the climate crisis and driving environmental injustice. As of November 2025, IRA funding remains uncertain due to federal actions[12]. However, New Jersey continues to advance its clean energy and efficiency goals through IRA funding, particularly by implementing the HOMES and HEAR rebate programs to support whole-home energy efficiency upgrades and high-efficiency appliance replacements. The future of Solar for All remains uncertain.

Federal Energy Regulation Commission Order No. 1920 (2024)

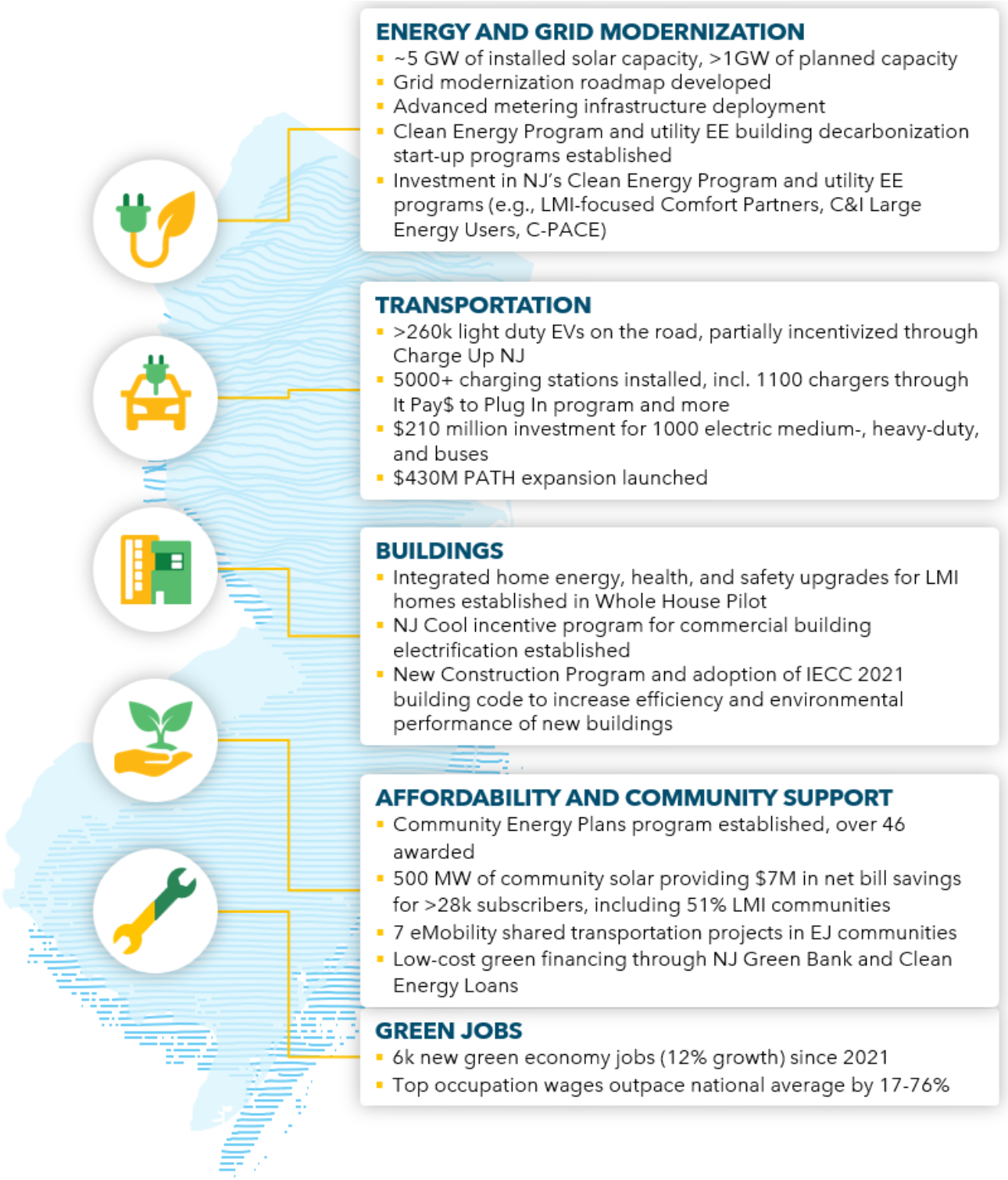
Federal Energy Regulatory Commission (FERC) Order No. 1920 adopts a transmission and cost allocation rule requiring the nation's transmission providers to conduct long-term planning for future regional transmission facility needs and plan for their funding. The rule specifically outlines states' central role in regional transmission planning.

Progress on the 2019 EMP Strategies

This section outlines the major initiatives New Jersey has undertaken since the release of the 2019 Energy Master Plan, organized by each of the 2019 plan's seven core strategies. These efforts reflect the State's commitment to implementing its climate and clean energy goals through targeted programs, policy reforms, and strategic investments. From accelerating renewable energy deployment and electrifying transportation to modernizing the grid and advancing environmental justice, the following highlights demonstrate the state's progress and continued leadership in building an affordable, equitable, resilient, and low-carbon energy future.

[12] Executive Order 14154 (2025) paused disbursement of all IRA and BIL funding pending agency review and alignment with the Trump Administration's policies.

Figure 3: Progress Highlights since 2019 EMP



Strategy 1: Reduce Energy Consumption and Emissions from the Transportation Sector

The 2019 EMP laid out a detailed set of strategies to overcome barriers to transportation decarbonization in the near- and long-term. Transitioning to a clean transportation system in New Jersey will entail EV deployment, electric vehicle supply equipment (EVSE) installation, expanded access to clean transportation options for LMI and overburdened communities, port decarbonization, and increased investment in public transit. Since then, New Jersey has introduced laws, regulations, and programs to make progress on these strategies, as detailed in the section below.

The State's EV Law (P.L. 2019, c. 362) laid out ambitious targets for 2025, 2032, and 2035 for vehicle and infrastructure deployment, including:

- 330,000 registered light-duty EVs on the road by 2025, and 2 million by 2035
- 25% state-owned non-emergency vehicle electrification by 2025, 100% by 2035
- 50% NJ TRANSIT new zero-emission bus purchases by 2026, 100% by 2032
- 400 fast chargers deployed across at least 200 locations by 2025 and
- 1000 level 2 chargers deployed by 2025.

New Jersey has taken significant steps toward achieving these goals through the adoption of regulations like Advanced Clean Cars II, which sets the state on a path to gradually achieving 100% light-duty EV sales by 2035, as well as the Model Statewide Municipal Electric Vehicle Ordinance, which ensures that municipalities across the state are utilizing consistent, clear requirements and guidance to streamline EVSE deployment, helping unlock EV adoption for residents without access to chargers at home.

The State's whole-of-government approach to transportation electrification has been critical to increase uptake of zero-emission vehicles and charging infrastructure. Notable program examples include the Charge Up NJ program, which provides rebates for consumer light-duty EVs and EVSE, and the Zero-Emissions Incentive and Diesel Modernization programs, which provide funding for clean medium- and heavy-duty vehicles, especially those operating in communities disproportionately impacted by transportation emissions. These programs play a crucial role in reducing the upfront cost barrier to clean transportation technologies, enabling EV adoption amongst LMI households and small businesses. The State is also expanding access to clean transportation options in Overburdened Communities through eMobility programs that provide electric carshare, rideshare, shuttle and on-demand programs.

Beyond grant funding, the State has worked to overcome non-economic barriers to clean transportation as well. EV awareness and education initiatives provide consumers and dealerships opportunities to learn more about EVs and EV ownership. The Transit Village Initiative and continued investment in improving public transit help improve connections between people with places and services. The NJBPU has been actively working on a proceeding that is proposed to provide utility funding for charging infrastructure for public and publicly accessible transportation.

Key programs to support this strategy include:

- **eMobility**: This NJDEP program has awarded $17M across 7 projects that expand access to clean, shared transportation, prioritizing overburdened communities. The program awarded $883,000 to Isles Inc. to launch GOTrenton!—a collaborative eMobility pilot program in Trenton—providing subsidized

carshare, rideshare, and shuttle services to low-income residents, aiming to enhance access to jobs, healthcare, and reduce disproportionate impacts of climate change. Additionally, the Overburdened Communities Electric Vehicle Affordability Program Study[13] that developed key recommendations and practices for program development and infrastructure deployment.

+ **Charge Up New Jersey program:** Aimed at increasing EV adoption across the state, this program has disbursed over $166M in per-vehicle customer incentives to purchase nearly 61,000 vehicles. **There are a total of 254,444 plug-in electric vehicles registered as of September 2025[14]. .** The program is set to receive a minimum of $30M in funding annually through 2030.

+ **It Pay$ to Plug In:** $12M in grants has been disbursed towards helping multi-unit homes, businesses, governments, non-profit organizations, and educational institutions with purchasing and maintaining EVSE. **There are a total of 4,842 charging ports distributed across 1,458 locations across the state, including 3,112 level 2 ports and 1,730 fast charging ports, as of November 2025[15].**

+ **NJ ZIP**: This NJEDA program provides voucher-style grants to reduce the purchase price of medium and heavy duty zero-emission vehicles. Now in its third Phase, NJ ZIP accelerates the adoption of zero-emission vehicles for commercial and institutional entities in New Jersey. The program has routinely been oversubscribed, with over $28M in funds disbursed to support over 260 vehicles on the road. A new complementary financing program, NJ ZEV Financing, was also created by NJEDA to further enable the deployment of zero-emission medium and heavy-duty vehicles.

Strategy 2: Accelerate Deployment of Renewable Energy and Distributed Energy Resources

Strategy 2 of the 2019 EMP focuses on increasing renewable energy and distributed energy resources in New Jersey to help meet the state's evolving clean energy goals. Achieving these goals will require meeting New Jersey's renewable portfolio standard (RPS), codifying EO 315, coordination with PJM to address transmission barriers, soliciting and providing incentives to both wind and solar generation, including community solar.

New Jersey has taken significant steps toward meeting these goals, with over 5 GW of installed solar capacity, achieving ~35% RPS compliance in 2025. The state has also made significant progress toward advancing solar, including grid-supply, behind-the-meter, and community solar projects. The Solar Act of 2021 expanded and reformed the state's solar incentive programs. The Community Solar Energy Program has advanced community solar projects and provided savings to LMI households, and recently adopted legislation expanding the program is poised to further bolster community solar and battery storage.

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[13] NJ Board of Public Utilities (NJBPU), *New Jersey Increasing Electric Vehicle Access in Overburdened Communities Study (Draft report)*, 2022, https://nj.gov/bpu/pdf/Draft%20Report%20-%20New%20Jersey%20Increasing%20Electric%20Vehicle%20Access%20in%20Overburdened%20Communities%20Study.pdf.

[14] New Jersey Office of the Governor, "During Climate Week, Governor Murphy Announces New Jersey Hits New Electric Vehicle Milestone, Exceeding 250,000 Registrations," September 23, 2025, https://www.nj.gov/governor/news/news/562025/approved/20250923a.shtml.

[15] Atlas Public Policy, "EValuateNJ," Atlas Public Policy (dashboard), November 2025. https://atlaspolicy.com/evaluatenj/.

+ **Building New Jersey's Offshore Wind Industry:** To support the development of offshore wind energy, the State has made several key advancements for supporting infrastructure and programming. The New Jersey Wind Port, located in Salem County in South Jersey, is a first-of-a kind effort to bolster the U.S. offshore wind industry with dedicated space for specialized development activities including manufacturing and marshalling. Parcel A was substantially completed in 2024. The State also created the Wind Institute for Innovation and Training to facilitate workforce development, education, research, and innovation efforts. The Wind Institute has collaborated with labor unions, community colleges, universities, community-based organizations, and other stakeholders to provide workforce training programs for construction managers, piledriving, welding, and other fields. The Wind Institute has also furthered research and technology innovation (described in further detail in Strategy 7). NJEDA also helped prepare existing NJ businesses to enter the offshore wind industry supply chain through business trainings, supply chain forums and other avenues.

+ **Reforming and Growing the Solar Market:** New Jersey has continued strong growth since the 2019 EMP coinciding with continued evolution of the state's solar programs. In the intervening years, New Jersey significantly reformed its solar market to provide more solar development at a lower cost per MWh. As of December 31, 2024, New Jersey had 5 GW of total solar installations with an additional 1.3 GW of solar in the pipeline, as reported by New Jersey's Clean Energy Program that tracks and posts progress each month[16]. **Of the projects installed, 80% (3.9 GW) of the capacity was behind-the-meter, 17% (815 MW) was grid supply, and the remaining 3% (141 MW) was Community solar.** Of the behind-the-meter capacity, 1.6 GW was residential, and 2.3 GW was non-residential. This growth reflects several state initiatives over the last several years. Importantly, the solar program directly reduces electric bills for thousands of participating residents and businesses, and the nation-leading community solar program makes solar available for tens of thousands of residents, the majority of whom are low-to-moderate income residents.

+ **Solar Act of 2021:** Passed in legislature in July 2021, the Solar Act of 2021 aimed to further expand New Jersey's solar capacity by 3,750 MW to meet a goal of 7.5 GW total solar installations by 2026, requiring 750 MW of additions annually over the 5-year period. Specifically, the Act calls for annual additions of at least 300 MW net metered solar, at least 150 MW community solar, and an average of 300 MW grid scale[17]. As the agency responsible for achieving this goal, the NJBPU developed two new incentives for solar resources through the Successor Solar Incentive Program (SuSI). The first incentive, the Administratively Determined Incentive (ADI), provides fixed $/MWh incentives to net metered facilities less than 5 MW and to community solar facilities. The second incentive, the Competitive Solar Incentive (CSI), incentivizes utility scale solar and net-metered commercial solar over 5 MW through solar renewable energy certificates, or SREC-II. CSI currently has competitive auctions underway to procure the 300 MW annual average target. Progress towards community solar procurement is described below. These programs replaced legacy incentive programs, including the SREC incentive program (active between 2004 and 2020) and the Transition Incentive (TI) program (active between 2020 and 2021). Since 2012, solar development in the state has been informed by the NJDEP's solar siting tool, which

[16] NJBPU, "Solar Activity Reports," accessed August 2025, https://www.njcleanenergy.com/renewable-energy/project-activity-reports/project-activity-reports.

[17] NJBPU, Order Establishing the Successor Solar Incentive Program, Docket No. QO19010068, July 28, 2021, https://njcleanenergy.com/files/file/TI%20Program/FY22/8A%20ORDER%20Successor%20Solar%20Incentive.pdf.

has helped local communities and potential solar developers alike with project siting. In 2024, New Jersey released a landfill solar portal that utilizes the NJDEP siting tool and EDA redevelopment incentives to assist municipalities in building solar on landfills.

+ **Community Solar Energy Program (CSEP):** As part of the NJBPU's effort to promise community scale solar, NJBPU's CSEP aims to increase the adoption of solar facilities on rooftops, carports and canopies, floating solar, contaminated sites and landfills, and mining sites. The program started as a two-year Community Solar pilot program from 2019 to 2021, during which it approved 150 projects (126 on rooftops), all of which were LMI projects that would provide at least 122 MW of the 243 MW in total to LMI subscribers. In August 2023, the NJBPU made the program permanent with the Community Solar Energy Program (CSEP) and subsequently awarded 225 MW of eligible capacity. In April 2024, the NJBPU expanded CSEP with an additional 275 MW of eligible capacity. At least half of the capacity must be reserved for LMI customers, who can submit a self-attestation form to qualify, and subscribers must also be provided with at least a 20% bill discount.

Recycling and other Management Methods for Solar Panels: NJDEP supported the New Jersey Solar Panel Commission in investigating options for recycling and other end-of-useful life management options for PV and solar energy generation structures. The Commission released a detailed report associated with the research, challenges, and recommendations for recycling solar panels, in New Jersey, in November 2023[18].

+ **Dual-Use Solar Program:** NJBPU proposed rules in 2025 for the establishment of a pilot program for dual-use solar energy projects on unpreserved farmland with the aim of demonstrating and studying the compatibility of agricultural or horticultural production with solar photovoltaic infrastructure on the same property. The Pilot Program allows 200 MW of solar installation capacity over three years, extendable by the Board to up to 300 MW over five years, with the goal of informing a permanent dual-use program.

Strategy 3: Maximize Energy Efficiency and Conservation and Reduce Peak Demand

The 2019 EMP identified EE as an important pillar of decarbonizing New Jersey's built environment and highlighted a set of strategies to promote improved EE across residential, commercial, and industrial end uses. EE delivers tangible customer benefits such as lower energy bills and greater comfort, while also improving grid resiliency, slashing emissions, and creating jobs—all crucial components of New Jersey's pathway to deep decarbonization. New Jersey has worked to define clear EE goals for utilities, provide incentives for energy efficient device adoption and weatherization, and establish performance indicators to track energy and demand savings across fuels, in the context of transforming the energy system in the near- and long-term. Through this robust framework, the State continues to prioritize affordability and equitable access to clean energy savings. The State's Clean Energy Program and utility EE programs are the two dominant sources of EE financial incentives for homes and businesses alike, with a host of programs established to enable easy access to low-cost financing for efficiency upgrades. NJBPU oversees these programs in three-year cycles called "Triennia," as directed by the Clean Energy Act of 2018 (CEA), establishing frameworks of goals, targets, performance incentive mechanisms, and programs focusing on efficiency, building decarbonization, and demand response.

[18] NJ Solar Panel Commission, "Report of Investigation of Recycling and other Management Methods for Solar Panels, and Recommendations by the New Jersey Solar Panel Commission," November 29, 2023, https://www.nj.gov/dep/dshw/recycling/Solar%20Panel%20Commission.pdf.

Key initiatives include:

- **New Jersey's Clean Energy Program (NJCEP):** Established by NJBPU in 2003, NJCEP offers incentives, programs, and services that benefit residents, businesses, educational and non-profit entities, and government entities to help them save energy, money, and the environment. **NJCEP has established a comprehensive suite of programs to bolster EE and promote building electrification across residential and commercial sectors**. These initiatives encompass a wide range of offerings, including benchmarking initiatives to compare energy and water metrics, combined heat and power & fuel cell programs, EE incentives for large energy users, a higher education decarbonization pilot, community solar projects, EV infrastructure support, free energy audits for local government and other eligible entities, and grants for local climate action plans. For example, NJBPU approved a revised New Construction Program (NCP) in 2024, a transformative initiative aimed at improving EE and building performance in new construction across the state. Similarly, the Large Energy Users program is a major initiative that has disbursed $41 million to help commercial and industrial facilities implement cost-effective efficiency improvements, reducing both operating costs and emissions. Another notable example is the Comfort Partners program, an income-eligible EE incentive program co-administered with the state's utilities, which has provided energy-saving home improvements that lower energy bills and improve the health, safety, and comfort for over 126,000 families.
- **Utility-Administered Programs:** The Clean Energy Act (CEA), signed into law by Governor Murphy on May 23, 2018, focuses on the significance of EE and peak demand reduction (PDR) and requires electric and gas utilities in New Jersey to play a critical role in delivering EE and PDR programs to their customers. Triennium I has reduced annual electricity usage by 3 million megawatt hours, annual natural gas usage by 8.5 million MMBtu, customers' utility bills by $600 million, and annual GHG emissions by 1.4 million metric tons (equal to removing 300,000 cars from the road). Triennium II was approved [19], with expanded focus on building decarbonization and demand response[20].

Strategy 4: Reduce Energy Consumption and Emissions from the Building Sector

The buildings sector accounts for a quarter of New Jersey GHG emissions across residential and commercial end-uses. The 2019 EMP identifies electrification of end use equipment as the key lever in decarbonizing this sector, with ambitious goals established since then via executive orders and other commitments:

- Executive Order No. 316 established a target to electrify 400,000 homes and 20,000 commercial properties and to make 10% of LMI homes electrification-ready by 2030.
- New Jersey joined eight other states in signing a NESCAUM MOU that set a new goal for heat pumps to meet 90% of residential heating, air conditioning, and water heating shipments by 2040.

[20] NJBPU, "Murphy Administration Announces Approval of Triennium 2 Energy Efficiency Programs," October 31, 2024, https://www.nj.gov/bpu/newsroom/2024/approved/20241031.html.

- As a member of the U.S. Climate Alliance, New Jersey joined other member states in announcing commitments to collectively reach 20 million heat pump installations across the coalition by 2030, with New Jersey committing to exploring the development of clean heat standards and aligning buildings sector utility resource planning and procurement policies with state climate goals.

The State is fulfilling these goals by providing access to financial incentives and low-cost financing for building electrification programs, with NJBPU requiring utilities to offer building decarbonization start-up programs as part of their EE program portfolios in the near-term, to help the State evaluate program design, performance tracking, equity, workforce development, cost-effectiveness, and performance incentives for future building decarbonization programs.

Key initiatives include:

- **Triennium 1 and Triennium 2 building decarbonization start-up programs**: As a part of the regulatory framework for energy efficiency programs during Triennium 2, NJBPU authorized electric and gas public utilities to offer incentives for clean electric heating, cooling, and water-heating equipment across residential, commercial, and industrial sectors. These programs are intended to help the State explore building decarbonization incentive design in the near term and ramp up funding and programming accordingly in Triennium 3 (2027-2029).
- **Strategic Roadmap for Building Decarbonization**: As directed by E.O316, in November 2025, OCAGE released the Strategic Roadmap for Building Decarbonization that provides a comprehensive whole-of-government approach to decarbonization. That report offers more than a dozen recommendations on program design and additional measures to achieve the goals of E.O. 316.
- **Regional Greenhouse Gas Initiative (RGGI) Funded Programs**: The State has also utilized RGGI funding to develop and launch initiatives that advance building decarbonization efforts, including the NJEDA's NJ Cool and Reducing Emissions through Retrofits, Optimization, Fuel-Switching, and Innovative Technologies (RETROFIT NJ) grant programs.

Strategy 5: Decarbonize and Modernize New Jersey's Energy System

Strategy 5 of the 2019 EMP aims to decarbonize and modernize New Jersey's energy system. The plan called for distribution system upgrades to accommodate higher levels of electrification and greater integration with distributed energy resources, improved cost-recovery processes for transmission system investment, implementation of advanced metering infrastructure (AMI), strategic gas system planning, and addressing methane leakages from the gas pipelines.

Since 2019, New Jersey has released a Grid Modernization Study outlining both near- and long-term recommendations for the electric system, and in 2024, the NJBPU announced approval of the proposed rules. New Jersey required all EDCs to file and implement AMI and is working to develop an environment attractive to DER aggregators and the participation of New Jersey based virtual power plants in wholesale electricity markets, which should confer cost savings to participating ratepayers. Additional efforts to facilitate emissions reductions have included improvements to the GHG emissions inventory and methane emissions reporting.

- **Advanced Metering Infrastructure (AMI):** Deployment of AMI is an important piece of grid modernization that can bring benefits to both utilities and customers. In particular, AMI infrastructure can provide customers and utilities with more direct information on, and control of, energy usage—

thereby contributing to customers' ability to control energy costs by better controlling energy usage. Following RECO's AMI program, the NJBPU issued an AMI order in February 2020 for remaining EDCs to file petitions for AMI implementation, reflecting the potential benefits to the distribution system, utility operations, customer experience, and the environment. For example, AMI can help improve rapid control, monitoring, and communications on the electric system (e.g., to mitigate impacts of, or accelerate recovery from, an outage) or help manage two-way energy delivery between the grid and customers.

+ **All EDCs have filed and begun AMI implementation:** The NJBPU opened the stakeholder comment window for the Draft Interconnection Rule Amendments, in March 2023, to discuss proposed changes to New Jersey's process for interconnecting distributed generation resources to the state's electric grid, including rules to support reverse power flow[21]. The NJBPU examined the integration of Volt/Var Control as part of its optimal voltage study. Currently, there are no pilot projects supporting the sub-goal to assess integration of Volt/Var control, as per Staff.

+ **Grid Modernization Study:** In November 2022,[22] the NJBPU released a report[23] on grid modernization goals in the near- and long-term with recommendations to evolve the electric grid capabilities, streamline resource interconnection processes to address the growing backlog of resources in the interconnection queue, and explore non-wires solutions such as demand response or EE that can help mitigate or defer the need for investments in the transmission and distribution system, saving ratepayers money. In April 2[24] the NJBPU proposed rules to advance recommendations in the report, including **updated processes for utility interconnection applications, an improved pre-application and verification system intended to provide applicants greater visibility and transparency on anticipated feasibility and costs, and improved distribution system information for applicants**. These changes will ensure a more dynamic, flexible, and participatory grid of the future.

Strategy 6: Support Community Energy Planning and Action

New Jersey's LMI households, especially those in EJ communities, face disproportionately high energy burden, climate risks, and air pollution. All New Jerseyans will benefit from the clean energy transition, through improved air quality, reduced exposure to climate risk, and lower energy costs through the adoption of clean and efficient technologies, and LMI households would enjoy the equitable benefits. One of the key pillars of the 2019 EMP was to support municipalities in determining their own comprehensive energy transition plans, guided by local experience and familiarity with the unique needs of the community, and establish programs to support clean transportation, electricity generation, and green workforce in New Jersey's Overburdened Communities.

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[21] NJBPU, Notice in the Matter of Modernizing New Jersey's Interconnection Rules, Processes, and Metrics (Docket No. Q021010085)," Rev. March 2, 2023, https://nj.gov/bpu/pdf/publicnotice/Revised%20Notice_Interconnection_ProposedRuleLanguage%203-2-23.pdf.

[22] NJBPU, "New Jersey Board of Public Utilities Accepts Grid Modernization Report and All of Its Recommendations," November 10, 2022, https://www.nj.gov/bpu/newsroom/2022/approved/20221110a.html.

[23] Guidehouse Inc. for NJBPU, "Grid Modernization Study: New Jersey Board of Public Utilities," August 24, 2022, https://www.nj.gov/bpu/pdf/reports/NJBPU%20Grid%20Modernization%20Final%20Report.pdf.

[24] NJBPU, "NJBPU Announces Approval of Proposed Grid Modernization Rules to Build a Stronger, More Reliable Electric Distribution System," April 30, 2024, https://nj.gov/bpu/newsroom/2024/approved/20240430.html.

The State has made progress on this goal in the form of supporting Community Energy Plans and Implementation grants, directing funding toward shared clean transportation eMobility projects, and prioritizing Overburdened Communities in program funding and selection across all key sectors, including transportation (bonuses for EV and EVSE incentives across light-, medium- and heavy-duty vehicles), buildings (income-qualified incentive programs like Comfort Partners, LMI-focused key performance indicators for EE programs), electricity generation (community solar deployment in EJ communities), and the clean energy economy (targeted green workforce development and access to low-cost financing for projects benefiting Overburdened Communities).

- In 2023, the NJBPU transitioned the Community Solar Pilot Program into a permanent program, enabling New Jersey residents, especially renters and those without rooftop access, to subscribe to solar projects and receive direct credits and savings on their utility bills. More than 500 MW of community solar projects have registered in the program, serving more than 28,000 subscribers, who have received more than $37 million in bill credits and realized over $7 million in net savings.[25] Building on this success, in April 2025 the NJBPU approved an additional 250 MW capacity block, with a built-in requirement for a minimum of 51 percent of capacity supporting LMI subscribers, to meet growing demand and help put affordability within reach for more New Jerseyans. Community solar subscribers are guaranteed bill savings of at least 15%, meaning for many households the program provides immediate and meaningful reductions in energy costs.
- The NJBPU established the CEPG program in 2019 to support municipalities in developing climate action plans based on the most applicable EMP strategies at the local level. The CEPI program provides eligible municipalities up to $250,000 for clean energy projects, complementing the CEPG Program and supporting high-priority municipal projects for energy resilience, renewable energy, and efficiency, with eligibility requiring a complete and adopted community energy plan or equivalent plan.
    - Program year 2 was redesigned to prioritize LMI communities, with a total of 46 grants awarded and over 50% funding directed toward Overburdened Municipalities[26].
    - Program year 3, approved on November 17, 2023, includes changes such as a shorter grant timeline, expanded criteria for determining overburdened municipalities, and the requirement for submitting a proposed project budget deferred until a grantee can participate in a technical assistance consultation with Sustainable Jersey. All municipalities are eligible for a $10,000 grant,

[25] NJBPU, "Murphy Administration Expands Nation-Leading Community Solar Energy Program by 250 MW," April 23, 2025, https://nj.gov/bpu/newsroom/2025/approved/20250423csep.html

[26] NJBPU, "NJBPU Opens Application Windows for New Round of Community Energy Plan Grants and Unveils First Year of Community Energy Plan Implementation Program," December 19, 2023, https://www.nj.gov/bpu/newsroom/2023/approved/20231219.html.

with overburdened municipalities qualifying for a $25,000 grant. Program year 3 of the CEPG Program will award ninety-two (92) [27][28]

+ Under the CEPI program, 25 electric vehicle charging stations are being installed for municipal and public use, including in high-traffic economic centers and municipal facilities. To date, the NJBPU has funded 18 projects across 16 municipalities, 11 of which are overburdened municipalities.[29]

Strategy 7: Expand the Clean Energy Innovation Economy

Strategy 7 of the 2019 EMP aims to grow the clean energy economy. The plan called for research, development, supply chain support, expanding workforce training programs, and developing innovative clean energy financing and funding mechanisms. Since 2019, notable progress has included the establishment of the New Jersey Green Bank, NJ Clean Energy Loans program, and the Garden State Commercial Property Assessed Clean Energy program to financially support clean energy investments. The establishment of the Green Workforce Training Grant Challenge prepares residents for growing job demand in the green economy and leadership on innovative technologies, such as green hydrogen, in addition to other programs through the Wind Institute for Innovation and Training.

+ **Green Economy Workforce**: Since 2021, the state's green economy workforce increased by 12%, adding about 6,000 new jobs. [30] All major sectors saw growth, with the highest rate in alternative vehicles and the largest net gain in energy efficiency, with an increase of over 3,600 jobs. Moreover, while the average wage for a New Jersey worker is 13% higher than the national average, the top 12 green economy occupation types (e.g., carpenters, electricians, HVAC mechanics, etc.) earned even more, with wages ranging from 17% to 76% higher above national averages for these roles.

+ **Wind Institute for Innovation & Training**: As described in Strategy 2, the Wind Institute for Innovation and Training was established as a hub for offshore wind workforce development programs, education opportunities, and research and innovation. In addition to initiating workforce training programs in a variety of fields, the Wind Institute supported undergraduate and graduate student research across eight NJ research universities and the development of an ocean-based testbed to assist researchers, students, startups and others to test and pilot cutting-edge technologies in deepwater conditions.

+ **New Jersey Green Bank (NJGB)**: Approved by the NJEDA in April 2024, the NJGB program provides private capital for clean energy projects through debt, credit enhancements and other financial mechanisms.[31] Specifically, investments are applicable for new projects benefiting New Jersey that will

[28] NJBPU, "NJBPU Announces Funding to Support Creation and Implementation of Community Energy Plans," August 14, 2024, https://www.nj.gov/bpu/newsroom/2024/approved/20240814.html
[29] NJBPU, "NJBPU Awards Major Community Energy Plan Implementation Grant to Borough of Madison," November 15, 2024, https://www.nj.gov/bpu/newsroom/2024/approved/20241115.html.
[30] NJ Governor's Office of Climate Action and the Green Economy, "Growing Green jobs: The Opportunities for New Jersey's Workforce," September 2025, https://www.nj.gov/governor/docs/Green-Jobs-Report-9.22.25.pdf

lead to reductions in GHGs or other pollutants. In addition to capital allocated to the NJGB in the annual state budget ($40M), the NJGB will receive continued funding from RGGI auction proceeds.

+ **Early-stage support**: The Commission on Science, Innovation and Technology (CSIT) provides targeted support to entrepreneurs and startups in the green economy. The Clean Tech R&D Pilot Seed Grant Program provides grants for research & development activities to very early-stage, New Jersey-based, clean technology companies with technology between a Technology Readiness Level (TRL) 2 (applied research) to TRL 7 (Full-scale, similar (prototypical) system demonstrated in relevant environment), based on the U.S. Department of Energy definitions. Additionally, CSIT's Clean Tech R&D Voucher Program enables NJ startup companies to use world-class facilities and makerspaces at New Jersey universities or government laboratories to accelerate technology development.

Chapter 3: Stakeholder Feedback on the EMP

The EMP process strove for meaningful stakeholder engagement to ensure diverse perspectives of New Jersey's residents were heard. Input was gathered from a wide range of stakeholders including New Jersey residents, business and industry representatives, labor organizations, utilities, and environmental and environmental justice organizations. Stakeholder perspectives directly informed the economy-wide emissions and total resource cost analysis conducted for this study and contributed to the strategy reflected in this report. This chapter summarizes the EMP's stakeholder engagement process and outlines the cross-cutting themes that emerged from stakeholder comments and discussions.

Process for Collecting Feedback

The EMP's stakeholder engagement strategy included four key feedback mechanisms: four public hearings, an open comment period, five small-group stakeholder workshops, and a public input session on the draft EMP. We detail these activities below.

Public Hearings and Open Comment Period

Four public hearings were conducted on May 20, 22, 29, and June 3, 2024. These hearings were held virtually and were open to the public. The NJBPU issued notices to inform stakeholders about hearing scheduling and topics for public input. In addition, the NJBPU issued a Request for Information outlining specific topics and questions for comment. Stakeholders could provide written comments online, verbally share comments in the hearings, or both. The online written comment period closed on June 12, 2024.

Fifty-one members of the public made oral comments during the four public hearings, and 255 unique written comments were submitted online. Many stakeholders who made oral comments also submitted written comments expanding on their verbal public comment.

Stakeholder Workshops

Five small-group stakeholder workshops were organized in July and August to confirm modeling assumptions and understand additional stakeholder input to inform the EMP. These workshops convened key stakeholder groups to gather feedback and facilitate an intentional dialogue on the opportunities and challenges associated with the State's clean energy goals.

Participation ranged from 10-25 stakeholders per workshop, in addition to representatives from the New Jersey Office of the Governor, the NJBPU, the New Jersey Division of Rate Counsel, other agency staff, and the consultant team. The five workshops were broadly organized by interest area:

1. Utilities
2. Non-governmental organizations
3. Environmental justice and equity organizations
4. Business and industry groups
5. Labor organizations

Workshops were held virtually and lasted 90-120 minutes each. The workshops began with structured questions and requests for input, then moved into an open discussion for stakeholders to share their perspectives.

Draft EMP Public Meeting

On March 13, 2025, a virtual public meeting was held to share the draft EMP and invite public review and comment. Stakeholders provided both oral testimony and written comments. The comments received during the webinar and the subsequent public comment period will inform the final iteration of the report. A summary of feedback received through this virtual public meeting and subsequent public comment period is reported as an appendix.

Stakeholder Feedback Summary

Stakeholder feedback received through all modes of engagement (public hearings, written comment, and workshop participation) during development of the EMP is summarized below. This summary is organized around seven key themes that emerged across all feedback mechanisms: Affordability and Cost, Environmental Justice and Equity, Climate Change and Environmental Risk, Impact of Electrification on Infrastructure, Workforce Readiness, Transparency in Modeling and Reporting, and Energy Efficiency Program Offerings and Structure. Stakeholders spoke to these thematic categories from a wide range of distinct perspectives, yet there was significant cross-over and overlap between categories. For example, issues raised relating to affordability and cost were also raised in relation to environmental justice and equity. In both cases, stakeholders emphasized the need for affordable access to energy efficiency and electrification programs, and clean energy and workforce development opportunities. However, some stakeholders distinguished their comments within the environmental justice context. As a result, feedback often informed and involved several cross-cutting themes. The feedback presented here is ordered by the frequency of mentions.

Affordability and Cost

Stakeholders across all input modes provided feedback related to affordability and cost. Respondents commonly mentioned:

Comprehensive Cost Analysis

- Stakeholders expressed concern following the 2019 EMP that there was not a sufficiently sensitive and thorough cost and affordability analysis. Members of the public emphasized the importance of including a transparent and comprehensive analysis in the EMP, balancing economic burden with the State's climate agenda.
- Stakeholders called for cost projections for meeting electrification, clean energy development, energy storage, and energy infrastructure goals, with detailed assessments of financial impacts for ratepayers, particularly low- and moderate-income (LMI) households.
- Stakeholders expressed concern over infrastructure upgrade costs and the allocation of the associated financial burden.

Affordability for Renters

- Stakeholders sought special consideration for the needs of renters to address energy affordability concerns. Renters, particularly those in LMI brackets, face barriers to participation in energy efficiency programs and lack access to clean energy. The feedback noted that rental homes are often less energy efficient, and because renters do not own the properties, they typically cannot make meaningful upgrades, such as installing new windows, insulation, or energy efficient appliances.
- Stakeholders identified a need for policies and incentives to prioritize renters to enable this population to benefit from reduced energy costs.
- Feedback highlighted renters' access to affordable clean energy as a priority to reducing their energy burden and meeting clean energy adoption targets.

Energy Burden

- Stakeholders emphasized the importance of reducing energy burdens[31], particularly for LMI households, by prioritizing affordability in the State's energy programs.
- Stakeholders commonly pointed to energy efficiency as a critical priority to address residents' energy burdens and achieve the State's decarbonization goals.
- Stakeholders called for expanded and accelerated adoption of clean energy and energy efficiency programs to reduce energy burdens.

Key New Jersey Actions Related to this Feedback

New Jersey has undertaken several targeted actions to address stakeholder concerns around affordability, equity, and access to clean energy. These initiatives reflect the state's commitment to a just and inclusive energy transition:

- **Energy Master Plan (EMP) Affordability Study:** An affordability study is being conducted as part of the EMP. This includes analysis of capital costs associated with electrification and clean energy adoption.
- **Equitable Rates Study:** New Jersey is evaluating rate structures to ensure that the clean energy transition does not disproportionately impact vulnerable populations.
- **Energy Burden Ceiling:** The state is pursuing a policy target to limit household energy burdens to no more than 4% of income, helping to ensure energy affordability for all residents.
- **Community Solar Program:** The Community Solar initiative continues to deliver savings to subscribers, particularly those in historically underserved communities, by enabling access to clean energy without the need for on-site installations.

[31] Energy burden is defined as the percentage of gross household income spent on energy costs. It is calculated by dividing the average housing energy cost by the average annual household income. A household with 6% or greater energy burden is considered to be a high energy burden household. Ariel Drehobl, Lauren Ross, and Roxana Ayala, "How High Are Household Energy Burdens?," September 2020, https://www.aceee.org/sites/default/files/pdfs/u2006.pdf.

Environmental Justice and Equity

Concerns about environmental justice impacts and an equitable clean energy transition were expressed through all input modes; these concerns were a consistent throughline woven through other themes and topic areas. Overburdened communities, such as low-income or communities of color, have historically been disproportionately impacted by industrial pollution, extreme weather, and other environmental impacts of fossil fuel generation. These communities stand to benefit significantly from access to clean energy and energy efficiency opportunities. Stakeholders commonly mentioned:

Access to Electrification and Energy Efficiency Measures

- Stakeholders called for policies and programs specifically targeting LMI and overburdened communities[32] to improve their access to electrification and energy efficiency programs.
- Stakeholders highlighted access to clean transportation and affordable EV infrastructure as particularly critical to equitable electrification and clean energy adoption.
- Stakeholders described the significant barriers to renters benefiting from electrification and energy efficiency opportunities. Feedback highlighted the high proportion of renters who are also members of overburdened communities.
- Stakeholders noted that the challenge of old housing stock that is not ready for electrification or energy efficiency upgrades disproportionately impacts overburdened communities because they are more likely to have older housing stock.
- Stakeholders described challenges navigating energy efficiency program information, a lack of awareness about energy efficiency resources, and a lack of capacity to submit applications as a significant barrier facing disadvantaged communities.

Access to Clean Energy and Workforce Development

- Stakeholders emphasized the importance of expanding access to affordable clean energy generation for overburdened communities, particularly through community solar and other distributed clean energy.
- Stakeholders identified the significant workforce development opportunities associated with distributed clean energy. They highlighted how these opportunities can benefit overburdened communities, improving their ability to participate in and benefit from the clean energy transition.

Energy Industry Impacts

- Stakeholders commonly noted historical environmental justice impacts of the energy industry on disadvantaged communities and called for careful consideration of this legacy when planning for and developing additional energy infrastructure.

[32] New Jersey defines overburdened communities in the State's Environmental Justice Law as communities with 1) at least 35% low-income households; or 2) at least 40% of the residents identify as minority or as a State recognized Tribal community; or 3) at least 40% of the households have limited English proficiency.

Key New Jersey Actions Related to this Feedback

Below are key actions New Jersey has taken relating to the concerns and priorities raised by stakeholders in this subsection:

- The New Jersey Comfort Partners Program is a free program that helps income-eligible customers reduce utility bills through implementing cost-effective measures to save energy and money.
- Through the Comfort Partners Program, New Jersey launched the Whole House Pilot to connect residents who need assistance with community-based organizations to address health and safety concerns in their homes to make them ready to take advantage of energy efficiency upgrades. The pilot has ended, and the State is exploring how to expand the program statewide.
- Adopted in 2020, the Environmental Justice Law directs the New Jersey Department of Environmental Protection to consider the cumulative environmental and public health impacts on overburdened communities when reviewing applications for certain facilities. This law aimed to address the legacy of the disproportionate impacts of the energy industry on environmental justice and overburdened communities. The law requires facilities to engage in meaningful dialogue with members of the impacted community to identify relevant environmental and public health stressors.
- Following New Jersey's publication of its Priority Climate Action Plan [33] in March 2024 through participation in the US EPA's Climate Pollution Reduction Grant Program, the State is developing its Comprehensive Climate Action Plan, an all-encompassing strategy outlining a holistic framework on how the state will reduce GHG emissions across all sectors.

Impact of Electrification on Infrastructure

Stakeholders emphasized grid modernization needs, and the associated costs required to meet the State's electrification and clean energy goals. Key themes include:

Energy Efficiency and Demand Management

- Stakeholders emphasized the importance of prioritizing energy efficiency programs as well as integrating energy efficiency in electrification efforts.
- Stakeholders called for investment in incentive programs to reduce and manage peak demand and reduce overall energy consumption, particularly through advanced technologies and implementation of virtual power plants.
- Comments advocated for the adoption of strengthened building energy efficiency standards and codes to hasten the progress toward climate goals and meet future energy demand.

[33] "New Jerseys Priority Climate Action Plan," March 2024, https://www.epa.gov/system/files/documents/2024-03/nj-pcap.pdf.

Grid Capacity and Modernization

- Stakeholders expressed concern about the urgent need for grid modernization to handle increasing demand from building and transportation electrification.
- Feedback noted the opportunities for coordinated planning efforts to invest in grid infrastructure, integrating clean energy for a more resilient and flexible energy system.

Transmission and Distribution Infrastructure

- Stakeholders called for streamlined interconnection processes to accelerate the development of distributed energy resources.
- Comments emphasized a need for transparent interconnection cost structures, improving predictability for developers, utilities, and ratepayers. The public expressed concern that high and unpredictable interconnection costs would depress investment in clean energy.

Rate Design

- Stakeholders called for updated rate structures to facilitate the electrification transition, noting the potential benefit of time-of-use rates and managed charging programs for EVs.
- Stakeholders expressed concern over the development of equitable rate structures to ensure the necessary grid upgrades without disproportionately burdening ratepayers, particularly LMI households and overburdened communities.

Grid Reliability

- Stakeholders called for increased and accelerated adoption of clean energy generation to meet increased demand and the integration of distributed energy generation as a tool to strengthen grid reliability.
- Stakeholders emphasized the role of natural gas as an important component of the State's energy portfolio, noting the significant proportion of the population that relies on it for heating and cooking.
- Stakeholders advocated for the continued use of natural gas to support grid reliability and energy affordability as the State transitions to clean energy.
- Stakeholders stressed the need for significant energy storage capacity to complement increasing clean energy generation to ensure grid reliability.

Key New Jersey Actions Related to this Feedback

Below is a sample of key actions New Jersey has taken relating to the concerns and priorities raised by stakeholders in this subsection.

- The NJBPU commissioned a Grid Modernization Study, and the findings and recommendations, finalized in November 2022, are informing the State's plan to modernize the grid.

- In August 2023, the Fuel Cell Task Force, led by the NJBPU, issued the Hydrogen and Fuel Cell Technology Toward Clean Energy Goals report exploring and identifying ways in which the State is well positioned to adopt these technologies.
- FERC Order No. 1920 is a transmission and cost allocation rule requiring the nation's transmission providers to conduct long-term planning for future regional transmission facility needs and plan for their funding. New Jersey is engaged in long-term transmission planning through the Organization of PJM States Inc (OPSI) and with the regional grid operator, PJM Interconnection, as well as the Northeast States Collaborative.
- The New Jersey Comfort Partners Program is a free program that helps income-eligible customers reduce utility bills through implementing cost-effective measures to save energy and money.
- Through the Comfort Partners Program, New Jersey launched the Whole House Pilot to connect residents who need assistance with community-based organizations to address health and safety concerns in their homes to make them ready to take advantage of energy efficiency upgrades. The pilot has ended, and the State is determining next steps for the program.

Climate Change and Environmental Risk

Many stakeholders stressed the importance of acting swiftly to mitigate the impacts of climate change on the State and the environment and noted how adopting clean energy and transitioning away from fossil fuels could help to offset the impacts of climate change. Stakeholders commonly mentioned:

Clean Energy Adoption

- Stakeholders called for accelerated timelines and more aggressive targets to drive the State's transition to clean energy.
- Stakeholders expressed concern over including green hydrogen in the State's clean energy portfolio, citing the State's exploration and study of hydrogen and fuel cell technologies.
- Stakeholders emphasized electrifying medium- and heavy-duty vehicles as a critical step to meeting the State's climate goals and reducing transportation emissions. Comments specifically noted opportunities to electrify the State's public transportation system.
- Stakeholders called for investment in public transportation and policies to promote compact and walkable development as strategies to reduce emissions from personal transportation.

Moratorium on Fossil Fuels

- Stakeholders called for a moratorium on all new fossil fuel projects and an accelerated phase-out of existing fossil fuel infrastructure.

Holistic Cost Calculations

- Stakeholders noted that climate change poses an existential threat, creating unprecedented weather and environmental impacts. They encouraged integrating extreme weather, environmental damage, and other climate impacts in cost calculations for a more holistic cost analysis to inform statewide planning.

Workforce Readiness

Stakeholders expressed significant concern for the rate and scope of workforce development necessary to meet the State's goals. Key themes include:

Workforce Gaps

- Stakeholders expressed the critical need for a comprehensive, sector-wide workforce needs assessment to understand and address both short- and long-term workforce gaps.
- Stakeholders emphasized the need for workforce training and reskilling to address skill gaps in the clean energy sector.

Curriculum Development

- Stakeholders identified opportunities to work with educational institutions and other partners to identify and develop the curriculum necessary to meet future workforce demands.

Workforce Pipeline Partnerships

- Stakeholders expressed support for developing workforce pipeline partnerships with universities, high schools, vocational schools, and early education programs in K-12 schools. University stakeholders noted that university partnerships could be a key resource for EMP implementation, including in addressing questions related to topics raised in this section, such as grid capacity and modernization, transmission and distribution infrastructure, and workforce development.
- Stakeholders emphasized the opportunity and importance of targeting LMI and other overburdened communities to improve equitable access to career opportunities in the clean energy sector.

Key New Jersey Actions Related to this Feedback

Below are key actions New Jersey has taken relating to the concerns and priorities raised by stakeholders in this subsection.

- New Jersey released a comprehensive workforce and green economy report in September 2025. Summary findings are detailed in the Societal Impacts of Decarbonization Chapter.
- New Jersey is investing in equitable workforce development through two major initiatives funded by the Council on the Green Economy. The NJEDA Green Workforce Training Grant Challenge program supports clean energy career training in overburdened Communities. The NJDEP BRIDGE Grant initiates community-based programs that expand green job access and training in environmental justice communities.

Transparency in Modeling and Reporting

Stakeholders emphasized the importance of clearly documenting both the modeling assumptions and analysis used in the EMP's scenario modeling, showing how stakeholder feedback was incorporated into the final EMP. Some key themes in this area include:

Reporting Assumptions

- Stakeholders across all input mechanisms called for the modeling assumptions, particularly in relation to cost, to be transparent and explicitly included in the EMP. Comments noted that increased costs are manageable if they are transparent and can be planned for.

Reporting Progress

- Stakeholders stressed the desire for the State to provide regular updates to the public that detail progress being made on the goals set out in the EMP. Stakeholders called for these updates to be led by a central administrative office tasked with overseeing execution of the EMP and ensuring transparency and accountability of government actions.

Meaningful Stakeholder Engagement

- Stakeholders called for intentional and direct engagement with environmental justice, overburdened communities to understand the needs of these communities, and meaningfully incorporate their perspectives into the State's energy planning.
- Stakeholders representing a range of perspectives called for more direct engagement and transparent reporting of how stakeholder engagement was considered and integrated into the EMP.

Key Steps New Jersey is Taking to Address Feedback

Below are key actions New Jersey has taken relating to the concerns and priorities raised by stakeholders in this subsection.

- NJEDA required partnering with a community-based organization for its Green Workforce Training Grant Challenge to ensure communities were a part of and informing workforce program design.
- Section 1.1 of this chapter of the EMP details the stakeholder engagement strategy engaged for its development.
- Modeling inputs and assumptions used to inform this study are detailed in Chapter 4 of this report as well as in the Technical Appendices.

Energy Efficiency Program Offerings and Structure

Stakeholders provided feedback on the importance of expanding and improving energy efficiency programs as a core component of New Jersey's decarbonization strategy. Members of the public emphasized the need for equitable access to the programs and for program administration and implementation to be streamlined for greater impact. Key themes included:

- Stakeholders recommended the State make a "one stop shop" of all funding, rebate, energy efficiency, and clean energy program opportunities in the State. They noted that streamlining the information and application processes would reduce barriers to participation. In October 2025, the State announced its

interactive and user-friendly "New Jersey Funding One Stop Shop" database and tool to help residents, local governments, and businesses to easily identify project funding opportunities.[34]

+ Stakeholders described how the current structure of most energy efficiency and clean energy programs do not enable renter participation. In many cases, renters are ineligible for the programs as they are not the property owners or cannot receive landlord permission. These challenges were raised by stakeholders as a consideration for energy efficiency program design and expansion to reach this critical population.

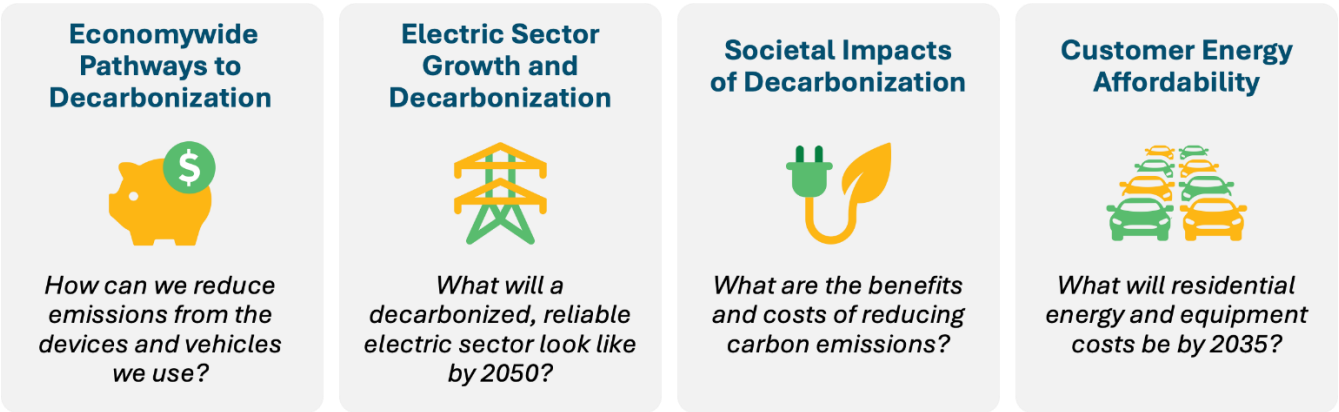
The stakeholder feedback gathered for this EMP highlights the diverse perspectives and priorities of New Jerseyans. As the State pursues its ambitious clean energy and decarbonization goals, meaningful stakeholder input is critical to ensure its actions are equitable and responsive to the needs of all its residents. The feedback summarized here has made meaningful contributions to the EMP's development and will continue to shape the State's energy plan going forward.

[34] NJDEP, "Murphy Administration Announces New Online Tool to Help Identify Climate Mitigation Project Funding Opportunities," October 7, 2025, https://dep.nj.gov/newsrel/25_0044/

Chapter 4: Integrated Energy Plan (IEP)

The IEP evaluates decarbonization pathways for each sector of the economy to meet New Jersey's clean energy goals and its emissions reduction targets, while maintaining electric system reliability and affordability. The IEP modeling occurred from early 2024 to early 2025 and addresses four core research questions through economy-wide modeling of energy use and GHG emissions (Figure 4).

Figure 4. Integrated Energy Plan Core Research Questions

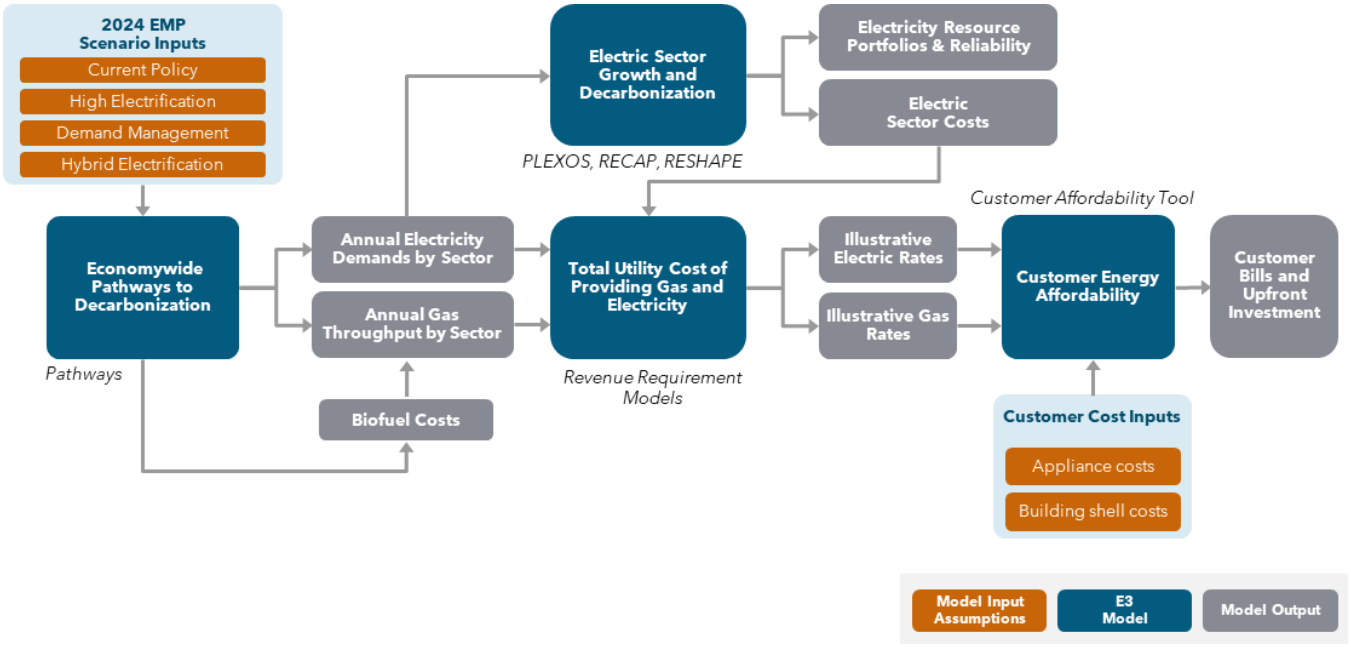


To assess the trade-offs and benefits of technology and policy choices, the IEP explores three distinct decarbonization pathways designed to meet the state's goal of reducing GHG emissions 80% below 2006 levels by 2050. A "Current Policy" scenario that includes legislated policies already in place in New Jersey serves as a reference against which to measure cost and emissions impacts. Each scenario yields key insights into electricity demand, infrastructure needs, and affordability under different policy and strategy pathways that New Jersey could pursue.

Modeling Framework

The IEP modeling framework leveraged several models that, together, assessed the impact of each scenario on emissions reductions, the reliability of the electricity sector, infrastructure costs, and residential energy bills. An illustration of the IEP modeling framework is provided in Figure 5.

Figure 5. Integrated Energy Plan Modeling Framework



For each scenario, E3's Pathways model was used to explore the timing and scale of infrastructure investments—such as replacements of appliances, vehicles, and equipment needed—to meet New Jersey's long-term decarbonization goals. These technology transitions informed annual electricity and fuel demand projections across the state. Electricity demand outputs then served as inputs to an electric sector planning framework, which projected the total installed capacity, generation mix, and associated costs required to reliably serve future electric loads.

The resulting electric and gas demand trajectories, along with cost projections from the long-term electricity sector modeling, fed into electric and gas revenue requirement models. These models estimated the total cost to utilities of providing electric and gas service and calculate corresponding customer rate impacts. To assess how these changes affect household energy affordability, a Customer Energy Affordability Tool was applied, which incorporated rate projections, appliance costs, and efficiency assumptions to estimate customer bills across different technology adoption scenarios.

Together, this modeling framework enabled a comprehensive analysis of system costs, emissions outcomes, and customer affordability across all decarbonization pathways. The State used this information to assess the trade-offs and benefits of technology and policy options. Additional methodological details are provided in the IEP Technical Appendix.

Decarbonization Scenario Definitions

The IEP explores several scenarios of future energy demand and emissions in New Jersey. The study includes three decarbonization (or, "mitigation") scenarios that achieve the state's economy-wide target of reducing net GHG emissions 80% below 2006 levels by 2050. These scenarios were selected with input from New Jersey state agencies and numerous stakeholders and reflect distinct pathways that New Jersey could pursue to meet its 80 by 50 goal:

- The **High Electrification** scenario relies on rapid electrification of buildings, transportation, and industry in New Jersey, combined with expanded efficiency for building envelopes, appliances, and manufacturing.
- The **Hybrid Electrification** scenario also includes significant electrification, but with lower electric peak loads due to reliance on hybrid heating systems in buildings (where heat pumps cover most of the annual heating load, but furnaces remain to provide heat during the coldest hours of the year). This scenario entails a greater share of plug-in hybrid electric (PHEV) and hydrogen fuel cell (HFCV) vehicles, a lower amount of industrial electrification, and some use of renewable fuels made from municipal waste and agricultural and forestry residues.
- The **Demand Management** scenario achieves a similar level of electrification as High Electrification, but with a greater focus on efficiency in buildings, reductions in vehicle miles traveled (VMT), and the use of flexible loads from EVs and building appliances to manage peak electricity demand.
- In addition, a **Current Policy** scenario serves as a counterfactual scenario and represents all finalized state and federal policies as of March, 2024. This includes policies that have been legislatively adopted and have enforcement mechanisms (e.g., the Advanced Clean Cars II program)[35] but excludes opt-in targets and Executive Orders (e.g., the goal of installing heat pumps in 400,000 homes by 2030 from Executive Order 316).

Table 3 lists the key attributes of each scenario.

[35] At the time of publication, the future of the Advanced Clean Cars II and Advanced Clean Trucks programs is uncertain.

Table 3: Scenario Definitions and Assumptions

Measure	Current Policy	High Electrification	Hybrid Electrification	Demand Management
Economy-Wide Emissions Constraint	N/A	80% below 2006 by 2050		
Electricity Sector				
Clean Electricity Standard	N/A	100% by 2035 % of retail sales met by generation from zero-carbon resources		
Renewable Portfolio Standard	50% by 2030 % of retail sales met by generation from renewable resources			
Offshore Wind Deployment	3.5 GW by 2035	11 GW by 2040		
Load Flexibility	N/A	Moderate for buildings and EVs	Moderate for buildings and EVs	High for buildings and EVs
Buildings Sector				
Residential Heat Pump Sales Share	50% by 2050	100% by 2050		
Commercial Heat Pump Sales Share	27% by 2050	100% by 2050		
Air Source Heat Pump Backup Fuel	80% electric resistance backup, 20% gas backup	90% electric resistance backup, 10% gas backup	50% electric resistance backup, 50% gas backup	90% electric resistance backup,10% gas backup
Envelope Efficiency	Latest building codes for new construction	Latest codes + envelope retrofits for 26% of residential buildings, 32% of commercial buildings		Latest codes + envelope retrofits for 59% of residential buildings, 72% of commercial buildings
Transportation Sector				
Vehicle Miles Traveled (VMT) Reductions	N/A			3% reduction in passenger vehicle VMT by 2050
Light Duty EV Sales Share	100% EV by 2035			
Light Duty EV Types	80% full battery electric (BEV), 20% plug-in hybrid (PHEV)	100% BEV by 2050	80% BEV, 20% PHEV	100% BEV by 2050
Medium & Heavy Duty ZEV Sales Share	61% by 2040	100% by 2050		
Medium & Heavy Duty ZEV Types	87% BEV, 13% hydrogen fuel cell (HFCV)		79% BEV, 21% HFCV	87% BEV, 13% HFCV

Historical GHG Emissions

Based on the 2021 inventory from the New Jersey Department of Environmental Protection (NJ DEP)[36], New Jersey's net greenhouse gas emissions were 97.6 MMT CO2e in 2021, a 20% reduction below 2006 levels. New Jersey previously met the target of 20% reduction from 1990 levels by 2020 as set by the GWRA. Transportation is the largest source of GHG emissions, making up around 35% of gross emissions in 2021. Other major contributors are buildings and electricity consumption, which accounted for 23% and 18% of gross emissions in 2021, respectively. The industry sector is responsible for the remainder of emissions from fossil fuel combustion, accounting for 7% of gross emissions. Fossil fuel combustion in electricity generation, transportation, buildings, and industry accounts for the vast majority of emissions in the state, while the remaining non-combustion sources of emissions from industrial processes and product uses (e.g., refrigerant leakage), fugitive methane from the gas pipeline system, landfills and wastewater treatment plants, and agriculture and land use activities only accounted for around 16% of gross emissions in 2021. Table 4 shows the emissions by sector for 2021 from the NJ DEP inventory.

Table 4: 2021 GHG emissions by sector

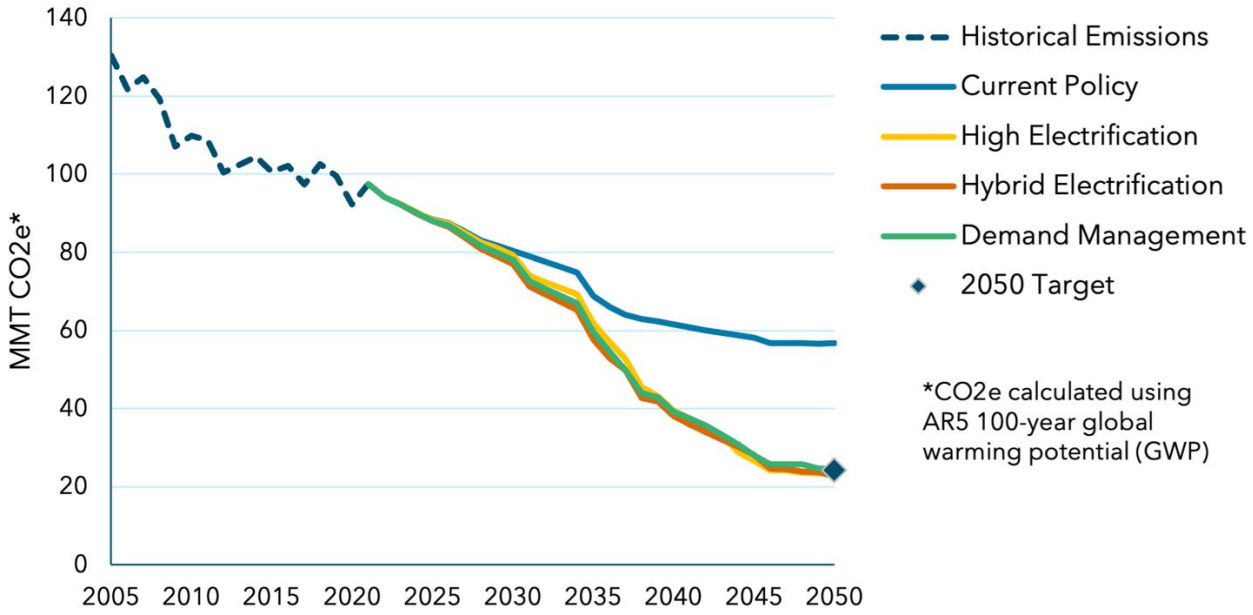
Sector	GHG Emissions (MMT CO2e)	Share of Gross Emissions (%)
Electricity Generation	19.1	18%
Transportation	37.3	35%
Residential Buildings	14.9	14%
Commercial Buildings	9.9	9%
Industry	7.6	7%
Industrial Processes & Product Uses (IPPU)	5.5	5%
Gas System Fugitives	2.5	2%
Waste	7.5	7%
Agriculture	0.4	0%
Land Use (Carbon Released Through Land Clearing)	1.0	1%
Gross Total	**105.7**	**100%**
Land Sink	-8.1	
Net Total	97.6	

[36] New Jersey Department of Environmental Protection (NJDEP), *"New Jersey's Greenhouse Gas Emissions Inventory: 2006–2021,"* April 2024, https://dep.nj.gov/wp-content/uploads/ghg/2024-ghg-inventory-report.pdf

Economy-Wide Emissions and Energy

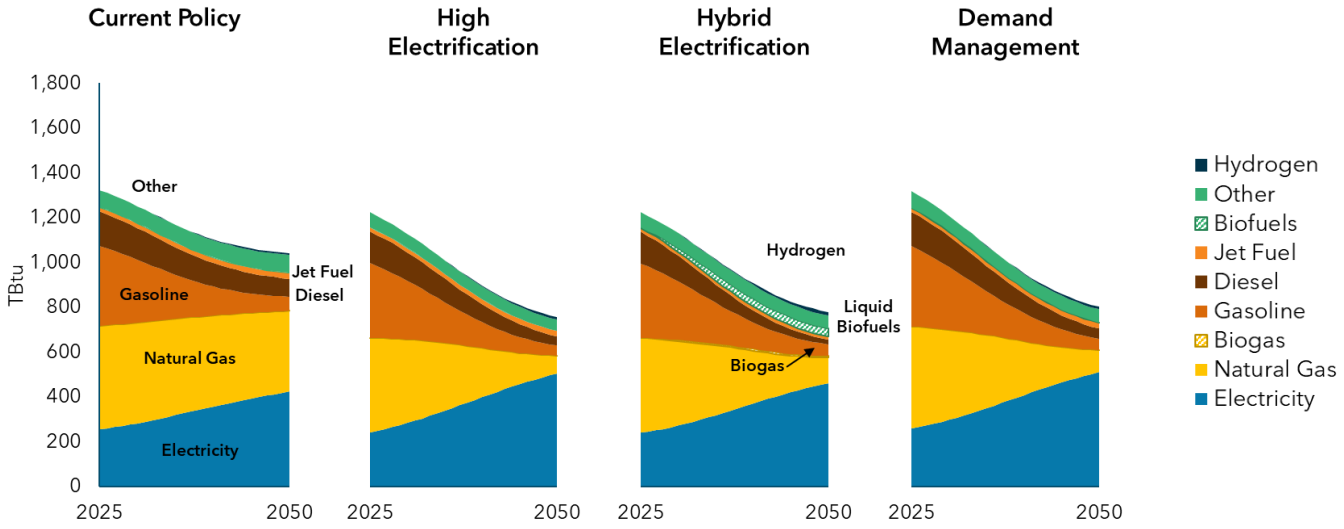
Under the modeled IEP scenarios, economy-wide GHG emissions decline between 2025 and 2050 in all four scenarios (Figure 6). In the Current Policy scenario, the transportation sector is the largest source of reductions, as the Advanced Clean Cars II and Advanced Clean Trucks programs lead to high ZEV adoption for both passenger and freight vehicles. As shown in Figure 6, emissions in the Current Policy scenario reach 53% below 2006 levels by 2050, but do not reach the state's economy-wide target. All three mitigation scenarios achieve the target of 80% reductions by 2050 through significant declines across all sectors of the economy, with most reductions coming from a combination of clean electricity, electrification, and energy efficiency improvements. There are additional reductions from the non-energy, non-combustion sectors and, in the case of the Hybrid Electrification scenario, the use of advanced biofuels.

Figure 6: Net Greenhouse Gas Emissions by Scenario and Historical Emissions



Total economy-wide energy use declines across all scenarios, driven by a combination of significant end-use energy efficiency measures and the inherent efficiency advantages of electrification. All scenarios include upgrades such as high-efficiency appliances, building shell improvements (e.g., insulation and air sealing), and widespread adoption of advanced equipment. Additionally, electrified technologies like electric vehicles (EVs) and heat pumps are approximately three times more efficient than their fossil-fuel counterparts—internal combustion engine vehicles and gas furnaces—at converting energy into useful work. As a result, transitioning from conventional technologies to efficient electric alternatives leads to substantial reductions in total energy demand, even as electricity consumption rises. Figure 7 below shows the changes in final energy demand by fuel type across the economy. Note that final energy demand accounts for all energy consumed at the final end-user, so these values exclude natural gas or petroleum used to generate electricity.

Figure 7: Total Energy Demand by Fuel Type Through 2050



Electrification and energy efficiency measures in buildings and industry lead to a decline in natural gas consumption. Between 2025 and 2050, natural gas consumption declines by 22% in the Current Policy scenario and by 81% in the High Electrification scenario. Even in the Hybrid Electrification scenario, which relies on widespread adoption of heat pumps with natural gas backup to manage peak electricity demand, natural gas consumption declines by 72% by 2050. Hybrid Electrification is also the only scenario that includes blending of renewable natural gas (RNG). Based on a 2023 report on biofuels availability from the NJDEP, the IEP analysis assumes that around seven trillion British thermal units (TBtu) of RNG would be available annually from in-state sources using currently available anaerobic digestion technologies[37]. This accounts for 5% of the remaining 128 TBtu of natural gas demand in 2050 in the Hybrid Electrification scenario.

Petroleum consumption declines across all scenarios, primarily due to the electrification of passenger vehicles. In mitigation scenarios, diesel use drops by over 70% as electric and hydrogen fuel cell trucks replace conventional freight vehicles. The Hybrid Electrification scenario uniquely includes renewable diesel and jet kerosene made from waste-based biomass, which doesn't compete with food production. By 2050, this scenario assumes 28 TBtu of renewable diesel and 9 TBtu of jet kerosene, equating to 56% and 33% fuel blends, respectively. These fuels are produced via biomass gasification and Fischer-Tropsch synthesis, a technology currently in the early stages of commercial deployment.[38]

[37] NJDEP Science Advisory Board, "Final Report: Biofuels," April 2023, https://dep.nj.gov/wp-content/uploads/cleanenergy/sab-biofuels-final.pdf.

[38] IEA Bioenergy, "Progress in Commercialization of Biojet / Sustainable Aviation Fuels (SAF): Technologies and Policies", January 2024, https://www.ieabioenergy.com/wp-content/uploads/2024/06/IEA-Bioenergy-Task-39-SAF-report.pdf

Demand-Side Clean Technology Adoption

This section details each scenario's key transformations of demand-side technologies, focusing on the buildings and transportation sectors. Rapid, widespread efficiency and electrification is the primary means of achieving decarbonization in the building and transportation sectors, requiring a significant and sustained increase in adoption of efficient electric devices relative to today's levels. Snapshots of key subsectors' new sales (i.e., shares of new units sold), and stocks (i.e., total number of operational units in the state) in each year are presented below.

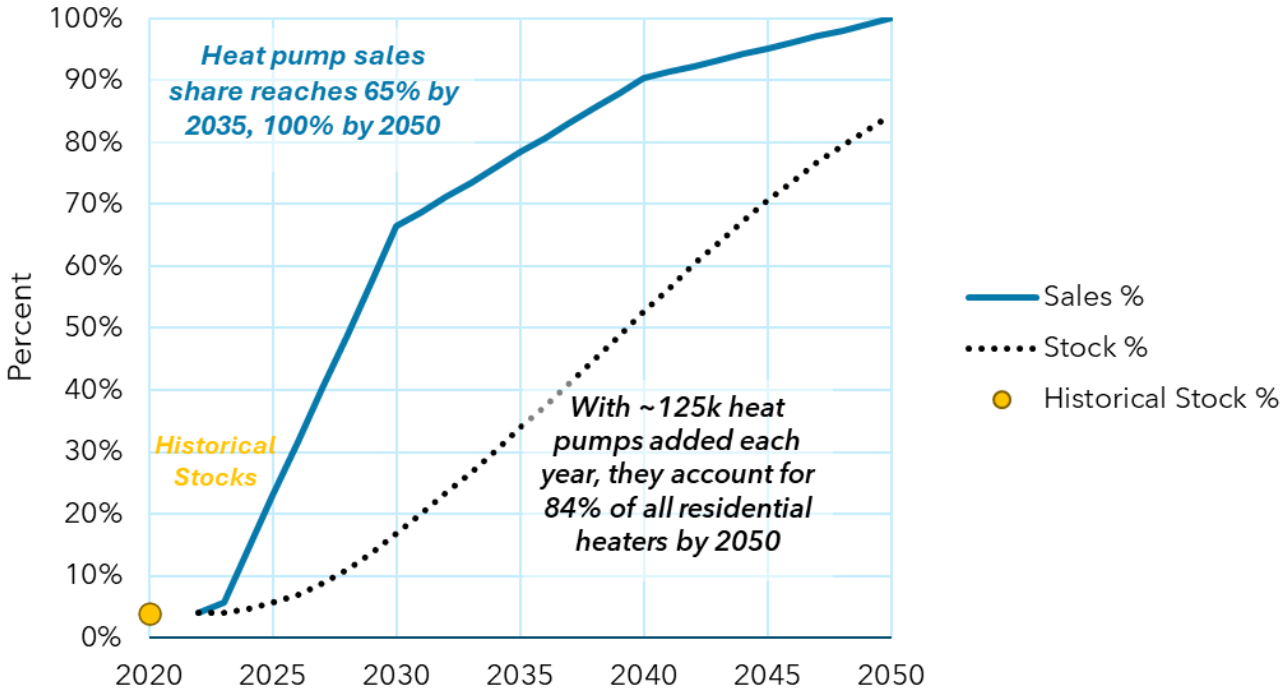
There is significant uncertainty in how fast customers will adopt decarbonization technologies like EVs and heat pumps, and the adoption trajectories here should not be interpreted as forecasts. Rather, the adoption trajectories are either determined by policy requirements (in the case of ZEV sales under Advanced Clean Cars II) or they are back-casts (forecasting backward in time) that illustrate what level of adoption would be required for New Jersey to meet its climate targets. If the adoption of decarbonization technologies like EVs or heat pumps is slower than what is modeled in these mitigation scenarios, then greater emissions reductions would be needed in other sectors (e.g., faster industrial decarbonization) or through other measures (e.g., greater use of hydrogen or low carbon fuels) to achieve the same emission reductions.

Residential and Commercial Buildings

Space heating is the largest energy end use in buildings today, accounting for just over 50% of total residential and commercial energy use in the first year of the Pathways model, and the adoption trajectories implemented in the scenarios are designed to align with existing targets for New Jersey. For buildings, the state has joined the Northeast States for Coordinated Air Use Management (NESCAUM) Memorandum of Understanding (MOU) that sets a voluntary target of achieving a 65% and 90% market share for heat pumps in the residential space and water heating sectors by 2030 and 2040, respectively[39]. As a result, that level of adoption is achieved in all mitigation scenarios, although the mix of heat pump technologies adopted (e.g., all-electric whole home heat pumps or heat pumps with existing fuel combustion used for backup) varies between the mitigation scenarios. Figure 8 shows the pace of adoption required for residential heat pumps in the mitigation scenarios.

[39] Northeast States for Coordinated Air Use Management, "Nine States Pledge Joint Action to Accelerate Transition to Clean Buildings," February 7, 2024, https://www.nescaum.org/documents/2.7.24-nescaum-mou-press-release.pdf.

Figure 8: Residential Heat Pump Adoption in Mitigation Scenarios



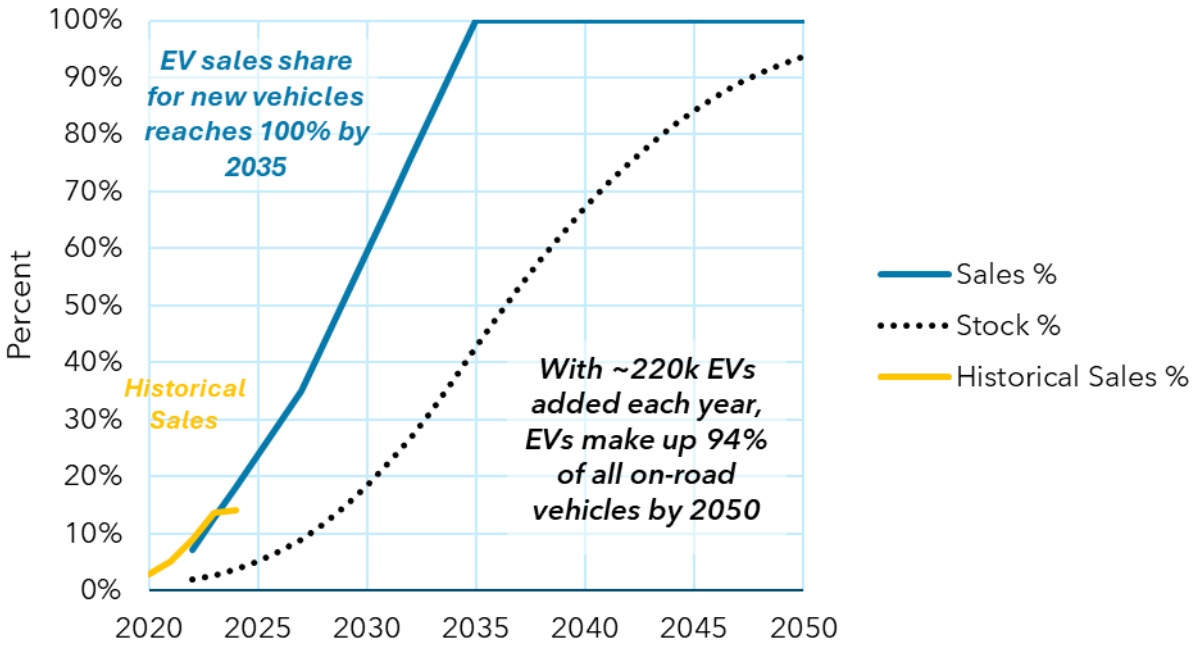
The NESCAUM heat pump target modeled for the residential sector does not cover commercial buildings. Commercial heat pump adoption is assumed to proceed at a slower pace in the near term but still achieves 90% sales by 2040. This level of adoption is not included in the Current Policy scenario because it is a voluntary target, so heat pump adoption in this scenario is based on a continuation of historical trends. While there is a significant gap in heat pump adoption between the Current Policy and mitigation scenarios, the difference is much smaller for ZEVs, presented in the next subsection. This is because New Jersey has formally adopted both the Advanced Clean Cars II[40] and Advanced Clean Trucks programs[41], so these finalized regulations are included in the Current Policy scenario.

[40] NJ Administrative Code § 7:27-29A, https://dep.nj.gov/wp-content/uploads/aqm/sub29a.pdf.
[41] NJ Administrative Code § 7:27-31, https://dep.nj.gov/wp-content/uploads/aqm/sub31.pdf.

On-Road Transportation

New Jersey's adoption of the Advanced Clean Cars II and Advanced Clean Trucks regulations drive transformation of the sector toward EVs. The required uptake of ZEV sales across vehicle classes is rapid across scenarios, with the Hybrid scenario relying more on plug-in hybrid electric vehicles in the long run to mitigate peak load impacts from EV charging. Since ZEV medium- and heavy-duty vehicles are still an emerging technology with uncertainty related to vehicle and charging infrastructure costs, the modeled scenarios do not reach 100% ZEV sales until 2050, compared to 2035 for light-duty vehicles. Not shown here is the additional assumed 3% reduction in passenger VMT by 2050 in the Demand Management scenario, another important transportation sector decarbonization lever. Figure 9 shows the pace of adoption required for EVs in the mitigation scenarios.

Figure 9: Light Duty Electric Vehicle Adoption in Mitigation Scenarios



Electric Sector Transformation

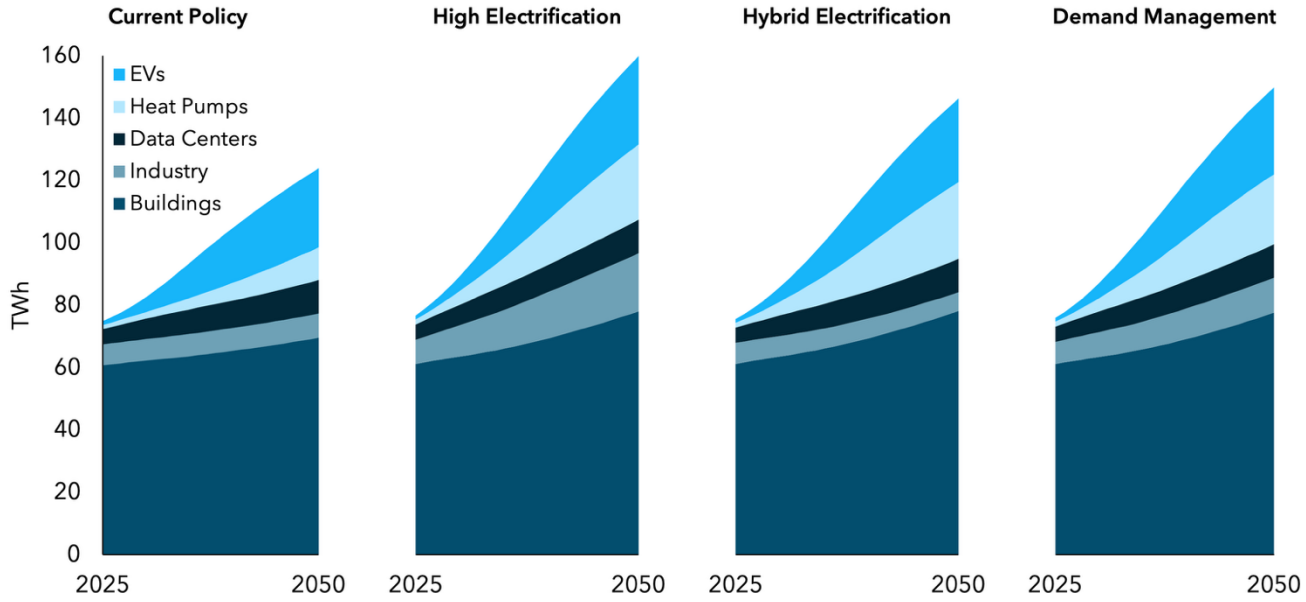
The electricity sector is a key pillar of New Jersey's decarbonization strategy. As electricity supply becomes cleaner over time, electricity can power many end-uses across the economy with significantly lower emissions relative to fossil alternatives. Electricity demand grows significantly across all scenarios due to widespread electrification of end-uses across the economy that are met with fossil fuels today, including building appliances, industrial equipment, and vehicles (Figure 10), with heat pumps and electric vehicles serving as the primary drivers of this load growth.

Data centers are also driving load growth. In the near-term, data center load is projected to grow 8% year-over-year before leveling out to a growth rate of 2% per year by 2040. This initial growth rate represents a moderate business-as-usual assumption, higher than the historical average of 5% over the past decade but below peak years of up to 12%. The projection captures continued gradual small-scale additions to the existing fleet of data

centers in the state, reflecting the expected impact of recent tax credits, AI incentives and the state's position to serve nearby population centers and corporate needs. In the long term, growth is expected to slow from expected efficiency improvements. However, there is significant uncertainty around data center growth, especially given the nascency of AI and the recent rapid acceleration of data center demand. For example, this load growth could accelerate further, such as with favorable changes to incentives, or decline, such as if efficiency gains outpace expectations, AI applications deliver less value than anticipated, or nearby states offer more competitive incentives.

Overall electricity consumption is projected to increase between 66% and 109% by 2050, depending on the scenario, underscoring the need for a robust, flexible, and clean electric grid to meet future energy demands. The modeled increase in demand is largely driven by electrification assumptions, though data centers will play a role in demand increase as well and are depicted separately in the figure below.

Figure 10: Electricity Energy Consumption by Source through 2050



A clean electric sector is necessary for a decarbonized economy, but there is a twofold challenge facing New Jersey: expanding the electricity system to reliably meet growing demand while also significantly reducing the carbon intensity of electricity supply. The following sections detail resource capacity and energy generation across all scenarios through 2050.

The IEP modeled the long-term trajectory of the electricity sector under each scenario based on the parameters described in Table 3. For the electric sector analysis, additional scenario-specific input assumptions were utilized to reflect state policy, as shown in Table 5.

Table 5: Electricity Supply Modeling: Scenario-Specific Policy Assumptions

Policy Input	Current Policy	High Electrification, Hybrid Electrification and Demand Management
RPS/CES*	50% RPS by 2030	50% RPS by 2030; 100% CES by 2035
Offshore Wind Target	3.5 GW by 2035	5.5 GW by 2035; 11 GW by 2040
Battery Storage Target	2 GW by 2030	
Solar Target	750 MW/year through 2026	
Availability of Thermal Resources	Natural Gas Fleet Capacity Limited to Existing Levels; New Nuclear Allowed as Candidate Resource	
RPS/CES Contributions from Out-of-State Resources	Candidate resources limited to in-state clean energy additions; purchases of unbundled RECs are also available to contribute to RPS/CES obligations until 2045.	

* RPS and CES requirements are modeled as a required percentage of retail sales on an annual basis. Achievement of the 100% CES in the mitigation scenarios requires sufficient clean generation to match 100% of retail sales on an annual basis, which allows reliance on gas generation and imported power to meet demand in some hours and days of the year, given the ability to offset this generation by exporting clean generation in other hours.

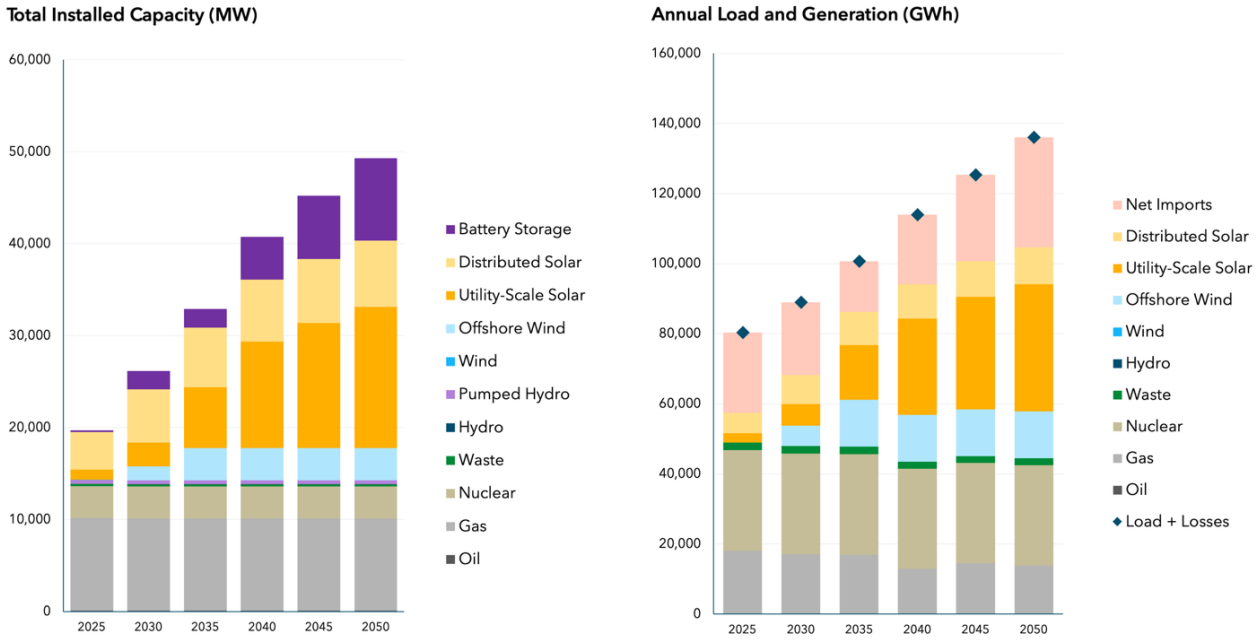
Current Policy Scenario

The *Current Policy* scenario resource portfolio results provide an understanding of how New Jersey's system may expand to meet loads under current state law. Figure 11 shows total installed capacity and annual generation through 2050.

Increasing annual load is met in part by new renewable resources, which reflects compliance with the 50% RPS goal, as well as a moderate increase in the state's reliance on net imports between now and 2050. The state achieves its RPS goals through a significant build-out of solar, coupled with new offshore wind resources to reach the state's legislated target of 3.5 GW by 2035. By 2050, total installed solar capacity reaches 22 GW, with 7 GW of distributed solar and 15 GW of utility-scale solar.

Battery storage additions reach the 2 GW target in 2030, and an additional 7 GW are selected by 2050 to meet resource adequacy needs and provide flexibility to support renewable balancing. Existing gas capacity is retained to support system reliability, even as the annual generation of the gas fleet declines over time.

Figure 11: Total Installed Capacity (Left) and Annual Energy Balance (Right): Current Policy



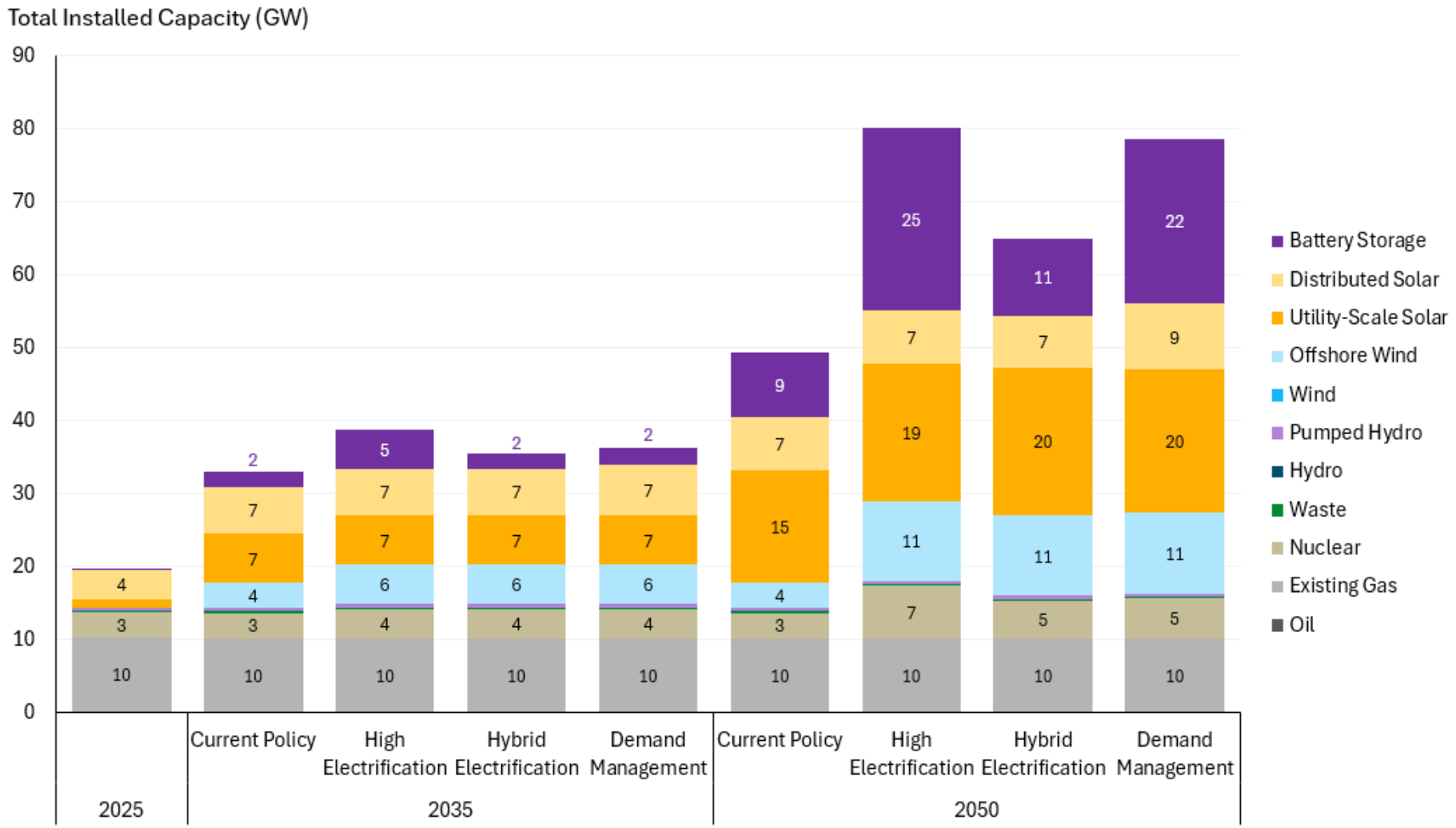
Mitigation Scenarios

Mitigation scenarios meet the 100% CES by 2035 and support compliance with the goal to reduce emissions 80% economywide by 2050. In the near term, New Jersey is projected to rely on investments in solar, battery storage, and offshore wind to support growing demand and meet the 100% CES by 2035 as shown in Figure 12. Existing nuclear provides clean firm capacity and is retained in all scenarios. New nuclear capacity (500 MW) is also projected to become economic in 2035 in all mitigation scenarios to support policy achievement. In the long term, electrification-driven load growth coupled with the 100% CES drive substantial resource portfolio expansion through 2050, reaching a range of 65 to 81 GW of total installed capacity in the Hybrid Electrification and High Electrification portfolio, respectively.

The Hybrid Electrification and Demand Management scenarios incorporate strategies to manage electrification-driven growth in annual and peak demands; these managed electrification strategies lead to substantially lower capacity additions. Compared to the High Electrification scenario, these scenarios require 3 GW less battery storage capacity in 2035. By 2050, the reduction in new capacity installations is more significant: the Hybrid Electrification scenario results in 1 GW less renewables, 14 GW less storage, and 2 GW less nuclear relative to High Electrification. The Demand Management scenario results in 3 GW less storage and nearly 2 GW less nuclear relative to the High Electrification scenario by 2050, coupled with a nearly 3 GW increase in solar capacity.

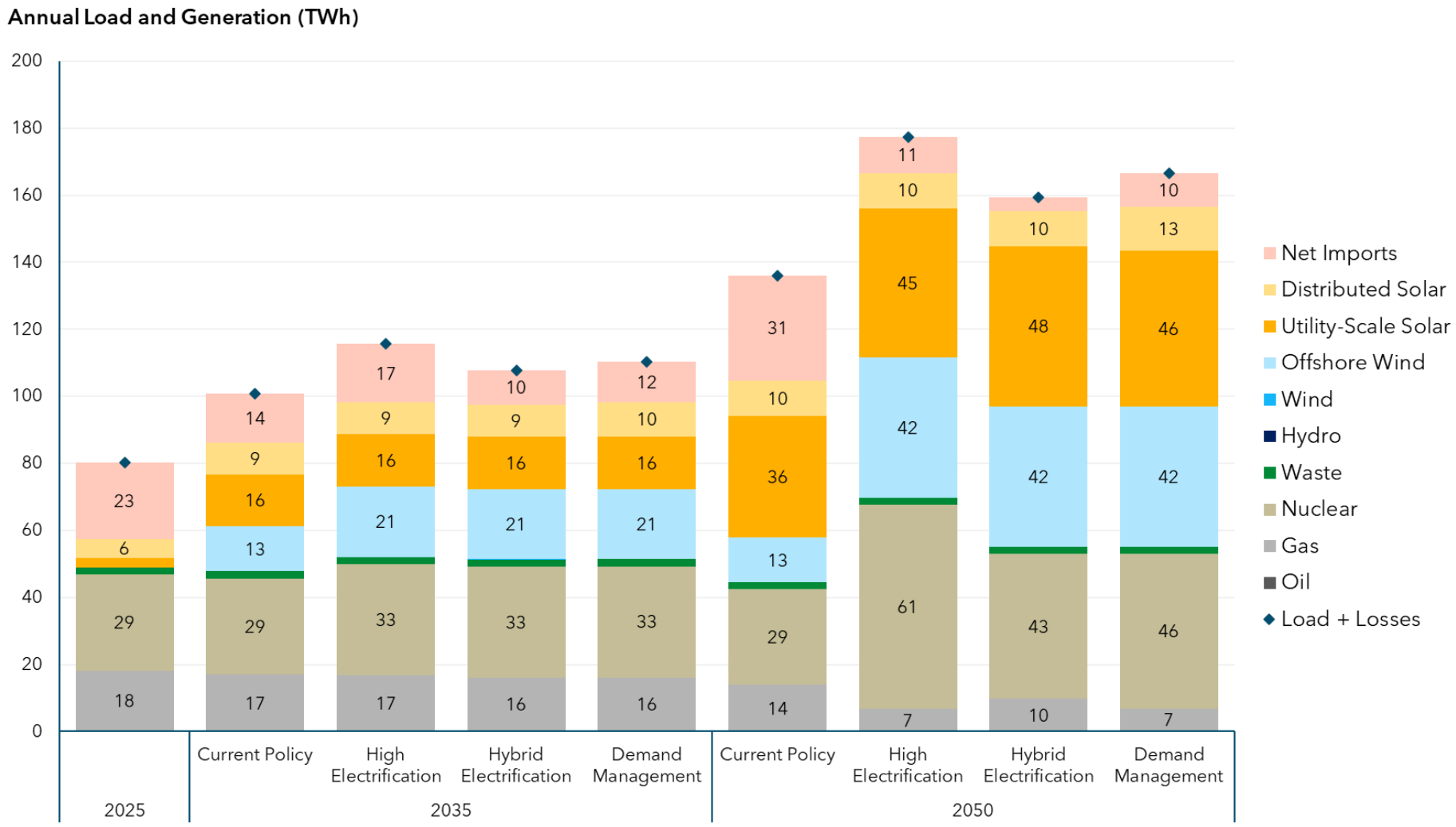
While each mitigation scenario projects a continued reliance on existing gas capacity, total gas generation declines by 2050 across all mitigation scenarios relative to both today's levels and relative to the Current Policy scenario, driven by the expansion of renewable and nuclear capacity to meet the state's 100% CES (Figure 13). Similarly, New Jersey's reliance on imports declines significantly on an annual basis relative to today, even as annual demand approximately doubles. The role of imports and firm capacity is explored in more detail in the proceeding section. As a result of reductions in gas generation and imported electricity, the emissions intensity of New Jersey's electricity system declines by approximately 80% relative to today in the mitigation scenarios.

Figure 12: Total Installed Capacity Across Scenarios



* All resources shown in legend feature non-zero generation in at least one scenario

Figure 13: Annual Energy Balance by Scenario



* All resources shown in legend feature non-zero generation in at least one scenario

Role of Firm Capacity

This section further explores the role of firm capacity[42] in maintaining system reliability beyond 2035, as New Jersey reaches deeper levels of decarbonization and electrification-driven load growth places additional pressure on system reliability needs. The analysis described herein is narrowly focused on identifying and characterizing the resource adequacy needs of New Jersey's decarbonized electric sector in 2050.

Generation from weather-dependent renewable energy resources varies throughout the year. The chart in the lower half of Figure 14 shows weekly generation by resource type as simulated across multiple weather years in a reliability model (RECAP). There are many weeks across the year in which generation from offshore wind, solar, and nuclear meet most of the electricity demand. During typical spring, summer, and autumn weeks, in-state gas and imported power provide limited support during some hours, and New Jersey exports clean power during other hours. The top of Figure 14 provides an illustration of hourly dispatch during a typical spring week which shows that during the daytime hours of every day on a week like this one, New Jersey is exporting clean energy out of state, while relying on battery storage, gas generation, and imported power to meet demand during nighttime hours when renewable production is lower.

The IEP analysis also demonstrates that there are a few weeks in the year, typically occurring during the winter, in which electricity demand significantly exceeds available generation from renewables and nuclear. Cold weeks with high heating demand resulting from electrification of building heating can sometimes coincide with periods of low renewable output. During these intervals, which can stretch across multiple days, additional firm resources, coupled with the contributions of nuclear, existing gas, and imports, are needed to avoid a significant shortfall. Figure 15 demonstrates the system need during this type of week for the High Electrification scenario, which experiences the highest levels of winter peak demand.

In these infrequent but challenging circumstances, battery storage is charged from gas and imports in addition to excess renewables in some hours on Day 1 to help maintain reliability on Day 2 when the shortfall is the highest. However, short duration storage is quickly depleted. During the most challenging hours of the cold winter week shown in Figure 15, up to 10 GW of additional firm capacity need exists in the High Electrification scenario, even with 10 GW of existing gas and 7 GW of firm import capability assumed to be available. In the Hybrid Electrification and Demand Management scenarios, the magnitude of this additional system need is 3 GW and 7 GW, respectively, highlighting the potential of demand-side measures in reducing firm capacity need.

The IEP also explored the portfolios of resources that could address this reliability challenge subject to the policy assumptions and resource availability defined in Table 5. In the High Electrification scenario, the 10 GW firm capacity need can be met with 2 GW additional nuclear and 17 GW of additional 8-hr storage. The high volumes of storage capacity are needed because there are instances in which the length of the critical reliability periods exceed the 8-hour duration of the storage resource, particularly in the High Electrification scenario. Existing gas and imports remain crucial in this challenging week, helping to both directly meet load during challenging hours and to charge storage resources during the lead up to periods of need.

System reliability may be met by other technologies or portfolios of technologies, including emerging clean firm solutions such as hydrogen or renewable natural gas utilization in combustion-based resources (e.g., CTs or CCGTs); hydrogen utilization in fuel cells; long-duration battery storage; new nuclear technologies, and others. These solutions are at varying levels of technological readiness, and none have been widely deployed at commercial scale to date.

[42] Firm capacity refers to generation or storage resources that are reliably available to meet electricity demand during critical periods, and that can provide sustained, continuous output over multiple consecutive days.

Figure 14: Hourly Dispatch Over a Typical Spring Week in 2050 (Based on RECAP Simulations in the High Electrification Scenario)

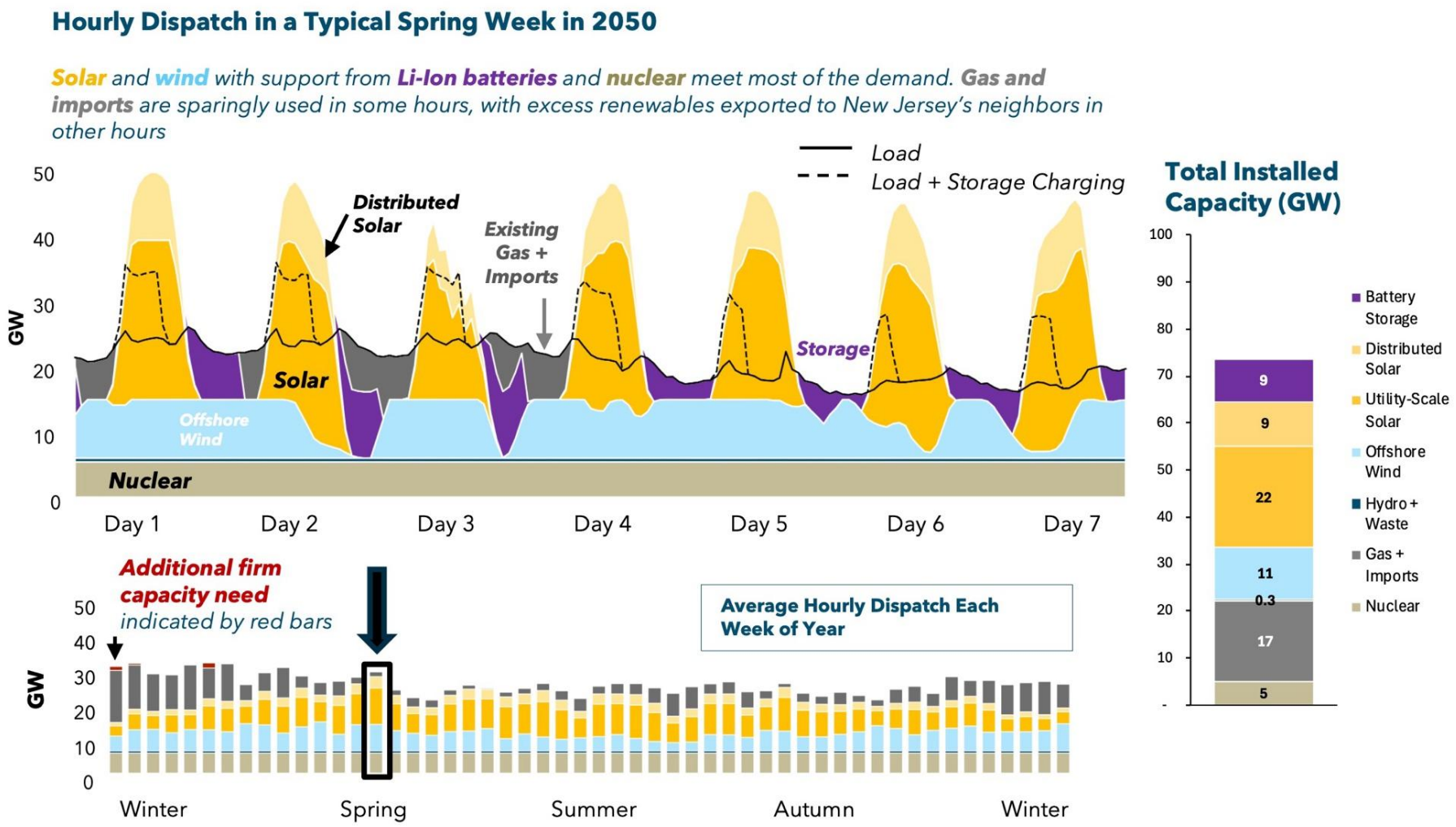
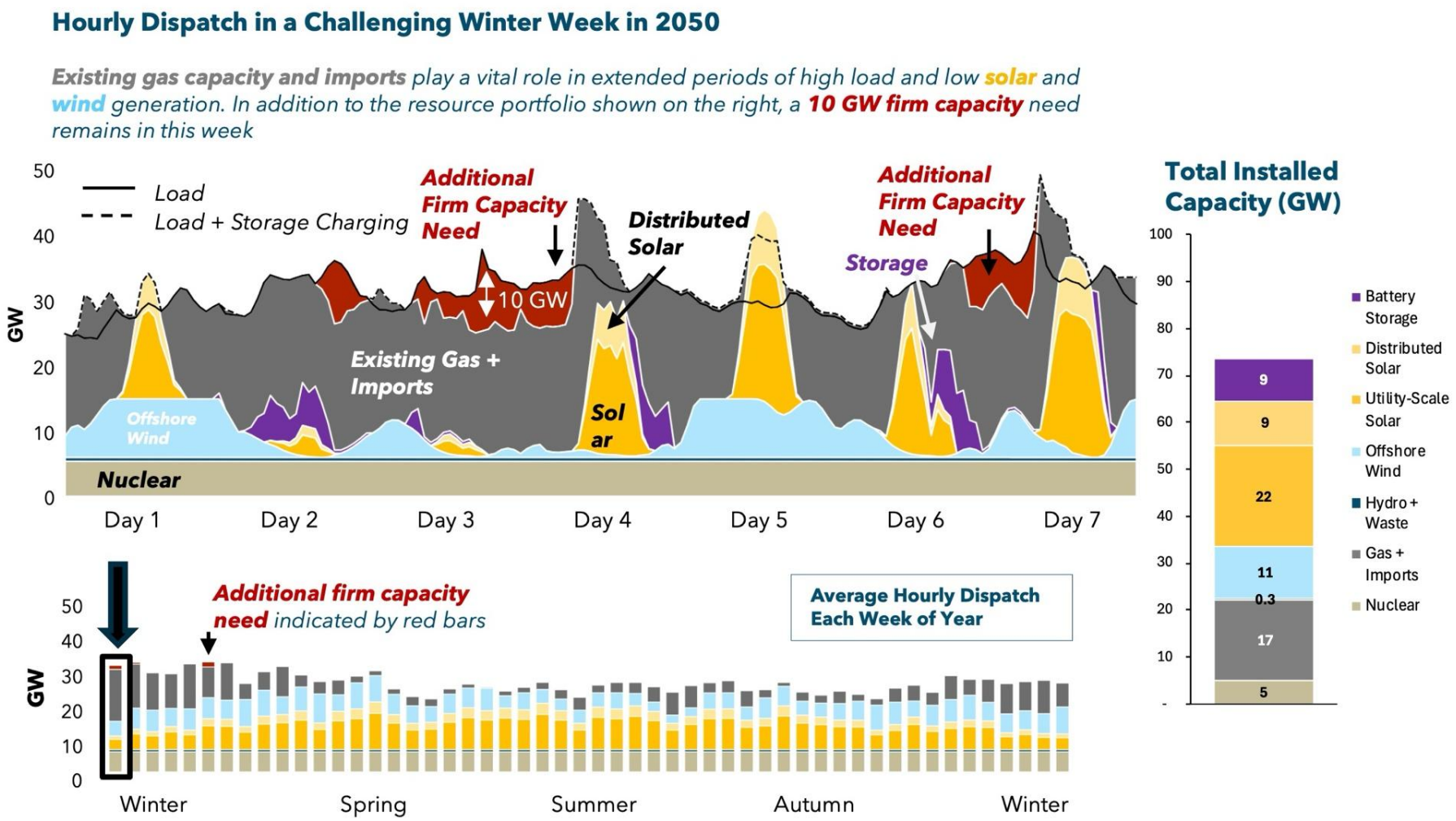


Figure 15: Firm Capacity Need Over a Challenging Winter Week in 2050 (Based on RECAP Simulations in the High Electrification Scenario)



Findings from Additional Sensitivities: Resource Availability Uncertainty

The resource options that will be available to the state in the long term are uncertain. To assess the potential impact of resources that are not considered in the core scenarios, several additional sensitivities were examined. These sensitivities explored how clean fuel combustion capacity and out-of-state land-based wind, if available, might facilitate achievement of New Jersey's clean energy goals. The IEP analysis concludes that, if these options become available to New Jersey, they could reduce resource builds, land-use, and cost impacts in New Jersey, especially under scenarios with high load growth. In the High Electrification scenario, 10 GW of clean fuel combustion capacity would be able to replace the reliability contributions provided by 17 GW of storage and 2 GW of nuclear energy. In a sensitivity in which New Jersey can access out-of-state wind with new or upgraded transmission, up to 8 GW of out-of-state wind can help replace 2 GW of new nuclear and 2 GW solar. Details of these sensitivities can be found in the IEP Appendix.

Additional Sources of Uncertainty

Key sources of uncertainty that would impact the supply-side findings include but are not limited to those presented in Table 6. In particular, items related to data centers, PJM, and federal funding have changed substantially since the 2024 EMP modeling as completed and is discussed in more detail in the "Changing Energy Landscape" section of the Executive Summary.

Table 6: Key Sources of Uncertainty for the Electric Sector

Source of Uncertainty	Description
Data center load forecast	While this study relied on the best available data with respect to projected data center growth, data center industry is a rapidly growing and evolving space, and if the timing and/or magnitude of data center load changes, so will the resource investments needed to meet the demand.
Federal and regional policy	All policies outside of New Jersey were modeled as they were "on the books" as of March 2024, including all federal, regional, and state policies. These policies may change in the future and may have impacts on resource builds, operations and costs in New Jersey.
Resource costs	The National Renewable Energy Lab's 2024 Annual Technology Baseline (NREL ATB) was the primary data source for all technology costs (relying on the "Mid" scenario), with some modifications such as adjustments made to reflect cost of labor and state taxes specific to New Jersey, and offshore wind cost refinements informed by the state's latest work in this area. Tariffs, tax credits, material costs, rate of deployment, and learning all contribute to the uncertainty associated with resource costs.
Resource availability and pace of deployment	Siting, permitting, and interconnection processes are time intensive. Annual resource build limits are introduced in the model to capture current on-the-ground constraints. These modeled limits are gradually relaxed over time assuming these processes become more efficient, but uncertainty exists. The pace of deployment of resources that have not yet been widely deployed in the U.S., such as offshore wind and new nuclear technologies, also carry uncertainty.

Source of Uncertainty	Description
Emerging technologies	New nuclear reactors are assumed to be available starting 2035 and are selected by the model in all mitigation scenarios to help maintain reliability while meeting CES and emissions targets. Other emerging technologies may also play this role. In the absence of new nuclear or another emerging technology, a higher reliance on mature technologies would be needed, which may have different cost, feasibility, or land use implications.
Transmission and imports	This analysis assumes that New Jersey can continue to import significant amounts of power from its neighbors and rely on 7 GW of firm imports from the rest of PJM to maintain reliability during critical periods, which is estimated based on its historical import capabilities. The supply and demand dynamics outside New Jersey and the possibility of additional regional or interregional transmission expansion are both uncertain and may impact resource builds and costs in New Jersey.

Chapter 5: Societal Impacts of Decarbonization

This chapter details the impact that decarbonization has on several aspects of quality of life in New Jersey, including employment impacts, household energy affordability, air quality, and the societal costs and benefits of decarbonization.

Green Economy Workforce Analysis

The Workforce Analysis was conducted by BW Research Partnership for the New Jersey Economic Development Authority (NJEDA) as part of an updated workforce needs assessment for New Jersey's Council on the Green Economy. Through this study BW Research explored New Jersey employment impacts under the Current Policy and the High Electrification scenarios. Employment modeling calculates net job gains or reductions across five sectors: Electricity, Fuels, Buildings, Transportation, and Green Infrastructure. These findings also detail employment changes by 2035 across sub-sectors and industries.

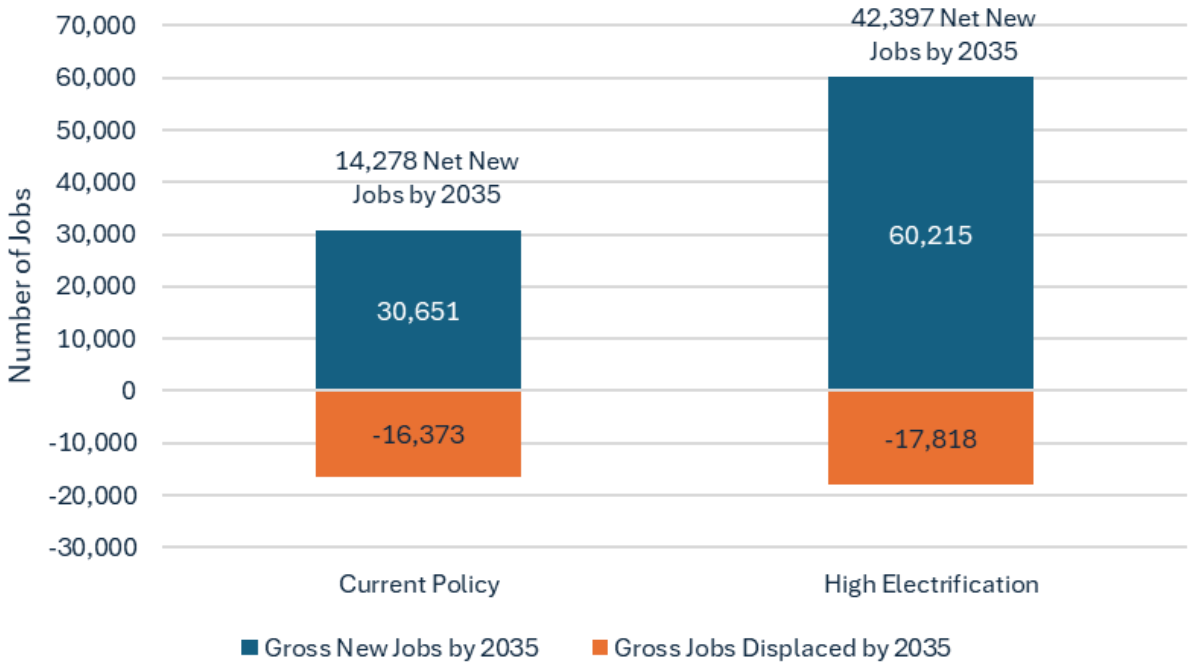
A comprehensive workforce needs assessment was published in September 2025[43] that contains the data reported here, as well as deeper analysis of current green economy employment, occupational employment projections, a gap analysis of current and projected occupational demand, a workforce ecosystem analysis, training and wraparound service provider inventories and asset maps, identification of challenges and barriers to workforce development, case studies of successes, and targeted recommendations for workforce development stakeholders supporting New Jersey's future green economy.

Employment impacts for each sector were derived based on in-state capital and operational expenditures on electricity and fuel resources, building efficiency and electrification measures, and alternative transportation adoption. To provide a comprehensive look at direct employment outcomes, the modeling framework includes negative impacts on the New Jersey economy, in the form of reduced employment in fossil electricity generators and fuel suppliers. This modeling does not include economic impacts to households and businesses from cost recovery or energy savings, which is outside the scope of this analysis.

The climate and clean energy related policies and investments modeled under the *Current Policy Scenario* generate employment change of 14,300 net new jobs by 2035 in our modeled sectors, representing a 7% change in the energy workforce. This is comprised of 30,700 gross new jobs and about 16,400 gross jobs displaced across New Jersey's energy workforce by 2035. Under the *High Electrification* scenario, net employment change by 2035 totals 42,400 new jobs, based on 60,200 gross new jobs and 17,800 jobs displaced (Figure 14).

[43] New Jersey Office of the Governor, *"Growing Green Jobs: The Opportunities for New Jersey's Workforce,"* September 2025, https://www.nj.gov/governor/docs/Green-Jobs-Report-9.22.25.pdf

Figure 14. Employment Change by 2035



Note: Includes both direct and indirect employment in the energy economy and its supply chain.

Employment Changes by Sector

Under the Current Policy scenario, the Electricity sector sees the most net new job growth through 2035 of all modeled sectors, with 13,100 new jobs added to the sector for a 50% increase on the baseline employment in 2022. The buildings sector follows with 10,200 net new jobs by 2035, representing 28% growth. The Fuels and Transportation sectors experience similar amounts of net job displacement by 2035, with 4,700 and 7,100 jobs displaced, respectively. This represents a 21% decline over 2022 baseline employment for the Fuels sector and an 8% decline for the Transportation sector.

Under the High Electrification scenario, the Electricity and buildings sectors see significantly more growth than in the Current Policy scenario, the Electricity sector experiences 26,300 net new jobs by 2035, and the buildings sector experiences 26,800 net new jobs. This represents a 101% increase for the Electricity sector and a 74% increase for the buildings sector. The Fuels sector experiences slightly greater job displacement by 2035 under the High Electrification scenario, with 6,500 jobs displaced, or a 29% decline from 2022 baseline. The Transportation sector will experience slightly fewer jobs displaced by 2035 as compared to Current Policy scenario, with 7,000 jobs displaced or 8% decline.

Priority Occupations and Workforce Training

Twelve occupations were developed through the research process as priority occupations in the state's green economy. These occupations represent many, but not all, of the most important occupations necessary for the State to meet its green economy goals. These priority occupations include Carpenters; Construction Laborers; Construction Managers; Electricians; First-Line Supervisors of Construction Trades and Extraction Workers; General Maintenance and Repair Workers; Heating, Air Conditioning, and Refrigeration (HVAC) Mechanics and Installers; Operating Engineers and Other Construction Equipment Operators; Plumbers, Pipefitters, and Steamfitters (Plumbers); Sheet Metal Workers, Solar Photovoltaic Installers; and Welders, Cutters, Solderers, and Brazers (Welders). Two-thirds (66.7%) of the selected priority occupations are part of the construction and extraction occupational group, while the remaining are installation, maintenance, and repair; production; and management jobs.

Training providers and programs exist for all priority occupations in New Jersey, especially those that require more specialized skill sets. However, there remains a lack of understanding about opportunities in clean energy and the green economy, particularly among workers, students, and under-resourced and underserved populations in overburdened communities. Training providers and employers looking to recruit or hire from overburdened communities can partner with existing community groups and wraparound service providers to support these efforts. Two recently launched resources to support awareness of training programs include the NJ Training Explorer, which provides information on a broad range of trainings, and the NY/NJ Offshore Wind Training website, which provides information specific to OSW in the region.

Pre-apprenticeships and other hands-on, job readiness programs are vital to developing New Jersey's green economy workforce pipeline. When job seekers participate in pre-apprenticeships and other work experience-centered programs, they can gain familiarity with construction and manufacturing sites and better identify their interest in pursuing full-time or permanent jobs in these industries. The best pre-apprenticeships offer individualized support to participants, such as mentorships and stipends, which increase completion rates. These programs typically include focused outreach workers, who collaborate with communities and organizations to recruit candidates from underserved backgrounds. New Jersey has taken the initiative to increase these opportunities through funding streams such as the NJDOL's Pre-Apprenticeship in Career Education (PACE) grant program. Increased union direct entry programs can further maximize the impact and opportunity that pre-apprenticeship programs provide.

Household Energy Costs

While the analysis presented in Chapter 4 describes three scenarios to decarbonize each sector of the economy, a crucial consideration in evaluating the opportunities and challenges of each scenario is the impact on energy affordability. This section explores household energy costs under each scenario, including utility bills, vehicle operation costs, equipment upfront costs, and available rebates. The analysis presented here covers the residential sector, although the conclusions related to energy bill savings and upfront cost challenges of electrification are applicable to small commercial customers as well. Understanding household energy expenditures under different scenarios entails two key analytical steps: (1) forecasting retail electricity and natural gas rates by developing models of utility revenue requirements, and (2) developing representative household energy and cost profiles.

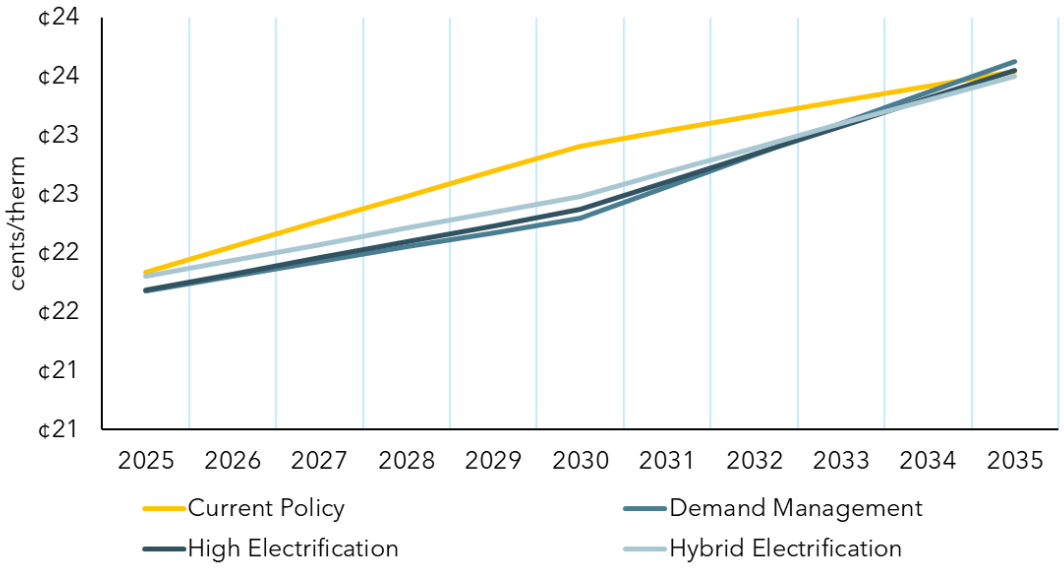
Utility Revenue Requirement Forecasting

Natural Gas

As discussed throughout the IEP, all three mitigation scenarios entail significant adoption of electric heat pumps, meeting the NESCAUM MOU voluntary target of achieving a 65% and 90% market share for heat pumps in the residential space and water heating sectors by 2030 and 2040, respectively. This transformation leads to significant declines in natural gas throughput across all scenarios, ranging from a 72% decline in the Hybrid Electrification scenario to an 81% decline in the High Electrification scenario. Nearly three quarters of households in New Jersey today are heated by natural gas.[44] All mitigation scenarios see widespread building electrification: the High Electrification, Demand Management, and Hybrid Electrification scenarios show 13% of all households retaining gas-only heating in 2050 across scenarios. However, the share of customers using air source heat pumps with gas backup heating systems (i.e., hybrid heat pumps) differs across scenarios. The High Electrification and Demand Management scenarios have 8% of households relying on hybrid heat pumps, while the Hybrid Electrification scenario sees 39% of households using hybrid heat pumps. This leads to higher utilization of the gas system in the coldest hours of the year in the Hybrid Electrification scenario compared to the other scenarios. Decreasing throughput leads to increases in retail gas rates across scenarios assuming current cost recovery and rate design approaches, although hybrid customers consume significantly less gas annually and thus have limited exposure to higher retail rates. Figure 16 shows the estimated volumetric retail gas rates for each scenario, highlighting the increase in rates due to decreasing system usage starting in 2030. This sets the stage for the risks to energy affordability faced by remaining gas customers, explored in the Household Energy and Cost Profiles section.

[44] Energy Information Administration, New Jersey State Energy Profile, https://www.eia.gov/state/print.php?sid=NJ.

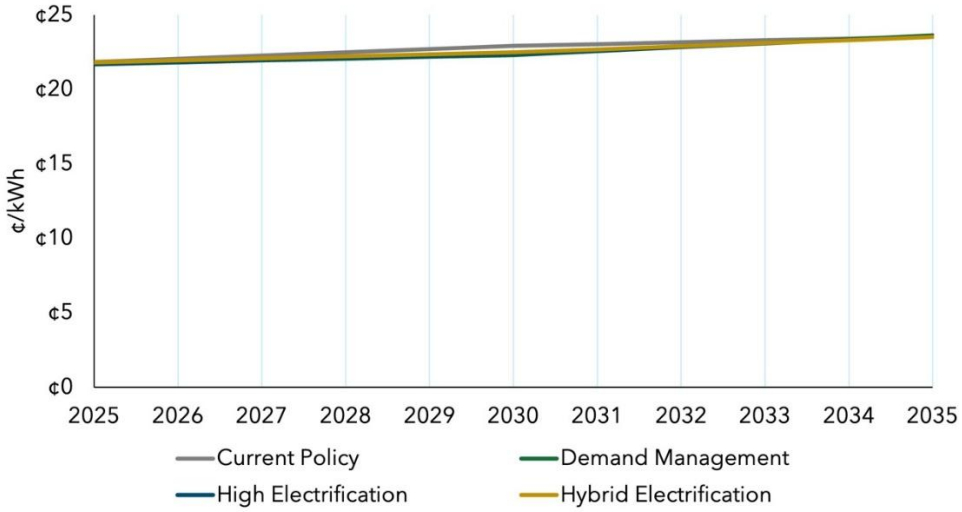
Figure 16: Retail Residential Natural Gas Rate (in 2024$)[45]



Electricity

Electrification of buildings and transportation is a crucial pillar of all mitigation scenarios. As described earlier in this report, all scenarios see increases in annual and peak loads electricity loads, necessitating considerable generation capacity, transmission, and distribution system investments to decarbonize New Jersey's electricity supply while meeting system needs reliability. Figure 17 shows that rate growth over time is minimized by increased electric sales (i.e., higher usage of existing infrastructure) and load flexibility.

Figure 17. Retail Residential Electricity Rate (in 2024 $)



[45] Residential retail gas rate projections are a fundamentals-based revenue requirement estimate of gas delivery costs and are not meant to capture near- and long-term variability in supply costs.

Household Energy and Cost Profiles

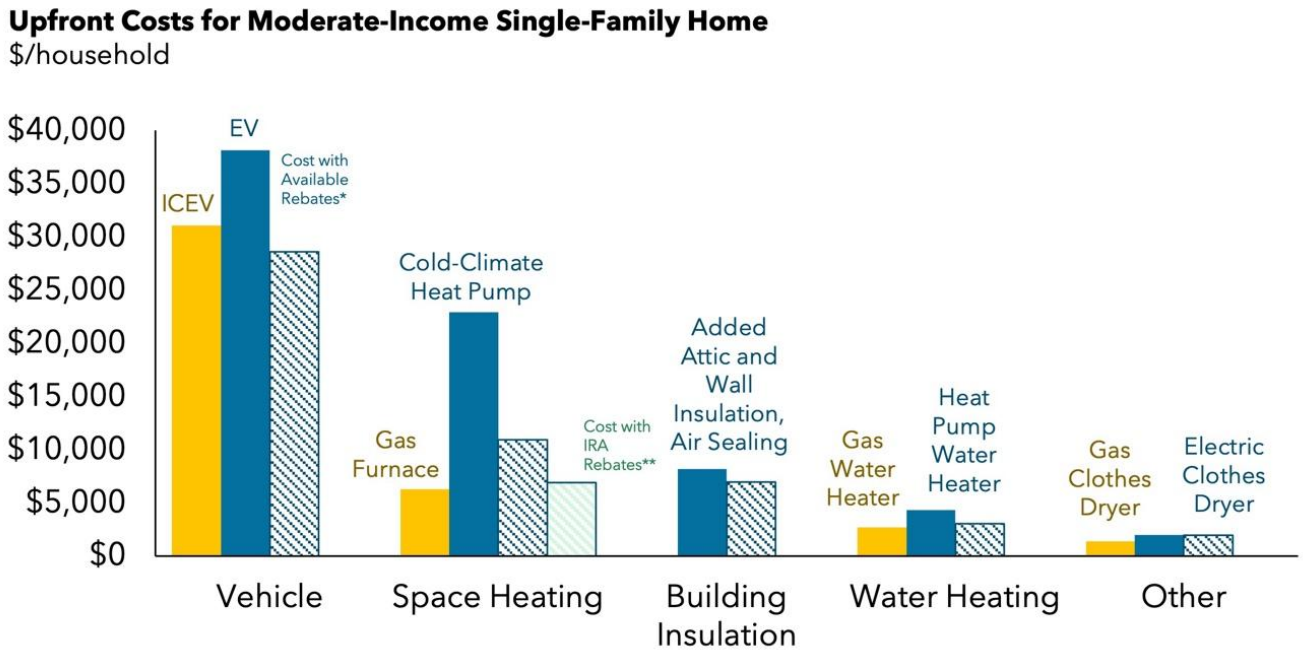
The analysis presented here focuses on a moderate-income single-family household at the annual state median income level of ~$92,000 for a household of four, with additional analyses conducted for this study for low-income (40% of state median income, ~$37,000) multifamily households as well.

Several technology packages are modeled for these profiles to capture a range of potential customer configurations. The baseline technology configuration shown has a natural gas furnace and water heater and an internal combustion engine vehicle. Given that three-quarters of NJ households still rely on natural gas for space heating, and that only 2.7% of registered vehicles are BEVs as of June 2025,[46] this is a commonly found technology configuration among NJ homes today. This baseline is then compared to an all-electric technology package, which includes all-electric cold-climate heat pumps, electrified appliances, and EVs, as well as building weatherization upgrades. A dual-fuel heat pump technology package is also included for the Hybrid scenario, combining a standard efficiency heat pump with a back-up natural gas space heating system for the coldest hours of the year.

Figure 18 provides a comparison of upfront equipment costs across efficient electric and natural gas devices, as well as EVs and ICEVs, including the net upfront costs after available utility and federal rebates. While the point estimates provided here indicate the approximate incremental costs of clean technologies, each of these equipment categories sees a large range in costs across equipment manufacturers, household configurations, and labor costs, especially the higher-cost purchases such as vehicles and heating, ventilation, and air conditioning (HVAC) equipment. With available federal tax credits and state rebates, new EVs approach cost parity with ICEVs. The upfront cost gap for heat pumps is more pronounced despite available IRA 25C tax credits and utility rebates; however, access to recently approved utility building decarbonization rebates under the Triennium 2 Energy Efficiency and Peak Demand Reduction Programs (available to approximately 30,000-35,000 homes) and additional federal rebates that New Jersey has applied for would significantly reduce the upfront cost barrier for heat pump adoption.

[46] NJDEP, "NJ Alternative Fuel Vehicle Report," accessed August 2025, available at https://dep.nj.gov/drivegreen/nj-ev-data/.

Figure 18: Upfront Costs of Clean and Baseline Technologies (in 2024 $)



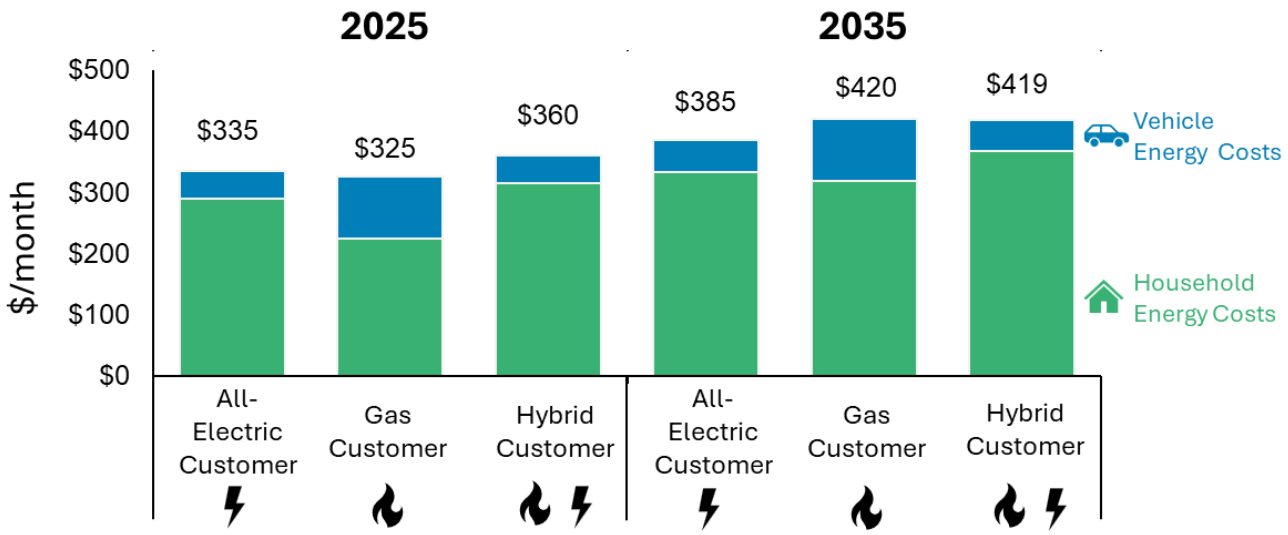
*including available state and utility rebates and 25C IRA tax credit for eligible technologies
**including $4,000 IRA HOMES rebate

Figure 19 provides a snapshot of monthly energy expenditure (including vehicle fuel) in the High Electrification scenario. The figure highlights households with efficient natural gas devices and households with efficient all-electric equipment. For the hybrid scenario, a back-up gas furnace is included, covering 6-27% of the annual heating load for different household types. Vehicle fueling for natural gas customers is assumed to be gasoline, while vehicle fueling for all electric and hybrid customers is assumed to be electricity.

These projections suggest that all-electric customers see similar home energy bills as gas using customers in 2035, excluding vehicle energy costs. Natural gas bills increase starting in the late 2030s due to decreasing gas system usage, which can pose a risk to customers still using gas if the impacts are not strategically minimized. Across scenarios and technologies, energy efficiency upgrades, including improved building shell measures, insulation, and air sealing, would help protect households from bill volatility and increases, while providing valuable electric system peak reduction benefits that would reduce electric system costs, lowering rates for all ratepayers. In terms of vehicle fueling, the study shows that fueling with electricity is about half the cost of fueling with gasoline, both in 2025 and in 2035.

An important modeling caveat is that this study did not consider future changes to rate design that could significantly impact utility bills, especially reductions in volumetric rates from higher monthly fixed charges (especially relevant for gas bills for hybrid customers, where low annual gas usage still yields significant gas expense given high volumetric rates with the current rate structure) and load management from avoiding on-peak consumption with time-varying rates.

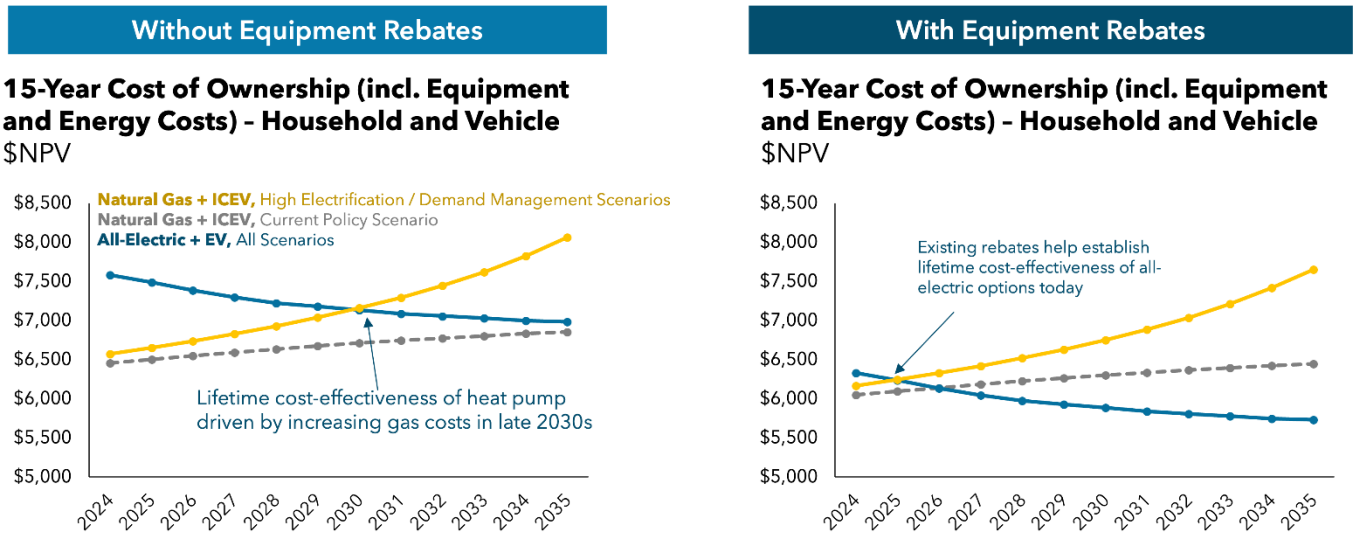
Figure 19. Average Monthly Energy Bills in the High Electrification Scenario (in 2024 $). Vehicle energy costs entail gasoline for gas customers and electricity for all electric and hybrid customers.*



*This figure presents projected energy bills for the High Electrification Scenario, but projected bills are similar under all scenarios, including *Current Policy*.

The energy bill savings from building and vehicle electrification help establish the lifetime cost-effectiveness of these technologies over fossil fuel baselines in the long run, even without equipment rebates. Figure 20 shows the same moderate-income single-family home and includes the impact of rebates in bringing the breakeven point of cost-effectiveness forward to today, a crucial condition to support the levels of clean technology adoption required to achieve the state's climate goals.

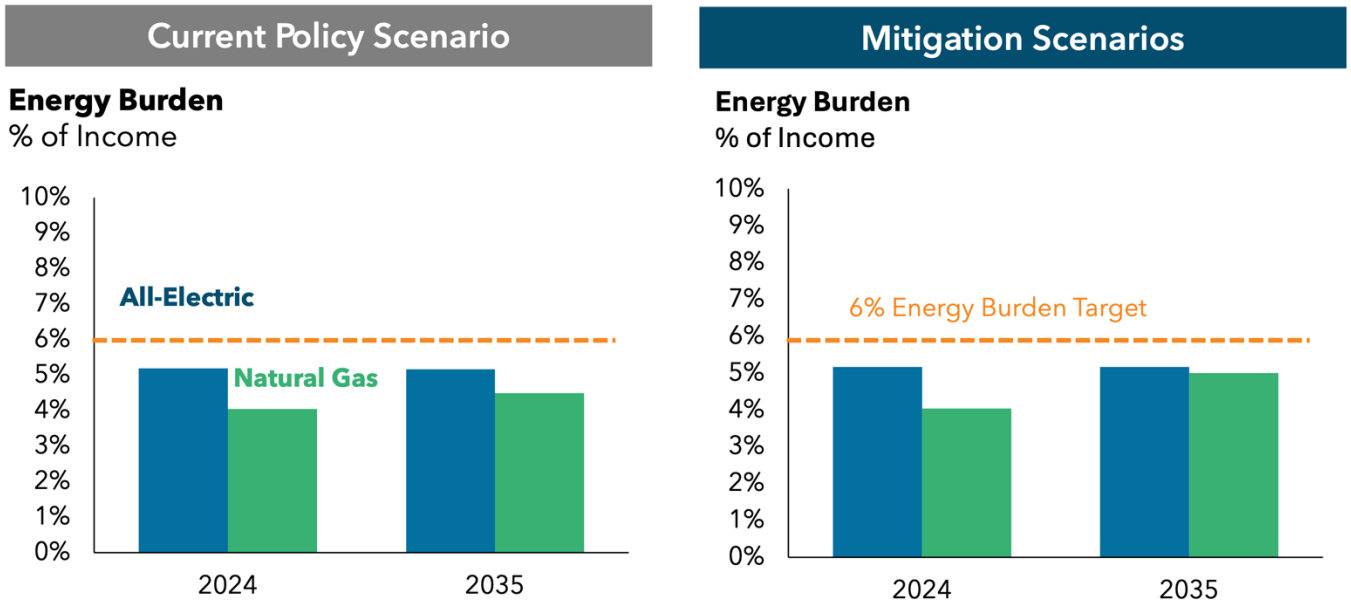
Figure 20: Total Cost of Ownership with and without Rebates (in 2024 $)



Shifting focus to low-income multifamily homes, Figure 21 examines energy burden for an example household (40% of state median income, ~$37,000 for a four-person household) over time with natural gas and all-electric

heating. This metric refers to the share of household income dedicated to energy expenditure, with a policy goal of no more than 6% burden used across jurisdictions (including New Jersey through the Universal Service Fund bill assistance program[47]). While energy burden remains below the 6% threshold over the next ten years in the mitigation scenario, there is still a need to prioritize the most vulnerable households for electrification and expanded bill assistance to access the benefits of electrification. This is especially true for renters, which represent nearly 40% of New Jersey households in 2023. While renters pay for utility bills, they rarely get a say in equipment adoption decisions, heightening the risk of landlords being slow to adopt electric technologies with higher upfront costs absent incentives or penalties to ensure electrification.

Figure 21: Energy Burden for Low-Income Multifamily Home



Economy-wide Costs and Benefits of Decarbonization

Economy-wide direct costs for each scenario account for supply side spending on fuels and electricity (production and delivery) in addition to demand side costs such as building appliances, vehicles, charging equipment, energy efficiency upgrades, and mitigation costs for non-combustion emissions. Key societal benefits are also calculated including the monetized benefits of avoided air pollution and climate damages. These costs and benefits are calculated relative to a business-as-usual (BAU) scenario where no decarbonization actions are taken to better isolate the incremental benefits and costs of all decarbonization actions, including those in the Current Policy scenario.[48]

Figure 22 shows the annual incremental costs and benefits of the Current Policy and three mitigation scenarios compared to BAU. As the economy electrifies, spending shifts away from conventional fuels like natural gas and petroleum and towards electricity, producing savings on fossil fuel expenditures. For transportation

[47] "Universal Service Fund," NJBPU, accessed August 2025, https://www.nj.gov/bpu/residential/assistance/usf.html.
[48] The BAU scenario does not include any decarbonization actions included in Current Policy such as the RPS, ACC II, and ACT and holds energy consumption patterns at 2021 levels.

electrification, the projected capital cost decline of electric vehicles compared to internal combustion engine vehicles results in vehicle cost savings compared to BAU even when accounting for additional EV charging infrastructure costs.[49] However, there are increased direct costs in buildings as electrified equipment like heat pump space and water heaters cost more than conventional fossil fuel appliances. Costs for other categories of spending (labeled as "Other" on cost charts) like industrial electrification, industrial energy efficiency, non-combustion emissions mitigation, and investments in expanding natural carbon sinks are estimated to make up a small portion of overall costs.

Across the three mitigation scenarios, the incremental costs of electricity, building equipment, and other spending categories reach $22-25 billion annually by 2050. However, these scenarios also save money relative to the BAU due to lower spending on fuels and vehicles, and these avoided costs reach $10-12 billion by 2050, offsetting around half of the incremental costs of each scenario. As a result, the net direct costs of the mitigation scenarios ranges from $11-13 billion annually by 2050. However, the monetized benefits from avoided air pollution and avoided global climate damages are large, reaching $22-24 billion annually by 2050, and all three mitigation scenarios see net benefits from reaching the state's emissions targets.[50] The negative net costs shown in the charts mean that the societal benefits from decarbonization outweigh the direct costs when accounting for climate and air quality benefits. As shown in Figure 23, from 2025 to 2050, the net present value of these net benefits ranges from $52 to $61 billion when using a 2% societal discount rate (the same rate used for the social cost of GHG emissions that determines the global climate benefits). The Current Policy scenario also shows net benefits compared to BAU, but it is important to note that this scenario does not achieve the state's long-term emissions targets and does not reach the same magnitude of climate and air quality benefits as the three mitigation scenarios.

[49] Peter Slowik, Aaron Isenstadt, Logan Pierce, Stephanie Searle. "Assessment of Light-Duty Electric Vehicle Costs and Consumer Benefits in the United States in the 2022-2035 Timeframe," International Council on Clean Transportation, October 2022, https://theicct.org/wp-content/uploads/2022/10/ev-cost-benefits-2035-oct22.pdf.

[50] Global climate benefits are calculated using the social cost of GHGs with a 2% discount rate from the EPA's 2023 publication, "EPA Report on the Social Cost of Greenhouse Gases: Estimates Incorporating Recent Scientific Advances", https://www.epa.gov/system/files/documents/2023-12/epa_scghg_2023_report_final.pdf. This yields a social cost of carbon increasing from $250/metric ton in 2025 to $370/metric ton in 2050 (in 2024 dollars).

Figure 22: Annual Societal Costs & Benefits Relative to BAU (real 2024$)

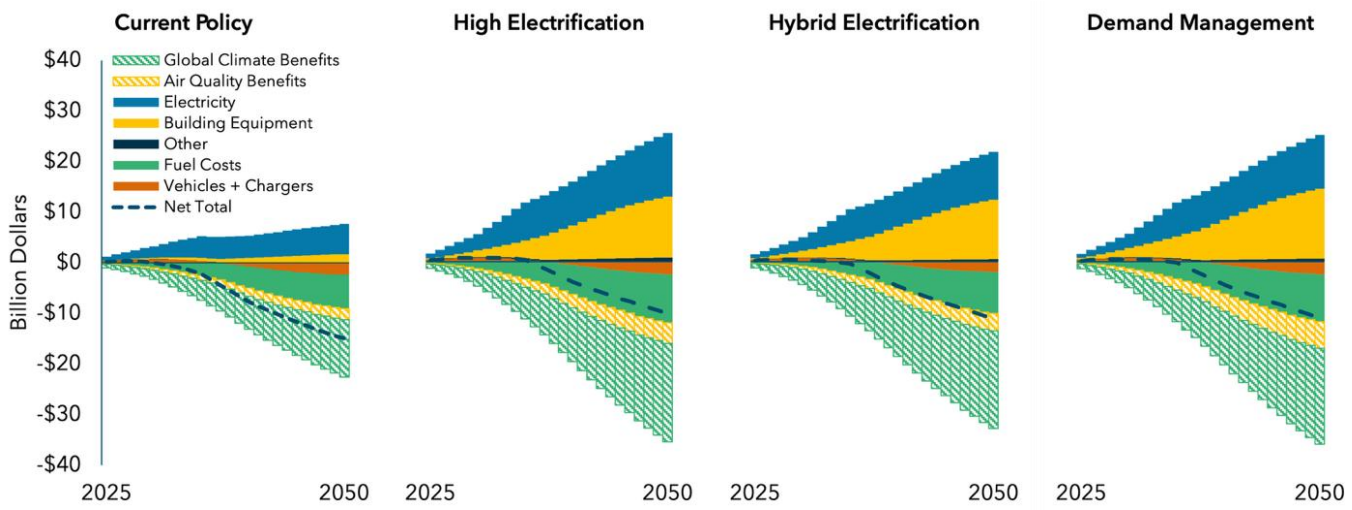
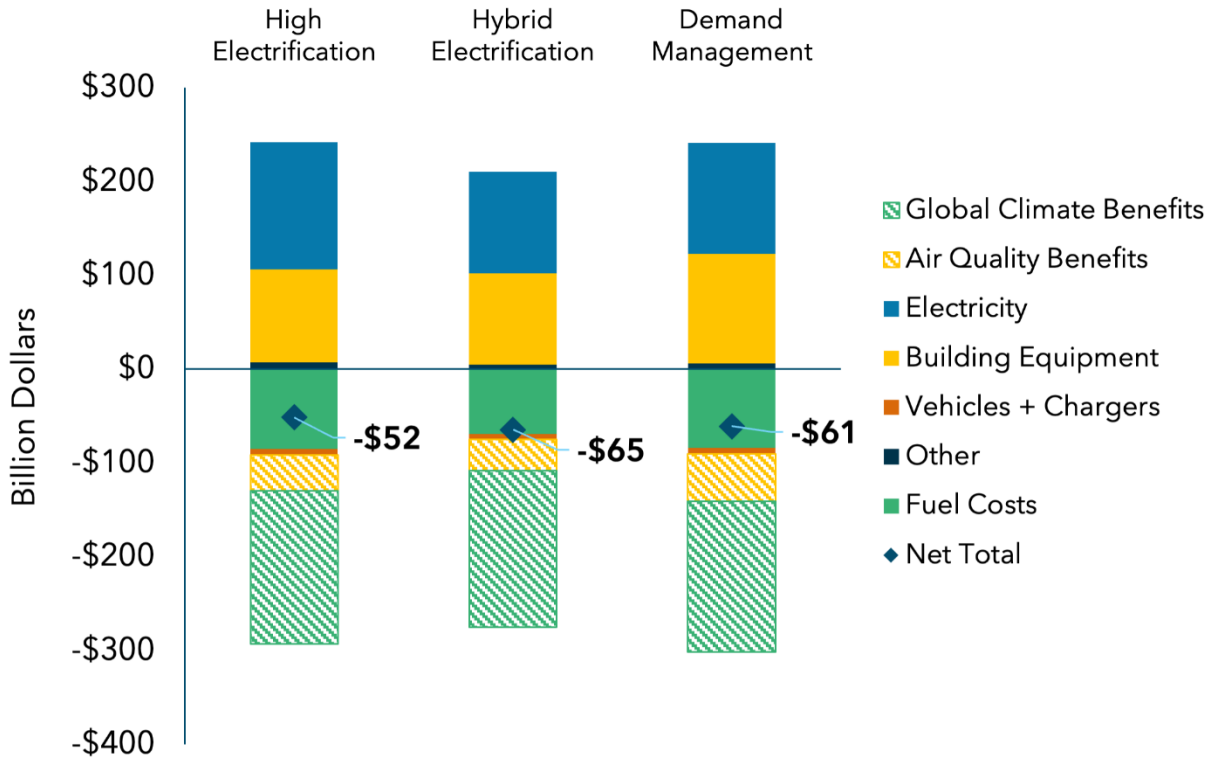


Figure 23. NPV of Cumulative Societal Costs & Benefits Relative to BAU 2025-2050 (real 2024$)



Air Quality Analysis

An analysis of air quality and associated health impacts was conducted to tie fuel combustion from modeled scenarios to changes in ambient fine particulate matter ($PM_{2.5}$) exposure, which is a significant cause of premature mortality and other illnesses in the U.S. and globally. Leveraging EPA's Co-Benefits Risk Assessment (COBRA) screening model, the analysis estimates improvements in air quality-related outcomes in each scenario relative to the modeled BAU, based on changes in technology adoption and fuel use by sector, such as changes in vehicle types and vehicle miles traveled. Examples of key technology and fuel changes that may impact air quality parameters include increased adoption of electric vehicles by the general population, advancements in electric vehicle battery technology through increased driving ranges and enhanced high speed charging capabilities, and improvements to emissions intensity of fuel.

Compared to the BAU, reductions in $PM_{2.5}$ exposure due to lower fossil fuel combustion result in nearly 400 annual avoided deaths by 2050 under High Electrification, compared to around 200 under Current Policy. While significant benefits occur within NJ, benefits also occur in nearby states (particularly NY and PA) due to the ability of air pollution to cross state borders.Translating these avoided deaths to monetary benefits based on the EPA's Value of Statistical Life (VSL) yields nearly $5 billion in benefits under High Electrification by 2050.

Chapter 6: Next Steps and Conclusions

As New Jersey advances toward its 2050 clean energy and climate goals, continued stakeholder engagement and strategic refinement are essential. Building on the foundation of the 2019 Energy EMP and informed by updated analysis in the IEP the state will pursue a collaborative process to guide implementation of programs and policies, ensure accountability to equity and affordability goals, and consider evolving priorities.

Next Steps in Stakeholder Engagement

Robust and inclusive stakeholder engagement is essential to the success of New Jersey's clean energy transition. Moving forward, the state should implement a multi-pronged engagement strategy that ensures transparency, equity, and broad participation across all sectors of society.

New Jersey should continue outreach by actively engaging a diverse group of stakeholders, including utilities, local governments, industry leaders, labor unions, environmental justice advocates, and community-based organizations. Engagement opportunities should include public meetings, formal comment periods, advisory groups, and working sessions that allow for meaningful input into policy and program design.

A core priority should be to center equity and inclusion in all stakeholder processes. This means elevating the voices of overburdened and underserved communities, ensuring that decision-making reflects the lived experiences and needs of those historically left out of energy planning. Special efforts should be made to overcome barriers to participation—such as language, technology access, or time constraints—and to build trust through long-term community partnerships.

To enhance transparency, the state should commit to providing regular updates, user-friendly data tools, and accessible reporting. Clear and consistent communication will help keep stakeholders informed and empowered to contribute throughout the implementation of the Energy Master Plan and related initiatives.

Finally, the state should support collaborative planning by continuing to foster coordination across sectors such as housing, transportation, workforce development, and environmental protection. By aligning efforts across these domains, New Jersey can deliver integrated solutions that advance climate goals while improving economic and public health outcomes statewide.

Conclusion and Next Steps for Action

Since the publication of the 2019 EMP, New Jersey has made significant progress in advancing the key policy recommendations across several sectors of the economy, including transportation, power generation, and buildings. Accomplishing this has required substantially modifying and creating new programs to achieve New Jersey's energy and climate goals. In particular, the State's actions around vehicle electrification, building decarbonization, clean power deployment, grid modernization, workforce training, and environmental justice have all improved measurably in terms of scope, ambition, and effectiveness over the past 8 years. The results of the 2024 EMP modeling and stakeholder exercise broadly support the continuation of these programs and policies into the future. Critically, the 2024 EMP modeling results show that the 2019 EMP recommendations that were implemented by the State have made meaningful progress on achieving its climate goals.

The most significant difference between the policy environment of 2019 EMP compared to the 2024 EMP is the state of comprehensive programming and policy implementation in New Jersey. Simply stated, in 2019 New Jersey did not have the necessary programming in place to meet its energy and climate goals. That is no longer the case. As a result of continued policy and programmatic development, New Jersey now has the tools necessary to meet its goals, and future near-term progress will largely depend on programmatic evolution.

Meeting the Changing Energy Landscape

Having established a stable base of energy and climate programming, the next steps for New Jersey are to focus on the policies and programs that will be needed to meet the New Jersey's energy needs and climate goals through 2035. As discussed in the Executive Summary, the overall energy landscape is undergoing a massive shift not seen since New Jersey and the region hit peak electric load and peak emissions in the mid 2000's. It is appropriate to view the 2024 EMP as a "bookend" to the era of flat-or-declining electric load, broad electric generation retirement, and relatively stable energy pricing. The cost and reliability implications of significant large load additions is new to the State and to the region. Similarly, the rapidly changing federal landscape over the past several years has materially changed project economics of various decarbonization technologies. While the full breadth and impact of these rapid changes is not yet fully understood, it does underscore the core guiding principle of the 2024 EMP—flexibility and adaptability.

The primary takeaway of the 2024 EMP is the identification of the "No Regrets" policy approach to energy planning for the next decade. While there are many unknowns the State will have to contend with, the No Regrets policy solutions are those solutions the State should pursue to best meet the moment, while preparing for the future and staying on track to largely decarbonize New Jersey's economy by 2050, consistent with the GWRA.

No Regrets Strategies:

+ **Accelerate Clean Energy Deployment:** Any future aligned with the state's economic, energy, and climate goals will require accelerated clean energy generation—solar, wind, advanced nuclear, green hydrogen, and battery storage. Doing so will reduce electricity imports, boost in-state generation, grow clean energy jobs (42,400 net new jobs projected[51]), increase resource diversity, and support long-term cost stability. This includes doubling down on the states successful solar programming, while at the same time expanding programming to deploy battery storage projects, clean firm generation options, virtual power plants, as well as exploring the potential for advanced nuclear resources in the state.

+ **Expand Decarbonization and Efficiency Programs:** Energy efficiency and building decarbonization are essential across all scenarios. Since 2018, billions have been invested through utility-led programs. New Jersey's Strategic Roadmap for Building Decarbonization, released in November 2025, outlines strategies and national best-practices such as a one-stop-shop, heat pump targets, utility planning reforms, and workforce development to ensure success. Importantly, New Jersey's energy efficiency programming must continue to serve as a delivery system for long-term bill reduction for participating residential and commercial customers. Not only does more efficient equipment provide lower bills for

[51] Note: Includes both direct and indirect employment in the energy economy and its supply chain, as well as the induced employment supported by workers in the energy economy.

program participants; it reduces overall electric demand thereby taking pressure off the wholesale power market and reducing emissions from both the power and building sectors.

+ **Ensure a Reliable and Modern Grid:** New Jersey needs reliable electric infrastructure that is equipped to serve increasing loads. The 2022 Grid Modernization Study recommends proactive planning, streamlined interconnection, and policy reforms. Since then, BPU has adopted the first set of regulatory changes aiming to improve transparency and speed of interconnection for distributed energy resources. Distribution planning and rate structures must adapt to a more interactive, flexible grid, while transmission coordination through PJM remains critical. This includes the successful implementation of FERC Order 1920. Electric reliability will also remain central to New Jersey's energy future, ensuring that as the state transitions to a more electrified and clean energy economy, residents, businesses, and essential services can depend on a stable, uninterrupted supply of power—even during periods of peak demand, extreme weather, or changing system conditions.

+ **Stay the Course on Transportation Electrification:** New Jersey has made strides in advancing transportation electrification through programs like Partnership to Plug In, which coordinates efforts across multiple agencies to accelerate zero-emission vehicle (ZEV) adoption and expand charging infrastructure. The State's strategy has included consumer incentives, utility investments, regulatory streamlining, and public-private partnerships. New Jersey is closing in on its statutory target of 330,000 light-duty electric vehicles by the end of 2025. Programs such as Charge Up NJ, It Pay$ to Plug In, and EV Tourism have helped put over 260,000 light-duty EVs on the road and deployed 5,000+ charging ports statewide. To meet the goal of 2 million light-duty EVs by 2035, the state must continue scaling these efforts while removing barriers to access in underserved communities. More recent programs have also focused on harder to reach market segments such as financing for fleet electrification, charging incentives for multi-unit dwellings, and medium- and heavy-duty vehicle and charging incentives.

+ **Ensure Energy Affordability, Equity, and Environmental Justice:** The State of New Jersey is committed to making affordability and equity a central pilar of climate and energy programs. The Energy Equity and Affordability Report recommended expanding bill assistance, piloting time-of-use rates that offer lower-cost charging during off-peak periods and lowering upfront costs of energy efficiency, heat pumps, and EVs for low- and moderate-income customers. Several of these actions have since been implemented.

+ **Enhance Regional Coordination and Advocacy:** New Jersey must continue to actively engage with PJM and neighboring states to ensure grid reliability, affordability, and accelerate clean energy integration. New Jersey recently joined with 10 other PJM States to sign a Statement of Intent to create a formal PJM Governor's Collaborative to jointly address key challenges facing the region. That work must continue and expand in the coming years. Additionally, the State should continue to take steps to have more formal involvement in the PJM decision-making process to ensure that its policy objectives are reflected in PJM's market rules and policies.

+ **Drive Innovation and Workforce Development:** Strategic workforce investments are vital for long-term success. The 2025 *Growing Green Jobs* report notes a 12% increase in the green economy workforce since 2021 and projects approximately 14,300 to 42,400 net new workers will be needed in New Jersey's broader energy economy, primarily in the green economy between 2022 and 2035. Existing initiatives include clean energy training hubs, apprenticeship expansion, and funding

wraparound services for trainees in overburdened communities, all of which should continue to meet this growing demand. Additionally, the State should continue to invest in early-stage cleantech start ups and cutting-edge research to drive innovation in the green economy.

These strategies form the lynchpin of the state's energy policy regardless of future uncertainties or technological preferences. Critically, the EMP recognizes that achieving public policy objectives—such as reducing emissions, ensuring reliability, lowering consumer costs, and creating equitable economic opportunities—does not hinge on one specific technology or pathway. Instead, the plan promotes a flexible, adaptive framework that allows New Jersey to evolve its strategies in response to emerging data, innovation, market conditions, and stakeholder feedback.

Looking ahead, the EMP identifies key areas that require continued exploration and policy development, including the long-term role of hydrogen and low carbon fuels, implications of rising electricity demand from sectors like data centers, regional transmission dynamics, and the pace of clean technology deployment. Addressing these challenges will demand transparency, collaboration, and openness to new solutions.

Ultimately, the path to 2050 is not static. New Jersey's approach must remain grounded in rigorous analysis, aligned with its core public policy goals, and guided by an inclusive process that ensures all residents benefit from a cleaner, fairer, and more resilient energy future.