October 12, 2018

Via Electronic Submittal: EMP.comments@bpu.nj.gov

New Jersey Board of Public Utilities
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New Jersey Resources Corporation's Comments on the 2019 Energy Master Plan

New Jersey Resources Corporation (NJR), a diversified energy provider with a strong, long-term commitment to sustainable business practices, is respectfully submitting written comments to help inform and participate in the New Jersey Board of Public Utilities' 2019 Energy Master Plan (EMP) process.

NJR provided public testimony at three EMP stakeholder meetings:

- Clean and Renewable Power (Friday, September 7)
- Reducing Energy Consumption (Friday, September 14)
- Sustainable and Resilient Infrastructure (Friday, September 28)

Each of the public stakeholder meetings provided NJR an opportunity to express support for Governor Murphy's clean energy agenda, and provide critical input into the public policies that will shape the path for New Jersey to achieve the ambitious goal of a 100 percent clean energy future by 2050.

With a focus on serving our customers, NJR is submitting a summary and more detailed written comments on the three important areas that we addressed in our public testimony.

In our *Clean and Renewable Power* comments, we will focus on the strategic path and diversified energy solutions necessary as New Jersey's energy profile transitions to lower greenhouse gas emissions while ensuring reliability and affordability to customers.

In our *Reducing Energy Consumption* comments, we recommend a broad portfolio of energy efficiency programs and payment options to ensure that all customers, particularly low-to moderate-income residents, can participate in energy efficiency to realize energy savings and the corresponding environmental benefits.

Finally, our *Sustainable and Resilient Infrastructure* comments urgently present growing reliability risks in serving home heating customers in the State, 75 percent of which are now served by natural gas. Due to a lack of access to adequate supply, natural gas utilities are facing challenges to meet growing peak demand needs and ensure critical safety reserves are in place to protect customers against pipeline service disruptions. Solutions to this challenge will be important to address in the EMP.

Clean energy policies put forward in the EMP that directly impact customers through rates or their own energy purchases should be carefully considered to ensure long-term costs are minimized and pricing volatility or sudden price increases are avoided. The costs to customers of certain emission reduction measures can be quite significant, particularly regarding new technologies when they are introduced, impacting both capital outlays for new equipment as well as changes in annual energy purchase costs.

As noted in our energy demand comments, offsetting impacts to specific customer classes, such as low- to moderate-income households, should be prioritized. Already, many low-income customers have a higher potential to be negatively impacted in their communities, often located in areas with higher pollution levels or living in homes with a lower average energy efficiency.

Given the transformational nature of a decarbonized energy future - within a 30-year framework that promises to dramatically alter the fundamental characteristics of New Jersey's energy economy – State policymakers should encourage flexibility in the design of the 2019 Energy Master Plan and take a technology-neutral approach to key issues whenever possible.

The State's Energy Master Plan should recognize the value of complementary measures that work in tandem with the Governor's top-level polices to send a clear policy signal to investors that long-term solutions are needed for lower carbon emissions and cost competitive fuels.

These may take the shape of programs that act as a low-carbon fuel standard (generally focused on transportation fuels) or dedicated efforts to decarbonize pipeline gas (e.g., via a renewable gas standard). These types of complementary measures are common in carbon-constrained markets including California, Europe, and British Columbia.

New Jersey should prioritize and implement measures designed to encourage further research and development of emissions reduction technologies to avoid locking the State into one decarbonization pathway over other options that may prove more cost-effective over the long-term as technologies advance.

To achieve long-term success for the Governor's clean energy goals, the Energy Master Plan must recognize the value of combining technological solutions with behavioral changes by customers, educating people about new opportunities and how they may alter such issues as the way they commute and travel, or how they can lower energy usage in their businesses, communities and homes. Consumer choices and market forces can work together to drive this transformation.

As an energy provider, we must keep our focus on our customers during this transition by understanding and meeting their energy needs in a cost-effective way.

Our customers want and expect reliable, affordable and clean energy. They want their heat to reliably turn on in the winter. They want their energy bills to remain low. And, they want their appliances to be efficient to help save them money and help protect the environment.

Meeting their expectations is our top priority. As we transition to a clean energy future, it must be a shared priority for all of New Jersey.

CLEAN AND RENEWABLE POWER

NJR has a strong track record of supporting a clean energy agenda.

We are a major investor in New Jersey's solar energy market and one of the leading solar providers in the State.

We've invested over $800 million in clean energy projects with the installed capacity to power more than 60,000 homes per year.

For almost a decade, our principal subsidiary, New Jersey Natural Gas (NJNG), has successfully deployed energy efficiency solutions to reduce energy demand and help our customers lower their energy costs, lower emissions and protect the environment.

We have helped our customers save $374 million through energy efficiency programs and providing advice about energy conservation. Our efforts have protected the environment by preventing the release of 2.1 million tons of carbon dioxide into the atmosphere.

We are a member of the U.S. Environmental Protection Agency's (EPA) Natural Gas STAR Program. Over the past 10 years, we have reduced our emissions by over 20 percent through changes in our operations.

NJNG also recently joined The Natural Gas Methane Challenge, a voluntary program founded by the EPA in collaboration with oil and natural gas companies. The program recognizes companies that make specific and transparent commitments to reduce methane emissions.

NJNG is the first natural gas utility in the nation to purchase independently certified supply under the Trustwell™ Ratings system. The rating evaluates a wide range of risks and impacts, including emissions, leaks and well integrity among many others, and attests a responsible natural gas product for natural gas purchasers and end users.

Ensuring safe, reliable natural gas from suppliers that work to reduce methane and other emissions is consistent with NJNG's long-term commitment to sustainability and environmental stewardship.

As part of Governor Murphy's new vision for a sustainable future in New Jersey, a stated goal of the new EMP is to put the State on a path to achieve 100 percent clean energy by 2050.

NJR is proposing a potential path forward to achieve these ambitious clean energy goals that keeps our essential focus on providing reliable, affordable and clean energy for New Jersey's customers.

We will need to work with all of New Jersey's stakeholders and we will need to employ a variety of energy solutions to reach the 100 percent clean energy goal.

Policy leaders, homeowners, utilities, regulators, environmentalists, community organizations, businesses, universities and research centers will all play a critical role in advancing this transformation.

One of the simplest and most powerful tools at our disposal is energy efficiency – the lowest cost form of clean energy. If families and businesses use less energy, providers will be able to produce and deliver less energy. That, in turn, will benefit the environment, save customers money and help us meet our clean energy goals.

Our State's new legislative mandates more than triple the current pace of savings from energy efficiency.

The American Council for an Energy Efficient Economy (ACEEE) recently identified New Jersey as one of the most-improved states in its energy efficiency policies and best practices, a direct reflection of Governor Murphy's early and aggressive emphasis on clean energy priorities.

Solar is another critical part of the clean energy future in New Jersey.

Today, with over 2,500 megawatts (MWs) of solar installed at nearly 100,000 sites across the State, and with more than 7,000 jobs created and $10 billion in capital from private investors, solar has become a tremendous growth industry in New Jersey.

The very good news is the demand for solar continues to grow, largely driven by it becoming more affordable for customers.

In 2008, solar installation costs for an average residential home were $80,000. Today that is closer to $25,000 – more than 60 percent less than what it cost a decade ago.

It is clear the market is growing, technology is improving and the environment and economy are benefitting.

As we look to our State's energy future, solar can be an anchor in a more distributed energy system, which includes other components like battery storage, electric vehicles, smart thermostats, Combined Heat and Power (CHP), and a modernized, two-way electric grid. This will give New Jersey more control over its energy resources, drive economic development, give consumers more options and opportunities to participate in energy markets and improve the state's energy resiliency.

The recently passed Clean Energy Bill gives us a clear roadmap on our priorities:

- We need to launch community solar and remote net metering pilot programs. These projects are important to extending the benefits of solar to low- to moderate-income consumers. The potential for large scale projects should facilitate sustained solar growth and will help us meet our aggressive clean energy goals and reduce the costs to customers. We will need the BPU's help in changing the solar program's established RPS cap, which must be raised to protect the SREC market going forward. We have expressed concern that solar installations, plus the pipeline of approved projects, are

already approaching the 5.1 percent RPS program cap. There is currently limited room to accommodate new projects without having an adverse impact on the SREC market.

- We need to close the current SREC market to bring incentives down faster for new projects, while preserving SREC values for older legacy projects built at much higher costs. Getting the market closure right will help sustain investor confidence to raise the capital for future solar programs.

- In closing the current SREC market, to increase and maintain job continuity and growth, we must implement a long-term solar growth target and successor program, as quickly as possible. This program should drive lower costs and give us a longer runway for solar development that avoids the oversupply crisis of the past. Nearly 10 years since implementation, the SREC market has been a success in making New Jersey one of the leading solar states in the nation and in developing a thriving in-State market. As with any market structure, it can be improved. NJR is actively engaged with industry stakeholders and in discussions with the BPU to help ensure continued success in the solar market moving forward. We look forward to participating in the upcoming stakeholder process to share more ideas regarding the solar transition.

The Governor's recent policy support for offshore wind power is also a cause for long-term optimism in New Jersey. It is already stimulating development activity and attracting experienced global developers to our State.

One of our most urgent goals must be decarbonizing the transportation sector and leveraging alternative fuels to achieve our clean energy goals. It is a fact that the majority of New Jersey's greenhouse gas emissions come from cars and trucks.

With respect to low-carbon transportation fuels, the greenhouse gas emission reduction strategies should reflect the diversity of transportation modes, vehicle segments and fuels that are used statewide. This will require specific policies that incentivize greenhouse gas emission reductions along the entire supply chain for the transportation fuel market—and this will require working with fuel producers, distributors, infrastructure providers and end users.

It is also important that the EMP recognizes that low-carbon transportation fuel technologies like Compressed Natural Gas (CNG) in the heavy-duty truck sector should be accompanied by measures that will decrease the carbon intensity of all modes of travel—including transit, rail, goods movement, etc.

And recent studies have shown that using renewable natural gas (RNG) produced from anaerobic digestion of food waste is net-carbon *negative* over its lifecycle, including production, use and avoided emissions.

The transportation sector typically has high costs for greenhouse emission reduction technologies; as a result, the EMP must balance the need for short-term actions that will help

achieve 2030 emission reduction targets, while keeping the State on a long-term trajectory that will ensure 2050 emission reductions are met.

The electric grid of the future will need to be modernized to integrate different energy sources, such as solar, wind and battery storage in a way that maximizes grid reliability and optimizes costs.

The final point in the path to 2050 goals responds directly to questions provided by the BPU about the overall energy transition from fossil fuels to clean energy.

Natural gas has already helped accelerate New Jersey's transition to a cleaner energy future.

Since 2008, lower natural gas prices have saved New Jersey customers more than $5.5 billion.

At the same time, solar incentives have cost customers about $2.5 billion, and incentives for energy efficiency have cost customers approximately $1.5 billion.

Low natural gas prices have allowed us to accelerate our clean energy investment, and saved New Jersey residents more than a billion dollars.

Natural gas prices are expected to remain low, which will keep our energy transition affordable and support clean energy growth.

In addition, the flexibility of natural gas generation allows it to adjust quickly to the intermittent output of renewables, which helps provide grid reliability as we add more solar, wind and new technologies to the mix.

The natural gas network must be a valued asset in a low-carbon world.

The natural gas distribution infrastructure plays a unique role in both total energy delivery as well as meeting peak-winter heating requirements, and is the single most efficient approach to meeting peak-energy demand in the State.

The network is a safe, resilient energy delivery system. It must be leveraged to provide additional support to the 2050 plan. There is a significant risk that the value of this system, which has been improved with billions of dollars in investments, could be lost through implementation of policies that focus primarily on eliminating fossil fuel consumption.

Instead, this natural gas system must be considered an asset as New Jersey restructures the energy network to reduce carbon emissions, with policies designed to maximize the value of this system.

The path to a clean energy future in 2050 should leverage the natural gas system to deliver low carbon fuels. Some of these new fuels may include renewable biogas products from plants or waste and hydrogen gas-powered from renewable energy sources.

All segments of the natural gas supply chain must invest in building and maintaining an airtight natural gas delivery system. This is an important opportunity for the natural gas industry to lead and reduce fugitive emissions. Efforts such as committing to EPA's Natural Gas Methane

Challenge must become an industry standard. It is an opportunity the industry must drive forward.

Energy storage has the potential to be a game changer for solar and wind, allowing us to integrate more intermittent renewables into the grid.

Superconductive transmission would allow energy to be carried across major regions of the United States without line losses.

And, pilot projects are underway that capture carbon from a power plant's emissions, from customer equipment, and directly from the air, converting it to other materials that are being stored or reused.

We should not underestimate the transformative effect these and other new technologies can bring over the next 30 years. They will be critical to meet our 2050 goals.

A technology-neutral approach to a clean energy future that incorporates the array of solutions highlighted above will provide built-in flexibility to adapt as technologies evolve. This will help avoid technology and path 'lock-in' at an early stage of the clean energy transition.

The energy network should be allowed to evolve over time in the direction of the most reliable and affordable approach to meeting the state policy objectives, helping policy goals to be achieved while leaving enough room to navigate unexpected developments and unforeseen impacts to the system or customers, or the flexibility to include new technology developments.

A technology-neutral approach would place the same value on carbon reductions achieved through:

- Improvements in energy efficiency that reduce the need for energy consumption.
- Conversion of fossil-fuel demand to clean electric power in the transportation, residential, commercial and other end-use demand sectors where it's economically and environmentally beneficial.
- Reductions in the carbon content of natural gas, transportation fuels and other carbon-based fuels.
- Carbon capture, sequestration and reuse.

A market-based, technology-neutral approach will enable the most affordable and effective options for reducing carbon emissions, minimizing the overall costs of the shift in energy policy, allowing new technologies to come to scale, and reducing the impacts on New Jersey customers.

Ultimately, our success will be judged by how well we deliver what customers want: Reliable energy. Affordable energy. Clean energy.

REDUCING ENERGY CONSUMPTION

New Jersey Natural Gas (NJNG) has been working hard to engage our customers in creative ways to reduce their energy usage since our Conservation Incentive Program was approved in 2006.

We significantly expanded those efforts in the fall of 2009 when our SAVEGREEN Project programs were approved. Our energy efficiency programs were designed to work collaboratively with the New Jersey Clean Energy Program (NJCEP) to deliver comprehensive solutions for customers. We are proud of what we have accomplished to date:

- Nearly 52,000 customers have participated
- More than 2,600 contractors have participated
- More than $159 million has been invested

Based on our experience working with customers and trade allies and our participation in national efficiency organizations, we believe New Jersey must have a diversified portfolio of energy efficiency programs to ensure that all customer classes can participate and realize energy savings.

It is important that special attention be given to programs and features that support participation by low-to moderate-income residential customers. It is also important to develop and deploy distinct approaches for some residential market segments, including renters and seniors.

For commercial and industrial customers, we will need to expand efforts by industry segment and leverage the support and knowledge of national groups (e.g., Consortium for Energy Efficiency (CEE) and the U.S. Department of Energy (DOE) Better Buildings Network) to learn from and share best practices in program administration.

We encourage the State to establish commercial benchmarking rules as soon as possible and to consider incorporating a "demonstrated compliance waiver" for early champions who have built to LEED standards or maintain an ENERGYSTAR certified building. A streamlined compliance process will create an extra incentive for commercial entities to participate in energy efficiency programs offered today.

Regarding the recognition of non-energy benefits of energy efficiency, both the American Council for an Energy Efficient Economy (ACEEE) and Lawrence Berkeley National Laboratory (LBNL) have done significant work on this topic. They have demonstrated a broad range of benefits, from health and safety on the residential side, to employee productivity and resiliency on the commercial side.

New Jersey can learn from other jurisdictions that have addressed these additional benefits in their energy efficiency programs. We encourage the state to go beyond just capturing non-energy benefits in their program assessment, and to use the National Efficiency Screening Project's

Resource Value Framework to test whether the approach to cost-benefit testing New Jersey's programs is balanced and aligned with policy objectives.

NJNG also believes it is important for the energy efficiency programs to have a dedicated Emerging Technologies (ET) program.

An ET program will fund investments to develop critical insights to help the state with longer-term strategies to reach its climate goals. This program is a key step to gain technical and market understanding on installation, performance, reliability and serviceability considerations for new customer, energy-efficiency solutions.

Funding should support new technologies and program solutions to allow us to meet tomorrow's energy efficiency goals with less risk and more certainty. Leading states in energy efficiency have made this financial commitment to emerging technology research. They recognize the importance of an ET program when pursuing aggressive energy reduction targets and the ability to draw in new technologies or approaches as codes and standards advance so targets can still be met.

This is a reasonable and prudent investment to ensure New Jersey has a strong knowledge of the potential for innovative technologies that may transform energy efficiency. An ET program should support new technologies and approaches that are ready for broader adoption but need enhanced contractor training, customer incentives, or other key elements to help the marketplace understand their value.

When pursuing ET programs, we need to support educating existing workers, our next generation of engineers and technicians about proper installation of newer technologies.

Any ET program should ensure natural gas technologies are considered. Our team currently participates in both the Gas Technology Institute Emerging Technology Program and the Energy Solutions Center.

From our involvement, we recognize several new gas technologies are approaching commercial breakthroughs. Gas heat pump water heaters are becoming available for the commercial market. Given the opportunity to access efficiencies greater than 100 percent with this technology, we should investigate ways to achieve more energy out of every energy therm used.

Similarly, several manufacturers have made advances with micro-CHP systems. This significantly broadens the pool of customers that may be able to make use of heat and electricity from these systems with the potential for added reliability.

New Jersey is getting high marks on code stringency. In the most recent ACEEE State Scorecard, New Jersey got strong scores for both residential and commercial code stringency. In the coming decades, the State should continue to be a leader in adopting new building codes and should consider the opportunity to expand benchmarking requirements.

There is an opportunity to improve the ACEEE scores for both compliance, with approved codes, and benchmarking. This can be achieved with more resources and training to support trade allies

and local officials, as well as efforts to educate customers about specific code elements and why they matter. We should explore a stronger partnership with the Department of Community Affairs (DCA) to advance compliance.

Shifting the outreach and education strategies to compliance with all installations could alleviate some of the perceived burden for participating in energy efficiency programs.

Energy efficiency and peak demand reduction strategies provide a great opportunity to support reliability. In fact, the natural gas industry pioneered large-scale demand response with industrial customers through interruptible service tariffs, which have been in place for decades.

This approach helps ensure we can meet our obligations on peak days, and also provides a significant economic benefit for participating industrial customers, by lowering their energy burden.

As technology advances we can start to see some of the benefits of this strategy even for customers who need firm service. Some utilities are starting to pilot natural gas demand-response programs. These include programs that involve small behavioral actions from a large group of customers through smart thermostats, and those that involve larger commercial customers bidding in potential resources. New Jersey can learn from these pilots and start utilizing these approaches.

As an industry, we have an opportunity to improve our engagement with higher education, including community colleges and technical colleges, to identify what skill sets we need to build a clean energy economy. We need a focused effort to identify the types of skill sets and positions we need, and then identify the gap from what is currently available.

The energy efficiency solutions described above are complementary and can help achieve measurable progress in lowering energy demand in New Jersey.

There is an obvious connection between workforce development for emerging technology programs. Educational needs must be considered when the State advances building codes. Training programs must be flexible to ensure smaller companies have the ability to participate. Sole proprietors lose billable hours when they participate in classes in traditional formats. We recommend evaluating and potentially expanding the NJCEP Clean Energy Learning Center run by New Jersey Institute of Technology.

We recognize the importance of ensuring all customers can participate in energy efficiency programs. NJNG is proud to have worked collaboratively with the other utilities to help nearly 112,000 low-income customers significantly reduce their energy bills and improve the health and safety of their homes.

There are still barriers to participation for many eligible customers. From our estimates, nearly 30 percent of the Comfort Partners' audits performed in our territory identify structural or safety conditions that we are not able to remedy through the program due to the limits on how much we can spend on such measures. As a program implementer and lifeline service provider, it can be

discouraging to not be able to provide incentives to customers who are in need and interested in assistance.

We are encouraged by the BPU's recent approval of a new Memorandum of Understanding regarding the coordination of Comfort Partners with DCA's federally funded weatherization program. This should provide opportunities to serve customers more efficiently and cost effectively.

We should continue to explore other potential funding sources, including the potential to use a portion of auction proceeds from future Regional Greenhouse Gas Initiative auctions. Longer term, more comprehensive solutions must be developed to ensure all customers can benefit from a growing clean energy economy.

Beyond traditional low-income programs, we must also consider features within standard energy efficiency programs that support participation by low-to moderate-income (LMI) customers. At NJNG, we screen participants in our On-Bill Repayment Programs by relying upon utility payment history and lack of bankruptcy, rather than traditional credit screening that can limit eligibility. Modified incentive levels may be appropriate to make repayment amounts more affordable.

As the State expands its commitment to program evaluation, we recommend assessing the income levels of participating customers to determine whether other incentives or features are needed to ensure these LMI customers are fairly represented.

Finally, a focused outreach approach may help us reach underrepresented customers. We should explore specific strategies to partner with schools and municipal teams in LMI communities.

Stakeholder engagement is critical to reducing energy demand in New Jersey.

As stated in our recommended path to achieving a clean energy future, policy leaders, homeowners, utilities, regulators, environmentalists, businesses, universities and research centers will all play a critical role in advancing this energy transformation.

SUSTAINABLE AND RESILIENT INFRASTRUCTURE

As a natural gas utility and a lifeline service provider, New Jersey Natural Gas must ensure that our customers have reliable heat when they need it most --- on the coldest days of the year.

New Jersey's natural gas utilities have a regulatory obligation to procure natural gas supply and the associated delivery capacity to provide safe and reliable service.

The fact is that the natural gas utilities in New Jersey are facing increasing challenges during the winter season to meet these obligations both for their current customers and the growing number of new customers who rely on natural gas to heat their homes and support their businesses.

Our primary challenge is the inability to acquire additional capacity from the existing interstate pipeline infrastructure serving our State.

Without additional capacity, we simply cannot access adequate supply to meet our growing customer needs and provide a safety reserve as a prudent planning practice during cold weather.

There are also risks associated with New Jersey's lack of pipeline diversity bringing natural gas supply into this State.

Our natural gas utility currently depends on one pipeline for more than 80 percent of our supply capacity. The disruption of supply on this one pipeline in the winter heating season would jeopardize the health and safety of potentially hundreds of thousands of New Jersey residents.

We have an obligation to ensure reliable heat in the winter. It is with urgency that we are submitting comments to raise awareness about these time-sensitive, statewide issues for New Jersey's natural gas utilities.

Our comments are aimed at conveying the extraordinary importance of addressing this projected shortage, the reliability risks associated with a lack of pipeline diversity, and the need to propose solutions in New Jersey's next Energy Master Plan.

Natural gas is a key element in helping the State transition to a clean energy economy by 2050.

As New Jersey looks to a clean energy future, natural gas will also continue to play an essential role in the power sector, balancing the intermittent output of renewables to maintain grid reliability as we add more solar, wind and new technologies to the mix.

The low cost of natural gas helps keep customer rates affordable, while accelerating investments in renewables such as solar and wind energy. Natural gas also provides measurable air quality benefits by displacing coal and other fossil fuels, such as oil, that have higher emissions.

While we fully support and are actively participating in efforts to achieve a clean energy future in New Jersey, reliable service must be provided to our customers along the way. Lives depend on it. The vitality of the State's economy depends on it.

According to the U.S. Energy Information Administration (EIA), about three-fourths of the households in New Jersey now use natural gas as their primary home heating fuel.

The benefits of natural gas are clear.

- It is affordable – up to four times less than the cost of electric heat.
- It is cleaner – natural gas produces approximately half the carbon dioxide than from a typical coal plant.
- And, it is reliable – a benefit that is increasingly at risk in New Jersey today.

There has been growing demand for natural gas for decades, but the resources necessary to bring additional supply into New Jersey to meet this rising demand have not been met.

While mandated and aggressive energy efficiency measures will help offset a portion of the anticipated demand, additional capacity will be essential to address the remaining natural gas supply and reliability gaps, particularly as we transition to more renewables in a clean energy economy.

Importantly, we need to make the distinction that these projected natural gas shortages are ***not*** inclusive of New Jersey's power sector, which will only exacerbate the challenges we face during the transition to renewable energy. According to the EIA, between the years 2011 and 2016, natural gas consumption in New Jersey for electricity generation alone increased by two-thirds with no additional capacity to meet this demand. And, for the first time in 2016, natural gas generation supplied more than half of the State's net generation.

The existing supply and resiliency concerns specifically for home heating stem from the fact that the interstate pipeline companies serving New Jersey are fully subscribed, which means natural gas utilities cannot purchase additional firm capacity to meet demand.

This is a regional problem, affecting other states such as New York.

Without additional supply infrastructure, NJNG and other New Jersey natural gas utilities estimate a shortage of natural gas to meet our coldest-day demand needs. Without greater diversification of our supply infrastructure, the risks of a major disruptive outage affecting service to our customers continues to loom.

New Jersey's natural gas utilities are tapping into safety reserves to meet growing demand, which is not sustainable or consistent with the prudent planning process that natural gas utilities undertake to ensure reliable service to customers.

Based on current forecasts, by 2021, our company may not have access to a sufficient supply of natural gas to serve its customers. Based on publicly filed, design-day forecasts by New Jersey's natural gas utilities, this lack of access to adequate supply is a state-wide challenge that could affect the ability to meet growing demands of customers across New Jersey.

Statewide, New Jersey natural gas utilities are already challenged with insufficient design-day supplies and safety reserves, which is unprecedented for the industry in this State for several decades.

We must urgently work together and find a supply solution, including enhanced reliable infrastructure, to increase capacity and resiliency.

Any suggestion that the State does not have a natural gas capacity shortage is simply incorrect.

While it is the position of some advocates to prohibit all future fossil-fuel infrastructure investments, doing so would compromise safety and reliability, put our citizens at risk, and undermine efforts to obtain the public support needed to meet our clean energy goals.

In addition to our concern about meeting growing demand needs during the coldest days of the year, there are increasing and significant reliability risks due to a lack of pipeline diversity for New Jersey's natural gas customers.

An analysis of historical outages over the past five years on the interstate pipeline systems serving New Jersey shows a need for utilities to plan for a higher design day reserve margin.

Because these pipelines systems are fully utilized to meet increased demand, operational flow orders or disruptions in service are increasing, nearly doubling between 2017 and 2018. These disruptions decrease operational flexibility previously available to natural gas utilities and power plants. Access to greater safety reserves and supply diversity would help offset these risks and provide protection for customers.

In April 2016, there was a pipeline incident that caused a natural gas supply disruption to New Jersey and other states in the Northeast. The emergency repairs and inspections that were necessary to restore the interstate pipeline service took several months.

Statewide, millions of people would have been impacted if this outage had occurred in the winter.

We should not underestimate this timeframe.

New Jersey Natural Gas experienced an average of 64 percent reductions in pipeline capacity deliveries to our system during the initial 11 days of this pipeline disruption. If this had occurred on a cold day in the winter, over 250,000 households could have lost their gas supply. If we had to curtail service to our customers, it can take months to restore natural gas service to our customers after the supply is restored, due to the processes we must follow to safely restore service after an outage.

The solution to addressing this preparedness risk is to identify and incorporate diverse natural gas supplies and interconnections to multiple interstate sources as a priority to build natural gas system resilience.

This supply diversity would help New Jersey mitigate and prepare for the potential loss of supply from an interstate pipeline disruption, while protecting customers from an outage that could impact health, life and safety for New Jersey residents during a cold weather event.

Since Superstorm Sandy, New Jersey has taken extraordinary efforts to strengthen our resiliency against a catastrophic natural disaster such as flooding.

We have raised and elevated homes and businesses. Under the leadership of the BPU, we have aggressively hardened in-state pipeline delivery systems against future storm events.

We need to do the same for our interstate pipeline network. We need to plan for diverse supply access, so if supply is disrupted on one pipeline system, there are alternatives to ensure we can heat our customers' homes, hospitals, schools and businesses.

If prudent planning is not done by the natural gas utilities and the State, the public will, and should, question what went wrong. We will all be held accountable.

New Jersey Natural Gas is working closely with the BPU on these preparedness issues and we recommend, again with urgency, that they be reflected in the updated EMP.

Demand and supply side solutions must be identified in the EMP to meet growing customer needs. The BPU and New Jersey's natural gas utilities also should identify a statewide standard for natural gas Design Day Planning that incorporates a supply reserve for operational risks of the pipelines and increased pipeline disruptions and supply constraints.

Ensuring safe and reliable service during our efforts to achieve a clean energy future is essential to our success.

As the State defines the future role of natural gas and its resilient and sustainable infrastructure in its clean energy goals, the ability to access adequate supply to heat people's homes, fuel the economy and meet our obligation to our municipalities, hospitals and other essential service providers during the coldest days of the year must be a high priority.

Our customers must be the **highest** priority.

In closing, as we transform our energy sector, we must not compromise the needs of our customers who depend on us to provide affordable, reliable service.

The BPU's stakeholder process to inform New Jersey's Energy Master Plan has provided us the opportunity to help bring these important customer issues to the forefront of this planning effort.

NJR appreciates the opportunity to present our comments and share our view on New Jersey's energy future.