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Re: Comments of NRG Energy, Inc. on the Draft New York State Energy Plan

NRG Energy, Inc. (“NRG”) is a wholesale power generation company that owns, develops, constructs and operates power generation facilities in the major competitive power markets across the United States. NRG has also recently acquired Reliant’s retail business in Texas, adding more than 1.6 million customers to the NRG portfolio. As of June 30, 2009, NRG had a total global generation portfolio of 187 active operating fossil fuel and nuclear generation units, at 47 power generation sites, with an aggregate generation capacity of approximately 24,085 MW, and approximately 350 MW under construction which includes partners’ interests of 100 MW. In addition to its fossil fuel plant ownership, NRG has ownership interests in two wind farms representing an aggregate generation capacity of 270 MW, which includes partner interests of 75 MW. NRG has recently partnered with eSolar and announced plans to develop up to 500 MW of solar thermal power in California and across the southwestern United States and continues to look at opportunities to develop various solar technologies in other parts of the country. Within the U.S., NRG has one of the largest and most diversified power generation portfolios in terms of geography, fuel-type and dispatch levels.

In New York, NRG is the largest independent power producer with over 4000 MW located at five generation stations. Our generation investment in New York includes both peaking and baseload resources from New York City (“NYC”) to Buffalo. NRG has made and continues to make significant investments in these generators since acquiring them in 1999. We continue to seek ways to improve operating efficiency, environmental attributes and reliability both through the consideration of repowering and the implementation of upgrades to our existing units where they make sense. As such, NRG is currently participating in the State Environmental Quality Review Act (“SEQRA”) process in order to obtain permits for a repowering of its Astoria facility in Queens. NRG is also actively participating with state agencies to enable its Dunkirk facility, located in Chautauqua County, to co-fire biomass.

NRG applauds the development of State Energy Plan (the “Plan”) as a means to align energy policy guidelines with long-term goals. The 2009 New York State Energy Plan, completed by the State Energy Planning board, has many merits including the use of market-based programs to achieve policy aims. The Plan identifies five main policy objectives:

1. Assure that New York has reliable energy and transportation systems;
2. Support energy and transportation systems that enable the State to significantly reduce greenhouse gas (“GHG”) emissions, both to do the State’s part in responding to the dangers posed by climate change and to position the State to compete in a national and global carbon-constrained economy;
3. Address affordability concerns of residents and businesses caused by rising energy bills, and improve the State’s economic competitiveness;

4. Reduce health and environmental risks associated with the production and use of energy across all sectors; and
5. Improve the State's energy independence and fuel diversity by developing in-state energy supply resources.

Five strategies are outlined in the plan that simultaneously achieves the above policy objectives. The strategies are:

1. Produce, deliver, and use energy more efficiently;
2. Support development of in-state energy supplies;
3. Invest in energy and transportation infrastructure;
4. Stimulate innovation in a Clean Energy Economy; and
5. Engage others in achieving the State's policy objectives.

The above strategies can be further refined to ensure that the State's specified energy objectives are achieved. NRG recommends that replacing older, existing generation with new, clean generation (referred to within this document as "repowering") is the key to successfully obtaining the State's goals. First, the case behind the need for new generation from repowered sites, primarily in New York City, will be discussed as it relates to the energy plan. Next, policy recommendations will be highlighted that would promote repowering and environmental retrofits to existing assets to meet the State's needs. Lastly, considerations surrounding the interdependence of generation and energy transportation and transmission infrastructure will be discussed.

I. The Case for Repowered Generation in New York State

Four main reasons why repowering enables the State reach its energy objectives are (1) increased efficiency, (2) environmental benefits, (3) the ability to firm-up and import intermittent renewable generation, and (4) the maintenance of local reliability.

1. **Energy Efficiency** - Repowering embodies the principles of energy efficiency by using far less fuel to produce the same amount of energy. Less fuel per MW produced equates to lower incremental energy costs and emissions. Encouraging further power plant efficiency improvements can play a significant role in reducing wholesale electric energy costs in New York. PlaNYC noted in their report issued April 22, 2007 that repowering can increase efficiency up to 40% and significantly reduce greenhouse gas emissions¹.
2. **Environment and Environmental Justice** – Power produced by new and efficient repowered facilities will produce dramatically less emissions than the units they replace. The emission reductions that can be achieved with repowering would directly support the State's environmental objectives that are being sought under proposed regulations such as the High Electric Demand Day ("HEDD") and Nitrogen Oxides ("NOx") Reasonably Achievable Control Technology ("RACT"). When located near Environmental Justice areas, a repowering will have a positive impact on local emissions while helping the State meet its non-attainment obligations under the Ozone Transport Commission's directive. We note that the Environmental Justice issue brief of the draft Plan highlights the benefits that repowering of older electric generating facilities could provide towards reducing health risks and environmental impacts in environmental justice communities. We strongly support the issue brief's recommendation to create incentives for funding programs that would bring about repowering of such facilities. The issue brief correctly recognizes that "repowering or retrofitting old plants can increase electric generation, improve energy efficiency, reuse land already dedicated to energy production, maintain and create jobs, increase the tax base, and reduce energy

¹ PlaNYC Full Report – Mayor's Office of Long-Term Planning and Sustainability – Page 110

costs²² – all of these are important aspects that support the public policy objectives of the State and NYC in particular.

3. **Supports reliability needs associated with increased reliance on intermittent renewable resources** – A 2005 New York State Energy Research and Development Authority (“NYSERDA”) wind study indicated that greater penetration of wind resources may increase the need for resources with more flexible operating characteristics to complement the variability of such intermittent resources.³ The New York Independent System Operator (“NYISO”) is also currently conducting an updated wind study that is looking at potential system needs resulting from the changing resource mix and has also identified a need for greater system flexibility⁴. The NYISO’s preliminary analysis of the wind simulations indicate that wind generation will result in increased system variability and will amplify the morning ramp up period and evening ramp down period due to the typical inverse relationship of wind output to the daily load cycle. Modern combined cycle units can be designed to complement this variability by incorporating quick-start capabilities and operating flexibility that will allow them to operate around the daily intermittent generation cycles.

4. **NYC Load Pockets and Local Reliability Needs** – As a practical matter, NYC will always require a significant amount of local generation to maintain reliability. The current NYC locational capacity requirements specify that 80% of its total capacity must be from local resources. On any given day, sufficient generation must be online and operating with additional headroom remaining to provide spinning reserves in addition to 10-minute quick-start generation standing by to cover contingencies. Further, a number of out-of-merit resources must be operated simply to meet load pocket needs within the NYC area. These load pocket needs cannot be easily addressed with transmission upgrades due to physical constraints and the high cost of upgrading NYC’s underground transmission network. NYC reliance on local generation is a reality that will continue. As the city’s PlaNYC report highlights, the average age of the NYC fleet is approximately 30 years. Facilitating the construction of 2,000 to 3,000 MW of supply capacity by repowering old plants, constructing new ones, and building dedicated transmission lines is a goal that was identified in the city’s PlaNYC report.⁵ A program to replace much of this generation will support this objective and realize significant economic and environmental benefits and is consistent with the broader Plan objectives.

NRG is currently developing a repowering project in NYC that will retire approximately 600 MW of older generation and add 1040 MW of new, clean and reliable generation to an existing power plant site (“Astoria Repowering Project”) in two phases. The Astoria Repowering Project would retire and replace thirty-one 1970s-era simple cycle combustion turbines comprising approximately 600 MW as part of the repowering initiative, with a full replacement and additional net increase of 440 MW of new capacity at the Astoria site. The retired generators have low efficiency and comparatively poor air emissions profiles. As a result of the repowering, NOx and SO2 emissions from the facility will decrease by over 80 percent at the site on a HEDD, and greenhouse gas

² 2009 State Energy Plan – State Energy Planning Board – Page 57.

³ 2005 NYSERDA study - The effects of integrating wind power on transmission system planning, reliability, and operations - http://www.nyiso.com/public/webdocs/services/planning/special_studies/wind_integration_report.pdf

⁴ NYISO Wind Integration Studies Preliminary Results - https://www.nyiso.com/public/webdocs/committees/bic/meeting_materials/2009-08-12/NYISO_Wind_Integration_Study_Presentation.pdf

⁵ PlaNYC – Energy Initiatives - <http://www.nyc.gov/html/planyc2030/html/plan/energy.shtml>

emissions will decrease by approximately 50 percent on a megawatt-for-megawatt basis.

The Astoria Repowering Project supports the environmental objectives of the State and NYC, and will by itself achieve 75% to 80% of New York State's targeted reduction in air emissions on HEDD days. In addition, the Astoria Repowering Project will provide over one-third of the peak-day replacement capacity needed to address reliability violations identified by the NYISO in its 2009 Reliability Needs Assessment that would result if the State were to implement new ozone emissions limitations.

The Astoria Repowering Project is configured in a 1-on-1 combined cycle design that incorporates the flexibility to be started on short notice in response to varying power system demands and in response to transmission and generation contingencies. The older steam boiler units that are still prevalent in NYC are not so flexible and require long-lead times to start and extended minimum run-times once they are online. Consequently, the repowered Astoria units are precisely the type of flexible resource that is needed to allow NYC to make the most efficient use of its limited transmission capacity to deliver renewable supplies from remote locations while also supporting increased deployment of intermittent resources by being able to operate when those resources are not available. Essentially, it provides similar flexibility and contingency response needed to maintain system reliability from the historic peaking units it would replace, while achieving an operating efficiency and low emissions close to that of a typical new 2-on-1 combined cycle unit.

II. Assuring Clean Power is built in New York State from Repowered Generation and Environmental Retrofits to Existing Plants

There are four strategies which we believe should be addressed in the Plan to strengthen the regulatory framework to support the construction of repowered generation and additional retrofits to existing plants.

1. **Long-Term Contracting** – Long-term contracting attracts financing of repowering projects, which is even more important in the current financial climate. The value of competitive markets is not diminished by a state policy that encourages a reasonable level of long term contracting by loads as the market provides a transparent and competitive price signal upon which efficient long-term contracting decisions can be based. Long-term contracts can take various forms such as hybrids that place a portion of a merchant project's resource requirements under contract while requiring the developer to take construction risk and some level of market exposure. The State should continue to investigate ways to encourage utility long-term contracting in ways that can accommodate load shifting under the State's important retail access programs.
2. **Low Emission Efficient Production Portfolio Standard ("LEEPPS")** – Because of the poor financial market, the competitive market signals on their own are not sufficient to bring about repowering of older generation in NYC that would otherwise make a significant contribution to furthering the State's economic, environmental and reliability objectives. Like the current Renewable Portfolio Standard ("RPS") that is designed to attract resources with certain desired attributes, similar incentive programs should be considered for repowering of older NYC resources that would support the public policy objectives of energy efficiency, emission reductions, energy price reductions and Environmental Justice concerns. A LEEPPS procurement program could be designed using similar competitive bidding principles as the RPS program, with selection criteria and payments based on a project's \$/ton bid for a quantity of NO_x, SO_x or PM reductions as well as other possible criteria based on the amount of higher emitting capacity retired by a repowering project or for the addition of other capabilities such as quick-start, load following, and cycling ability to support increased reliance on

intermittent renewable resources. While this may not replace the necessity for long-term contracts, it can relieve the magnitude of the financial burden of the long-term contracts.

- 3. Renewable Portfolio Standard** – The RPS program adopted by the State in 2004 set a goal of 25 percent of the State’s generation coming from renewable sources by 2013. The Plan recommends that this goal be revised to 30 percent renewable by 2015. With some modifications to the RPS program, the State will have a better opportunity to meet this revised target. Currently the State, through NYSERDA, offers RFPs for renewables through the Main Tier program. There have been three such offerings to date. We encourage the State to continue to support future solicitations and believe that providing as much advanced information on the timing of the solicitations and the level of funding will encourage greater participation and result in the submission of well planned proposals from new and more varied technologies. NRG agrees with the Plan’s recommendation to enhance certainty in the renewable energy market by scheduling regular solicitations for Main Tier procurements⁶. To achieve this, authorization of state funds for the Main Tier needs to be clearly sustained with amounts communicated months or years in advance of future solicitations. The Main Tier program needs to consider bids more flexibly with contract durations of varying lengths rather than the standard ten years as well as differing price structures other than just a single fixed rate per MWh.

NYSERDA’s requirement that prohibits bidders in the Main Tier program from seeking CO2 exemption from the Regional Green House Gas Initiative based on RPS attributes⁷ should be eliminated. This advantages non-biomass renewable options in the bid evaluation process and potentially foregoes an important option that could be instrumental in helping the State meet its renewable goals. Significant quantities of renewable energy could be realized from existing generators that might otherwise be incented to move towards the use of a renewable fuel supply. A major benefit provided to the State from biomass fueled resources is that their output is controllable and can be scheduled (as compared to intermittent output from many renewable resources). Thus, biomass resources can contribute to meeting the State’s renewable objectives while limiting the potential system reliability issues that the NYISO has identified with the addition of large quantities of intermittent resources. Additionally, existing electric generators that could be converted to biomass are already tied into the bulk transmission grid, typically on stronger portions of the system where they are well situated to deliver their output to the system. As such they would not create new transmission constraint issues or the need for upgrades as has been identified with the interconnection of wind resources that are generally locating in remote locations where the grid is the weakest.

The New York City Economic Development Corporation (“NYCEDC”) released a Request for Expressions of Interest (“RFEI”) over the last year that called for innovative ideas to help NYC develop sources of renewable energy. The ideas included offshore and building sited wind, tidal power, solar power, biomass, and geothermal energy projects⁸. The Main Tier program will need to sponsor Renewable Energy Credit (“REC”) RFPs that specifically target diverse forms of renewables to achieve an outcome other than contract awards which have typically gone to land based wind and hydro as the most cost effective renewables. By just maximizing energy procured via the RFP’s fixed budget, the Main Tier Program fails to foster the growth of what may initially be more expensive and cutting edge forms of renewable technologies, but with

⁶ 2009 State Energy Plan – State Energy Planning Board – Page 47.

⁷ Renewable Portfolio Standard Program Purchase of Renewable Energy Attributes Request for Proposals (RFP) No. 1681 – NYSERDA – Page 16

⁸ PlanNYC Progress Report 2009 – Mayor’s Office of Long-Term Planning and Sustainability – Page 31

time and experience could prove to be economic and valuable alternatives that add to the diversity of renewable supplies.

The existing State system could ultimately be replaced by a Federal renewable energy portfolio standard. As the Federal program becomes a reality, the State should redesign the current procurement process with a full market-based approach to obtaining RECs, aligning its program with other states who obligate load serving entities to obtain RECs. This will allow for a portfolio approach to contracting for RECs with both long-term contracts and trading on the spot or monthly markets. A standard product will provide access to larger markets that can spur innovation and increase competition that ultimately brings down the costs to consumers.

4. **Environmental Regulations** – The approval of any new regulation needs to consider coincident impacts of multiple existing and proposed regulations on reliability and the cost of energy in the State. Implementation of new rules should allow for grandfathering for a period of at least 5 years for existing facilities that have already incurred a significant environmental capital expenditure to meet other recent new regulations. Additionally, environmental retrofits to an existing plant generally involve long-lead times for budgeting, design, planning and implementation of such upgrades and thus new regulations must provide sufficient advanced notice for compliance with a final rule in order to allow for an orderly implementation of compliance measures.

By establishing energy policy consistent with the State's goals and by assessing proposed regulation in light of its benefit to policy, reliability and affordability of energy in New York State should be positively impacted.

III. The interdependence of generation and energy transportation and transmission infrastructure

Both gas transportation and transmission planning must include consideration of generation interdependencies and new generation additions as alternatives to transmission expansions.

1. **Natural Gas Infrastructure** - Increasing demands on the constrained natural gas infrastructure is an issue identified in the energy plan. Repowering can help defer the need and cost associated with such upgrades because less gas is needed for an equivalent amount of power. Many of the older units in NYC were not originally designed to run on natural gas. Most have been converted over the years to burn natural gas as their primary fuel; however they will never be able to utilize the available quantity of fuel as efficiently as a new combined cycle unit that was purposefully built to run on gas. Besides stressing the gas delivery infrastructure at times, it also can drive increased demand with a resulting price consequence for natural gas. In this current time of very low electric load growth, policies that promote efficient use of the gas supplies can ease the demand on the delivery infrastructure, delay the need for costly upgrades, and ease the demand side of the pricing equation.

NYC must also consider expanding the amount of natural gas delivery capability into the city. This will allow for more redundancy and diversity of supply options which will lower consumer costs. Most of the city relies on the Transcontinental gas pipeline to deliver natural gas to the city-gate. By encouraging other interstate pipelines to connect into the city, it will allow for a more reliable and competitive gas delivery system.

2. **Transmission Planning** – The transmission planning process needs to ensure that non-transmission alternatives are given full consideration and have equal opportunities to compete so that the most cost effective and beneficial solutions are selected. In cases

where the State may seek to direct the construction of a solution to either reliability or economic needs, it should ensure that the process includes market tests against generation alternatives to ensure the project with the most beneficial economic impact is selected. If a situation arose that involved directing a regulated utility to build a transmission solution under rate base to address an identified economic need, the State should conduct a competitive RFP process for consideration of non-transmission solutions as alternatives to the utility built transmission option.

IV. Conclusion

The Plan effectively addresses a number of important issues to meet the State's objectives. With that in mind, NRG believes that the Plan can benefit by further focus on facilitating the repowering existing sites in New York City. Repowered generation has the benefit of increased efficiency while simultaneously decreasing the amount of emissions. Additionally, replacement with new quick start capability can compliment increased reliance on generation from renewable resources. As NYC will continued to require significant generation within the city, repowering of existing sites is the least cost approach due to the proximity of electric and natural gas interconnections. Long-Term Contracting and the adoption of a LEEPPS will provide the right incentives to build the type of resources for the power infrastructure that the State will require in the years ahead.

NRG is pleased to offer these comments on the draft Plan and would welcome the opportunity to discuss any of the ideas and suggestions raised here with the State Energy Planning Board and its representatives. We are greatly encouraged by the State's effort to develop the Plan and we are confident that it will serve as a roadmap that will guide the state agency and public policy maker decision making process.

Regards,



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NRG Energy, Inc.