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New Jersey's Energy Master Plan

PJM Written Comments

PJM appreciates the opportunity to provide comments to New Jersey's draft Energy Master Plan (EMP). PJM commends the EMP team for the thoroughness of plan and the strategies it has identified to implement it. PJM is encouraged that the plan is comprehensive; considering not only alternative generation methods, renewable generation, and demand response but also conventional generation methods to achieve the state's energy needs for the future.

PJM believes that it, the EMP, the Board of Public Utilities, and all other interested parties need to be linked and working together to ensure the successful implementation of the EMP. All stakeholders are required to be truthful as the EMP is finalized so that the plan is reasonable and focused at addressing the real needs of New Jersey. If a goal or objective in the draft EMP is admirable but not realistic, stakeholders need to raise this as a concern and the EMP team and BPU need to listen and address the concerns in the final version. Failure to do either of these will lead to a failure in EMP implementation. Additionally, the EMP needs to consider not only the needs of New Jersey but also how its needs link with other states. Similar energy planning efforts are being conducted within PJM's footprint. Considering the regional nature of the electric grid, the goals and plans of other states have to be taken into consideration when finalizing the EMP. Conflicting goals or plans would not only be detrimental to addressing New Jersey's energy needs but also, potentially, to the grid itself.

Once all interests and concerns have been heard, vetted and a final EMP written, New Jersey needs to ensure that there are milestones set-up and that the implementation of the plan is meeting these milestones. The EMP can not sit on a shelf and be looked at once a year. It needs to be a living document that considers advances in technology and markets to achieve the goals it has set. PJM's role as the Regional Transmission Operator for New Jersey and 12 other states obligates us to ensure that the region we serve has a reliable supply of electricity. To that end, if the EMP is not being implemented successfully by meeting its milestones, PJM will be required

to make choices that could go against the goals of the EMP in order to ensure reliability. PJM neither desires nor anticipates this happening, but will take the actions required if needed. PJM looks forward to being an enabling partner in the implementation of the EMP.

PJM believes that the EMP has set the rights goals to address the needs of New Jersey and that those goals are very aggressive. Reducing energy consumption through conservation and energy efficiency of at least 20% by 2020, reducing peak demand by 5700 MW by 2020, and meeting 22.5% of the state's electricity needs through renewable sources are all admirable but will be difficult to achieve.

- Goal 1 – Reduce energy consumption 20% by 2020

Goal one of the EMP: Maximize the State's energy conservation and energy efficiency to achieve reductions in energy consumption of at least 20% by 2020. PJM believes in conservation and energy efficiency and supports this goal. In fact, the PJM Demand Response Working group is working on the best way(s) to incorporate energy efficiency into PJM wholesale markets. While PJM is working on ways to enable energy efficiency to participate in its markets, there is not much we can do to assist with the first three action items of goal one (develop state programs, rewrite the New Jersey building code or set minimum appliance standards). However, PJM believes it can assist with the education process. One of the best ways to address the energy needs in New Jersey is to start by using less electricity. Prompting consumers of electricity to conserve energy and to utilize energy efficient process and technology will be a key in managing energy growth in New Jersey. To jump start the conservation effort, consumers, both large and small, need to be educated on the whole process of how electricity is generated, transported, consumed and ultimately its total cost of production. PJM believes, through experience, that many consumers are unaware or have even considered the above processes. The implementation of goal one discusses the formation of an Energy Education Joint Venture Partnership (EEJVP) comprised of representatives from many areas: utilities, business groups, environmentalists,

academia, county & municipal governments, elementary and secondary educators, consumer advocacy groups, and state government. PJM supports this effort and will look for ways to participate with or in the EEJVP. PJM has resources, data, and skills its can bring to the effort to ensure a complete and thorough picture is presented. PJM believes educating consumers on the entire electricity production process and its associated costs will show why electricity prices are rising, why demand continues to rise, and reveal the true need for conservation and energy efficiency.

- Goal 2 – Reduce peak demand by 5700 MW by 2020

Throughout the entire PJM footprint, demand for electricity continues to grow. PJM has forecasted that peak demand for electricity in New Jersey will continue to increase at approximately 1.5% per year. This growth in peak demand continues to strain the transmission system, cause congestion, and threaten reliability, not only for New Jersey but for the entire PJM footprint.

PJM's number one priority, and the priority that drives all of the decisions it makes, is reliability. In order to ensure that the transmission system remains reliable, PJM uses an open process called the Regional Transmission Expansion Plan (RTEP) to study the transmission system that identifies what changes, additions to the grid are needed to ensure reliability and the successful operation of the wholesale markets. These improvements also accommodate the interconnection of new generating projects onto the grid. The decision to build a new electric generating plant or to upgrade or build a new transmission line is significant since these construction projects are costly, time-consuming and subject to numerous regulatory approvals. At the same time, decisions to add generation or transmission resources cannot be made in a vacuum because these projects affect the overall operation of the grid and its ability to deliver power to customers reliably. The RTEP process systematically and objectively evaluates proposed transmission upgrades and generation interconnection projects to make sure that compliance with reliability criteria is maintained.

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Additionally, demand response resources play an important role in PJM's transmission planning process. In many cases, demand response resources (as well as generation resources) can serve as alternative solutions to addressing congestion and reliability needs. As a result, the development of demand response is a critical factor to analyze in determining the needed level of transmission upgrades. A certain level of demand response is included in the PJM load forecast, which is updated annually and initiates the annual expansion planning process. Load shedding programs (Interruptible Load Resources or ILR) are explicitly included in the planning analysis and may impact the plans for new transmission depending on the amount and location of ILR. PJM believes it is vital to fully consider demand resources both in reliability and economic planning.

PJM's Reliability Pricing Model is a critical means for identifying, on a forward basis, demand response resources which can be considered "utility grade resources" available to address projected reliability violations. Demand response resources are able to bid into the RPM market and enjoy a fixed revenue stream for their commitment. Because the demand response resources have made a definite commitment to be available for a period of time, similar to a generation resource's commitment to be available to run, PJM's reliability planning specifically "counts" and relies upon such resources, in the same manner as planned generation or transmission, in determining compliance with NERC and other planning reliability criteria.

PJM currently has a significant amount of demand response participating within its footprint. As of year-end 2007, 4,898 sites totaling 2,944 MW were registered to participate in economic load response and 705 sites totaling 2,144 MW were registered to participate in emergency load response. Demand response demonstrated its value during a heat wave in early August 2006. Reductions in electricity use produced price reductions estimated to be equivalent to $650 million in payments for energy for the week of the heat wave. On the day, PJM reached a new all-time peak, and demand reductions lowered the cost of electricity by about $230 million.

To that end, PJM supports EMP Goal 2 – Reduce peak demand by 5700MW by 2020. Reducing peak demand eases the burden on the transmission system which makes it more robust and

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reliable. While PJM believes the number of MW reduction the EMP calls for to be highly aggressive, it does believe that a significant reduction can be achieved in this time frame and that demand response will play a significant role in managing peak demand growth

PJM also supports action item 1 under Goal 2 of the EMP - Expand real-time pricing for commercial and industrial customers to customers with a peak demand of at most 600 kW or greater by 2010 and at most 500 kW or greater by 2012. PJM is working to broaden the opportunities for demand response to play a significant role in its wholesale electricity markets. PJM believes its demand-response initiatives are valuable because they can give retail customers the ability to respond to wholesale prices. Even though wholesale electricity prices fluctuate hourly, retail consumers generally pay electricity rates that are based on average electricity costs. This means that they don't see the changes in wholesale prices and don't have the opportunity to react to them. Without clear price signals, consumers have no incentive to reduce their usage when wholesale prices are high. By enabling consumers to respond to wholesale prices enhances efficiency by linking the price of electricity and the value consumers place on it. Giving consumers the ability to "see" wholesale prices and react when prices are high can help minimize the impact of price spikes, reduce the need for expensive peaking generating capacity and help reduce peak demand.

PJM supports action item 2 under Goal 2 – Expand incentives for participation in regional demand response programs. PJM's markets – Reliability Pricing Model (RPM), Interruptible Load Response (ILP), Emergency Load Response, have been successful in attracting significant amounts of MWs of demand response. Expanding incentives at a state level, such as making modification to the BGS to incent energy usage reduction, would only enhance the attractiveness of PJM's markets and programs and attract additional demand response resources.

Additionally, PJM is a technology company. It has been at the forefront of many technological advances in the electric industry. So PJM believes that it will take technological advances in order to achieve significant reductions in peak demand. Consumers need to know the price they are paying for electricity when they are consuming it and not a month later when they receive

their bill. The power of knowing instantly what it costs to consume a product is very powerful. So PJM supports and believes that Smart Grid is needed in order to move the electric industry forward. Allowing real-time price signals to be sent to more consumers will send the right signals to "incent" them to make better choices which will ultimately lead to reduced consumption and lower prices. Whether the solution lies in advanced metering, in a smarter more automated transmission & distribution system or some combination of both, PJM supports the EMP goal to move to New Jersey toward smart grid infrastructure.

- Goal 3 – 22.5% of electricity needs from renewable resources

PJM believes that renewable energy will play a vital role in meeting the demands for electricity it is forecasting in the future. As was stated previously, demand for power continues to grow and with it the demand for more generation and transmission to satisfy it. However there is also a much greater realization that traditional solutions alone can not continue to be utilized. Interest in demand response, distributed generation, smart metering and renewable energy continues to gain momentum, but challenges remain to make the grid greener. Adding more renewable energy to the grid will be vital in not only meeting growing demand but also to achieve a cleaner environment and energy independence.

PJM takes its leadership role in getting renewable energy on the grid seriously. PJM is independent and neutral, creating an environment where diverse players and investors can be rewarded for their participation. In 2007, 223 renewable generators actively participate in PJM, with almost a third of them conventional hydroelectric generators. Another 31 percent are captured methane generators and the remainder is wind, solar, pumped storage, biomass, fuel cells, municipal solid waste, waste coal, wood by-product and blast furnace gas.

Collectively renewable energy sources are growing in PJM. Through November 2006, more than 13,666,946 mega-watt hours (MWhs) of renewable energy were generated in PJM. Wind generation in particular is seeing more growth with over 36,000 mega-watts (MWs) of wind

generation in the queue to be studied. Currently, there are more than 11,000 MWs of wind generation in service or in various stages of development in the PJM RTO.

PJM's market structure allows all energy-only generators the ability to participate in the Real-Time Energy Market only. This ability has historically been advantageous to wind generators who are affected by the availability of wind and who can not participate in the day-ahead market because of this restriction.

PJM continues working to make the grid friendly to these alternatives energy sources by fairly reviewing renewable generators' requests to interconnect and will remain so. PJM agrees with the EMP goal of supplying its electricity needs from more renewable sources of energy and will work with New Jersey, the BPU, and other stakeholders in helping to achieve this goal

- Goal 4 – Develop low-carbon, efficient power plants to close supply/demand gap

As stated before, New Jersey's demand for electricity continues to grow at 1.5% per year and managing the growth of the electric system is an integral part of PJM's role as an RTO. PJM long-range RTEP process identifies what changes and additions to the grid are needed to ensure reliability and the successful operation of the wholesale markets. To address the growing demand in New Jersey, PJM is working with PSEG to build a new 500 kV transmission line from the Susquehanna substation in Pennsylvania to PSE&G's Roseland substation New Jersey. This line will ease overload conditions on approximately 25 smaller transmission lines in the New Jersey/Pennsylvania area – making the system more reliable, keeping the lights on in New Jersey.

New and or upgraded transmission lines do more than enable traditional sources of generation from reaching loads. Transmission lines are needed to enable renewable sources to reach loads. As discussed previously, the EMP has very aggressive renewable goals and to meet these goals transmission lines will need to be built.

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However, transmission is only one way to meet the growing demand in New Jersey. It is no secret that New Jersey is an importer of electricity. In fact, the state imports approximately 40% of the energy it needs to meet its demand. So PJM is encouraged that the EMP has recognized the need to build new base-load generation and not rely solely on demand response, renewables, and transmission to meet their electricity demand.

PJM supports the EMP direction of looking to build an additional nuclear power plant within the state. PJM believes doing this will help close the supply/demand gap in New Jersey, decrease the state's need to import energy and improve the reliability of the grid, and reduce electricity prices. Subsequently, while improving the energy situation in New Jersey, new nuclear power will assist the state in meeting its highly aggressive reductions in greenhouse gas emissions. We applaud the EMP for acknowledging the need for new base-load generation to be built in the state. We encourage the EMP to be even more aggressive on the front and to look potentially at clean-coal fired generation for the state

- Continued Advocacy and Analysis

Finally, PJM understands the concerns the EMP and the state of New Jersey have with Reliability Pricing Model (RPM). RPM was developed and implemented in order to incent generation to be maintained and or built within its footprint. PJM believes that RPM has been successful and is committed to making RPM successful going forward. PJM commissioned the Brattle Group to study RPM and to make recommendations for areas of improvement. PJM has received their report and is in the process of reviewing the recommendations and vetting them through the stakeholder process before being implemented. However, the Brattle group concurs with PJM on the success of RPM.

While we have a number of concerns and recommendations for possible improvement of various RPM design parameters, which we present in Sections IV and V of this report, we find that the five base residual auctions conducted to date have been quite successful in achieving the stated reliability and economic objectives of RPM. These auctions have attracted and retained about 14,500 MW of resources that likely would not have been made available to PJM otherwise, including new capacity of various

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types, uprates and other investments in existing capacity, a reduction in net exports, and unprecedented growth in demand response. As a result, target reserve margins have been achieved even as load has grown. Reliability requirements within LDAs also have been achieved through a combination of capacity retentions, new resources, and planned transmission upgrades. RPM has stimulated an unprecedented amount of potential new resources, which include approximately 33,000 MW of effective capacity from new generation projects in PJM's interconnection queue that have not already been committed through past auctions, but are eligible to offer into future RPM auctions.[11] The vast majority of these proposed generation projects did not exist before 2006, the year during which RPM was approved and finalized.[1]

PJM recognizes that the capacity committed in RPM has led to increased costs and that New Jersey stakeholders are concerned about whom the revenues are being paid. New Jersey believes that almost 100% of the money is being paid to existing generation and is hence not spurring utilities to invest in new generation. PJM is aware of this issue and is committed to working with New Jersey, the EMP and all stakeholders on improving RPM and making sure that the state has the capacity its needs to meet its future energy needs.

PJM believes that RPM is only one way to incent new generation to be built. However, if the market does not accomplish the goal of getting generation built, PJM does support alternate methods. PJM believes that long-term contracts, if used correctly, can play a part in new generation being built. PJM also believes that the BPU ordering new generation to build is also a viable option to address capacity needs. The bottom line is that PJM's main function is to make sure that there is enough capacity to meet load throughout its footprint so that the transmission system is reliable and available. PJM will continue to focus on that goal and will continue to work with its stakeholders on the best way or ways to get additional capacity added to the system.

PJM believes that the electric industry is at a very important crossroad. The decisions made today surrounding electric generation & transmission and how those decisions are ultimately implemented will have a very big impact on the future of the industry and the nation. We are

[1] 1. Review of PJM's Reliability Pricing Model (RPM), The Brattle Group, June 2008, p. 13

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grateful that the state of New Jersey has chosen to take bold steps to address those needs and we see the state as being out in front of many of the issues. PJM looks forward to working with New Jersey on making implementation of the plan a success and are grateful for the opportunity to comment on the plan. We thank Governor Corzine, his staff, the BPU, and the EMP team for inviting PJM to participate in the process of developing the plan.