STATE OF NEW JERSEY
BOARD OF PUBLIC UTILITIES

IN THE MATTER OF THE PETITION OF PUBLIC SERVICE ELECTRIC AND GAS COMPANY FOR A DETERMINATION PURSUANT TO THE PROVISIONS OF N.J.S.A. 40:55D-19	)	**BPU DOCKET NO. EM09010035**
(SUSQUEHANNA-ROSELAND)	)	

INITIAL BRIEF OF EXELON CORPORATION IN SUPPORT OF SUSQUEHANNA-ROSELAND TRANSMISSION LINE PROJECT

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PRELIMINARY STATEMENT

The Governor's Energy Master Plan underscores that the reliability of the State's energy supplies has been and will remain a top priority for the State. (Energy Master Plan, Exhibit BKS-46 to Cooper Direct Testimony, at 76). The need for reliable energy supply is self-evident: the dangers associated with an overloaded transmission system are too great, and the costs associated with interruptions in electric service too high, to risk maintaining a power delivery system that does not fully comply with federally mandated reliability standards and cannot assure that our lights will stay on.

This proceeding has been convened because threats to the future reliability of our energy supply, in the form of projected constraints to the transmission grid, have been identified by PJM Interconnection LLC ("PJM"), applying the mandatory standards and procedures adopted by the North American Electric Reliability Corporation ("NERC"), and approved by the Federal Energy Regulatory Commission ("FERC"). PJM has determined, based upon three years of continuing study, that beginning in as early as 2012, critical system overloads will begin to occur that will threaten the reliability of the PJM transmission grid in both Northern New Jersey and Pennsylvania. Exelon has intervened in this proceeding because two of the projected system overloads will occur in PECO's service territory in Pennsylvania.

The Regional Transmission Expansion Plan ("RTEP"), a robust system analysis and planning process conducted by PJM, has identified 23 separate "criteria violations" that will occur beginning in June, 2012 unless the Susquehanna-Roseland line is developed. (Herling Direct at 24, McGlynn Direct at 12-15). Criteria violations refer to persistent transmission line

overloads which, if left unresolved, can cause permanent damage to transmission lines. The existence of criteria violations on a transmission line creates a substantial risk that in overloaded operating conditions, customer load, or generating plants, or both, would be subject to immediate, unannounced curtailment by system operators as a means to temporarily alleviate dangerous, overloaded conditions. (McGlynn Direct at 18). This procedure, commonly referred to as a brownout, is initiated by PJM system operators as an emergency measure to prevent the ultimate catastrophe: uncontrolled, cascading system blackouts. (Khadr Direct at 9-11).

The 2003 Northeast blackout stands as a vivid reminder of the tremendous economic and social toll that can be exacted when the interstate bulk power system does not perform properly in stressed conditions. It has been estimated that the costs associated with the blackout ranged between $4 to $10 billion, in addition to the unquantifiable personal toll it exacted on the persons whom it affected. (Energy Master Plan, Exhibit BKS-46 to Cooper Direct at 27). It was because of the 2003 blackout that the Energy Policy Act of 2005, 42 U.S.C. Section 16511-14 (2009), which mandates the procedures and standards that were utilized by PJM in approving the Susquehanna-Roseland line, was enacted to assure the future reliability of the transmission system and to prevent further blackouts from occurring. (Herling Direct at 19-20).

It should therefore be clear that where, as here, the issue is how best to assure the continuing reliability of the bulk power system, a prudent and responsible course is required because the potential costs associated with a wrong decision are incalculable. *As the Energy Master Plan confirms, for utilities, regulators and the energy consuming public, our paramount concern must be keeping the lights on at all times.* This concern is also consistent with the statutory obligation imposed upon PSE&G as a New Jersey utility to provide safe, adequate and proper service to its customers. See, N.J.S.A. 48:2-23.

Accordingly, any issues, and any uncertainties regarding how best to plan for the near and longer term requirements of the transmission system must be resolved in favor of a cautious, conservative approach to the reliability of our energy supply. As will be discussed at length below, following years of study and analysis of the projected criteria violations, as well as consideration of various alternative solutions to those violations, the Susquehanna-Roseland line has been determined to be the comprehensive solution that is needed to assure the continuing reliability of New Jersey's transmission grid.

In opposition to the Susquehanna-Roseland line, certain Intervenors have challenged the efficacy and projections of the PJM RTEP process and advanced the view that increased reliance on energy efficiency, demand response and renewable energy resources is a preferable alternative to further investment in traditional energy infrastructure like transmission lines. Intervenors argue that the implementation of the energy policies set forth in the Energy Master Plan could serve as a near-term substitute for the development of the Susquehanna-Roseland line. However, the record developed in this proceeding amply demonstrates that Intervenors' arguments are unsupported and uninformed and, if adopted as policy, would expose New Jersey to an inordinate risk of transmission system failure.

As discussed below, the PJM RTEP process is conducted pursuant to PJM's obligation as a federally mandated Regional Transmission Organization to ensure the safety, reliability and security of the interstate bulk power system under its control. In carrying out these duties, PJM is required to act independently and impartially in planning and operating the regional transmission system and to utilize the NERC Reliability Standards that have been developed and approved by the Federal Energy Regulatory Commission ("FERC") to assure the reliability of that system. (Herling Direct at 13-14). The RTEP process is a dynamic one that occurs annually and utilizes

continuously updated market and system data to identify future transmission problems and assure that proper solutions to these problems are developed as necessary and appropriate to assure compliance with the NERC Standards.

The record developed in this proceeding fully refutes Intervenors' challenges to the validity and continuing viability of PJM's RTEP forecasts and methodologies, and establishes that PJM properly executed its obligations as an RTO throughout the RTEP process. In fact, contrary to Intervenors' arguments, *PJM's updated 2009 Retool analysis incorporated relevant recession-related data and load projections that fully took into account the largest load drop that PJM has ever addressed*. The 2009 Retool confirmed not only the need for the Susquehanna-Roseland line, but also the need that it be developed on schedule to resolve the 23 criteria violations that *continue* to be projected to occur in New Jersey and Pennsylvania beginning in June, 2012. (Herling Rebuttal at 3-7).

Further, although Exelon shares Intervenors' support of the Energy Master Plan, Exelon urges that Intervenors' arguments regarding the efficacy of relying on its energy efficiency, distributed generation and conservation initiatives as a near-term substitute for the Susquehanna-Roseland line must be rejected as they would expose the State to inordinate risk of system failure. There should be little question that the implementation of the Energy Master Plan is merely in its incipient stages, and there currently exist substantial uncertainties whether and to what extent its policy goals will be achieved, particularly in the near term when the Susquehanna-Roseland line is needed.

In fact, the Energy Master Plan itself candidly acknowledges that its various goals are aggressive, and that some of the technologies and policies it seeks to implement are new or untested, or both. Thus, the Energy Master Plan readily concedes what Intervenors do not—that

it is unclear and a matter of reasonable doubt at this early juncture whether the State's goals will be achieved as envisioned and whether the efficiencies and load reductions that derive from our efforts will prove to be timely, reliable and sustainable over the long term. (Energy Master Plan, Exhibit BKS-46 to Cooper Direct testimony at 6 and 67).

The record strongly suggests that as of June, 2012, when the criteria violations are projected to begin, the State will not have made sufficient progress toward achieving its 2020 goals to obviate the need for the Susquehanna-Roseland line. The inconvenient truth that refutes Intervenors' reliability arguments is that despite the best efforts of the State and a broad spectrum of industry stakeholders, it has been a challenge to implement the programs of the Energy Master Plan, and it is by no means clear what levels of efficiencies, demand reductions, renewables and distributed generation resources will be achieved by June, 2012 and whether these resources will be sustainable over time.

As discussed below, the NERC Standards require such capacity resources to be fully committed, verified and measurable and, in order to be considered remedies for single facility criteria violations, they must be located near to where the criteria violations occur. The NERC Standards preclude demand response resources from being considered as a remedy for the ten "double tower" criteria violations identified by the RTEP because such violations are modeled under normal, rather than emergency operating conditions, and can occur without warning, thereby precluding the advance notice that is needed to notify demand response customers to interrupt service. (Khadr Direct at 28, Herling Rebuttal at 6).

Thus, the record underscores that Intervenors' energy efficiency/demand response "substitute" for the Susquehanna-Roseland line represents an uncertain and untested approach to transmission system design that is inconsistent with the federally- mandated NERC Standards,

and could expose the citizens of New Jersey and Pennsylvania to the potential for catastrophic system failure.

In support of their arguments, Intervenor's reliability witness, Mr. Cooper (as well as Dr. Sovacool for whom he testified), espoused their vision of an energy system in which energy efficiency, demand response, renewable energy and other technical innovations substitute for conventional infrastructure like transmission lines and fossil-fueled and nuclear generation. However, the Intervenors' arguments lack credibility and must be rejected.

The record reveals that Intervenors' "expert" witnesses are a professor and a policy advocate who have no expertise or background whatsoever in transmission planning or the operation of a bulk power system. They did not participate in, and have no personal knowledge whatsoever regarding New Jersey's efforts to develop and implement the Energy Master Plan. They have no personal knowledge regarding the extent of the implementation of the various Energy Master Plan programs or the benefits that these programs have achieved, or are likely to achieve in the near and long term. (Tr. at 882-888).

Moreover, it should be underscored that Messrs. Cooper and Sovacool performed *no independent analysis* to support their opinions regarding the propriety and reasonableness of relying on energy efficiency, conservation and distributed generation solutions to substitute for the Susquehanna-Roseland line. (Tr. at 930-935). *In a word, Messrs Cooper and Sovacool have given the Board no reason whatsoever to rely on their unsubstantiated opinions and personal preferences regarding how New Jersey should insure the continuing reliability of the electric service that is provided to its citizens*.

The citizens of this State clearly deserve better than what Intervenors have to offer. We should not be asked to forego the transmission line solution that was developed through the three

year RTEP process in favor of a "conservation" alternative that would essentially require us to cross our collective fingers and hope that things will turn out as Intervenors' opinions suggest. The Board clearly has the right and obligation to demand a proper solution that will assure the reliability of the transmission system, rather than a risky one that Intervenors deem "technically feasible" and more desirable. (Tr. at 888-890).

During cross-examination, Intervenors' counsel objected to a question that posed the following hypothetical to Mr. Cooper—"It is June, 2012 and due to opposition to the project, the Susquehanna-Roseland line was not built. Unfortunately, it turns out that PJM's forecasts were correct and the criteria violations begin to occur on the existing transmission line. The situation worsens and PJM operators are forced to curtail service to customers through rolling brownouts. The citizens and business community, whose service has been interrupted, are angry and demanding that the BPU and elected officials take immediate action to get the lights back on and make sure they stay on. Because you were the one who persuaded the decision-makers not to build the line they look to you for guidance. What do you tell them?" (Tr. at 908-909). Although Mr. Cooper did not answer the question, it is a question that merits consideration by the Board. If the line is not built and we later have problems with the transmission system—problems that could literally take years to correct—what then?

Exelon urges that the record fully supports the Board's approval of PSE&G's application as the prudent and responsible course, as it will ensure the reliability of the transmission grid for many years to come. During those years, we will be able to pursue the State's other worthy energy and environmental goals, secure in the knowledge that PJM's transmission infrastructure will be sufficiently robust to fully and reliably backstop these efforts and fully accommodate our energy requirements for years to come.

The record fully supports a finding by the Board that PSE&G has carried its burden pursuant to N.J.S.A. 40:55D-19 to demonstrate that the Susquehanna-Roseland line "is necessary for the service, convenience or welfare of the public" and to maintain reliable electric service to the citizens of this State, and that no alternatives to the line are reasonably available to achieve an equivalent public benefit. See, also, In re Public Service Electric & Gas Co., 35 N.J. 358, 376-377 (1961). Accordingly, Exelon respectfully urges that PSE&G's application be granted.

POINT ONE

THE FEDERALLY-MANDATED STANDARDS AND PROCEDURES UTILIZED BY PJM IN THE RTEP PROCESS ESTABLISH THE NEED FOR THE SUSQUEHANNA-ROSELAND LINE

In the wake of the 2003 blackout, Congress passed the Energy Policy Act of 2005 (EPAct 2005), supra, which, among other things, established a mandatory compliance and enforcement regime for transmission reliability standards by FERC. NERC was designated the Electric Reliability Organization for the United States, and directed to adopt standards, as later approved by FERC, that define the reliability requirements for planning and operating the North American bulk power system (including facilities operated at voltages of 100 kV or higher). The NERC Reliability Standards are required for use in transmission planning by Regional Transmission Organizations ("RTO"), including PJM, and mandatory compliance with the NERC Standards began in June, 2007. Failure to comply with the NERC standards can result in penalties of up to $1 million per day per violation. (Herling Direct at 19-20; McGlynn Direct at 5).

As a federally approved RTO, PJM is responsible to ensure the safety, reliability and security of the bulk transmission system under its control . PJM is designated by NERC as the Planning Authority and Transmission Planner with respect to compliance with the NERC Standards, and is required to utilize the NERC Standards for system planning purposes (Herling Direct at 13). The NERC Standards are used by transmission planners to measure the need for new transmission lines or for upgrades of existing lines. In order to satisfy its obligation to comply with the NERC Standards and ensure reliable service, PJM annually engages in an extensive FERC-approved transmission planning RTEP process. (Herling Direct at 9-10).

a) The RTEP Process

PJM's RTEP is an annual process that involves a comprehensive analysis of all elements of the PJM system to ensure compliance with the NERC Standards. The RTEP integrates numerous system factors including forecasted load growth, demand response, energy and conservation efforts, distributed generation additions, interconnection requests by developers of new generating resources and merchant transmission facilities, assessment of the potential risk of aging infrastructure, generation retirements and other deactivations, and transmission owner-initiated improvements (Herling Direct at 15).

The PJM RTEP process uses both five and fifteen year planning horizons to test the transmission system to determine whether it can provide reliable service under a broad range of possible system operating conditions. The five year baseline analysis is designed to assess compliance with reliability criteria and identify transmission upgrades needed to meet customer growth. The fifteen year analysis is designed to identify developing trends that will require longer lead time solutions and to examine the long term reliability impacts of economic growth and assumptions about generation resources. (Herling Direct at 9-10).

System planning begins with a forecast of the peak power flow that the system will be required to carry over a range of weather conditions in the current year and the five ensuing years. Once the peak load forecast is determined, transmission planners test the system in various operating modes to determine the ability of the system to accommodate the projected load in a variety of conditions. As will be described in greater detail below, the system is first tested under normal operating conditions, in which all components of the system are properly functioning

when the system is at peak load. System planners then "stress" the system by simulating the removal or reduced availability of one or more elements of the system from service to determine if the resulting load would exceed the maximum thermal capabilities or operate outside of the intended voltage levels of the remaining lines and facilities. (McGlynn Direct at 4-9).

When studies applying the NERC Standards demonstrate an inability of the transmission system to meet a required standard under the stated conditions, construction of one or more new transmission lines or one or more enhancements to existing transmission facilities is necessary. (McGlynn Direct at 7). PJM does not have jurisdiction over the generation assets within its footprint and its authority is therefore limited to requiring transmission solutions to criteria violations. PJM does not have authority to direct or otherwise control the siting, capacity or timing of new generation or demand side management efforts in high load areas like New Jersey. (Herling Direct at 34).

If PJM identifies NERC Standards violations through the RTEP process, the NERC Standards *require* PJM to develop and implement solutions that mitigate the violations. Such violations were identified in the 2007 and 2008 RTEP for Northern New Jersey and Pennsylvania, and provide the basis for PJM's directive to PSE&G and Pennsylvania Power and Light Company ("PPL") to identify appropriate transmission upgrades through the ongoing RTEP process to resolve the projected violations. (Herling Direct at 20-21, Exhibit S-101). PJM's Transmission Owners Agreement requires transmission owners to build transmission facilities, approved by the PJM Board, that are needed to meet the NERC Standards. (Herling Direct at 21-22)

After available alternatives are analyzed by the affected utilities and PJM stakeholders through the Transmission Expansion Advisory Committee ("TEAC") process, system planners

consider a range of factors, including the likelihood that the solutions under consideration will resolve the violation, the period of time in which the solutions would be effective, estimated cost and other impacts, and then select the best solution among the alternatives considered. The determination of best solution does not involve establishing an actual transmission line route, but establishes a hypothetical electric path that presents the best resolution of the violations. PJM then develops the actual route with the affected transmission owners through the TEAC process, in which all PJM members and interested stakeholders are permitted to participate. As a result of the TEAC process, the Susquehanna-Roseland line was selected as the best solution to the projected criteria violations with the least environmental and other impacts among the alternative routes considered. (Khadr Direct at 15-16, Herling Direct at 12-13)

After extensive analysis, PJM and its stakeholders, including PSE&G and PPL, narrowed the potential solutions to resolve the reliability problems to three functional alternatives. The first option was the development of the Susquehanna-Roseland 500 kV line, beginning at the PPL substation in Lackawanna, Pennsylvania, crossing the Delaware River into New Jersey, and terminating at the Roseland station in the PSE&G zone. A substantial portion of the new line construction would use existing transmission line corridors. The line would resolve all of the identified criteria violations.

The alternative Bossards to Roseland 500 kV line would have provided less relief on the overloaded facilities over the 15 year planning horizon and required construction-related outages of several 230 kV lines along the proposed route that would have significantly affected reliability and congestion during the construction period. The last alternative, the Stanton to Roseland 230 kV line, would have required construction of a new line and would not have provided a sufficiently robust solution, as many of the criteria violations on the line would only have been

cured for a few years. This alternative was quickly discarded by PJM because it only provided a temporary solution to many of the violations identified in the 2007 RTEP. The PJM Board therefore directed PSE&G and PPL to develop the 145 mile Susquehanna-Roseland line. (McGlynn Direct at 24, Herling Direct at 32, Khadr Rebuttal at 9).

b) The NERC Reliability Standards

The NERC Reliability Standards require PJM to identify the critical system conditions against which the system must be evaluated to ensure it meets all specified performance criteria.

i) NERC Category A, B, and C Criteria

The NERC Reliability Standards are broken down into three categories that may be briefly summarized as follows:

- NERC Category A criteria require that with all facilities in service, equipment thermal ratings and system voltage levels are respected within desired limits and the system is stable. The test for Category A violations assumes that there are no system contingencies and that all facilities are fully operational.
- NERC Category B criteria impose similar requirements, but with one facility removed from service. This is referred to as the "n minus 1" or "N-1" criterion or single contingency test. This requires PJM to complete thousands of power flow studies to determine the impact of the removal from service of each facility on the system. These criteria ensure that the system continues to remain reliable upon the instantaneous outage of a generator or transmission system element.

- NERC Category C criteria require the system to be stable and within applicable thermal ratings and system voltage limits for less probable contingency events, including the loss of two facilities, either simultaneously or sequentially. The system is tested for the loss of a system element, followed by system readjustments, and then the loss of a second system element. This is referred to as the "n minus 1 minus 1" or "n-1-1" criterion. Category C also includes the loss of two circuits on a single tower line or a single faulted system element followed by a circuit breaker failing to operate. PJM does not re-dispatch generation in anticipation of loss of tower or "stuck breaker" events and the test of compliance with these criteria does not allow generation patterns to be adjusted for such events. (McGlynn Direct at 6-7; Tr. at 609-613).

(ii) Capacity Deliverability Tests

In order to maintain transmission system reliability, it is necessary that capacity resources contribute to the deliverability of energy within PJM in two ways. First, energy must be deliverable from the aggregate of available capacity resources to load located in an area experiencing a localized capacity emergency or deficiency. Second, capacity resources within a given electrical area must, in aggregate, be able to be exported to other areas of the PJM region. PJM has established two tests to verify compliance with these deliverability requirements: the load deliverability test and the generator deliverability test. (McGlynn direct at 6-7).

These tests establish a link between the adequacy of generation resources in the PJM region and the ability of the transmission system to deliver these resources to loads. Both tests simulate the transmission system as it is expected to exist during future time periods, including expected load growth and the anticipated benefits of conservation efforts, the addition of new

generating plants and retirement of existing plants, and planned transmission construction projects. The load deliverability and generator deliverability tests are the accepted procedures by which the PJM studies "stress" the PJM transmission system under critical system conditions to test NERC Category B contingencies. (McGlynn Direct at 7-9, Tr. at 603).

The *load deliverability test* examines defined load zones within the PJM region and considers the ability of the transmission system to deliver adequate power to the load zone during peak load conditions. For this test, the area under analysis is tested at 90/10 emergency peak load conditions (intended to represent a severe load forecast representing very hot weather, with the forecast having only a 10 percent probability of being exceeded by even hotter weather) with all other areas in PJM set at statistically normal 50/50 load levels (intended to represent more moderate weather, with the forecast having a 50 percent probability of being exceeded by more severe weather). PJM then tests the system under various contingency conditions to determine the ability of the system to deliver power to meet peak load conditions in the area being studied. (McGlynn Direct at 6; Tr. at 603, 607 and 808).

The *generator deliverability test* evaluates the capability of the transmission system to deliver available generation resources out of one area and into another during a distributed generation capacity emergency. For this test, PJM uses the 50/50 peak load forecast in all areas. PJM then reduces available generation across the system and tests the ability of a particular area to export additional generation to meet the generating capacity deficiency in other areas. In other words, the test determines whether the transmission system is sufficiently robust to export additional generation that is "bottled" in one area to other areas that require it. (McGlynn Direct at 8-9; Tr. at 604).

Generator and transmission interconnection requests are a significant driver of regional transmission expansion needs. RTEP baseline analyses include all existing generation and transmission facilities as well as proposed modifications to the facilities. PJM's rules with regard to proposed generation assets are understandably conservative. PJM includes generators with executed Facilities Study Agreements in the RTEP base case to allow the generator to be modeled as potentially contributing to generator deliverability problems. However, PJM does not consider such a generator to be a solution to identified system problems because of the considerable uncertainty whether the unit would ultimately be placed into service. (McGlynn Direct at 9-10).[1]

PJM's new generation approach ensures that the transmission system would be able to accommodate a generator if it is ultimately placed into service, but does not plan the transmission system around the generator until its actual development is sufficiently certain. This "certainty" threshold is deemed to be met with the execution of an Interconnection Service Agreement ("ISA"), because generators with an executed ISA experience only a 4% drop-out rate. (McGlynn Direct at 9-10). As will be discussed below, similar rules regarding the certainty of available resources apply as well to demand response and energy efficiency resources, whose availability and sustainability are required to be demonstrated by clearance though the PJM Reliability Pricing Model ("RPM") auction before they will be considered solutions to NERC Category A and Category B violations.

[1] Intervenors are critical of PJM's approach to the modeling of new generation, arguing that the capacity associated with new generation should be deemed as much a part of the solution to a system problem as part of the problem. Intervenors argue that "the certainty or uncertainty of any generator with an executed Facility Study Agreement to relieve system problems is equal to the certainty or uncertainty of its ability to contribute to system problems". (Cooper Direct at 30). However, this argument ignores the fact that New Jersey has experienced an *88%* drop-out rate for proposed generation in the queue. Thus, the new generation issue is not the 50/50 proposition suggested by Intervenors, but is decidedly tilted *against* most new generation resources ever coming on line. While caution dictates that proposed new generation be taken into account for future planning purposes, the reality is that most new

c) RTEP Retool Analysis and the Determination of Need for the Susquehanna-Roseland Line

The transmission planning process is a dynamic, ongoing one that involves the continuing review of changes in the transmission system and energy markets. The assumptions used in prior RTEP assessments are updated annually to account for changes in load forecast, as well as the expected availability of the various generation and transmission assets and demand response and energy conservation measures. (McGlynn Direct at 17-18) Retool studies are the vehicle for PJM to verify the continued need for previously identified RTEP upgrades. The retool analyses allow PJM to reassess current system conditions and to make any adjustments to prior analyses as deemed necessary due to changed circumstances that affect power flows. (Tr. at 793-794).

PJM's 2007 RTEP identified transmission reliability criteria violations on critical circuits located in Northern New Jersey and Pennsylvania beginning as early as 2012. These findings were thereafter confirmed in the 2008 RTEP, which identified 23 NERC Category A and B violations and an equal number of Category C violations that extended through the 15 year planning horizon through 2022. Each violation was projected to result from "overloaded" transmission facilities, involving the loading of those facilities in excess of their approved ratings. When a transmission line overloads, it overheats and may sag low enough to bring the line into contact with the ground. In such circumstances, the metal in the conductor may become brittle and rendered useless. Overloaded transmission lines may cause permanent damage to transmission infrastructure and catastrophic power outages. (McGlynn Direct at 12-15, 18).

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generation will not come to fruition and therefore cannot be relied upon as a solution to transmission problems. (McGlynn Direct at 9-10)

PJM's March 2009 Retool Study, which contained updated 2009 data that reflected current operational and energy market conditions, demonstrated that there continue to be 23 projected NERC reliability violations in the area to be served by the Susquehanna-Roseland line, 13 Category B violations and 10 Category C violations. Multiple violations continued to be projected to begin as early as 2012, even after fully taking into account the significant decline in load that has resulted from the extraordinary economic downturn in 2008 and 2009. (McGlynn Rebuttal at 3-7 and Exhibits PFM 1-3; Tr. at 623-625) Two thermal violations are projected to occur in 2012 and two additional thermal violations are projected for 2013. (Tr. at 623).

The thermal reliability violations identified in the 2009 Retool analysis affect major facilities in the PJM region. The violations are significant, they occur on several different facilities, and they present substantial operational and reliability concerns. As such, they require a robust transmission solution, rather than "band-aid" measures that do not provide lasting solutions to the wide range of violations identified by the three year RTEP process (McGlynn Rebuttal at 4-7).

For purposes of the NERC Standards, there is no significance attached to the extent of the reliability criteria violations. The NERC Standards require PJM to evaluate all contingencies, and if violations are identified, PJM is required to develop and implement a solution regardless of the magnitude of the violation. (Tr. at 851). Therefore, although some reported violations may be less severe than others, this is irrelevant for PJM planning purposes, given the "bright line" nature of the tests established by NERC. (Herling Direct at 20).

In sum, PJM has validated the continuing need for the Susquehanna-Roseland line using the federally-approved NERC reliability standards as supported by updated data that fully takes

into account the present and forecasted system operating conditions that will impact the need for the line over PJM's five and fifteen year planning horizons.

POINT TWO

INTERVENORS HAVE NOT REFUTED THE NEED FOR THE SUSQUEHANNA-ROSELAND LINE TO ADDRESS AND RESOLVE THE PLANNING VIOLATIONS IDENTIFIED IN THE PJM RTEP PROCESS AND TO ASSURE THE CONTINUING RELIABILITY OF OUR TRANSMISSION SYSTEM

The record developed in this proceeding amply demonstrates that the Susquehanna-Roseland line is needed to comply with the NERC Standards and to ensure the continuing reliability of the interstate bulk power system. It is submitted respectfully that PSE&G has established a prima facie case that the Susquehanna-Roseland line is needed to resolve the criteria violations identified in the PJM RTEP process and to provide the reliable service to the citizens of this State required by N.J.S.A. 40:55D-19 and 48:2-23.

The Intervenors oppose PSE&G's request for relief on several grounds, including the need to incorporate into the RTEP further, updated and more accurate data and forecasts regarding the continuing need for the Susquehanna-Roseland line in light of, among others, the reductions in peak load associated with the economic downturn and the implementation of the programs of the Energy Master Plan. Intervenors argue that the project is not needed because the recession has weakened economic growth, reducing the peak demands that had been forecasted by PJM, and because there exist "better alternatives" to the line in the form of the conservation and renewables programs adopted by the Energy Master Plan. (Cooper Direct at 3). It is submitted respectfully that Intervenors' arguments are erroneous and uninformed and, if adopted by the Board, could severely compromise the reliability of the power grid. The arguments of Mr. Cooper, the Intervenors' reliability witness, are addressed below.

a) The justification for the Susquehanna-Roseland project is sound and the record demonstrates that the line is needed.

Mr. Cooper argues that PSE&G's justification for the project is "unsound", and that "the project is not needed due to reductions in electricity demand and diminished economic growth". Mr. Cooper argues, among other things, that PJM's RTEP data is outdated and does not properly take into account unanticipated reductions in demand caused by the economic downturn and the implementation of New Jersey's energy efficiency and conservation policies as set forth in the Energy Master Plan. Mr. Cooper argues that the use of more accurate and updated PJM load forecasts and data could delay or eliminate entirely the need for the Susquehanna-Roseland line. (Cooper Direct at 3 and 13). Mr. Cooper's arguments are not supported by the record and must be rejected.

As to the first argument, as noted above, the PJM RTEP process is, by design, a dynamic one, a far cry from the static process that Mr. Cooper purports to describe. The RTEP is updated annually to permit the analysis of current data regarding not only forecasted demand, but a host of other factors that each influence the reliability of the transmission system. The factors considered in the RTEP process include, among others, forecasted load growth, penetration of demand response and energy efficiency measures, additions of distributed generation, interconnection requests by developers of new generating resources and merchant transmission facilities, assessments of risks associated with aging infrastructure, generation retirements and other deactivations, and transmission owner-initiated improvements. This information is incorporated into countless computer simulations that are designed to predict transmission problems that could arise under a broad range of operating conditions. The PJM planning process

seeks to identify such problems before they occur and to implement solutions that prevent the identified problems from occurring. (Herling Direct at 27, McGlynn Direct at 3-5).

At this point, the Susquehanna-Roseland project has been studied and modeled by PJM for three years. PJM's ongoing analysis has demonstrated not only the continuing need for the proposed line, but also the need to maintain intact its June 1, 2012 in-service date. While Intervenors claim that the 2008 RTEP utilized stale consumer demand data from 2006 to support the need for the line, (Cooper Direct at 8), both the 2008 load forecast and the 2009 Retool analysis were based on current, updated data that fully took into account, among other things, the reductions in demand caused by the economic downturn, updated assumptions about the increasing availability of demand response and energy conservation resources, and data pertaining to new interconnection customers (McGlynn Rebuttal at 2-3).

In fact, the updated data in the 2009 Retool analysis identified fewer Category A and B planning violations because the data revealed the changed circumstances that had occurred since the original study, including the reduction in consumer demand. *The 2009 RTEP included a January 2009 load forecast that fully took into account the effect of the recession that began in 2008, deepened in 2009, and represented the "largest load drop that anyone at PJM has ever seen".* (Tr. at 813) *However, even after taking these significantly changed circumstances into account, the Retool continued to identify multiple thermal reliability violations that are projected to occur beginning in 2012 and continuing throughout PJM's 15-year planning horizon*. The 2009 Retool continues to project thirteen different overloads due to single contingency events, and ten double circuit tower line overloads. (McGlynn Rebuttal at 4).

Mr. Cooper points to PJM's delay of the in-service date of its planned Mid-Atlantic Power Pathway (MAPP) and Potomac Appalachian Transmission Highline (PATH) transmission

lines from 2013 to 2014, and abandonment of a section of the MAPP line as evidence that a proper factoring of the near-term reductions in consumer demand caused by the recession and implementation of the Energy Master Plan programs into PJM's long-term forecasts, could obviate the need for long lead-time projects like the Susquehanna-Roseland line. (Cooper Direct at 6 and 12). However, the record is clear that as contrasted with its delays of the MAPP and PATH lines, PJM's ongoing evaluation of the Susquehanna-Roseland line continues to underscore the need to develop the line on schedule. (Herling Rebuttal at 3-4).

As noted by PSE&G witness Khadr, the fact that PJM has delayed and/or changed the scope of the MAPP and PATH transmission projects only underscores the validity, credibility and independence of the PJM planning process. Exercising its independent judgment, and utilizing the same RTEP processes, PJM concluded that the "need" analysis for the MAPP and PATH projects had changed sufficiently given the current state of all of its planning inputs to delay and limit the MAPP and PATH lines. However, at the same time, PJM determined that it would neither cancel nor delay the in-service date of the Susquehanna-Roseland line (Khadr Rebuttal at 5, see also Herling Rebuttal at 5).

b) Energy efficiency, demand response and distributed generation resources cannot resolve the projected criteria violations and, therefore, do not constitute a "better alternative" to the Susquehanna-Roseland line.

Mr. Cooper argues that energy efficiency, demand response and distributed generation resources represent a "better alternative" to resolve the projected RTEP criteria violations than the development of a transmission line. (Cooper Direct at 3). However, Mr. Cooper (i) overstates the value of these resources for transmission planning purposes because demand response is not available, or not available in sufficient quantities, to solve the identified criteria violations, and

(ii) advocates for the recognition and inclusion into the RTEP of demand response and energy efficiency measures that are not sufficiently certain, measurable and verifiable to satisfy the NERC reliability requirements for capacity resources.

Mr. Cooper alleges that PJM only began to recognize Demand Side Management as an adjustment to its unrestricted load forecast in its 2008 RTEP, and that the RTEP analysis therefore did not fully reflect all of the load management resources available to mitigate or eliminate projected reliability criteria violations, thereby overstating the need for the line. He also criticizes PJM for requiring that any load management resource fully commit through the RPM auction before it can be considered in load forecasting. (Cooper Direct at 9-10).

PJM witness Herling refuted Mr. Cooper's testimony regarding PJM's purported first use of demand response resources in the 2008 RTEP. Mr. Herling clarified that PJM has recognized demand side management in every RTEP since the initiation of the process in 1999 and has included demand response in its resource adequacy planning process for decades (Herling Rebuttal at 3). Thus, qualifying demand response resources were taken into account throughout the Susquehanna-Roseland RTEP process.

The PJM and PSE&G witnesses, Messrs. Herling, McGlynn and Khadr, testified, however, that in order to model and reasonably rely upon demand response and energy efficiency resources for planning purposes, the resources must be in place, certain, measurable and verifiable. PJM considers such resources to be of assistance in the resolution of projected criteria violations only when the resources are reasonably expected to be available, based upon their clearance as capacity resources in the RPM auction (Herling Rebuttal at 6). These requirements are deemed necessary because, unlike transmission and conventional generation

assets, demand response and energy efficiency resources may not be available to PJM from year to year.

Availability is an important factor because demand response resources are offered by customers only on a voluntary basis and a customer's participation in a demand response program can be terminated at any time. Demand response is not under the control or direction of PJM system operators and is therefore not expected to provide steady, firm capacity output over an extended period of time until it is firmly committed as a capacity resource in the RPM auction. The RPM auction establishes the requisite certainty for such resources because it requires that they be fully committed, measurable and verifiable and establishes penalties for customer non-performance (Khadr Rebuttal at 6).

Thus, notwithstanding Mr. Cooper's stated preference for demand response and energy efficiency as alternatives to the Susquehanna-Roseland line, these resources are generally regarded as too unpredictable to rely on for RTEP transmission planning purposes until they are formally measured and committed as capacity resources to PJM. (Herling Rebuttal at 7). As Mr. Herling testified:

> While PJM is supportive of efforts by the states to develop demand response resources and to further energy efficiency, the targets that have been set may not be attainable, the levels that are attainable may be slower in coming than desired, and they may or may not be sustainable over time. As with proposed new generation, PJM must have a reasonable level of certainty as to the availability of these resources if the reliability of the grid is to depend upon them. Once generating resources are constructed, they can be expected to remain connected to the system for decades and their operational behavior is highly predictable. Demand response resources may or may not continue to be available to PJM from year to year. Many forms of demand response are a function of voluntary customer behaviors and are not under the control or direction of system operators. Energy efficiency programs are largely new, in concept, and there is no track record for the sustainability of the demand reductions that may result. These factors suggest the need for a conservative approach to the integration of these resources into the RTEP. (Herling Rebuttal at 8).

A further limitation on the use of demand side management resources is that they cannot be utilized to assist in the resolution of all of the projected criteria violations, even where these resources have been proven to be available. While demand response can assist in resolving NERC Category A and B violations, it has no impact on Category C criteria violations, e.g. the double circuit tower line contingencies. Category C violations are tested at summer peak load conditions, rather than the emergency peak load conditions used to test the Category A and B events (Herling Rebuttal at 6). The test utilized for Category A and B violations is the load deliverability test, which measures the ability of the transmission system to deliver energy to a specific area of the transmission system. This test was developed to test only a certain set of operational conditions and to address the loss of single facilities, rather than Category C double circuit tower line outages. (Tr. at 659-660).

From an operational standpoint, demand response can be called upon in Category A and B emergency conditions because these emergencies can be predicted and PJM operators are able to implement load management procedures in anticipation of their occurrence. Demand response procedures generally take several hours to implement, as customers must first be advised of a potential interruption in service before actually being ordered to interrupt. (Tr. at 661-663).

However, Category C loss of tower line events occur instantaneously and there is no operational procedure available to support the system with demand response resources (Tr. at 664). Ten such Category C violations have been predicted by the RTEP for New Jersey and Pennsylvania. Therefore, even demand response resources that clear in the RPM auctions cannot be considered available to resolve the Category C violations revealed by the RTEP and cannot be relied upon as a planning solution to mitigate the need for the Susquehanna-Roseland line. (Herling Rebuttal at 6).

It should also be underscored that to be an effective remedy for the 13 projected Category A and B violations, demand response resources must be located in areas reasonably proximate to where the projected violations occur. Thus, *only demand response located in Northern New Jersey would have an impact on the Category A and B violations projected to occur on the New Jersey transmission lines*. Much of the increased demand response cited by Intervenors that cleared in the 2009 RPM auction was located in areas that are geographically remote from Northern New Jersey (e.g. Baltimore) and, accordingly, would have no impact whatsoever on the projected criteria violations and would not mitigate the need for the Susquehanna-Roseland line (Khadr Rebuttal at 6; Tr. at 740-743).

Mr. Herling also addressed a further concern regarding the integration of demand response and energy efficiency programs into the RTEP that Intervenors neglected to address. He noted that one obvious consequence of reduced energy demand and consumption caused by demand response and energy efficiency programs will be reductions in the amount of energy generated, which will lead to corresponding reductions in the locational marginal prices paid to generators for the energy produced. Reductions in the price of energy could cause marginal generators to run less often and therefore be less profitable, potentially leading to additional retirements of generation resources from service. Should retirements increase as a result of reduced energy consumption, this would increase the possibility that the need for imports from the West will increase, rather than decrease, thereby *increasing* the need for the Susquehanna-Roseland line. (Herling Rebuttal at 9-10).

Finally, demand response cannot be called upon to resolve criteria violations revealed by the generation deliverability test. The addition of demand response capacity resources into an area in which generation is “bottled”, e.g. one in which there is already an overabundance of

generation capacity, would add to the available generation resources and thereby exacerbate the problem.

As will be discussed in the next section, there is currently insufficient demand response, energy efficiency, or other generation capacity resources, to obviate the need for a transmission solution to the projected criteria violations. (Khadr Rebuttal at 5-6). Intervenors are certainly not in a position to argue otherwise, given Mr. Sovacool's candid admission in discovery that he had "not conducted independent analysis" regarding the issue of whether demand side management or distributed generation programs could displace the need for the Susquehanna-Roseland project in 2012. (Khadr Rebuttal at 6, Exelon Exhibits 1-3).

In sum, the fully developed record in this proceeding confirms that the Susquehanna-Roseland line is needed to properly resolve the criteria violations identified by the RTEP process and that uncertain and potentially unsustainable capacity resources such as demand response and energy efficiency measures do not represent a responsible or prudent alternative to the transmission line.

POINT THREE

THE ENERGY CONSERVATION AND RENEWABLES PROGRAMS OF THE ENERGY MASTER PLAN CANNOT SUBSTITUTE FOR THE SUSQUEHANNA-ROSELAND LINE

As noted, one of Intervenors' principal arguments is that energy efficiency, demand side management and renewable energy programs are a better alternative to the development of the Susquehanna-Roseland line because these programs would be more cost-effective, reliable and secure than the proposed line. (Cooper Direct at 14). As a corollary to this argument, Intervenors also urge that the development of the transmission line would conflict "with New Jersey's stated energy policy due to the substantial environmental and social costs of the project" (Cooper Direct at 3).

Intervenors' arguments are predicated on their clear preference for non-conventional solutions to conventional infrastructure problems. Their reliability witnesses, Messrs. Cooper and Sovacool, are apparently consistent advocates of energy conservation and renewable alternatives to conventional power generation and transmission infrastructure. They have even advanced such arguments with regard to nuclear facilities like Indian Point, which provides significant base load power to New York City. (See, e.g., "*Promoting a Level Playing Field for Energy Options: Electricity Alternatives and the Case of the Indian Point Energy Center*", by Sovacool and Brown, and *Alternatives to the Indian Point Center for Meeting New York Electric Power Needs*, Exhibits BKS-31 and 32 to Cooper Testimony, (in which Dr. Sovacool argued in the first article that "energy efficiency and demand side management programs were just as "firm" and reliable as building new power plants and operating conventional sources of energy")). However, it is evident from the record that the alternatives Intervenors espouse cannot

substitute for responsible transmission planning or for the upgrades that the RTEP process has identified as necessary to preserve the reliability of our transmission system.

It should be noted that Exelon joins with the Intervenors in supporting the programs of the Energy Master Plan and the long term energy and environmental benefits these programs will confer upon the State. However, Intervenors' suggestion that the implementation of these programs could serve as a responsible near-term substitute for the development of the Susquehanna-Roseland line must be rejected. *Where, as here, the continuing reliability of our power grid is at issue, the risks are too great to reject time-tested, and proven conventional solutions to projected transmission problems in favor of uncertain energy conservation and renewable alternatives that are only now beginning to be implemented.*

The RTEP process described in the prior section is designed to assure that the statutorily-mandated NERC Standards are satisfied, and that PJM and its transmission owners are able to provide highly reliable service to customers on a continuing basis. In order to accomplish this purpose, the transmission system must be planned and constructed in a manner that accommodates a broad range of system operating scenarios, including scenarios in which our conservation and demand reduction programs fail to produce their intended benefits.

It would be poor public policy to plan a critical backbone transmission system on the premise that the newly-adopted programs of the Energy Master Plan will be achieved on a timely and sustained basis, as this could ultimately prove not to be the case. Clearly, this type of "wait and see" approach has no legitimate place in transmission planning, which requires *certainty* with regard to the resources that are relied upon for system planning. (McGlynn Rebuttal at 6). The Board must reject Intervenors' invitation to rely on the success of fledgling and unproven

energy conservation programs whose success will largely be dependent upon the voluntary and unpredictable actions of energy customers.

Indeed, the Energy Master Plan, *whose underlying projections were based on an assumption that the Susquehanna-Roseland line will be built*, candidly acknowledges what Intervenors do not: that the Energy Master Plan's energy conservation and renewables goals are aggressive and will be difficult to achieve, and that some of the technologies and policies it seeks to implement are new, or untested, or both (Energy Master Plan, Exhibit BKS-46 to Cooper Direct Testimony at 6 and 67). Moreover, the implementation of the Energy Master Plan is merely in its incipient stages. An objective assessment of the State's implementation efforts thus far would confirm that at this early stage, there is substantial uncertainty whether the State will achieve its 2020 goals on a timely and sustainable basis and, in particular, whether sufficient conservation and renewable resources will be committed and available by the June, 2012 in-service date for the Susquehanna-Roseland line.

Mr. Cooper cites the "immense amount of *untapped* energy efficiency potential" in New Jersey, identified in the Report of the Northeast Energy Efficiency Partnerships, "An Energy Efficiency Strategy For New Jersey Achieving The 2020 Master Plan Goals" ("NEEP Report"), (attached as Exhibit BKS-27 to the Cooper Direct testimony), as an indication that there exists a cheaper, cleaner and more reliable alternative to the Susquehanna-Roseland line. Mr. Cooper further argues that the development of the Susquehanna-Roseland line would therefore be at odds with the goals of the Energy Master Plan. (Cooper Direct at 15-19, 36-37, Tr. at 956-957).

However, it is clearly one thing to establish aspirational policy goals based on a report designed to assist the State in tapping its long term energy efficiency potential, it is quite another to suggest that the NEEP Report provides an appropriate blueprint for PJM transmission

planning. (Tr. at 924-927). Because the record is clear that most of the State's energy efficiency and conservation assets remain "untapped", and likely will remain so for several years to come, reliance on Intervenors' "alternative" would expose New Jersey to inordinate risk that our transmission system will be compromised. *It should therefore not be surprising that no state regulatory commission or RTO has adopted Intervenors' "alternative" to displace the need for a backbone transmission system upgrade project whose need was determined by application of the NERC standards*, a point that Mr. Cooper tacitly conceded on cross-examination. (Tr. at 905-908, Khadar Rebuttal at 7-8).

It was also evident from the cross-examination of Mr. Cooper that both he and Dr. Sovacool espouse an energy paradigm in which we "go completely renewable", and forego nuclear power plants and "pollution-belching conventional forms of electricity supply that degrade the land, foul the world's climate and impoverish the environment". In their view, a "completely renewable power sector is technically feasible" and the only thing that is lacking is the "political will, institutional inertia, and social awareness needed to bring it forward". (See, Sovacool article "*Going Completely Renewable: Is It Possible (Let Alone Desirable)*", at pages 95-96 and 107; Exhibit BKS-49 to Cooper Direct Testimony. See also, "*Nuclear Nonsense: Why Nuclear Power Is No Answer To Climate Change And The World's Post-Kyoto Energy Challenges*" by Sovacool and Cooper, William & Mary Environmental Law & Policy Review, Vol. 33:1 at 1).

Messrs. Cooper and Sovacool have apparently been prolific writers regarding energy policy and are consistent advocates of the viewpoints they have expressed in this proceeding and in the cited articles. However, it is equally apparent that Messrs. Cooper and Sovacool completely lack any expertise whatsoever in transmission planning and operation. Therefore,

prudence dictates that their arguments regarding the intersection of energy conservation and renewable energy policy and transmission system planning should be given little weight.

It is noteworthy that Mr. Cooper readily conceded on cross-examination that neither he nor Mr. Sovacool has ever been involved in the operation or management of an electric transmission or distribution system, has had primary responsibility for planning or designing a high voltage transmission line, has been in any way responsible for the reliable operation of a bulk transmission system, or has worked for a utility or an organization like NERC (Tr. at 882-883). Rather, Mr. Cooper described himself as a "researcher" who "prepares strategic analysis on the information that is being reviewed by Dr. Sovacool", who, in turn, is an academician and writer (Tr. at 883).

Mr. Cooper also made the very significant concession that neither he nor Dr. Sovacool performed <u>any</u> independent transmission planning studies for this proceeding, nor <u>any</u> original analysis of whether demand side management and other programs could actually displace the need for the Susquehanna-Roseland project in 2012 as they have suggested (See, Exelon Exhibits 1-3, Tr. at 928-935). In fact, Mr. Cooper conceded that he "would only be guessing" whether energy efficiency, demand response or distributed generation would be viable alternatives to the transmission line "because we don't have the figures". (Tr. at 930-933).

In fact, there is much about New Jersey and our efforts to implement the Energy Master Plan that Mr. Cooper did not know. He readily conceded that he had no involvement in the development or implementation of the Energy Master Plan, in the proceedings in which the State's renewable energy policies were developed, in the demand response working group, in any of the utilities' RGGI filings, or in the development of any of PSE&G's solar and energy efficiency programs. *Indeed, Mr. Cooper conceded that neither he nor Dr. Sovacool have <u>any</u>*

personal knowledge of, or had <u>any</u> direct involvement in the State's efforts to implement the Energy Master Plan or its energy efficiency, demand response and renewable energy programs. He also conceded that his testimony regarding New Jersey's energy efficiency and demand response programs and our efforts to implement them was based not on his own personal knowledge but rather on what he had read or been told by others. (Tr. at 883-888).

While Intervenors may lack personal knowledge regarding the extent to which the programs of the Energy Master Plan have been implemented, more informed stakeholders would entertain little doubt that as of June, 2012, when the criteria violations are projected to begin, the State will not have made sufficient progress toward achieving its 2020 goals to obviate the need for the Susquehanna-Roseland line.

Despite broad support for the worthy goals of the Energy Master Plan, the level of implementation of its "action items" achieved to date can be fairly described as modest. The Board is well aware that after six years of being a national leader in solar development, we only recently achieved the 100 megawatt "milestone". It is noteworthy that the next 100 megawatts will likely be achieved much more rapidly because PSE&G has sponsored programs like the Solar Loan I and II and Solar 4 All programs that will spur solar development and help the State achieve its Renewable Portfolio Standard in the PSE&G service territory.

Further, although there is optimism that a more favorable environment for cogeneration development is now being created through grant programs and proposed legislation like A3339 (establishing micro grids and easing restrictions regarding on-site generating facilities), the fact remains that no significant cogeneration facility has been developed in the State since 1999. Because it generally takes three years for a cogeneration plant to become operational, no

distributed generation would be available from any newly developed plants to offset the need for the Susquehanna-Roseland line by June, 2012.

While the State will someday develop the energy efficiency resources identified in the NEEP Report, as of today, these resources continue to remain largely untapped. We have yet to develop new building energy subcodes or implement the aggressive goal to conduct 300,000 whole-building retrofits per year, and the utility-specific "energy efficiency master plans" are not due to be filed until next July. While the Board successfully implemented a one year demand response pilot program that acquired close to 300 megawatts of new commercial and industrial demand response resources, it is presently unclear whether the pilot program will be renewed. It also remains to be seen what degree of success will be achieved by the relatively modest utility-specific residential demand response programs.

More fundamentally, it is presently unknown whether and to what extent Governor-elect Christie will adopt the policies and goals of Governor Corzine's Energy Master Plan. Assuming that he does, it bears repeating that the Energy Master Plan readily acknowledges that its various initiatives are "experimental and largely untested on a substantial scale". Thus, in order to address the many uncertainties regarding these initiatives, the Energy Master Plan directs that they be continually monitored through 2012 as part of an ongoing assessment of program efficacy and the results that are achieved. (Energy Master Plan, Exhibit BKS-46 to Cooper Direct testimony at 67). The 2012 time frame obviously coincides with the in-service date of the Susquehanna-Roseland line, thus underscoring the risks associated with undue reliance on these "untested" initiatives as a substitute for prudent transmission system planning. That such risk must be avoided is underscored by the Energy Master Plan's core policy pronouncement that

"the reliability of the State's energy supplies will remain a top priority for the State". (Energy Master Plan, Exhibit BKS-46 to the Cooper Direct testimony at 76).

Finally, from a policy perspective, it should be observed that renewable energy and conventional transmission resources should properly be viewed as synergistic, rather than as the "either/or" proposition that Intervenors suggest. As the Energy Master Plan aptly notes:

> Together, the energy efficiency, reduced peak demand and renewable energy goals will effectively reduce consumers' overall energy consumption while relying on an energy supply that has much lower carbon dioxide emissions from today. However, many of these renewable energy supplies provide an intermittent supply of electricity. Consequently, the homes and businesses that use these technologies will still be dependent on the electricity grid to ensure reliability. Therefore, the State's efforts to meet the greenhouse gas targets for 2020 and the need to create a reliable supply of competitively priced electricity will largely depend on the ability of the energy infrastructure, including transmission lines and pipelines, to support the various efforts in this plan. (Energy Master Plan at 75).

In a similar vein, in his Rebuttal testimony, Mr. Herling addressed Mr. Cooper's arguments that the Susquehanna-Roseland line would be used to deliver energy from fossil fuel plants in violation of New Jersey's environmental goals, and that wind generation is a preferable and less costly alternative to the transmission line. Mr. Herling noted that "there are approximately 86,000 MW of generating resources under development at one level or another in the PJM queue. Of course, approximately 44,000 MW are wind generators and over 85% of those projects are in western PJM. Without backbone transmission projects like the Susquehanna-Roseland line, these western renewable generation resources will not be deliverable to serve customers in states such as Pennsylvania and New Jersey which have aggressive renewable standards". (Herling Rebuttal at 11-12).

Therefore, it is evident from both an energy policy and operational perspective that the further expansion of renewable resources to comply with New Jersey's renewable portfolio standards will require the simultaneous development of additional transmission infrastructure projects like the Susquehanna-Roseland line. While renewable energy resources can assist in the reduction of system peak loads, they are limited in the sense that they are intermittent in nature (e.g. wind generation is generally considered an off-peak resource because wind tends not to blow during system peak periods and, like solar, has a capacity factor of less than 20%) and are dependent upon traditional infrastructure for delivery to remote customers.

In sum, there can be little question that the "untapped" energy efficiency, conservation, distributed generation and renewable resources identified and targeted for penetration by the Energy Master Plan cannot be viewed as a realistic alternative the Susquehanna-Roseland line, particularly in the near term. It would represent poor public policy to require PJM to include within its regional transmission planning processes, *potential* demand reductions and capacity resources associated with new and untested programs that, for the most part, have yet to be implemented. In circumstances like these, it is therefore appropriate to support *both* energy conservation and renewable energy policies as well as a prudent, conservative approach to the development of transmission capacity. Such an approach is analogous to following a strict diet and exercise regime while maintaining comprehensive health insurance. One cannot responsibly be pursued to the exclusion of the other.

In a word, transmission planning is about assuring reliable service to customers in a broad range of operating conditions. The substantial uncertainties regarding the ultimate ability of the Energy Master Plan programs to achieve their conservation and demand reduction goals on a timely and sustained basis dictate that the solution determined by PJM's RTEP process—the

development of the Susquehanna-Roseland line—be adopted by the Board as the transmission planning alternative that will best assure the continuing reliability of the transmission system and our ability to keep the lights on.

CONCLUSION

The record developed in this case fully supports the Board's approval of PSE&G's application as the prudent and responsible course, as it will assure the reliability of the transmission grid for many years to come. The record also demonstrates that Intervenors' criticisms of the RTEP process are without merit, and that they have failed to establish that there exist viable alternatives to the development of the Susquehanna-Roseland line.

Exelon respectfully submits that PSE&G has made the requisite showing required by N.J.S.A. 40:55D-19 that the Susquehanna-Roseland line is necessary for the service, convenience or welfare of the State and that no alternatives to the line are reasonably available to achieve an equivalent public benefit. Accordingly, the Board should grant PSE&G's application.

Respectfully submitted,

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