`

UNITED STATES DEPARTMENT OF ENERGY

2012 CONGESTION STUDY

COMMENTS OF THE PENNSYLVANIA PUBLIC UTILITY COMMISSION

I. Introduction.

The Pennsylvania Public Utility Commission ("PAPUC" or "Commission") herein files its comments to the U.S. Department of Energy ("DOE") Federal Register Notice published on November 10, 2011 (76 FR 70122) soliciting comments in preparation for the 2012 DOE Congestion Study. The Energy Policy Act of 2005 ("EPAct of 2005") directed that DOE perform a triennial study, in consultation with states, of electric transmission congestion on the national grid. After receipt and consideration of comments, the Secretary of DOE has the discretion to issue a report, based on the study, which may designate any geographic area experiencing electric energy transmission and constraints as a national interest electric transmission corridor.

To date, two Congestion Studies have been issued –the initial Study in 2006 and a second Study in 2009. The 2006 Congestion Study resulted in the issuance of a Report that designated the Mid-Atlantic National Interest Electric Transmission Corridor ("Mid-Atlantic NIETC") which encompasses the entirety of Pennsylvania as well as substantial portions of the Mid-Atlantic states from northern New York to southern Virginia. The PAPUC was an active participant in the DOE administrative process that resulted in the

`

designation of the Mid-Atlantic NIETC. The 2009 Congestion Study did not change the character or geographic scope of the Mid-Atlantic NIETC.

The PAPUC has participated in opportunities for comment and at technical conferences sponsored by DOE in preparation of the two prior studies. The PAPUC most recently attended a technical conference in Philadelphia on December 6, 2011 sponsored by DOE in relation to the preparation of the 2012 Congestion Study.

The PAPUC is the agency charged with the responsibility for regulating electric distribution companies within the Commonwealth of Pennsylvania pursuant to the Public Utility Code, 66 Pa. C.S. §101 *et seq.* The PAPUC has specific authority under Section 1501 of the Public Utility Code for approving the siting of electric transmission facilities within the state and appreciates the opportunity to provide comments on the 2012 Congestion Study. As the state agency responsible for siting transmission facilities within the Mid-Atlantic NIETC, the PAPUC is most concerned with DOE actions that impact the PAPUC's oversight of the intrastate transmission siting process as well as future changes to the Mid-Atlantic NIETC.

The PAPUC is encouraged by DOE's statements as explained in the November 10, 2011 Federal Register Notice and at the December 6, 2011 Technical Conference that it intends to engage in a more transparent and inclusive process and to actively solicit the input of the states in the development of the 2012 Study.

`

II. Conclusions of DOE's Prior Studies with Reference to the Mid-Atlantic NIETC.

The 2006 Study identified the Mid-Atlantic region from northern New York to southern Virginia as part of the Mid-Atlantic NIETC. With regard to Pennsylvania, the 2006 Study noted that there were high congestion costs caused by constraints that limit east-bound flows of electricity across the Allegheny Mountains. The Study identified specific constraints at several locations including lines from Allegheny Power to Potomac Electric Power ("PEPCO") and Dominion Power ("Dominion"); on the interfaces between western, central and eastern PJM and at various transformer sites in Pennsylvania. The most significant congestion occurred in the following metropolitan regions: New York City, northern New Jersey, the Delmarva Peninsula and the Baltimore-Washington, DC area. DOE noted that it would not be economic to eliminate all transmission congestion within the Mid-Atlantic NIETC but that its intent would be to focus on congestion that creates significant reliability risks or increases economic costs to consumers. (*See* 2006 Congestion Study, pp. 41-42).

In its 2009 Study, DOE noted that some improvements within the Mid-Atlantic region have occurred, primarily regional progress in reducing loads and improving reliability through aggressive demand response and energy efficiency programs and PJM-approved backbone transmission projects such as the Trans-Allegheny Interstate Line ("TRAIL Project") and the Susquehanna-Roseland Project, both of which have received

`

state regulatory approval.[1] DOE also noted that other backbone transmission lines are in various stages of regulatory approval and are under development including the Potomac Appalachian Transmission Highline ("PATH") sponsored by Allegheny Electric Power (AEP) and Allegheny Power and the Mid-Atlantic Power Pathway ("MAPP") sponsored by Dominion. (2009 Congestion Study, p. 50).[2] PJM estimated that, once these latter projects are completed, 40% of the region's total congestion cost will be eliminated. DOE also concluded that load centers continue to experience the impacts of significant levels of transmission congestion and that transmission system upgrades and expansion projects sufficient to impact current transmission congestion levels are several years into the future. Also, new generation is slow to come on-line and is often offset by retirement of older generation capacity. Based on the foregoing, DOE concluded that no changes should be made in the Mid-Atlantic NIETC designation at this time.

The PAPUC anticipates that DOE will, in the 2012 Study, revisit its conclusions from the 2006 and 2009 Studies as well as the methodologies employed to reach those conclusions and will reassess whether it is necessary to retain the current Mid-Atlantic NIETC designation in its present form.

[1] The Susquehanna-Roseland Line, although receiving approval from both PA and NJ Commissions, has yet to receive approval from the National Park Service for a portion of the line that passes through the Delaware Water Gap National Recreational Area.

[2] It should be noted that since the issuance of the 2009 Congestion Study, both the PATH and MAPP transmission line projects have been suspended until further notice under the most recent PJM RTEPs.

`

III. The PAPUC Supports DOE's Intent to Improve the Process for Developing the 2012 Congestion Study.

DOE has demonstrated its intention to engage in a more open, transparent, interactive and cooperative approach with the States than has been the case since preparation of the 2006 and 2009 Congestion Studies. These improvements are evident in DOE interactions with the states as part of the Eastern Interconnection Planning Collaborative "(EIPC")/Eastern Interconnection States Planning Collaborative ("EISPC") process, presentations at the National Association of Regulatory Commissioners ("NARUC") meetings and at the most recent technical conference in Philadelphia. The PAPUC supports DOE's statements regarding how it will improve the process as follows:

- DOE will continue to utilize a combination of both historic and future congestion information.
- DOE will rely on publicly available information.
- DOE will publish a draft study document for comment and will permit state agency review of the preliminary results.
- DOE will utilize, as appropriate, the results of the EIPC/EISPC.

As discussed later, the PAPUC endorses these steps as material improvements DOE's planning process.

A. Consideration of Historic and Projected Data for Measuring Congestion is Appropriate.

DOE should continue to rely on a combination of both historic and projected congestion data in evaluating the future anticipated transmission congestion and constraint conditions in the Eastern Interconnection. Both the 2006 and 2009 Congestions Studies reviewed historic reliability assessments and economic congestion

`

metrics to identify congested areas. The 2006 Study methodology was less refined recognizing DOE's initial foray into the area. By contrast, the 2009 Study built on the experience gained from the 2006 Study and appropriately utilized certain metrics of transmission usage such as: (1) actual electricity flows as a direct measure of utilization; (2) net schedules based on contractual commitments as a measure of expected utilization; (3) curtailments as a measure of scheduled utilization; and (4) requests for transmission service as a measure of reservations for future utilization. Further, DOE also examined the frequency of transmission loading relief ("TLR") events as a relevant reliability metric indicating that transmission congestion exists.[3] DOE also considered certain economic congestion metrics such as shadow prices, nodal prices and congestion rent that can be calculated from actual transactions within organized markets. The PAPUC submits that all of these metrics are and should be considered as meaningful measures of congestion/constraints as part of the 2012 Study.

The 2009 Study relied extensively on 2007 historical data for transmission utilization assembled through DOE's Lawrence Berkeley National Laboratory. This historical assessment was the first analysis of its kind examining publicly available historical data on transmission congestion for the Eastern Interconnection. To some degree, access to usable historic data was limited due to the lack of organized electricity markets in certain regions such as the Southeastern United State. Also, data availability varied even between RTOs/ISOs with regard to measures of analysis reflected in the

[3] A TLR is declared by a transmission operator when flow over one or more flow-gates threatens to violate operating limits. TLRs are associated with specific events such as storms and equipment maintenance events that can render particular generation and transmission assets unavailable.

`

Open Access Same-Time Information System ("OASIS") mechanism. Constraint shadow prices, congestion rent and locational marginal pricing ("LMP") congestion component data were not uniformly available from all RTO/ISOs. (*See* 2009 Congestion Study, p. 39). Inherent gaps in available data inevitably leads to gaps in analysis and less trustworthy results.

For purposes of the 2012 Study, DOE should have enhanced access to data from both organized markets and unorganized markets (such as those regions managed by the Southern Company and the Southeast Reliability Council ("SERC"), the Tennessee Valley Authority ("TVA") and Florida. The experience of all parties in the EIPC/EISPC demonstrates that DOE and the RTOs/ISOs/power authorities can work together in an effective coordinated fashion. The experience of most parties to the Eastern Interconnection planning process demonstrated that data access and dissemination can occur with appropriate proprietary safeguards to achieve a mutually satisfactory result for all stakeholders. Additionally, the Federal Energy Regulatory Commission ("FERC") is taking steps to enhance the availability of data reflecting flow-gate utilization (through submission of e-Tag data).[4] The enhanced cooperative relationship between DOE and organized/unorganized markets coupled with increased reporting requirements by FERC (which will hopefully be available within the short term) should alleviate past problems with access to historical data.

With reference to future measures of congestion and as reflected in the Federal Register Notice, DOE intends to utilize a number of sources not fully considered as part

[4] *See* the current rulemaking proceeding at FERC Dkt. RM11-17.

`

of the 2006 and 2009 Studies including projected electric supply and generation plans, planned interconnection requests, forecast electricity loads, forecasted trends in energy efficiency ("EE"), demand response ("DR") and distributed generation ("DG"), projected economic conditions on demand and congestion and the results of filings made under FERC Order 890. Increased attention to these sources of information is appropriate.

The PAPUC notes that the 2006 and 2009 Studies did not rely extensively on forecasts or projections of supply, demand, generation and load, EE/DG/DR and economic conditions which may have led to deficiencies in the final result. DOE's intentions toward consideration of forecasted trends for the 2012 Study from publicly available information should materially contribute to a better result.

B. DOE's Reliance on Publicly Available Information Coupled with the Issuance of a Draft Study are Improvements on the Prior Congestion Study Process.

DOE's 2006 and 2009 Studies were hampered by its excessive reliance on proprietary data owned by the consultants with whom DOE contracted for preparation of the Studies. Reliance on proprietary data limits the ability of the States and other parties to examine the underlying information, analyses and assumptions relied on by the agency when developing these Studies. Limiting public access to the data underlying a Study with such significant infrastructure and cost ramifications to the States as well as the public, who must pay for these projects through rates, injects a level of uncertainty into a process that should be characterized by openness and cooperation. DOE's intentions to make the 2012 Study process more reliant on publicly available data coupled with the

`

opportunity to review a draft of the Study and file comments will allow State regulators and other interested stakeholders the opportunity to provide input, identify incorrect assumptions and analyses, provide clarification and otherwise lead to a better final product.

The Federal Register Notice highlights DOE's intent to consult with the States and regional reliability organizations in the preparation of the 2012 Study. DOE has indicated its plan to schedule bilateral meetings with individual interested states and other organizations in advance. The PAPUC anticipates taking advantage of these opportunities either on an individual basis or with other states in the Mid-Atlantic region. The PAPUC asserts that this "open door" policy is consistent with the original legislative intent behind the "consultation" requirement contained in Section 216 of the Federal Power Act (FPA), 16 U.S.C. § 824p. The PAPUC fully intends to take advantage of DOE's offer to consult following release of the draft Congestion Study for comments. Specifically, the PAPUC would anticipate convening a face to face meeting with DOE officials to discuss any concerns raised by the draft Congestion Study. The PAPUC encourages DOE to maintain a flexible approach in its outreach process with the States.

C. DOE Should Utilize the Cooperative Relationships Developed in the EIPC/EISPC Process.

The EIPC/EISPC process represents a unique multi-lateral state/federal/private sector effort to design future scenarios for the expansion of domestic transmission infrastructure that incorporates a variety of factors, sensitivities and policy objectives that

`

could conceivably influence the future direction of transmission planning. The objectives of the EIPC/EISPC process and the congestion study process are entirely different and the results of the scenario analyses from the former will not have much relevance to the latter. However, the EIPC/EISPC model utilized a number of paradigms that may have utility in DOE's performance of the 2012 Congestion Study as follows:

1. The EIPC/EISPC process was valuable in demonstrating that states, planning authorities and the federal government can work in a collaborative fashion to examine possible solutions to problems with national importance. DOE should keep that dynamic in mind when interacting with other stakeholders in soliciting information to conduct the 2012 Study.

2. EIPC/EISPC utilized the concept of "rolling up" modeling scenarios on an inter-regional basis, evaluating the model and folding that information back into various Planning Coordinators' planning processes.[5] The result was the 2020 Roll-Up Integration Case. DOE may want to consider the same "roll-up" modeling process for examining congestion on an inter-regional basis.

3. The EIPC/EISPC process is not scheduled for completion until mid-2013. Congestion modeling, although not the specific objective, was certainly considered as a contributory factor in the futures and scenario analyses. DOE should inventory the data produced as part of the development of the "Business As Usual" future, the remaining futures and 80 modeling scenarios for inputs that could prove useful to the 2012 Study.

4. The Energy Zone Work Group is actively examining the existing state of renewable resource development (including DR, EE and DG) throughout the Eastern Interconnection. Data assembled as part of this effort may prove useful to DOE in assessing the impact of these resources to present and projected congestion.

[5] The "roll-up" concept involved a review of each planning authority's regional plan at an interconnection-wide level. This effort provided the first opportunity for a much higher interconnection-wide review of the interconnected regions and enabled the reviewers to check for consistency between regions. Power flows between regions were examined as well as those factors that impede effective transfer of power. This effort yielded an important body of information that can be utilized by policy makers, planning authorities and other stakeholders in each entity's subsequent regional planning efforts pursuant to Order 890.

`

5. The North American Electricity and Environmental Model (“ NEEM”) was utilized by consultants to EIPC/EISPC for macroeconomic studies.[6] This model as well as the data generated may be useful to DOE in the conduct of the 2012 Study.

The PAPUC advocates consideration of the resource benefits and data results derived from the EIPC/EISPC process.

IV. DOE Should Expand the Range of Information It Considers in the 2012 Study.

The Federal Register Notice listed a number of informational sources on which DOE would rely. The PAPUC would encourage full utilization of these resources for the following reasons.

A. Electricity Market Analyses Including Locational Marginal Pricing (“LMP”).

Electric market analyses look at various loads and resources and the likely cost of those resources serving those loads. The LMP portion of the analysis typically looks at the transmission system loading involved in this process when resources are dispatched so as to minimize generation cost. If optimal power flows on the transmission system exceed the capacity of one or more transmission system elements (*i.e*., if there is transmission system congestion), then LMPs on the system diverge from one another. If there is no or little transmission system congestion, then the divergence between LMPs will be less. Because determining the loading on the transmission system elements is a

[6] In the NEEM model, the Eastern Interconnection was modeled as a simplified set of regions (bubbles) connected by a simplified network of transmission (pipes). One key assumption of the NEEM model is that transmission constraints between regions are an input to determine constraints between regions.

`

critical part of such an inquiry, any electric market analysis that includes LMPs could be valuable to DOE in its process of studying congestion. The PAPUC believes some of the NEEM modeling analysis utilized in the EIPC/EISPC process considered these factors.

B. Reliability Analyses and Actions Including Transmission Loading Relief ("TLR").

Reliability analyses look at the projected loading of transmission system elements under normal and contingency conditions to look for thermal overloads and voltage problems, which themselves are indicators of a shortage of transmission system and transformer capacity. The results of such analyses are useful indicators of projected transmission system congestion and of the system conditions under which such congestion is most likely to occur. TLR is required only when transmission system components are at their thermal limits, *i.e.* when there is transmission system congestion. Hence, information on the historical need for TLRs can provide valuable information regarding transmission system congestion. The PAPUC supports DOE's consideration of TLRs and other reliability analyses.

C. Historic Energy Flows.

Actual historic energy flows reflect actual loading on transmission system elements. These historical energy flows can be studied to see where congestion has existed and the conditions under which it has existed. Historic energy flows were extensively utilized in the 2006 and 2009 Studies and it is appropriate to again consider

`

these factors as well. DOE might also consider how synchro-phasor technology deployment and data may be used to improve power system models and allow increased flow over existing lines, thereby reducing congestion. DOE has sponsored synchro-phasor use in PJM.

D. Current and Forecasted Electricity Loads, Including EE, DG and DR Resources.

Current and forecast electricity loads can be used with various mixes of generating resources and load-reduction resources to determine how the transmission system is loaded up in the process. Depending on the level and locations of loads and resources, transmission system congestion may result. PJM has experienced a significant increase in contributions made by EE, DG and DR resources as reflected in the last Base Residual Auction. DOE considered the emerging impact of these resources in the 2009 Study to the extent data was available. These resources will have an increased impact on managing congestion in the future and it is important that these factors be considered in the context of the 2012 Study.

E. Location of Renewable Resources and State and Regional Policies with Respect to the Development of Renewables.

The PAPUC believes consideration of renewable resource is important because current and forecast electricity loads can be used with various mixes of generating resources, including renewable generation resources, to determine how the transmission system is loaded in the process. Depending on the level and location of loads and the

`

level and location of resources, transmission system congestion may result. PJM is in the process of completing a PJM Renewable Integration Study that assesses the impacts of state renewable resource mandates and renewable portfolio standard polices. The data assembled by PJM in this Study may be useful to DOE in examining the impacts of renewable development of future congestion in the PJM region.

F. Projected Impacts of Current and Pending Environmental Regulations on Generation Availability.

Environmental regulation can help determine which existing generation can continue to operate and which existing generation will be potentially shut down. If generation is likely to be retired for any reason, it will change transmission system loading and increase congestion, unless the retired generation is replaced, roughly on a megawatt for megawatt basis, at the same location of the transmission system as that of the retired generation. Recognition of such changes in transmission system loading is useful in studying transmission system congestion. With the potential retirement of coal units in the U. S. due to recently enacted environmental regulations, it is likely the energy industry will build additional natural gas generation facilities and increasingly rely on existing natural gas generation.

If significant retirements occur, the relationship between the natural gas industry and electric generation will become critical for reliability of both industries. Clear and frequent communication of load and supply requirements must happen between the two industries to ensure reliability. Natural gas transportation and storage must be designed

`

to accommodate electric generation needs. Electric compressor stations are increasingly used for natural gas transport and must become critical infrastructure for both industries. In recognition of this concern, the PAPUC supports consideration of environmental regulations, including the recent issuance by the Environmental Protection Agency of new Mercury and Air Toxic Standards ("MATS"), on existing generation in the PJM region and the impact of these and other regulations on reliability, the potential retirements of coal fired generation and the interdependency of the natural gas and electric power industries.[7]

G. Effects of Recent or Projected Economic Conditions on Generation Availability.

Economic conditions can help determine which existing generation can continue to operate and which existing generation will be potentially retired. Since the 2009 Study, there has been a continued economic downturn which is projected to continue into 2012. This economic downturn has translated into lower demand for electricity, reduction in some measures of congestion and delay or cancellation of large backbone transmission projects in PJM. Economic conditions were factored into the various future scenarios and modeling runs performed by EIPC/EISPC. The PAPUC sees value in renewed consideration of economic conditions that have an impact on the 2012 Study.

[7] See also the 2011 Special Reliability Assessment: A Primer of the Natural Gas and Electric Power Interdependency in the United States Report, December 2011.

`

H. Filings under FERC Order 890.

FERC Order 890 directed transmission providers to address nine transmission planning principles, including: (1) coordination; (2) openness; (3) transparency; (4) information exchange; (5) comparability; (6) dispute resolution; (7) regional participation; (8) economic planning studies; and (9) cost allocation for new projects. Studies of transmission system congestion can benefit from detailed knowledge about the transmission planning principles of the transmission system planners involved. Order 890 compliance filings from all of the power authorities comprising the Eastern Interconnection are publicly available from FERC or the individual authorities. The PAPUC supports consideration of Order 890 filings by PJM in the preparation of the 2012 Study.

I. Analytic Results from the Eastern and Western Interconnections Level Planning Studies.

Analytic results from the eastern and western interconnections level planning studies project loads, resources and transmission system additions, can be utilized to determine future transmission system loadings. DOE reviewed and presumably utilized such studies in preparation of the 2009 Study including: (1) numerous studies examining the potential for renewable resource development in different regions; (2) analyses conducted jointly by DOE and the American Wind Energy Association (AWEA); (3) the Western Renewable Energy Zone ("WREZ") analysis performed by the Western Governors' Association; (4) the California Renewable Energy Transmission Initiative

`

(CRETI); (4) the Regional Generation Outlet Study (RGOS) performed by the Midwest Governor's Association; (5) the 2008 Midwest Transmission Expansion Plan performed by the Midwest Independent System Operator (MISO); and (6) the 2008-09 Joint Coordinated System Planning effort by PJM, Southern Power Pool ("SPP") and Tennessee Valley Authority (TVA). Since production of the 2009 Study, numerous other studies have been conducted by various public and private parties including the PJM Renewable Resource Integration Study which should be examined. Additionally, DOE should review the Annual State of the Market Reports produced by each RTO/ISO market monitor insofar as these reports contain valuable information regarding historical congestion.

In summary, the PAPUC encourages DOE to consider all sources of information highlighted in the Federal Register Notice to the extent relevant.

V. DOE Should Focus on Narrowing the Mid-Atlantic NIETC Region and Concentrate on Identified Areas of Congestion.

As highlighted by PJM at the recent December 2011 Technical Conference, congestion remains a major concern for the Mid-Atlantic region amounting to $1.4 billion on 2010 with 50% of identified congestion occurring as interchange congestion and 35% associated with transmission line congestion. Moreover, the top 20 congestion events account for 76% of PJM total congestion.

PJM is proactively addressing these problem areas. A number of major backbone transmission lines have also gone into service or are nearing full service status, such as

`

the TRAIL 500 kV Line, the Carson-Suffolk 500 kV Line and the Susquehanna-Roseland Line. However, two major backbone lines have been held in abeyance based on reduced need as reflected in the latest PJM RTEP analyses.[8] In other congestion areas such as Allegheny Power ("AP") South, Cloverdale- Lexington and the Black Oak-Bedington interface, the TRAIL Line is expected to reduce congestion. In a number of other congested areas, congestion is expected to decline by 2020. PJM continues to monitor other potential congestion areas.

While not minimizing the importance of addressing congestion, the PAPUC believes that some effort should be made to re-evaluate the vast geographic scope of the Mid-Atlantic NIETC. In the 2006 and 2009 Congestion Studies, DOE designated a large geographic swath of territory encompassing most of the Mid-Atlantic region. The PAPUC believes that DOE went too far in drawing large polygonal zones that did not accurately depict the nature and extent of congestion and constraints in the Mid-Atlantic region. As data generated from the EIPC/EISPC process has revealed, a more granular representation of congested zones is now possible which will minimize the geographic area potentially subject to the exercise of federal backstop authority. DOE should seriously consider, as part of its 2012 analysis, utilizing the considerable resources available from the modeling tools to potentially scale back and refine the scope of the Mid-Atlantic NIETC. In addition, DOE should consider the efforts currently made and planned for the future by PJM to address specific areas of congestion.

[8] The two 500 kV lines are the PATH Line and the MAPP Line.

`

VI. DOE's Publication of a Draft Study will be Extremely Useful to the States.

DOE has indicated a willingness to issue a draft of its 2012 Congestion Study for comment. This step alone is a significant improvement over the procedures employed for the 2006 and 2009 Congestion Studies that essentially ignored State input after the initial technical sessions. The States have a vested interest in the preparation of an accurate Study that fairly reflects the considerations of each State. As stated earlier in these comments, the PAPUC looks forward to a useful dialogue with DOE throughout this process. The EISPC/EIPC process has demonstrated that States can play a useful role in transmission planning as a partner, not an impediment to the process. The PAPUC will carefully evaluate the draft Congestion Study when it is produced and submit additional comments.

VII. Conclusion.

For all the foregoing reason, the PAPUC requests consideration and adoption, where appropriate, of its comments in this matter.

Respectfully submitted,

/s/ James P. Melia
James P. Melia
Attorney ID # 35265
jmelia@pa.gov

/s/ Aspassia V. Staevska
Aspassia V. Staevska
Attorney ID # 94739

`

astaevska@pa.gov

Counsel for the Pennsylvania Public Utility Commission

PO Box 3265
Harrisburg, PA 17105-3265
Tel: (717) 787-5000

Dated: January 30, 2012