ORAL ARGUMENT NOT YET SCHEDULED

IN THE
UNITED STATES COURT OF APPEALS
FOR THE DISTRICT OF COLUMBIA CIRCUIT

Nos. 15-1453 and 15-1455 (Consolidated)

PJM POWER PROVIDERS GROUP, *et al.*,

Petitioners,

v.

FEDERAL ENERGY REGULATORY COMMISSION,

Respondent.

On Petitions for Review of Orders of the
Federal Energy Regulatory Commission

PETITIONERS BRIEF FOR THE PSEG COMPANIES AND PJM POWER PROVIDERS GROUP

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Initial Brief Dated: May 31, 2016

PETITIONERS' CERTIFICATE AS TO PARTIES, RULINGS, AND RELATED CASES

Pursuant to Fed. R. App. P. 28 and D.C. Circuit Rule 28, the PJM Power Providers Group ("P3"), PSEG Power LLC ("PSEG Power"), PSEG Energy Resources & Trade LLC ("PSEG ER&T") and Public Service Electric And Gas Company ("PSE&G") (collectively, "PSEG" or the "PSEG Companies") hereby certify as follows.

1. Parties

A. Parties Before This Court

Petitioners: PJM Power Providers Group
PSEG Power LLC
PSEG Energy Resources & Trade LLC
Public Service Electric and Gas Company

Respondent: Federal Energy Regulatory Commission

Intervenors: American Municipal Power, Inc.
New Jersey Board of Public Utilities
Old Dominion Electric Cooperative
PJM Industrial Customer Coalition
PJM Interconnection, L.L.C.

B. Parties Below

The parties and intervenors appearing in the proceeding below before the Federal Energy Regulatory Commission, FERC Docket Nos. ER14-2940-000, ER14-2940-001 and ER14-2940-002 were:

American Electric Power Service Corporation
American Municipal Power, Inc.

American Public Power Association
Calpine Corporation
Dayton Power and Light Company, The
DC Office of the People's Counsel
Delaware Division of the Public Advocate
Dominion Resources Services, Inc.
Duke Energy Corporation
Duquesne Light Company
Dynegy Inc.
East Kentucky Power Cooperative, Inc.
Electric Power Supply Association
EnergyConnect, Inc.
Exelon Corporation
FirstEnergy Service Company
Illinois Commerce Commission
LS Power Associates, L.P.
Maryland Office of People's Counsel
Maryland Public Service Commission
Monitoring Analytics, LLC
New Jersey Board of Public Utilities
New Jersey Division of Rate Counsel
NextEra Energy Resources, LLC
North Carolina Electric Membership Corporation
NRG Companies (NRG Power Marketing LLC and GenOn Energy Management, LLC)
Ohio Consumers' Counsel
Old Dominion Electric Cooperative
Panda Power Generation Infrastructure Fund, LLC
Pennsylvania Office of Consumer Advocate
PJM Industrial Customer Coalition
PJM Interconnection, L.L.C.
PJM Power Providers Group
Public Power Association of New Jersey
PSEG Energy Resources & Trade LLC
PSEG Power LLC
Public Service Electric and Gas Company
Public Utilities Commission of Ohio
Rockland Electric Company
Southern Maryland Electric Cooperative, Inc.
West Virginia Consumer Advocate

3. Rulings Under Review

This petition seeks review of the following Federal Energy Regulatory Commission orders:

A. *PJM Interconnection, L.L.C.*, Docket No. ER14-2940-000, "Order Conditionally Accepting Tariff Revisions Subject to Compliance Filing," 149 FERC ¶ 61,183 (Nov. 28, 2014); and,

B. *PJM Interconnection, L.L.C.*, Docket Nos. ER14-2940-001, *et al.*, "Order on Rehearing and Compliance," 153 FERC ¶ 61,035 (Oct. 15, 2015).

4. Related Cases

The orders on review have not previously been before this Court or any other court.

Respectfully submitted,

/s/ Kenneth R. Carretta

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Dated: May 31, 2016

PETITIONERS' CORPORATE DISCLOSURE STATEMENT

Pursuant to Rule 26.1 of the Federal Rules of Appellate Procedure, Fed. R. App. P. 26.1, and Rule 26.1 of the General Rules of the United States Court of Appeals for the District of Columbia Circuit, the PJM Power Producers Group ("P3"), Public Service Electric and Gas Company ("PSE&G"), PSEG Power LLC ("PSEG Power") and PSEG Energy Resources & Trade LLC ("PSEG ER&T") (collectively "PSEG" or the "PSEG Companies") hereby provide the corporate disclosure statement in connection with the Petition for Review in the above-captioned matter.

1. P3 is a non-profit organization dedicated to advancing federal, state and regional policies that promote properly designed and well-functioning electricity markets in the PJM Interconnection, L.L.C. ("PJM") region.[1] Combined, P3 members own over 84,000 MWs of generation assets, produce enough power to supply over 20 million homes and employ over 40,000 people in the PJM region covering 13 states and the District of Columbia. For purposes of this disclosure statement, P3 respectfully submits that it is a trade association pursuant to Circuit Rule 26.1 (b).

[1] The statements contained in this brief represent the position of P3 as an organization, but not necessarily the views of any particular member with respect to any issue.

2. The PSEG Companies are each wholly owned, direct and indirect subsidiaries of Public Service Enterprise Group Incorporated ("PSEG"). The principal and executive offices of PSEG are located at 80 Park Plaza, Newark, New Jersey 07102. PSEG is a public utility holding company engaged in, among other things, the generation, transmission, and sale of electric energy through its subsidiaries.

3. PSE&G is a public utility company organized under the laws of the State of New Jersey. PSE&G is presently engaged in, among other things, the transmission and distribution of electricity and the distribution of natural gas in New Jersey.

4. PSEG Power is a wholesale energy supply company that integrates its generation asset operations with its wholesale energy, fuel supply, energy trading and marketing, and risk management functions through three principal subsidiaries: (i) PSEG Nuclear LLC, which owns and operates nuclear generating stations; (ii) PSEG Fossil LLC, which develops, owns, and operates domestic fossil-fired and other non-nuclear generating stations; and (iii) PSEG ER&T.

5. PSEG ER&T sells power and certain ancillary services at market-based rates. PSEG ER&T markets the capacity and production of PSEG Nuclear's and PSEG Fossil's generating stations, manages the

commodity price risks and market risks related to generation, and provides gas supply services. PSEG ER&T is engaged in extensive asset-based energy trading operations throughout the Northeast.

6. PSE&G has publicly-held preferred stock and debt securities outstanding. PSEG has publicly-held common stock and debt securities outstanding. PSEG Power LLC, has publicly-held debt securities outstanding.

Respectfully submitted

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Dated: May 31, 2016

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GLOSSARY

APA	Administrative Procedure Act
BLS	Bureau of Labor Statistics
Brattle	The Brattle Group
Brattle CONE Study	"Cost of New Entry Estimates for Combustion Turbine and Combined Cycle Plants in PJM," included as an appendix to the Newell/Ungate affidavit, designated as Attachment D to PJM's September 25, 2014 filing
Brattle Report	"Third Triennial Review of PJM's Variable Resource Requirement Curve," included as an appendix to the Newell/Spees affidavit, designated as Attachment E to PJM's September 25, 2014 filing
Capacity	The ability of a generator to produce a certain quantity of energy, regardless of whether it is actually called upon to operate.
Capital Asset Pricing Model	Capital Asset Pricing Model is a method for pricing securities which assumes that the expected return of a security will equal the rate on a risk-free security plus an additional risk premium associated with the particular security being analyzed**.**
Commission	Federal Energy Regulatory Commission
CONE	The nominal levelized amount intended to represent the "cost of new entry" for a representative peaking plant taking account of capital costs (including a return on investment) and fixed operating and maintenance costs. Net CONE—that is, CONE minus expected revenues for energy and ancillary services—is located on the RPM downward sloping demand curve at the point corresponding with the target reserve level

	plus 1%. The CONE value determines the height of the downward sloping demand curve. CONE is determined administratively through engineering and financial studies. In the past, the tariff required PJM to update CONE every three years. Following the most recent update in 2014, the tariff requires PJM to update CONE every four years.
FPA	Federal Power Act
Gross CONE	The Gross Cost of New Entry reflects the revenues a new generation resource needs to earn to enter the market and recover its capital investment and annual fixed costs and is the value equal to the CONE before subtracting expected revenues for energy and ancillary services.
IMM	The Independent Market Monitor that oversees markets administered by PJM Interconnection, L.L.C.
IPP	Independent Power Producer
Initial Order	*PJM Interconnection, L.L.C.*, 149 FERC ¶ 61,183 (2014), JA____-____
IRM	Installed Reserve Margin
Locational Delivery Areas	Zones or sub-zones within PJM that may separate as separate markets under RPM.
Net CONE	The Net Cost of New Entry is the value equal to the CONE after subtracting expected revenues for energy and ancillary services.
P3	PJM Power Providers Group
PJM	PJM Interconnection, L.L.C.
PJM Filing	*PJM Interconnection, L.L.C.*, Docket No. ER14-2940-000 (filed September 25, 2014)

PSEG	Public Service Electric and Gas Company, PSEG Power LLC and PSEG Energy Resources & Trade LLC
Rehearing Order	*PJM Interconnection, L.L.C.*, 153 FERC ¶ 61,035 (2015), JA____-____
ROE	Return on Equity
RPM	Reliability Pricing Model. The rules that govern PJM's procedures for securing sufficient generation capacity to serve anticipated demand. The main provisions of RPM are set forth in Attachment DD of the PJM tariff.
S&L	Sargent & Lundy
Tariff	PJM Open Access Transmission Tariff
VRR Curve	Variable Resource Requirement Curve is the administratively determined demand curve used for RPM auctions. Discrete zones called "locational deliverability areas" may have separate curves for particular auctions to incentive the retention of existing resources or the development of new resources in that area.

I. JURISDICTIONAL STATEMENT

This petition challenges orders of the Federal Energy Regulatory Commission ("FERC" or "Commission") accepting specified labor and capital cost values used to calculate the Gross Cost of New Entry ("CONE") for auctions of electric generation capacity in the regional market administered by PJM Interconnection, L.L.C. ("PJM") *See PJM Interconnection, L.L.C.*, 149 FERC ¶ 61,183 (Nov. 28, 2014) ("Initial Order"), *reh'g denied*, 153 FERC ¶ 61,035 (Oct. 15, 2015) ("Rehearing Order"). FERC's orders are final and aggrieve capacity suppliers in PJM by lowering the price of wholesale energy capacity to an unjust and unreasonable level. The PJM Power Providers Group and PSEG Companies each timely requested rehearing of the Initial Order on December 29, 2014 and timely petitioned for judicial review on December 14, 2015 as required by Federal Power Act ("FPA") section 313. *See* 16 U.S.C. § 825*l*. This Court has jurisdiction to review the challenged orders under FPA section 313(b). *See id.* § 825*l*(b).

II. STATEMENT OF THE ISSUES

1. FERC erred in accepting understated labor cost estimates proposed by the PJM Independent Market Monitor ("IMM") and adopted by PJM to calculate the Gross CONE.

2. FERC erred in accepting an understated overall Cost of Capital of 8% proposed by PJM and used to calculate the Gross CONE.

III. STATUTES AND REGULATIONS

Pertinent statutes, regulations, and tariff provisions are reprinted in the attached addendum.

IV. STATEMENT OF THE CASE

In order to fulfill its obligation under its Open Access Transmission Tariff ("Tariff"), PJM submitted to FERC a proposal to revise certain elements of its Reliability Pricing Model ("RPM"). RPM's purpose is to provide price signals regarding when and where to construct new electric generation resources needed for reliability. PJM is required to perform a periodic review of the key RPM parameters including the Gross Cost of New Entry ("CONE"), which provides estimates of the cost of construction of the reference technology. Although Petitioners have consistently supported PJM's efforts to enhance the functioning of its capacity market, they objected to PJM's calculation of Gross CONE values. Specifically, PJM understated the labor cost component of the construction costs and the after-tax weighted-average cost of capital ("Cost of Capital") used to discount future cash flows into present values. As a result, the Gross CONE itself was significantly understated.

FERC accepted PJM's proposal subject to certain revisions not relevant here. FERC denied Petitioners' timely rehearing requests. This petition followed.

V. STATEMENT OF FACTS

This case concerns the rules governing PJM's RPM which is the auction mechanism PJM uses to ensure that enough generation capacity is procured to meet consumer demand. PJM is one of many Regional Transmission Organizations and Independent System Operators (collectively regional entities) that manage the complexities of the electric grid and that facilitate competition among energy providers. *See Morgan Stanley Capital Group v. Pub. Util. Dist. No. 1,* 554 U.S. 527, 536-38 (2008). Each regional entity acts as the system operator in a specific region and manages the transmission grid on behalf of transmission-owning member utilities. *See NRG Power Mktg., LLC v. Me. Pub. Utils. Comm'n*, 558 U.S. 165, 169 n.1 (2010).

PJM is the regional entity that coordinates the movement of wholesale electricity in all or parts of thirteen mid-Atlantic states and the District of Columbia. It operates a competitive wholesale electricity market and manages the high-voltage electric transmission grid to ensure reliability for more than 61 million people.

A. The PJM Capacity Procurement Mechanism

"One of PJM's primary responsibilities as a system operator is to ensure that there is a sufficient amount of electrical capacity within its system to provide reliable electricity to its consumers during periods of peak demand." *N.J. Bd. of Pub. Utils. v. FERC*, 744 F.3d 74, 82 (3d Cir. 2014). To accomplish this objective, PJM administers the regional markets for both energy and capacity through which Load Serving Entities ("LSEs") – that is, utilities who provide electricity to retail consumers – must purchase sufficient capacity to ensure they are able to serve peak demand. *See Conn. Dep't of Pub. Util. Control v. FERC*, 569 F.3d 477, 479 (D.C. Cir. 2009). Energy – that is, actual electricity – is sold wholesale through a "day-ahead market" and a "real-time market." *See Black Oak Energy, LLC v. FERC*, 725 F.3d 230, 233 (D.C. Cir. 2013). "In a capacity market, in contrast to a wholesale energy market, an electricity provider purchases from a generator an option to buy a quantity of energy, rather than purchasing the energy itself. To maintain the reliability of the grid, electricity providers generally purchase more capacity, *i.e.*, rights to acquire energy, than necessary to meet their customers' anticipated demand." *NRG Power Mktg.*, 558 U.S. at 168-69.

PJM uses a system of annual and incremental auctions to acquire sufficient capacity resources to meet its needs. The "purpose of the capacity market is to ensure that generators receive sufficient total revenue (capacity market payments plus energy and ancillary service revenue) to cover the actual cost of entering the unconstrained region in order to create the proper incentive for new entry." *PJM Interconnection, L.L.C.*, 128 FERC ¶ 61,157 P 13 (2009). The Third Circuit succinctly described this mechanism as follows:

> All capacity suppliers (*i.e.*, generation and transmission resources) that wish to receive a capacity payment or satisfy an LSE's capacity obligation are required to offer their available capacity into an auction. Those offers are grouped based on the particular "locational delivery area," or "LDA," the resource will serve. Offers are then accepted by the auction, or "cleared", in order of price, starting with the lowest price offered, and continuing until there is sufficient capacity in the auction to satisfy PJM's requirements for each LDA. All offers that clear for a given LDA are then paid the "clearing price" for that area, which is equal to the last offer (*i.e.*, the highest offer) necessary to meet the area's reliability needs as determined by P[JM]. (sic) The auction therefore sets the price that the LSEs will pay for capacity in a given area. Only capacity offers that successfully clear the auction can be counted towards an LSE's capacity requirements.

N.J. Bd. of Pub. Utils., 744 F.3d at 83-84 (footnotes omitted).

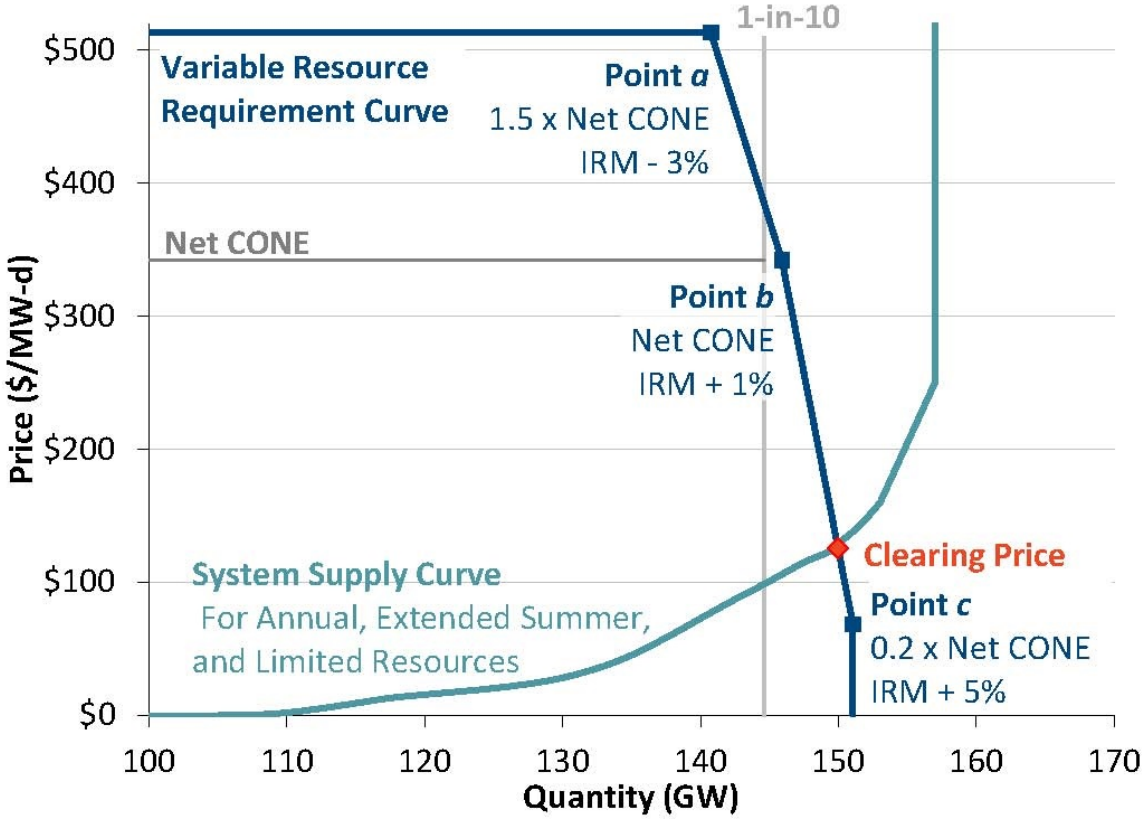
The auction mechanics operate through three basic elements: a supply curve, a demand curve, and the CONE value. Basically, the clearing price is the point of intersection between the supply curve and the demand curve.

The supply curve is a function of generator offers and the *shape* of the demand curve is based on an administrative rule set forth in the PJM tariff.

The third element – the CONE – is the construction and financing cost, levelized over a twenty year recovery period, of building a specified type of Combustion Turbine generator. Its value determines the "height" of the administratively determined demand curve. In other words, the CONE determines the correlation between the points on the demand curve and the price. To be precise, the *Net* Cost of New Entry, *i.e.*, the *Gross* CONE minus credits for energy and ancillary services payments that a resource receives, performs this function. *See generally* PJM Tariff, Attach. DD, § 5.12, A-19 to A-25. The RPM construct is designed, in theory, so that over time the *average* capacity price realized in the capacity auctions will be approximately equal to the Net CONE. "Third Triennial Review of PJM's Variable Resource Requirement Curve" ("Brattle Report") at 5, PJM Transmittal Letter, Attach. E, Newell/Spees Aff., JA____.

The following example of a past RPM auction demonstrates the principles underlying the basic clearing mechanism:

Figure 1
Capacity Supply and Demand in RPM
(Example: 2014/15 Base Residual Auction)



Id. at 4, JA____. As depicted in the graph, the clearing price of $125.99 is determined by the intersection of the demand curve and supply curve. Also, the Net CONE value located at the Installed Reserve Margin ("IRM") plus 1% on the demand curve correlates with the "x" (price) axis. Had the Net CONE been higher in this depiction, the clearing price would also have been higher because the downward-sloped demand curve would start at a higher point and thus would intersect the upward-sloped supply curve further to the right.

Accordingly, Gross CONE – and, ultimately, Net CONE – are key elements of the price determination mechanism for the capacity market auction. As stated in the Brattle Report included as part of PJM's filing:

> The administrative Gross CONE value reflects the net revenues a new generation resource needs to earn to enter the market and recover its capital investment and annual fixed costs. Gross CONE is the starting point for estimating the Net CONE. Net CONE is defined as the operating margins that a new resource would need to earn in the capacity market, after netting margins earned in the [energy and ancillary services] markets. Accurate Net CONE estimates are critical to RPM performance because they provide the benchmark prices against which administratively-determined system and local VRR curves are defined. Over- or under-estimated Net CONE values would result in either over- or under-procuring capacity relative to the quantity needed to satisfy PJM's resource adequacy standard.

Id. at iii, JA____.

At issue in this appeal is the calculation of "Gross CONE" with respect to two of its key inputs: the cost of labor and the Cost of Capital.[2]

B. PJM's Filing

On September 25, 2014, PJM submitted proposed changes to its tariff, pursuant to FPA section 205, 16 U.S.C. § 824d, to revise certain of the pricing elements used to clear its capacity market auctions under RPM. *See* PJM Tariff, Attach. DD. JA__. This filing was required under the PJM tariff to meet an obligation to conduct a triennial review of the capacity market

[2] Unless stated otherwise, all future references to "CONE" refer to "Gross CONE."

pricing inputs. *See id.*, §§ 5.10(a)(i)-(iii), A-10 to A-13. The changes proposed by PJM included new CONE values for the reference Combustion Turbine generating unit.[3] Because there were five PJM CONE Regions, there were five different values for Gross CONE that took account of local conditions.[4]

PJM retained the Brattle Group, in collaboration with Sargent & Lundy ("S&L") to assist in preparing the CONE estimate. *See* "Cost of New Entry Estimates for Combustion Turbine and Combined Cycle Plants in PJM" ("Brattle CONE Study"), PJM Transmittal Letter, Attach. D, JA____-____. "S&L [took] primary responsibility for developing the plant proper capital, plant O&M, and major maintenance costs and the Brattle authors [took] responsibility for various owner's costs and fixed O&M costs, and for translating the cost estimates into the CONE values." *Id.* at vii, JA___. The lead authors of the Brattle CONE Study were Dr. Newell at Brattle and Mr. Ungate at S&L. *See id.* at 1, JA____. Mr. Ungate's study included all the

[3] The "Reference Resource" is defined as "a combustion turbine generating station, configured with two General Electric Frame 7FA turbines with inlet air cooling to 50 degrees, Selective Catalytic Reduction technology in all CONE Areas, dual fuel capability, and a heat rate of 10.096 Mmbtu/ MWh." PJM Tariff, Attach. DD, § 2.58, A-8 to A-9.

[4] The Initial Order subsequently reduced the number of CONE regions from 5 to 4.

elements of the build-up for the construction cost of the reference unit including values for the cost of labor.

A fourth expert supported one element of the proffered Brattle CONE Study. As a substitute for Mr. Ungate's labor cost estimates found in the Brattle CONE Study, Dr. Sotkiewicz, PJM's chief economist, provided support for different labor cost components proposed by PJM. Subject to one minor adjustment not relevant here, these values had been previously proposed by another (fifth) consultant, Pasteris Energy, Inc. ("Pasteris") who in turn relied upon yet another (sixth) consultant Stantec Consulting Services, Inc. ("Stantec") for the labor costs. Transmittal Letter, Attach. C, Sotkiewicz Aff. P 38, JA____. The Pasteris study was introduced by the PJM Independent Market Monitor during the PJM stakeholder process that preceded PJM's filing. *Id.* P 36, JA____.

The labor cost values proposed by Dr. Sotkiewicz to calculate Gross CONE were significantly lower than the values determined by Mr. Ungate:

Table 1: "Construction Labor" Values for Combustion Turbine
($ millions)

Supporting Witness	CONE Area 1	CONE Area 2	CONE Area 3	CONE Area 4	CONE Area 5
Ungate	$71.7	$55.4	$55.3	$54.5	$48.2
Sotkiewicz	$38.3	$22.9	$21.4	$30.5	$21.1

See P3 Protest, Uniszkiewicz Aff., tbls. 1 & 2, JA____-____ (comparing Brattle CONE Study at 26, tbl. 19, JA____, with Sotkiewicz Aff. at 13, tbl. 2, JA____). PJM's filing indicated that the lower values claimed by Dr. Sotkiewicz had been approved by the PJM Board of Managers. *See* Transmittal Letter at 28, JA____. What PJM's filing did not make clear, however, was that PJM staff (including Dr. Sotkiewicz) had supported the higher values calculated by Mr. Ungate throughout the PJM stakeholder process. The PJM Board adopted the lower labor cost values from the Pasteris/Stantec study in a closed session *after* the stakeholder process ended and "directed staff to file a modified version of the PJM staff proposal" that would "utilize the IMM's proposed labor cost estimates in the CONE calculation instead of Brattle's recommended labor cost estimates." PJM Board Statement on 2014 Triennial Review Filing at 1 (Sept. 10, 2014) http://www.pjm.com/~/media/committees-groups/task-forces/cstf/20140912/20140912-board-statement-on-2014-triennial-review-filing.ashx; *see also* Initial Order P 96, JA____ ("PJM proposes to adopt an estimate that varies from that recommended by Brattle.").

The calculation of total labor costs is based on three components: base labor-hours; wage rate; and labor productivity factor. *See* Sotkiewicz Aff. PP 36-44, JA____-____.

- Base labor-hours are the number of hours required to construct the reference unit on the Gulf Coast before adjusting for regional differences. *Id.* PP 43-44, JA____-____.
- The wage rate is the average wage, including overtime and benefits, paid to generating plant construction workers in the area where a plant is built. *Id.* PP 41-42, JA____-____.
- The productivity factor is the relative productivity of workers in the area where a plant is built compared to workers in the Gulf Coast. *Id.* P 43, JA____. A higher productivity factor means labor is less productive, *i.e.*, it takes *more* time to do the same amount of work. *See id.*, JA____.

Dr. Sotkiewicz did not claim to have any expertise or personal knowledge regarding the inputs for the labor cost calculation. Nonetheless, he undertook to "validate the reasonableness" of the Pasteris/Stantec labor cost estimates. *Id.* P 41, JA____. His affidavit identified two sources for the base labor-hours value he used of 360,000 labor-hours: the report prepared by Stantec referenced by the Pasteris study but never produced in the record or in the PJM stakeholder process; and a report prepared by another consultant, CH2M Hill, in 2011 filed in a previous FERC docket. *Id.* PP 38-39, JA____-____. For the wage rates, Dr. Sotkiewicz used U.S. Bureau of

Labor Statistics (BLS) data reporting for "Utility Construction Wages" as designated under the North American Industrial Classification. *Id.* P 41, JA____. He then adjusted the BLS data by multipliers he obtained from discussions with S&L to account for "fringe costs" such as taxes, benefits and workers' compensation. *Id.* P 42, JA____. For the productivity factor, he used the average of a range of values also obtained from S&L. *Id.* P 43, JA____. On the basis of his calculations using these inputs, Dr. Sotkiewicz explained that: "PJM has adopted the [Independent Market Monitor] construction labor costs because they can be nearly reproduced using publicly available data, and what PJM has learned over time from both the current and past CONE studies for the [Combustion Turbine] Reference Resource." *Id.* P 44, JA____.

The Brattle Group was responsible for calculating the other element of the CONE study at issue in this appeal, namely the Cost of Capital. *See* Brattle CONE Study at 34-39, JA____-____. This value is used for "translating uncertain future cash flows into present values and deriving the CONE value that makes the project net present value (NPV) zero." *Id*. at 34, JA____. Brattle's recommendation was for an overall Cost of Capital value equal to 8.0% and was derived from two sources. *See id.* at 37, JA____.

First, Brattle calculated a Cost of Capital for three publicly-traded companies using a Capital Asset Pricing Model methodology based on widely available industry data – Calpine, NRG, and Dynegy – which resulted in a simple average of 6.7%. *Id.* at 35-37 & tbl. 25, JA___. Second, Brattle also identified a number of "other reference points [that] come from publicly available values used by financial advisors and analysts in valuations associated with mergers and divestitures." *Id.* at 36, JA____. Brattle specifically determined, however, not to include any data about private equity funds stating that "[w]e do not include private equity investors in our samples because their cost of equity cannot be observed in market data." *Id.* at 35 n.27, JA____. Brattle then adjusted the 6.7% value based on the Capital Asset Pricing Model analysis of the publicly-traded IPPs upward by 1.3% to 8.0% in order to "reflect the assumption of merchant risk that exceeds the average risk of the publicly-traded generation companies" and which placed the rate "near the mid-point of the range of additional reference points." *Id*. at 37, JA____.

C. P3 and PSEG Protests

P3 and PSEG supported certain elements of PJM's filing but both protested PJM's CONE calculation with respect to labor costs and Cost of Capital. P3 supplied a witness, Mr. Uniszkiewicz, with 33 years of

experience in the construction industry, who identified infirmities in PJM's labor cost estimates. *See* P3 Protest, Uniszkiewicz Aff., PP 1-3, JA____-____. Mr. Uniszkiewicz showed that PJM understated all three elements that go into the labor cost calculation. In particular, he criticized PJM's value of 360,000 labor-hours for the base labor-hours. Based on his own experience in constructing peaking plants, he estimated that 847,000 labor-hours are needed for constructing the reference Combustion Turbine resource which is about 135% higher than the Stantec/Pasteris value. *Id.* P 12, JA____. In addition, he prepared an analysis showing that if Dr. Sotkiewicz's recommendations for the wage rate and productivity factor were accepted, the resultant implied labor-hours used by Mr. Ungate in the S&L study would need to be much higher than Mr. Sotkiewicz was recommending, as depicted below:

	CONE Area 1	CONE Area 2	CONE Area 3	CONE Area 4	CONE Area 5
Ungate Implied Unadjusted Labor-Hours	635,000	788,000	658,000	572,000	740,000
Percentage Above Stantec Unadjusted Labor-Hours	76%	119%	83%	58%	106%

Id. P 17, JA____. His affidavit also explained that PJM could not properly rely upon the 2011 CH2M Hill study for the labor-hours because FERC had previously determined that the labor components in that study had not been shown to be just and reasonable. *Id*. P 17 n.8, JA____.

Mr. Uniszkiewicz also indicated that Mr. Sotkiewicz had understated the wage rates used in the labor cost calculation. He surmised that Mr. Sotkiewicz may have wrongly assumed that the work would be performed in a 40 hour work week when, in fact, considerable overtime work is typically involved in this type of construction. *Id.* P 10, JA____. He estimated that Dr. Sotkiewicz underestimated wages by 8% to 10% for CONE Area 1. In addition, Mr. Uniszkiewicz determined that Dr. Sotkiewicz had understated the productivity factor for CONE Area 1; instead of 1.16 as proposed by PJM, he determined that it should be 1.21. *Id.* P 11, JA____. Mr. Uniszkiewicz also noted that these same general concerns would apply to CONE Areas 2 to 5. *Id.* PP 15-18, JA____-____. PSEG objected to the PJM filing on similar grounds to those of P3. *See* PSEG Protest at 3, 4, 20, 21, JA____, ____, ____, ____.

P3 also sponsored two expert witness affidavits prepared by PA Consulting, Inc. ("PA Consulting") that criticized Brattle's calculation of the Cost of Capital. *See* P3 Protest, Hardy/Repsher Aff., JA____; Heidell/

Repsher Aff., JA____. The most salient point raised in the affidavits was that Brattle's calculation ignored the characteristics of the private equity entities that were constructing the vast bulk of new, gas-fired generation in PJM. Only 10% of the new construction in PJM was being made by publicly-traded companies; in comparison, about 70% of the new construction was being done by private equity funds and specialized power development shops. *See* Hardy/Repsher Aff. P 7, JA____. Among the specific claims made in the affidavits was that Brattle had failed to consider "project financing" risk associated with these types of developers, and had failed to incorporate the return on equity ("ROE") requirements of the private equity funds. *Id.* PP 9, 24, JA____, ____. Thus, the affidavits contended that Brattle's ROE of 13.8% was too low in comparison to private equity fund indices that indicated a necessary ROE of between 14.15% and 19.74%. *See* Heidell/Repsher Aff. P 12, tbl. 3; *see also* Hardy/Repsher Aff. P 23, tbl. 1 (recommending ROE between 15% and 20%).

D. Answering Pleadings

1. PJM Answer

On November 6, 2014, PJM answered certain of the protests filed in response to its filing, including those of P3 and PSEG. PJM made a number of allegations with respect to the labor cost calculation which included

supplemental materials supplied in two more affidavits. First, Dr. Sotkiewicz stated that he adequately considered overtime because the BLS data he used should include all remuneration, including overtime payments, for this work. *See* PJM Answer, Attach. C, Sotkiewicz Ans. Aff. P 8, JA____.

Second, Dr. Sotkiewicz noted that the answering affidavit of PJM witnesses Pfeifenberger and Zhao ”confirmed” that the (previously undisclosed) base labor-hours value used by S&L for CONE Area 1 was 368,000 hours (before adjusting for the productivity factor) which was close to the Stantec value of 360,000. *Id.* P 9, JA___. Third, Dr. Sotkiewicz argued that the base labor-hours values Mr. Uniszkiewicz calculated from peaker projects constructed by PSEG Power affiliates were “unreliable” because they did not consider economies of scale associated with building a larger plant such as the Combustion Turbine reference unit. *Id.*, JA____. Finally, Dr. Sotkiewicz argued that the lower productivity factor he used would have only a minor impact on the overall cost of labor. *Id.* P 10, JA____.

PJM also responded with respect to the Cost of Capital criticisms made by P3’s expert witnesses. In general, PJM’s response claimed that the data relied upon by P3’s witnesses were unreliable and did not demonstrate

that the Brattle methodology failed to reasonably account for all relevant risks. *See* PJM Answer at 28-29, JA____-____. In particular, addressing P3's claims that Brattle failed to consider "project financing" risks, PJM's expert witnesses asserted that private equity "investors can easily diversify the diversifiable risks themselves" and, in any event, "diversification does not add to a firm's value or subtract from it." *Id.* (citing PJM Answer, Attach. B, Pfeifenberger/Zhou Ans. Aff. at 15-16, JA____-____).

2. P3 Reply Comments

P3 replied to PJM's Answer with respect to the labor cost matter, attaching a supplemental affidavit by Mr. Uniszkiewicz responding to Dr. Sotkiewicz. Mr. Uniszkiewicz explained that reliance on general BLS utility worker data was deeply flawed as compared to specific data for the costs of new power plant construction. Because the BLS data used by Dr. Sotkiewicz was based on the North American Industrial Classification of "utility," the data set captured the wage information of industries other than the electric generation business such as sewage management. P3 Reply, Uniszkiewicz Resp. Aff. P 4, JA____. In addition, the North American Industrial Classification data failed to distinguish between workers with permanent utility jobs and those who work on discrete construction projects. This distinction is significant because specialized workers at temporary jobs

require higher wages or more overtime hours to take the work and, accordingly, will have higher average wage rates. In addition, workers at different industries are likely to be in different labor units. *Id.*, JA___.

Mr. Uniszkiewicz also responded to the assertion that the S&L study used the base labor-hour value of 368,000. He performed an analysis showing that when he back-calculated the implied wage rate, assuming that the 368,000 base labor-hour value was correct, the result showed a huge discrepancy with Dr. Sotkiewicz's claimed wage rate values. *Id.* P 6, JA____. In addition, noting his "extensive experience with providing cost estimates for power plant projects which has included power plants larger than the [Combustion Turbine] reference unit," he flatly contradicted Dr. Sotkiewicz's claim that he failed to consider economies of scale in preparing his estimate. *Id.* P 7, JA____. Finally, Mr. Uniszkiewicz noted that the higher productivity factor he identified reflected his actual experience in construction and would have been more impactful if the correct values for wage rates and base labor-hours were used. *Id.* P 8, JA____.

E. Initial Order

FERC's initial order accepted PJM's presentations with respect to the matters covered by this appeal. FERC found that PJM's labor cost data was supported by "publicly-available data on wage rates and labor estimates

from its previous CONE studies." Initial Order P 105, JA____. FERC generally rejected "intervenors' assertion that PJM's labor inputs are unsupported" and found that PJM had "a sufficient basis to depart from Brattle's recommendations" because the PJM IMM and PJM relied on publicly-available wage data supplied by the BLS. *Id*. PP 107-108, JA____.

Responding almost exclusively to the productivity issue, the least impactful of the issues identified by P3's witness, Mr. Uniszkiewicz, FERC accepted PJM's productivity values for three reasons. First, PJM's proposal was "consistent with labor productivity factors as used in Brattle's 2011 CONE Study." *Id.* P 109, JA____. Second, PJM's overall "construction labor costs are quite close to those relied upon by the [Independent] Market Monitor." *Id.* And third, "the difference between these productivity factors is not relevant in establishing an appropriate CONE estimate." *Id*. However, FERC did not specifically address the other deficiencies that Mr. Uniszkiewicz identified with the base labor-hours value or the wage rates.

FERC also rejected protests to PJM's proposed Cost of Capital calculation methodology, finding generally "that Brattle's methodology provides a reasonable Cost of Capital that 'captures financial market conditions and appropriately balances investor and consumer interests.'" *Id.* P 76, JA____ (citing Pfeifenberger/Zhou Ans. Aff. at 5, JA____).

With respect to P3's first specific criticism now on appeal—that Brattle failed to take account of "project-level finance" risk – FERC held that the Brattle methodology recognized the additional risks faced by a "merchant generator" as compared to "the average portfolio of independent power producers that have some long-term contracts and other hedges in place." *Id.* P 81, JA____. To determine the risk faced by a "generic" plant in the PJM footprint, FERC found "a 1.3 percent upward adjustment from 6.7 percent to 8.0 percent, which is 'near the mid-point of the range of the additional reference points,' to be just and reasonable." *Id.*, JA____. And, with respect to P3's protest that FERC should have considered the higher ROEs typically required for private equity funds, FERC "agree[d] with PJM that private equity consists of portfolios of investments in many different projects in many different industries, and therefore their ROEs are a poor proxy for determining the Cost of Capital for a merchant generation facility." *Id.* P 82, JA____ (citing Pfeifenberger/Zhou Ans. Aff. at 14, JA____).

F. Rehearing Requests

P3 and PSEG contested FERC's findings on rehearing. With respect to the labor cost calculation, they reiterated their objections that FERC left virtually unanswered from their protests. As PSEG explained, FERC "did

not provide any explanation, much less a reasoned one, as to why it accepted values that not only understated the actual labor costs based on expert testimony regarding actual projects, but were based on components not supported by the sworn affidavit of any witness purporting to be an expert in the area." PSEG Rehearing at 11, JA____.

P3 and PSEG also reiterated their objections on Cost of Capital issues FERC overlooked in the Initial Order. With regard to the order's failure to recognize project-level financing risk, "P3 acknowledge[d] the difference between 6.7% and 8.0%, [*i.e.*, the 1.3% adjustment]," but observed that "it is unclear how this difference fully recognizes the difference between company level and project level financing." P3 Rehearing at 12, JA____. P3 further explained:

> The reference points [from the Brattle CONE Study] appear to converge around 8%. And all the reference points are based on company-level data, not project-level data. Thus it does not appear that the need to base the Cost of Capital on project-level costs has been adequately reflected in the 8.0% value adopted in the Order.

Id. at 13, JA____ (footnote omitted). In sum, P3 explained that the "company-level" data used in the Brattle CONE Study did not address "project-financing" risks and, as such, "do not reflect recent and current new build generation in PJM." *Id.* at 12, JA____.

P3 and PSEG also reiterated their earlier fundamental criticism that the data used by Brattle to calculate the Cost of Capital ignored the actual characteristics of the largest segment of the generation industry constructing new gas-fired generation. As PSEG explained, "even if . . . private equity portfolios are a 'poor proxy' . . . this would not excuse PJM from carrying its burden of proof to demonstrate why the data derived from the publicly-traded IPP's (sic) provides a reasonable basis for calculating [after tax-weighted average cost of capital] for the [Combustion Turbine] reference unit." PSEG Rehearing at 13, JA____. Similarly, P3 contended that "Brattle incorrectly relied upon corporate-level, publicly-traded financial metrics, which do not reflect recent project-level financed generation in PJM." P3 Rehearing at 7, JA____. P3 explained that, while "private equity indices reflect industries in addition to electric generation, they are the best available indicator of the equity cost of the type of entities actually developing new generation in PJM." *Id.* at 19, JA____. For these reasons, "[t]he proxy group relied upon by PJM was not 'risk appropriate' and therefore could not satisfy PJM's burden of proof under section 205 of the FPA." *Id.* at 20 & nn.30-31, JA____ (quoting and listing FERC and judicial precedent).[5]

[5] The Supreme Court has long held that held that a just and reasonable

G. Rehearing Order

FERC rejected all of P3's and PSEG's claims on rehearing. With respect to labor costs, FERC held that PJM's determination was adequately supported for three reasons. FERC found that wage rates were not "understated" because they were "verified relative to the wage rates for utility construction in New Jersey, as reported by the U.S. Bureau of Labor Statistics," which "reflects remuneration of every type, including overtime pay." Rehearing Order P 75, JA____.

FERC also determined that the base labor-hours PJM derived from the Pasteris Report were supported "on this record" for three reasons. *Id.* P 76, JA____. First, FERC determined that "the labor hours reflected in the Pasteris Report were considered in PJM's stakeholder process" and reflected "good faith negotiation during the stakeholder process." *Id.* Second, while the Pasteris report was never placed in the record or produced for the

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return should be "commensurate with returns on investments in other enterprises having corresponding risks." *FPC v. Hope Natural Gas*, 320 U.S. 591, 603 (1944). P3 relied on more recent FERC and D.C. Circuit precedent in the same vein. *See, e.g.*, *Martha Oakley*, *Mass. Attorney Gen. v. Bangor Hydro-Elec. Co.*, Opinion No. 531, 147 FERC ¶ 61,234 at P 96 (2014) (explaining that selection of proxy group is a question of "capital attraction and comparability of risk."); *Composition of Proxy Groups for Determining Gas and Oil Pipeline Return on Equity*, 123 FERC ¶ 61,048, P 48 (2008)) ("It is thus crucial that the firms in the proxy group be comparable to the regulated firm whose rate is being determined. In other words, as the court emphasized in *Petal*, the proxy group must be 'risk-appropriate.'") (quoting *Petal Gas Storage, L.L.C. v. FERC*, 496 F.3d 695, 699 (D.C. Cir. 2007)).

inspection of any opposing party, FERC asserted that it "was developed based on data from recent construction proposals and input obtained from multiple construction contractors doing business in New Jersey." *Id.*, JA____. Third, FERC stated the Pasteris Report was consistent with "its prior CONE studies." *Id.*

FERC dismissed Mr. Uniszkiewicz's calculation of base labor-hours for the Combustion Turbine reference unit based on three recent peaker projects constructed by PSEG affiliates because "it ignores the economies of scale in building larger plants with less proportionate quantities of labor." *Id.* P 77, JA____. FERC also dismissed Mr. Uniszkiewicz's demonstration that the labor cost values used by Dr. Sotkiewicz and the implied values used by Mr. Ungate were extremely inconsistent. FERC found that Mr. Uniszkiewicz was "mistaken" because the 368,000 labor-hour estimate clarified by the Brattle witnesses in the PJM Answer was not "widely divergent" from the 360,000 labor-hours value used by Dr. Sotkiewicz. *Id.* P 78, JA____. FERC did not respond to Mr. Uniszkiewicz's mathematical demonstration that if the 368,000 base labor-hours value supposedly used by S&L is applied to the total labor cost value calculated in the S&L study, the resultant wage costs are much higher than the calculation recommended by Dr. Sotkiewicz.

With respect to Cost of Capital issues, FERC largely restated its findings from the Initial Order. FERC continued to insist it had already adequately considered any "project-financing" risks, through its 1.3% adjustment to the Capital Asset Pricing Model calculation undertaken for the publicly-traded IPPs. Thus, FERC claimed that the "asserted distinction" between corporate-level data for publicly-traded IPPs and project-level financing was not "relevant," and found PJM's reliance on "market- and transaction-based Cost of Capital data" was sufficient because it "was verifiable, and reflects the market's required compensation for the specific, systemic operating risks attributable to merchant generation, and the willingness of borrowers to bear these risks." *Id.* P 57, JA____. FERC also reiterated its earlier finding that "private equity index funds' ROEs are a poor proxy for determining the Cost of Capital for a merchant generation facility because these funds represent investments made in numerous industries (e.g., technology, pharmaceuticals, etc.)." *Id.* P 67, JA____.

Finally, FERC failed to respond meaningfully to the fundamental objection raised by P3 and PSEG that PJM had failed to carry its burden of proof by relying solely upon data related to a sliver of the industry. Instead of confronting the problem directly and seeking a means to incorporate the data needed for an appropriate proxy group, FERC limited itself to a narrow

scope of easily found data that did not do the job, claiming that PJM's analysis "reflects all available reference points." *Id.* P 59, JA____.

VI. STANDARD OF REVIEW

The Administrative Procedure Act directs the Court to "hold unlawful and set aside agency action, findings, and conclusions found to be—(A) arbitrary, capricious, an abuse of discretion, or otherwise not in accordance with law; . . . [or] (E) unsupported by substantial evidence . . . ." 5 U.S.C. § 706(2). "To survive this review, FERC 'must "examine the relevant data and articulate a satisfactory explanation for its action including a rational connection between the facts found and the choice made."'" *PSEG Energy Res. & Trade LLC v. FERC*, 665 F.3d 203, 208 (D.C. Cir. 2011) (quoting *PPL Wallingford Energy LLC v. FERC*, 419 F.3d 1194, 1198 (D.C. Cir. 2005) (quoting *Motor Vehicle Mfrs. Ass'n v. State Farm Mut. Auto. Ins. Co.*, 463 U.S. 29, 43 (1983))).

An agency acts arbitrarily when it "entirely fail[s] to consider an important aspect of the problem, [or offers] an explanation for its decision that runs counter to the evidence before the agency, or is so implausible that it could not be ascribed to a difference in view or the product of agency expertise." *Motor Vehicle Mfrs. Ass'n*, 463 U.S. at 43. "Among other things, an agency's failure to respond meaningfully to objections raised by a

party renders its decision arbitrary and capricious." *PSEG Energy*, 665 F.3d at 208 (alterations omitted) (citations omitted). Thus, FERC "must respond to objections and address contrary evidence in more than a cursory fashion." *Transmission Agency of N. Cal. v. FERC*, 628 F.3d 538, 543-44 (D.C. Cir. 2010). In addition, FERC must offer a reasonable explanation when it deviates from contrary precedent. *See Motor Vehicle Mfrs. Ass'n*, 463 U.S. at 41-42, 57 (citing *Greater Boston Television Corp. v. FCC*, 444 F.2d 841, 852 (D.C. Cir. 1971)); *Mich. Pub. Power Agency v. FERC*, 405 F.3d 8, 12 (D.C. Cir. 2005).

VII. SUMMARY OF ARGUMENT

FERC decision-making is premised upon an adversarial process whereby companies affected by a FERC rate filing have an opportunity for their reasonable concerns to be considered before a new rate is accepted. In this case, FERC failed to adequately address Petitioners' reasonable objections to PJM's calculation of the labor costs and Cost of Capital used to compute the CONE which is a key element of the capacity market price-formation mechanism. In many instances, FERC ignored or evaded Petitioners' objections entirely; in others, FERC's findings are demonstrably false.

Petitioners' first objection concerns PJM's downward adjustment to the S&L labor cost element. PJM identified the following support for the modification: (i) the Pasteris and Stantec studies, neither of which was in the record or sponsored by any witness; (ii) publicly available data regarding labor wage rates which lacked sufficient granularity to target construction workers at generating plants; (iii) a 2011 CONE study prepared by CH2M Hill which FERC had previously determined was not just and reasonable; and, (iv) for certain components, alleged consultations with S&L although S&L never filed any additional affidavits in the case. Petitioner P3 sponsored a witness with extensive experience in estimating the costs of constructing generating plants and other large projects in the energy industry who directly contradicted key elements of PJM's presentations.

The most troubling aspect of PJM's filing concerns the "base labor hours," *i.e.*, the number of hours it would take to construct the Combustion Turbine reference unit under optimal conditions. The primary support alleged by PJM for this value of 360,000 labor-hours was the Stantec/Pasteris study which was not sponsored by any witness and which only included vague general statements regarding the source of the data. This lack of foundational support nullified any potential evidential value and prevented Petitioners from supplying targeted objections. In addition, P3's

expert witness flatly contradicted the Stantec/Pasteris study estimate based on his experience of actual completed projects and put forth an estimated base labor-hour value of 847,000 labor-hours that was 135% higher.

PJM's reliance on the CH2M Hill study as support for the base labor-hours value was also unavailing because, as Petitioners showed, the CH2M Hill study was found by FERC not to have been shown to be just and reasonable in the proceedings concerning PJM's 2011 CONE filing. Further, when the 2011 CONE was eventually settled thorough a "black box" settlement, FERC's determination was never revisited because the settlement *specifically* stated that nothing in the agreement was deemed to settle any particular rate component.

Another element of purported support for the base labor-hours was the hearsay statement of certain Brattle witnesses that S&L advised them that the S&L value was close to the Pasteris/Stantec value of 360,000 labor-hours. But P3's witness showed through simple mathematical calculations that if S&L used this value, it would be impossible to reach the *total* labor cost estimates originally made by S&L without assuming much higher wage rates than PJM was claiming. FERC never explained this discrepancy.

The only direct criticism made of P3's witness's methodology was a speculative comment by PJM's witness that his base labor-hours estimate

was unreliable because he only identified smaller peakers in support of his labor-hours estimate and thus had not considered economies of scale associated with the larger Combustion Turbine reference unit. But P3's witness explained that he had been responsible for providing estimates for larger units and flatly stated that economies of scale would be small or non-existent.

Apparently realizing the weakness of its findings as to the specific presentations made by PJM in support of the base-hours element, FERC also attempted to bolster them with the claim that the labor cost adjustments were adopted as part of a stakeholder "negotiation." This was inaccurate as a factual matter because it was the PJM Board of Managers that had made this change *after* the stakeholder process had concluded and, in fact, PJM staff had always supported the S&L report in the stakeholder process. It is also irrelevant as a matter of law because FERC was not entitled to give substantive weight to unresolved stakeholder discussions under this Court's precedent.

FERC also failed to properly address Petitioners' concerns regarding PJM's wage rate calculations. PJM's witness used publicly available data from the BLM statistics to calculate a labor wage rate. However, P3's witness contended that the data set used by PJM – which covered industries

such as sewage treatment and which would have included wage rates for permanent employees – were not representative of the wages paid to workers who build generating plants. FERC never addressed this criticism.

The other area that was of deep concern to Petitioners in connection with the CONE study related to the "Cost of Capital" used to discount the future income steams expected to be realized by the plant over its assumed 20 year life. Petitioners raised two basic issues that were never adequately addressed by FERC.

First, Petitioners contended that the Cost of Capital value needed to take account of the "project financing" risks experienced by the vast bulk of the companies currently constructing gas-fired generating plants within the PJM footprint. FERC asserted that it had done so, but a review of the data relied upon for this claim shows that FERC only considered data about "independent power producers" with large portfolios of generating plants in its data set. Thus while FERC did increase the Cost of Capital value by 1.3% above the stand-alone Cost of Capital value for the publicly-traded independent power producers, it wrongly equated "merchant" generation risk with "project financing" risk.

Second, FERC never met its burden of proof to demonstrate that it used a representative proxy group for determining a reasonable ROE for a

"generic" PJM company that builds new generation. FERC solely relied upon data related to IPPs and sales by IPPs of generation portfolios thus covering the types of entities that were responsible for only about 10% of new construction. FERC never took account of the ROEs typically realized by private equity funds and power development shops that are building about 70% of new gas-fired generation within PJM. FERC's defense was that this data was not publicly "available." Confronted with this challenge, however, it was incumbent upon the Commission to utilize the tools at its disposal to obtain the necessary data. FERC was not relieved of its statutory obligations just because the task posed challenges.

Moreover, Petitioner P3's witness did provide information regarding private equity fund returns which FERC declined to consider, claiming that the data also included data about private equity investments in other industries. However, FERC never gave proper consideration as to whether this data would still be reasonably indicative of the returns generally demanded by private equity or whether the risk profiles of the other ventures pursued by the funds were of "comparable" risk to the generation business.

FERC thus failed to perform its statutory obligations to give due consideration and coherent responses to Petitioners' objections. The Court should remand this matter to FERC for further deliberations.

VIII. STANDING

FERC's orders on review accept unreasonably low and inaccurate adjustments to the labor and Cost of Capital values used to calculate CONE in PJM capacity auctions. The orders harm the members of P3 and PSEG by lowering capacity prices below the levels that would be realized if the RPM capacity auction design were properly implemented. This Court can redress that injury by granting the petitions for review.

IX. ARGUMENT

A. FERC Lacked Substantial Evidence To Justify Adoption of the Pasteris Study Values for Labor Costs

FERC's orders failed to identify substantial evidence that justified using the labor costs estimate from the Pasteris study in the calculation of the CONE for the reference Combustion Turbine unit. The evidence relied upon by FERC lacked meaningful probative value. At a minimum, the evidence called into question the credibility of the PJM witnesses' presentations and thus should have been set for hearing as PSEG requested.

There is no disagreement among the parties that the calculation of total labor costs is based on the multiplied sum of three components: the base labor-hours; the wage rate; and the productivity factor. Because PJM understated each of these formula components as shown below, its estimate

of total labor costs for the reference unit was significantly understated which resulted in a significantly understated value for CONE.

B. The Base Labor-Hours Are Not Adequately Supported in the Record

PJM's witness supporting the labor cost estimate, Dr. Sotkiewicz, did not claim to have any expertise or personal knowledge regarding the required base labor-hours to construct the reference unit. *See* Sotkiewicz Aff. P 2, JA____. The 360,000 labor-hours value he used in his calculations was thus obtained from sources he could not personally evaluate. His initial affidavit identified two sources for the base labor-hours: (1) a report prepared by Stantec referenced by the Pasteris study but never produced in the record or even in the PJM stakeholder process; and (2) a report prepared by CH2M Hill in 2011 and filed by PJM in the previous triennial review proceeding. *Id.* PP 38-39, JA____. PJM's Answer subsequently claimed that S&L – whose affidavit prepared by Mr. Ungate had a *significantly* higher overall labor cost value than the value claimed by PJM – also supported this base labor-hours amount. Upon analysis, however, none of these presentations has meaningful probative value.

Additionally, FERC failed to give proper weight to the most credible evidence adduced in the proceeding regarding the cost of labor – the affidavit of P3's witness, Mr. Uniszkiewicz. Mr. Uniszkiewicz had 33 years

of experience in estimating the costs of constructing various types of energy-related projects and based his opinions on actual completed work. FERC erred by dismissing his testimony based on speculation by Dr. Sotkiewicz who did not claim any experience in the construction industry. At a minimum, because the credibility of the witnesses was at issue, FERC should have granted PSEG's request for a hearing.

1. The Stantec Study Lacks Probative Value

The Stantec study was never made available for inspection, was not sponsored by any expert that filed an affidavit in the record and was only *referenced* in the Pasteris study which itself was not sponsored by any expert appearing in the record. FERC brushed off these concerns by stating that it "disagree[d] that PJM's base case labor-hours were not sufficiently supported in the record." Rehearing Order P 76, JA____. FERC seems to identify three reasons for the using the Stantec base labor values. First, FERC accepted PJM's substitution of a lower labor cost calculation based on the Pasteris Report because "the labor hours reflected in the Pasteris report were considered in PJM's stakeholder process," and reflected "a good faith negotiation during the stakeholder process." *Id.*, JA____. Second, FERC stated that "[t]he construction estimate set forth in the Pasteris report, moreover, was developed based on data from recent construction proposals

and input obtained from multiple construction contractors doing business in New Jersey." *Id.*, JA____. And third, FERC accepted the hearsay statement from PJM witnesses Pfeifenberger and Zhou that S&L, whose employee, Mr. Ungate, prepared the relevant portion of the Brattle CONE Study, generally supported PJM's base labor-hours calculation even though the overall labor cost estimates from Mr. Ungate's report were significantly higher than those claimed by PJM. *Id.* P 78, JA____. None of these assertions survive even basic scrutiny.

a. PJM's Alteration of the Labor Costs Used to Calculate CONE Did Not Result from the "Stakeholder Process" and, Even If It Had, the "Stakeholder Process" Does Not Constitute Meaningful Substantive Support

The S&L report prepared by Mr. Ungate and included in the Brattle CONE Study reflects substantially higher labor cost values than the Pasteris study later adopted by PJM. *See* Table 1 *supra*. PJM Staff – including Dr. Sotkiewicz – supported the Brattle CONE Study labor cost estimate throughout the entire PJM stakeholder process. At the Senior Capacity Task Force, where most of the discussions concerning the CONE levels occurred, the proposal receiving the most votes (Package B receiving 61% of the votes) called for CONE levels higher than Brattle CONE Study values. The proposal receiving the second most votes (Package I receiving 58% of the votes) incorporated the Brattle CONE Study values. The highest ranking

proposal incorporating the IMM CONE value was Package J receiving 32% of the votes.[6] It was only after the *completion* of the stakeholder process that "the PJM Board of Managers determined to reflect the IMM labor estimate in the CONE changes PJM . . . fil[ed] as a result of the triennial review." PJM Transmittal letter at 26, JA____.[7] That Board session was closed to PJM members.

Thus, FERC was simply wrong in stating – for the first time in its Rehearing Order -- that the lower labor cost estimate from the Pasteris CONE analysis was adopted "as part of a good faith negotiation during the stakeholder process." Rehearing Order P 76, JA____. The facts clearly demonstrate otherwise.

Further, this Court has "squarely rejected the notion that any settlement, solely because of its status as such, is reasonable." *Laclede Gas Co. v. FERC*, 997 F.2d 936, 946 (D.C. Cir. 1993) ("*Laclede")* (citing *Tejas*

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[6] *See* Capacity Senior Task Force Final Report at 4, tbl. 5, http://www.pjm.com/~/media/committees-groups/committees/mrc/20140821/20140821-item-03-triennial-review-final-report.ashx.

[7] *See* Letter from PJM Board of Managers to PJM Members Committee (Sept. 10, 2014) ("The PJM Board has directed staff to file a modified version of the PJM staff proposal for the triennial review parameters. The modifications . . . utilize the IMM's proposed labor cost estimates in the CONE calculation instead of Brattle's recommended labor cost estimates."), http://www.pjm.com/~/media/committees-groups/task-forces/cstf/20140912/20140912-board-statement-on-2014-triennial-review-filing.ashx.

Power Corp. v. FERC, 908 F.2d 998, 1003 (D.C. Cir. 1990) ("[T]hat the proposal is a settlement does not 'establish without more the justness and reasonableness of its terms.'") (quoting *Mobil Oil Corp. v. FPC*, 417 U.S. 283, 312–13 (1974)). The Court in *Laclede* did note that the "Commission may accord some weight to the fact that the bulk of [the company's] customers either supported or elected not to oppose the settlement offer." *Id.* Under the facts here, however, there was no evidence of any broad stakeholder agreement that PJM should adopt a lower labor cost estimate than proposed in the Brattle CONE Study and, in fact, there was evidence that the "bulk" of the stakeholders were opposed to a reduction. FERC thus improperly ascribed weight to the supposed "negotiations."

b. The Pasteris Report Description of the Methodology Used By Stantec Did Not Adequately Explain the Source of Base Labor-Hour Values In Order to Permit a Meaning Evaluation of Its Probative Value or To Allow Adversarial Comment

FERC asserts that two sentences purporting to describe the methodology employed by Stantec to derive the base labor-hours value, appearing in the Pasteris study, demonstrates that the Stantec value can be assumed to be "credible." Rehearing Order P 76, JA____. Thus FERC states that: "The construction estimate set forth in the Pasteris Report, moreover, was developed based on data from recent construction proposals

and input obtained from multiple construction contractors doing business in New Jersey." *Id*.

Set forth below is what the Pasteris Report actually has to say about the Stantec methodology for determining the labor costs:

> The power plant construction estimate was developed based on data from recent construction proposals and input obtained from multiple construction contractors. For this effort, the labor rates and labor productivity for the geographical location of New Jersey/[Atlantic Electric Company] Zone were verified and used to develop the direct and indirect labor costs.[8]

Broken down, the first sentence is the only one that actually might be deemed to support the base labor-hours value. The second sentence – the only one that refers to New Jersey – only relates to "labor rates" and "labor productivity." FERC's statement that the data for base labor-hours came from New Jersey sources therefore is simply incorrect based on the Pasteris Report description.

More fundamentally, however, the single sentence that might be deemed to add some credibility to the Stantec value for base labor-hours is far too general to lend meaningful evidentiary weight – particularly when appearing as a description of a report not in the record and not sponsored by a witness. This lack of particularity – *e.g.* not specifying which "proposals"

[8] Pasteris Report at 2-3, http://www.pjm.com/~/media/committees-groups/task-forces/cstf/20140725/20140725-brattle-vs-ma-som-cone-ct-revenue-requirements-comparison-final-report.ashx.

or which "contractors" form the basis for the conclusion reached or whether any of the "proposals" actually resulted in a project being built, severely hampered the ability of other parties to challenge the accuracy of the base labor-hours value and thus undermined the evidentiary review process. *See Sithe/Independence Power Partners, L.P. v. FERC*, 165 F.3d 944, 951 (D.C. Cir. 1999) (quoting *City of Holyoke Gas & Elec. Dep't v. FERC*, 954 F.2d 740, 743 (D.C. Cir. 1992)) (FERC failed to "support its decision with enough data to enable an adversely affected party and by extension a reviewing court, to understand its calculation of the comparison rate upon which it would rely, as well as the underlying assumptions."); *Keyspan-Ravenswood, LLC v. FERC*, 474 F.3d 804, 812 (D.C. Cir. 2007) (remanding orders where, despite "uncertainty regarding the effect of NYISO's [rate] methodology on the price of capacity, the Commission offered no reasons for rejecting [petitioners'] extensive economic analysis").

Given the absence of sponsorship by any witness with knowledge of how the Stantec report was prepared, principles regarding the use of materials of which an agency may take "official notice" should be deemed applicable. Fundamentally, the materials must contain sufficient detail that "the party against whom they are offered may see the evidence or hear it and parry its effect." *Ohio Bell Tel. Co. v. Pub. Utils. Comm'n of Ohio*, 301 U.S.

292, 302 (1937). Otherwise, "hearings and appeals are [no] more than empty forms." *Id*. at 303. FERC's reliance on the Stantec report fails under this standard due to the lack of sufficient detail in the report in order for intervenors to formulate a comprehensive response. *See Williston Basin Interstate Pipeline Co. v. FERC*, 165 F.3d 54, 59, 64 (D.C. Cir. 1999) (upholding FERC's decision to hold a special hearing for the purpose of considering data compiled by a private company of which FERC took official notice when the data "was not widely available."); *Air Prods. & Chemicals, Inc. v. FERC*, 650 F.2d 687, 697 (5th Cir. 1981) ("Section 556(e) of the [Administrative Procedure Act] recognizes that agency decisions often will rest on official notice of material facts not appearing in the record evidence. However, the statute requires that a party shall have an opportunity to rebut such evidence. Thus, an agency should either disclose the contents of what it relied upon or, in the case of publicly-available information, specify what is involved in sufficient detail to allow for meaningful adversarial comment and judicial review.").

Indeed, the lack of access to a witness with actual knowledge of how the Stantec report was prepared or even to the report itself, made it virtually impossible for protesters to evaluate its methodology. *See Office of Consumers' Counsel v. FERC*, 783 F.2d 206, 231 (D.C. Cir. 1986) ("It is

patently unfair for the Commission to require the protestors to compare Columbia's contracts with those of other pipelines while at the same time denying the protestors access to the information necessary for this proof."); *cf. Mobil Producing Tex. & N.M., Inc. v. FERC*, 886 F.2d 745, 759 (5th Cir. 1989) ("Normally, FERC is required to base its decisions on record evidence . . . .")

c. FERC Previously Found That The Labor Cost Estimates From The CH2M Hill Report Relied Upon In This Proceeding Had Not Been Shown To Be Just And Reasonable

PJM's witness, Dr. Sotkiewicz, also asserted – and FERC accepted as supporting evidence – a base labor-hours estimate provided by a consulting firm in another proceeding. *See* Initial Order PP 106, 107, JA____,____; Sotkiewicz Aff. P 39, JA____. Thus Dr. Sotkiewicz relied upon a base labor-hours estimate provided by CH2M Hill in PJM's 2011 CONE study previously submitted to FERC. Sotkiewicz Aff. P 39, JA___. However, FERC suspended the CONE values set forth in the 2011 study for the maximum statutory period finding that various elements of CH2M Hill's presentations had not been shown to be just and reasonable. Among the elements that were set for hearing were labor costs. *See PJM Interconnection, L.L.C.*, 138 FERC ¶ 61,062, P 41 (2012) ("Here, we find that intervenors have raised a number of material issues of disputed fact as to

the proper calculation of the Gross CONE values, as summarized above. Intervenors argue, for example, that PJM has failed to include accurate electrical and gas interconnection costs, property tax estimates, location-specific adjustments, and costs for material, *labor* and equipment.") (emphasis added).

This matter was subsequently resolved by a general settlement that "contains sufficient evidence for concluding that the Settlement values as a whole are just and reasonable" but did not set forth any agreed upon values for labor costs or any other particular element of the CONE calculation. *PJM Interconnection L.L.C.*, 142 FERC ¶ 61,079 (2013). "PJM states that the Settling Parties arrived at all of the Gross CONE values in the settlement on a 'black-box' basis. The Settling Parties agreed only on the values; there was no agreement on assumptions, estimates, or methodologies to calculate those values." *Id.* P 23, JA____. In addition, FERC's reliance on the CH2M study is subject to the same infirmity as PJM's and FERC's reliance on the Stantec study, namely that no expert witness in this proceeding sponsored the studies or is available to respond to any specific criticisms of it. FERC reliance upon the 2011 CH2M Hill study as support for a specific element of the CONE calculation in this case, therefore, is completely unwarranted. Moreover, Petitioners' pointed comments regarding this

deficiency were never addressed by FERC with a "real substantial response." *Golden Spread Elec. Coop., Inc. v. FERC*, 319 F.3d 522, 524 (D.C. Cir. 2003).

d. The Hearsay Claim That S&L Generally Supported The Base Labor-Hours Cannot Be Reconciled With Mr. Ungate's Sworn Affidavit That Sets Forth Total Labor Amounts

Although not included in PJM's initial filing, the Answering Affidavit of PJM Witnesses Pfeifenberger and Zhou states that "for the record" S&L used a base labor-hours value of 368,000 hours to construct the reference Combustion Turbine unit. Pfeifenberger/Zhou Ans. Aff. at 23, JA____. Dr. Sotkiewicz relies upon this hearsay statement in his own Answering Affidavit in support of the 360,000 labor-hours value used in his own calculation. *See* Sotkiewicz Ans. Aff. P 9, JA____. Notwithstanding the representations apparently made on his behalf, no answering affidavit was provided by Mr. Ungate.

Accepted at face value, and leaving aside the fact that the witness actually sponsoring the PJM CONE study, Mr. Ungate, never weighed in on this point, the 368,000 labor-hour value claimed to have been used by S&L is close to the value used by PJM of 360,000 labor-hours. However, Mr. Uniszkiewicz showed *twice*, using simple mathematical calculations that Mr. Ungate appeared to have used much higher labor-hours values in his study.

The first demonstration was made in his initial affidavit, where, by accepting the wage rate and productivity factor proposed by Dr. Sotkiewicz in his initial affidavit and dividing those values into the total labor costs estimated in Mr. Ungate's affidavit, Mr. Uniszkiewicz calculated the implied labor-hours as depicted below:[9]

	CONE Area 1	CONE Area 2	CONE Area 3	CONE Area 4	CONE Area 5
Ungate Implied Unadjusted Labor-Hours	635,000	788,000	658,000	572,000	740,000
Percentage above Stantec Unadjusted Labor-Hours	76%	119%	83%	58%	106%

See Uniszkiewicz Aff. P 17, JA___. Although FERC never identified any error in the methodology underlying Mr. Uniszkiewicz's calculations, it simply determined that he was "mistaken" based on the Pfeifenberger/Zhou hearsay statement. Rehearing Order P 78, JA___.

[9] As explained *supra*, the total labor costs are derived by multiplying together three values: the base labor-hours, the wage rate, and the productivity factor. Hence, when the total labor cost value is known (as stated in the original S&L study), it is a simple arithmetic calculation to divide any two known factors into the product (the total labor cost) to determine the third factor.

Second, Mr. Uniszkiewicz demonstrated in his answering affidavit that if the 368,000 labor-hours value and the 1.19 productivity multiplier identified in the Pfeifenberger/Zhou hearsay statement for CONE Area 1 are accepted and are divided into the total labor costs estimated in Mr. Ungate's affidavit, the implied *wage* rate for CONE Area 1 – and similarly for the other CONE regions – would be much higher than the wage rates used by Dr. Sotkiewicz, as follows:

CONE AREA	**CONE Area 1**	**CONE Area 2**	**CONE Area 3**	**CONE Area 4**	**CONE Area 5**
S&L Implied Wages	$163.89	$126.63	$126.40	$124.57	$110.17
Sotkiewicz "Upper Bound" Wages	$98.88	$62.43	$74.62	$84.58	$57.22

Uniszkiewicz Resp. Aff. P 6, JA____. FERC never gave any response whatsoever to this demonstration let alone an explanation as to how Mr. Uniszkiewicz erred in performing this simple calculation and, as such, wrongly "fail[ed] to respond meaningfully to objections raised by a party."[10] *PSEG Energy*, 665 F.3d at 208 (citations omitted).

[10] Of course, based solely on the arithmetical calculation, the base labor-hours could be correct and the wage rate (or the productivity factor) could be causing the discrepancies. However, while Mr. Uniszkiewicz did take issue with both the wage rate and productivity factor, the combined impact of those components alone could not account for the discrepancies; hence the

FERC should not, therefore, have accepted the Pfeifenberger/Zhou hearsay statement supporting the base labor-hours value as an accurate reflection of S&L's views without explaining these discrepancies. But that is exactly what FERC did.

Essentially, PJM attempted to rely upon S&L's expertise in some respect for each of the components comprising the labor cost calculation – *i.e.*, the wage rate, the productivity factor, and the base labor-hours – but never explained why S&L's total labor cost estimate was so much higher (more than 100% higher in some cases) than the values supported by Dr. Sotkiewicz. PJM cannot have it both ways: it cannot reject S&L's *total* labor cost estimates while claiming that S&L supports the each of the *components* from which the labor cost estimates were derived. At a minimum, additional inquiry was required.

2. FERC Failed to Adequately Consider Evidence Supplied by Mr. Uniszkiewicz Based on His 33 Years of Professional Experience Involving Construction Activities

FERC essentially ignored the most credible evidence adduced in the proceeding regarding the cost of labor – the information provided by P3's witness, Mr. Uniszkiewicz. As explained in his initial affidavit, Mr. Uniszkiewicz was a Construction Cost Estimating Manager for PSEG

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inference to be drawn from this calculation is that the base labor-hours are significantly understated.

Services Corporation with 33 years of experience in estimating the costs of constructing various types of energy-related projects. Because he worked for a single family of companies since 1981, not only has he estimated construction costs in advance of construction but he has had the opportunity to "review the adequacy and quality of the estimates" that he and his staff prepared *after* the projects are completed. Uniszkiewicz Aff. P 1-3, JA____-___. This provides for a high degree of quality control regarding his estimates.

Among other criticisms, Mr. Uniszkiewicz took issue with the 360,000 labor-hours used as the base labor-hours for the Combustion Turbine reference unit. Mr. Uniszkiewicz showed that, based on *completed* construction projects for combustion turbine generators, a more realistic rate for total work hours would be 847,000 hours – a value that is 135% *above* the value that Stantec recommended. *Id.* P 12, JA____. Mr. Uniszkiewicz's estimate was based on the experience of affiliates of Public Service Enterprise Group in constructing five peaker projects in New Jersey and Connecticut. *Id.*, JA____.

The only direct criticism of Mr. Uniszkiewicz's estimate of the base labor-hours was made by Dr. Sotkiewicz. He claimed that because the particular Combustion Turbine projects identified by Mr. Uniszkiewicz were

smaller than the Combustion Turbine reference unit, his estimate for base labor-hours was "unreliable." Specifically, he claimed that Mr. Uniszkiewicz did not consider economies of scale associated with building a larger plant such as the Combustion Turbine reference unit. Sotkiewicz Ans. Aff. 9, JA____. Mr. Uniszkiewicz, however, directly refuted this speculative claim in his responsive affidavit, stating:

> [B]ased on my extensive experience with providing cost estimates for power plant projects which has included plants larger than the [Combustion Turbine] reference unit, I do not believe that there would be significant economies of scale realized (if any) in terms of labor-hours per megawatt between the peakers discussed in my October 16, 2014 Affidavit and the [Combustion Turbine] reference unit.

Uniszkiewicz Resp. Aff. P 6, JA____.

Without providing any acknowledgment of Mr. Uniszkiewicz's extensive experience in construction cost estimating or providing any analysis of whether economies of scale could reasonably account for the 135% difference in Mr. Uniszkiewicz's labor-hours estimate, the Commission dismissed Mr. Uniszkiewicz's presentations out of hand and in their entirety. *See* Rehearing Order PP 77-78, JA_____.

Essentially, FERC gave dispositive weight to a speculative criticism made by Dr. Sotkiewicz – an individual holding an advanced degree in economics but who never worked in the construction industry – over the

direct statements of Mr. Uniszkiewicz – an individual with 33 years of experience in the construction industry and whose day-to-day job is preparing construction estimates for energy projects. This was an abuse of discretion. At a minimum, Mr. Uniszkiewicz's evidence was entitled to much more weight given his relative expertise and experience regarding construction related matters. In these circumstances, FERC was at least obligated to undertake an inquiry to understand the basis for the disagreement before accepting the 360,000 base labor-hours value. In this regard, FERC erred due to its failure to "respond to objections and address contrary evidence in more than a cursory fashion." *Transmission Agency of N. Cal. v. FERC*, 628 F.3d 538, 543-44 (D.C. Cir. 2010).

Alternatively, FERC should have granted Petitioner PSEG's request for a hearing on this issue on the grounds that it raised an issue of material fact in which the credibility of the witnesses was relevant. *See Pac. Gas & Elec. Co. v. FERC*, 306 F.3d 1112, 1119 (D.C. Cir. 2002) ("[W]e need only point out that FERC may properly deny an evidentiary hearing if the issues, even disputed issues, may be adequately resolved on the written record, at least where there is no issue of motive, intent, or credibility. *Texaco, Inc. v. FERC*, 148 F.3d 1091, 1100 (D.C. Cir. 1998)."). Given the disparity in the experience and expertise of the witnesses with respect to construction

activities, and given that Mr. Uniszkiewicz flatly contradicted Dr. Sotkiewicz' speculative comment, witness credibility issues were clearly present. *See Kannankeril v. Terminix Intern., Inc.*, 128 F.3d 802, 809 (3d Cir 1997) ("If the expert meets liberal minimum qualifications, then the level of the expert's expertise goes to credibility and weight, not admissibility."); *McCullock v. H.B. Fuller Co.*, 61 F.3d 1038, 1043 (2d Cir 1995) (issues regarding expert witness's level of expertise "went to his testimony's weight and credibility – not its admissibility").

In this case, FERC collectively relied upon several evidentiary sources alleged to support PJM's proposed base labor-hours, but FERC did not indicate that any of its reasons was sufficient on its own to satisfy PJM's burden of proof. Because much of this evidence had no probative value as a matter of law, the Court should remand FERC's orders.

C. FERC Failed To Adequately Respond To Objections Regarding the Wage Rates Used to Calculate the Reference Unit Cost of Labor

FERC also failed to adequately respond to Mr. Uniszkiewicz's objections to the labor wage rate proposed by Dr. Sotkiewicz. According to Dr. Sotkiewicz, the wage rates he used from publicly available sources accurately stated the wage rates for the craft workers who would be expected to construct the reference unit. *See* Sotkiewicz Ans. Aff. P 8, JA___. He

developed his wage rate assumption from BLS data reporting for "Utility Construction Wages" as designated under the North American Industrial Classification and then adjusted those values to account for "fringe" costs. *See* Sotkiewicz Aff. PP 41-42, JA___-___. Dr. Sotkiewicz also contended that the BLS data he was using would include all remuneration paid to the workers, including overtime. *See* Sotkiewicz Ans. Aff. P 8, JA___.

Mr. Uniszkiewicz, who again was relying upon his personal experience in the construction industry, contended that Dr. Sotkiewicz's recommended wage rates were too low by approximately 8% to 10%. *See* Uniszkiewicz Aff. P 10, JA___. Mr. Uniszkiewicz explained that Dr. Sotkiewicz' reliance on the BLM data was flawed because the North American Industrial Classification grouping upon which his calculations were based did not accurately reflect the profile of craft workers involved in constructing generating plants. *See* Uniszkiewicz Resp. Aff. P 4, JA___. Thus, the North American Industrial Classification definition of a "Utility" is as follows: "The Utilities sector comprises establishments engaged in the provision of the following utility services: electric power, natural gas, steam supply, water supply, and sewage removal." BLM, "Industries at a Glance," http://www.bls.gov/iag/tgs/iag22.htm. As Mr. Uniszkiewicz explained:

> This aggregated data can be expected to understate the wage rates for power plant construction workers because it apparently

> includes data about construction projects undertaken by workers with permanent full time employment arrangements with utility companies. Wages for these types of workers will typically be lower than wages paid to craft workers for power plant construction who move from job to job. Moreover, these workers will typically belong to different labor units than the craft workers for power plant construction and thus have different pay scales. In addition, permanent workers are less likely to work overtime on a continuous basis. Finally, the inclusion of data from industries other than the electric industry may also skew the results.

Uniszkiewicz Resp. Aff. P 4, JA___. FERC's response to Mr. Uniszkiewicz's objection was that "PJM's proposed wage rates for CONE Area 1 . . . were verified relative to wage rates for utility construction in New Jersey, as reported by the U.S. Bureau of Labor Statistics. This data, moreover, reflects remuneration of every type, including overtime pay." Rehearing Order P 75, JA____.

FERC's response, however, did not substantively address the actual deficiencies in the data set that Mr. Uniszkiewicz identified. Thus, Mr. Uniszkiewicz never disputed that the BLM data set covered "utility" construction. Nor did he dispute that the BLM data included all remuneration paid to the individuals that fall within the definition of "utility" workers. His point was that the term "utility" as defined by the North American Industrial Classification, included industries other than the electric industry and that workers with permanent employment have work profiles

different than the craft workers that move from job to job and that typically construct generating plants. Thus, FERC never explained why, for example, that data about the sewage collection industry – potentially involving workers that belong to different labor unions – would be relevant to determining wage rates for craft construction workers at power plants. And FERC never addressed Mr. Uniszkiewicz's contention that workers with permanent jobs typically work less overtime than workers who take on specific projects and then move elsewhere when the project is completed. In short, because the BLS data commingled payments to several categories of workers, the data lacked any probative value as a demonstration of the payments made to generation plant construction workers in particular. *Cf. Dorchester Gas Producing Co. v. FERC*, 571 F.2d 823, 830, 831 (5th Cir. 1978) (Because "documentary evidence failed to separate operating costs from capital costs" . . . . "there was no way for the FERC to determine whether Dorchester's revenues might have been sufficient to cover its operating expenses, or whether they were instead devoted to the capital costs of a highly leveraged investment.").

D. FERC Lacked Substantial Evidence To Support Its Adoption of the Cost of Capital Value

The Cost of Capital used in determining the CONE value has a profound effect on the calculation's outcome. It is the value used for

"translating uncertain future cash flows into present values and deriving the CONE value that makes the project net present value (NPV) zero." Brattle CONE Study at 34, JA____. The methodology proposed by PJM, and accepted by FERC, for calculating a Cost of Capital value in this proceeding consisted of two elements.

First, Brattle prepared Cost of Capital estimates for the three publicly-traded independent power producers ("IPPs") based on the Capital Asset Pricing Model using widely available financial data – Calpine, NRG and Dynegy – which resulted in a simple average of 6.7%. Second, Brattle prepared a "range [that] reflects all available reference points, including investment analysts' reports for acquired companies' (ranging from 7.6 percent to 10.3 percent) and fairness opinions for merger and acquisition transactions involving merchant generation assets (ranging from 7.1 percent to 8.3 percent)." Rehearing Order P 59, JA___. It set the Cost of Capital value at 8.0%, which it considered to be a 1.3% upward adjustment over the IPP Cost of Capital value, because "for a generic merchant project within PJM's footprint 'the risks would be larger than for the average portfolio of independent power producers . . . .'" Initial Order P 81, JA____ (footnote omitted). It also chose 8% as representing a value, with respect to the additional reference points, "near the midpoint of that range." Rehearing

Order P 59, JA____. FERC noted that "given the fact that CONE is based on a *generic* merchant generator, it follows that a generic Cost of Capital is appropriate." *Id*., JA____.

Notwithstanding FERC's claim that it was seeking to develop "a generic merchant project within PJM's footprint" it failed to take account of Petitioners' demonstrations regarding the characteristics of a "generic merchant project" in PJM. Initial Order P 81, JA____. Specifically, FERC failed to take account of two undisputed facts: (i) that the vast majority of new gas-fired generation in PJM is being constructed by companies that use project financing techniques; and (ii) that the companies constructing these plants obtain their funds from non-traditional funding entities such as private equity funds or power development shops that typically seek higher than average returns. Because FERC failed to address these issues, its acceptance of the 8.0% Cost of Capital rate lacked substantial supporting evidence.[11]

[11] FERC states "that neither P3 nor PSEG dispute PJM's calculation of the range of reasonable returns." Rehearing Order P 59, JA____. P3 and PSEG wish to make clear that they do (and always did) dispute the Brattle methodology on the grounds that it did not reflect the appropriate range of total returns of the types of entities building new gas-fired generator or reflect the correct proxy group for determining the Cost of Capital as shown elsewhere herein. If FERC means that P3 and PSEG did not dispute the values that comprise the data set for IPPs developed by Brattle, that would be irrelevant to whether that information was the proper data set to use for setting the Cost of Capital.

1. The Data Relied Upon By FERC Appears to Improperly Equate "Merchant Risk" with "Project Risk"

Although FERC agreed that the Cost of Capital value should be appropriate for a "*generic* merchant generator," FERC's approval of the Cost of Capital value of 8.0% was substantially below a realistic Cost of Capital value for a representative company that would be expected to build the reference Combustion Turbine unit in PJM. Initial Order P 76, JA____. The unrefuted evidence in the record shows "that more than 70% of the natural gas-fired projects (by capacity) currently under development in the PJM market are being developed by private equity or power generation development shops, and less than 10% of thermal capacity currently under development in PJM is being pursued by publicly-traded IPPs." P3 Rehearing at 11, JA____ (citing Hardy/Repsher Aff. P 6a, JA____). Yet, the 8.0% value was based entirely on observations about IPPs or sales of large IPP portfolios: private equity and power generation development entities using project level financing to construct new generating plants are not included in the analysis.

First, FERC apparently claims that by adjusting the Cost of Capital level by 1.3% above the level shown by its IPP analysis, it somehow captured the risk associated with project level financing. Initial Order P 81,

JA ____. But this is not the case. Thus, FERC acknowledges that "P3 and PSEG . . . argue that an 8.0% Cost of Capital inappropriately relies on corporate-level data for publicly-traded IPPs and thus is not indicative of allegedly riskier, project level financing." Rehearing Order P 57, JA____. However, FERC contends, "this asserted distinction is not relevant here." *Id.*, JA____. FERC states:

> In addition to corporate-level data for IPPs with assets in PJM, the November 28 Order also relied upon market- and transaction-based cost of capital data, including fairness opinions in merchant generation divestitures, as analyzed in the Brattle CONE Report. This evidence was verifiable, and reflects the market's required compensation for the specific systematic operating risks attributable to merchant generation and the willingness of borrowers to bear these risks.

Id., JA____. FERC further asserts that "an 8.0% cost of capital for a generic merchant generator is near the midpoint of that range." *Id.* P 59, JA____.

Nothing in FERC's explanation, however, addresses the point raised by P3 and PSEG that the Cost of Capital value needs to address "allegedly riskier project level financing." Rehearing Order P 57, JA____. *All* of the data points included in the Brattle Study – including the "fairness opinions" – concern large portfolios of assets. Thus, even accepting that the Brattle CONE Study accurately identifies the range and midpoint for the Cost of Capital of companies with a large portfolio of assets, FERC still never addressed Petitioners' contention that it needed to take account of the

"project-level financing" risk faced by the vast majority of companies currently building in PJM. In this regard, FERC seems to equate merchant generation risk with project-level financing risk. Yet, FERC never made any findings that showed they were the same or that the data set used to calculate the Cost of Capital, based upon IPPs and IPP divestitures, captures "project financing" risk. FERC's failure was arbitrary because it "entirely fail[s] to consider an important aspect of the problem." *Motor Vehicle Mfrs. Ass'n*, 463 U.S. at 43.

2. FERC Never Adequately Explained Its Failure to Include Data About the Cost of Capital Values Used by Private Equity

FERC also never adequately explained its failure to include data from private equity sources or, at a minimum, to hold hearings for the purpose of developing that data. FERC repeatedly claims that it used the best "available" public data. But FERC was confronted with the unassailable fact that most of the gas-fired generation being constructed in PJM was by entities for which public data was not so readily available. In these circumstances, FERC should have accepted the evidence Petitioners provided or directed PJM to otherwise account for the gap in its analysis.

The ROE associated with the 8.0% Cost of Capital value determined by PJM and accepted by FERC was 13.8%. Petitioner P3 identified six

projects in PJM being constructed by private equity firms and provided evidence that the return on equity associated with equity fund investments was between 14.15% and 19.74%. *See* Heidel/Repsher Aff. PP 2 n.7, 11. JA___, ___. The highest of those values, i.e., 19.74%, related to "specific private equity return metrics for the energy industry . . . ." Heidel/Repsher Aff. P 11, JA____- ____. FERC's response was that "private equity index funds' ROEs are a poor proxy for determining the Cost of Capital for a merchant generation facility because these funds represent investments made in numerous industries (e.g., technology, pharmaceuticals, etc.)." Rehearing Order P 67, JA____. This response is inadequate.

First, FERC's finding turns the burden of persuasion in a FPA section 205 case on its head. It was PJM's burden to demonstrate that its filing is just and reasonable. Here, FERC allowed the Cost of Capital to be determined based on the characteristics of a segment of the generation industry which was shown to have constructed only about 10% of recent new builds in the PJM footprint. That demonstration, even if accurate as to this small segment, is not sufficient to demonstrate a reasonable value for the "generic" plant especially given Petitioners' evidence that the type of entity constructing most of the plants in PJM seeks much higher ROEs than the ROE PJM calculated. *See Petal Gas Storage, L.L.C. v. FERC*, 496 F.3d 695,

699 (D.C. Cir. 2007) (holding that the proxy group for a regulated firm whose rate is being determined must be "risk-appropriate").

FERC was not justified in relieving PJM of its obligations to meet the FPA burden of proof on the grounds that data for the 10% segment was "publicly available" while the data for the larger industry segment responsible for new build was more difficult to develop. As this Court has previously held "[a] petitioning utility's bare assertions that its methods and forecasts are 'reasonable' or the 'best available' are not sufficient to shift the burden of persuasion onto those objecting to the new tariff." *Villages of Chatham & Riverton, Ill. v. FERC*, 662 F.2d 23, 33 (D.C. Cir. 1981). Petitioner P3's witnesses, moreover, suggested a number of approaches that could have been employed by FERC to take account of the risk characteristics of the private equity investors. *See* Heidel/Repsher Aff. P 11, JA____- ____. And if FERC did not think those approaches were acceptable, it should have identified something else. *See Pac. Gas & Elec. Co. v. FERC*, 306 F.3d 1112, 1120-21 (D.C. Cir. 2002) (In circumstances in which FERC wished to use a surrogate capital structure and ROE for a governmental entity, "the rejection of a single alternative does not alone warrant adoption of [a particular company] as a proxy."). At a minimum, this matter should have been set for hearing.

Second, FERC never addressed whether it should have used the data about the private equity funds supplied in the record even if some of the data related to other industries. As P3 stated on rehearing, "[a]lthough the [initial] order is correct that the private equity indices reflect industries in addition to electric generation, they are the best available indicator of the equity cost of the type of entities actually developing new generation in PJM." P3 Rehearing at 19, JA____. Yet, FERC rejected the suggestion of using data about other industries out of hand, notwithstanding that FERC's consideration of ROEs for other industries has been upheld by this Court as consistent with rate-making principles when the analysis applied to "enterprises determined to be of comparable risk . . . ." *Cities of Anaheim v. FERC*, 669 F.2d 799 (D.C. Cir. 1981). FERC thus should have considered whether the risk profile of the various included industries might be "comparable."

Third, FERC simply ignored that the data provided by P3 included private equity return metrics related specifically to the energy industry. *See* Heidel/Repsher Aff. at 12, JA____. (noting average gross rate of return of 19.74% for "private equity returns for the energy industry" since 2011). FERC should have at least taken account of this metric in its analysis.

X. CONCLUSION

For the foregoing reasons, P3 and PSEG respectfully request that this Court grant the petitions for review.

Respectfully submitted

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CERTIFICATE OF COMPLIANCE CIRCUIT RULE 32

Pursuant to Rule 32(a)(7)(C) of the Federal Rules of Appellate Procedure, Circuit Rule 32(a)(2), I hereby certify that the foregoing document contains no more than 14,000 words (13,838 words using the word-count feature in Microsoft Word), excluding the parts of the brief exempted by Rule 32(a)(7)(B)(iii). This brief complies with the typeface and type style requirements of Fed. R. App. P. 32(a)(5)-(6) because has been prepared in a proportionally spaced typeface using Microsoft Office Word 2010 in 14 point Times New Roman font.

Respectfully submitted,

/s/ Cara J. Lewis

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May 31, 2016

ADDENDUM

Section 10(e) of the Administrative Procedure Act, 5 U.S.C. § 706 provides:

5 U.S.C. § 706. Scope of review

To the extent necessary to decision and when presented, the reviewing court shall decide all relevant questions of law, interpret constitutional and statutory provisions, and determine the meaning or applicability of the terms of an agency action. The reviewing court shall—

(1) compel agency action unlawfully withheld or unreasonably delayed; and

(2) hold unlawful and set aside agency action, findings, and conclusions found to be—

(A) arbitrary, capricious, an abuse of discretion, or otherwise not in accordance with law;

(B) contrary to constitutional right, power, privilege, or immunity;

(C) in excess of statutory jurisdiction, authority, or limitations, or short of statutory right;

(D) without observance of procedure required by law;

(E) unsupported by substantial evidence in a case subject to sections 556 and 557 of this title or otherwise reviewed on the record of an agency hearing provided by statute; or

(F) unwarranted by the facts to the extent that the facts are subject to trial de novo by the reviewing court.

In making the foregoing determinations, the court shall review the whole record or those parts of it cited by a party, and due account shall be taken of the rule of prejudicial error.

Section 205 of the Federal Power Act, 16 U.S.C. § 824d provides:

16 U.S.C. § 824d. Rates and charges; schedules; suspension of new rates; automatic adjustment clauses

(a) Just and reasonable rates

All rates and charges made, demanded, or received by any public utility for or in connection with the transmission or sale of electric energy subject to the jurisdiction of the Commission, and all rules and regulations affecting or pertaining to such rates or charges shall be just and reasonable, and any such rate or charge that is not just and reasonable is hereby declared to be unlawful.

(b) Preference or advantage unlawful

No public utility shall, with respect to any transmission or sale subject to the jurisdiction of the Commission, (1) make or grant any undue preference or advantage to any person or subject any person to any undue prejudice or disadvantage, or (2) maintain any unreasonable difference in rates, charges, service, facilities, or in any other respect, either as between localities or as between classes of service.

(c) Schedules

Under such rules and regulations as the Commission may prescribe, every public utility shall file with the Commission, within such time and in such form as the Commission may designate, and shall keep open in convenient form and place for public inspection schedules showing all rates and charges for any transmission or sale subject to the jurisdiction of the Commission, and the classifications, practices, and regulations affecting such rates and charges, together with all contracts which in any manner affect or relate to such rates, charges, classifications, and services.

(d) Notice required for rate changes

Unless the Commission otherwise orders, no change shall be made by any public utility in any such rate, charge, classification, or service, or in any rule, regulation, or contract relating thereto, except after sixty days' notice to the Commission and to the public. Such notice shall be given by filing with

the Commission and keeping open for public inspection new schedules stating plainly the change or changes to be made in the schedule or schedules then in force and the time when the change or changes will go into effect. The Commission, for good cause shown, may allow changes to take effect without requiring the sixty days' notice herein provided for by an order specifying the changes so to be made and the time when they shall take effect and the manner in which they shall be filed and published.

(e) Suspension of new rates; hearings; five-month period

Whenever any such new schedule is filed the Commission shall have authority, either upon complaint or upon its own initiative without complaint, at once, and, if it so orders, without answer or formal pleading by the public utility, but upon reasonable notice, to enter upon a hearing concerning the lawfulness of such rate, charge, classification, or service; and, pending such hearing and the decision thereon, the Commission, upon filing with such schedules and delivering to the public utility affected thereby a statement in writing of its reasons for such suspension, may suspend the operation of such schedule and defer the use of such rate, charge, classification, or service, but not for a longer period than five months beyond the time when it would otherwise go into effect; and after full hearings, either completed before or after the rate, charge, classification, or service goes into effect, the Commission may make such orders with reference thereto as would be proper in a proceeding initiated after it had become effective. If the proceeding has not been concluded and an order made at the expiration of such five months, the proposed change of rate, charge, classification, or service shall go into effect at the end of such period, but in case of a proposed increased rate or charge, the Commission may by order require the interested public utility or public utilities to keep accurate account in detail of all amounts received by reason of such increase, specifying by whom and in whose behalf such amounts are paid, and upon completion of the hearing and decision may by further order require such public utility or public utilities to refund, with interest, to the persons in whose behalf such amounts were paid, such portion of such increased rates or charges as by its decision shall be found not justified. At any hearing involving a rate or charge sought to be increased, the burden of proof to show that the increased rate or charge is just and reasonable shall be upon the public utility, and the Commission shall give to the hearing and decision of such questions preference over other questions pending before it and decide the same as speedily as possible.

(f) Review of automatic adjustment clauses and public utility practices; action by Commission; "automatic adjustment clause" defined

(1) Not later than 2 years after November 9, 1978, and not less often than every 4 years thereafter, the Commission shall make a thorough review of automatic adjustment clauses in public utility rate schedules to examine—

(A) whether or not each such clause effectively provides incentives for efficient use of resources (including economical purchase and use of fuel and electric energy), and

(B) whether any such clause reflects any costs other than costs which are—

(i) subject to periodic fluctuations and

(ii) not susceptible to precise determinations in rate cases prior to the time such costs are incurred.

Such review may take place in individual rate proceedings or in generic or other separate proceedings applicable to one or more utilities.

(2) Not less frequently than every 2 years, in rate proceedings or in generic or other separate proceedings, the Commission shall review, with respect to each public utility, practices under any automatic adjustment clauses of such utility to insure efficient use of resources (including economical purchase and use of fuel and electric energy) under such clauses.

(3) The Commission may, on its own motion or upon complaint, after an opportunity for an evidentiary hearing, order a public utility to—

(A) modify the terms and provisions of any automatic adjustment clause, or

(B) cease any practice in connection with the clause,

if such clause or practice does not result in the economical purchase and use of fuel, electric energy, or other items, the cost of which is included in any rate schedule under an automatic adjustment clause.

(4) As used in this subsection, the term "automatic adjustment clause" means a provision of a rate schedule which provides for increases or

decreases (or both), without prior hearing, in rates reflecting increases or decreases (or both) in costs incurred by an electric utility. Such term does not include any rate which takes effect subject to refund and subject to a later determination of the appropriate amount of such rate.

Section 313 of the Federal Power Act, 16 U.S.C. § 825*l* provides:

16 U.S.C. § 825*l*. Review of orders

(a) Application for rehearing; time periods; modification of order

Any person, electric utility, State, municipality, or State commission aggrieved by an order issued by the Commission in a proceeding under this chapter to which such person, electric utility, State, municipality, or State commission is a party may apply for a rehearing within thirty days after the issuance of such order. The application for rehearing shall set forth specifically the ground or grounds upon which such application is based. Upon such application the Commission shall have power to grant or deny rehearing or to abrogate or modify its order without further hearing. Unless the Commission acts upon the application for rehearing within thirty days after it is filed, such application may be deemed to have been denied. No proceeding to review any order of the Commission shall be brought by any entity unless such entity shall have made application to the Commission for a rehearing thereon. Until the record in a proceeding shall have been filed in a court of appeals, as provided in subsection (b) of this section, the Commission may at any time, upon reasonable notice and in such manner as it shall deem proper, modify or set aside, in whole or in part, any finding or order made or issued by it under the provisions of this chapter.

(b) Judicial review

Any party to a proceeding under this chapter aggrieved by an order issued by the Commission in such proceeding may obtain a review of such order in the United States court of appeals for any circuit wherein the licensee or public utility to which the order relates is located or has its principal place of business, or in the United States Court of Appeals for the District of Columbia, by filing in such court, within sixty days after the order of the Commission upon the application for rehearing, a written petition praying that the order of the Commission be modified or set aside in whole or in part. A copy of such petition shall forthwith be transmitted by the clerk of the court to any member of the Commission and thereupon the Commission shall file with the court the record upon which the order complained of was entered, as provided in section 2112 of title 28. Upon the filing of such petition such court shall have jurisdiction, which upon the filing of the record with it shall be exclusive, to affirm, modify, or set aside

such order in whole or in part. No objection to the order of the Commission shall be considered by the court unless such objection shall have been urged before the Commission in the application for rehearing unless there is reasonable ground for failure so to do. The finding of the Commission as to the facts, if supported by substantial evidence, shall be conclusive. If any party shall apply to the court for leave to adduce additional evidence, and shall show to the satisfaction of the court that such additional evidence is material and that there were reasonable grounds for failure to adduce such evidence in the proceedings before the Commission, the court may order such additional evidence to be taken before the Commission and to be adduced upon the hearing in such manner and upon such terms and conditions as to the court may seem proper. The Commission may modify its findings as to the facts by reason of the additional evidence so taken, and it shall file with the court such modified or new findings which, if supported by substantial evidence, shall be conclusive, and its recommendation, if any, for the modification or setting aside of the original order. The judgment and decree of the court, affirming, modifying, or setting aside, in whole or in part, any such order of the Commission, shall be final, subject to review by the Supreme Court of the United States upon certiorari or certification as provided in section 1254 of title 28.

(c) Stay of Commission's order

The filing of an application for rehearing under subsection (a) of this section shall not, unless specifically ordered by the Commission, operate as a stay of the Commission's order. The commencement of proceedings under subsection (b) of this section shall not, unless specifically ordered by the court, operate as a stay of the Commission's order.

"Planning Period" shall have the meaning specified in the Reliability Assurance Agreement.

2.52 PJM Region

"PJM Region" shall have the meaning specified in the Reliability Assurance Agreement.

2.53 PJM Region Installed Reserve Margin

"PJM Region Installed Reserve Margin" shall have the meaning specified in the Operating Agreement.

2.54 PJM Region Peak Load Forecast

"PJM Region Peak Load Forecast" shall mean the peak load forecast used by the Office of the Interconnection in determining the PJM Region Reliability Requirement, and shall be determined on both a preliminary and final basis as set forth in section 5.

2.55 PJM Region Reliability Requirement

"PJM Region Reliability Requirement" shall mean, for purposes of the Base Residual Auction, the Forecast Pool Requirement multiplied by the Preliminary PJM Region Peak Load Forecast, less the sum of all Preliminary Unforced Capacity Obligations of FRR Entities in the PJM Region; and, for purposes of the Incremental Auctions, the Forecast Pool Requirement multiplied by the updated PJM Region Peak Load Forecast, less the sum of all updated Unforced Capacity Obligations of FRR Entities in the PJM Region.

2.56 Projected PJM Market Revenues

"Projected PJM Market Revenues" shall mean a component of the Market Seller Offer Cap calculated in accordance with section 6.

2.57 Qualifying Transmission Upgrade

"Qualifying Transmission Upgrade" shall mean a proposed enhancement or addition to the Transmission System that: (a) will increase the Capacity Emergency Transfer Limit into an LDA by a megawatt quantity certified by the Office of the Interconnection; (b) the Office of the Interconnection has determined will be in service on or before the commencement of the first Delivery Year for which such upgrade is the subject of a Sell Offer in the Base Residual Auction; (c) is the subject of a Facilities Study Agreement executed before the conduct of the Base Residual Auction for such Delivery Year and (d) a New Service Customer is obligated to fund through a rate or charge specific to such facility or upgrade.

2.58 Reference Resource

"Reference Resource" shall mean a combustion turbine generating station, configured with two General Electric Frame 7FA turbines with inlet air cooling to 50 degrees, Selective Catalytic Reduction technology all CONE Areas, dual fuel capability, and a heat rate of 10.096 Mmbtu/ MWh.

2.59 Reliability Assurance Agreement

"Reliability Assurance Agreement" shall mean that certain "Reliability Assurance Agreement Among Load-Serving Entities in the PJM Region," on file with FERC as PJM Interconnection, L.L.C. Rate Schedule FERC No.44.

2.60 Reliability Pricing Model Auction

"Reliability Pricing Model Auction" or "RPM Auction" shall mean the Base Residual Auction or any Incremental Auction, or, for the 2016/2017 and 2017/2018 Delivery Years, any Capacity Performance Transition Incremental Auction.

2.60A Repowered / Repowering

"Repowering" or "Repowered" shall refer to a partial or total replacement of existing steam production equipment with new technology or a partial or total replacement of steam production process and power generation equipment, or an addition of steam production and/or power generation equipment, or a change in the primary fuel being used at the plant. A resource can be considered Repowered whether or not such aforementioned replacement, addition, or fuel change provides an increase in installed capacity, and whether or not the pre-existing plant capability is formally deactivated or retired.

2.61 Resource Substitution Charge

"Resource Substitution Charge" shall mean a charge assessed on Capacity Market Buyers in an Incremental Auction to recover the cost of replacement Capacity Resources.

2.61A Scheduled Incremental Auctions

"Scheduled Incremental Auctions" shall refer to the First, Second, or Third Incremental Auction.

2.62 Second Incremental Auction

"Second Incremental Auction" shall mean an Incremental Auction conducted ten months before the Delivery Year to which it relates.

2.63 Sell Offer

"Sell Offer" shall mean an offer to sell Capacity Resources in a Base Residual Auction, Incremental Auction, or Reliability Backstop Auction.

5.10 Auction Clearing Requirements

The Office of the Interconnection shall clear each Base Residual Auction and Incremental Auction for a Delivery Year in accordance with the following:

a) Variable Resource Requirement Curve

The Office of the Interconnection shall determine Variable Resource Requirement Curves for the PJM Region and for such Locational Deliverability Areas as determined appropriate in accordance with subsection (a)(iii) for such Delivery Year to establish the level of Capacity Resources that will provide an acceptable level of reliability consistent with the Reliability Principles and Standards. It is recognized that the variable resource requirement reflected in the Variable Resource Requirement Curve can result in an optimized auction clearing in which the level of Capacity Resources committed for a Delivery Year exceeds the PJM Region Reliability Requirement (for Delivery Years through May 31, 2018, less the Short-Term Resource Procurement Target) or Locational Deliverability Area Reliability Requirement (for Delivery Year through May 31, 2018, less the Short-Term Resource Procurement Target for the Zones associated with such LDA) for such Delivery Year. For any auction, the Updated Forecast Peak Load, and Short-Term Resource Procurement Target applicable to such auction, shall be used, and Price Responsive Demand from any applicable approved PRD Plan, including any associated PRD Reservation Prices, shall be reflected in the derivation of the Variable Resource Requirement Curves, in accordance with the methodology specified in the PJM Manuals.

i) Methodology to Establish the Variable Resource Requirement Curve

Prior to the Base Residual Auction, in accordance with the schedule in the PJM Manuals, the Office of the Interconnection shall establish the Variable Resource Requirement Curve for the PJM Region as follows:

- Each Variable Resource Requirement Curve shall be plotted on a graph on which Unforced Capacity is on the x-axis and price is on the y-axis;
- For the 2015/2016, 2016/2017, and 2017/2018 Delivery Years, the Variable Resource Requirement Curve for the PJM Region shall be plotted by combining (i) a horizontal line from the y-axis to point (1), (ii) a straight line connecting points (1) and (2), (iii) a straight line connecting points (2) and (3), and (iv) a vertical line from point (3) to the x-axis, where:
    - For point (1), price equals: {the greater of [the Cost of New Entry] or [1.5 times (the Cost of New Entry minus the Net Energy and Ancillary Service Revenue Offset)]} divided by (one minus the pool-wide average EFORd) and Unforced Capacity equals: [the PJM Region Reliability Requirement multiplied by (100% plus the approved PJM Region Installed Reserve Margin ("IRM")% minus 3%) divided by (100% plus IRM%)], and for Delivery Years

through May 31, 2018, minus the Short-Term Resource Procurement Target;

- For point (2), price equals: (the Cost of New Entry minus the Net Energy and Ancillary Service Revenue Offset) divided by (one minus the pool-wide average EFORd) and Unforced Capacity equals: [the PJM Region Reliability Requirement multiplied by (100% plus IRM% plus 1%) divided by (100% plus IRM%)], and for Delivery Years through May 31, 2018, minus the Short-Term Resource Procurement Target; and

- For point (3), price equals [0.2 times (the Cost of New Entry minus the Net Energy and Ancillary Service Revenue Offset)] divided by (one minus the pool-wide average EFORd) and Unforced Capacity equals: [the PJM Region Reliability Requirement multiplied by (100% plus IRM% plus 5%) divided by (100% plus IRM%)], and for Delivery Years through May 31, 2018, minus the Short-Term Resource Procurement Target;

- For the 2018/2019 Delivery Year and subsequent Delivery Years, the Variable Resource Requirement Curve for the PJM Region shall be plotted by combining (i) a horizontal line from the y-axis to point (1), (ii) a straight line connecting points (1) and (2), and (iii) a straight line connecting points (2) and (3), where:

  - For point (1), price equals: {the greater of [the Cost of New Entry] or [1.5 times (the Cost of New Entry minus the Net Energy and Ancillary Service Revenue Offset)]} divided by (one minus the pool-wide average EFORd) and Unforced Capacity equals: [the PJM Region Reliability Requirement multiplied by (100% plus the approved PJM Region Installed Reserve Margin ("IRM")% minus 0.2%) divided by (100% plus IRM%)] minus the Short-Term Resource Procurement Target;

  - For point (2), price equals: [0.75 times (the Cost of New Entry minus the Net Energy and Ancillary Service Revenue Offset)] divided by (one minus the pool-wide average EFORd) and Unforced Capacity equals: [the PJM Region Reliability Requirement multiplied by (100% plus IRM% plus 2.9%) divided by (100% plus IRM%)] minus the Short-Term Resource Procurement Target; and

  - For point (3), price equals zero and Unforced Capacity equals: [the PJM Region Reliability Requirement multiplied by (100% plus IRM% plus 8.8%) divided by (100% plus IRM%)] minus the Short-Term Resource Procurement Target.

ii) For any Delivery Year, the Office of the Interconnection shall establish a separate Variable Resource Requirement Curve for each LDA for which:

A. the Capacity Emergency Transfer Limit is less than 1.15 times the Capacity Emergency Transfer Objective, as determined by the Office of the Interconnection in accordance with NERC and Applicable Regional Entity guidelines; or

B. such LDA had a Locational Price Adder in any one or more of the three immediately preceding Base Residual Auctions; or

C. such LDA is determined in a preliminary analysis by the Office of the Interconnection to be likely to have a Locational Price Adder, based on historic offer price levels; provided however that for the Base Residual Auction conducted for the Delivery Year commencing on June 1, 2012, the Eastern Mid-Atlantic Region ("EMAR"), Southwest Mid-Atlantic Region ("SWMAR"), and Mid-Atlantic Region ("MAR") LDAs shall employ separate Variable Resource Requirement Curves regardless of the outcome of the above three tests; and provided further that the Office of the Interconnection may establish a separate Variable Resource Requirement Curve for an LDA not otherwise qualifying under the above three tests if it finds that such is required to achieve an acceptable level of reliability consistent with the Reliability Principles and Standards, in which case the Office of the Interconnection shall post such finding, such LDA, and such Variable Resource Requirement Curve on its internet site no later than the March 31 last preceding the Base Residual Auction for such Delivery Year. The same process as set forth in subsection (a)(i) shall be used to establish the Variable Resource Requirement Curve for any such LDA, except that the Locational Deliverability Area Reliability Requirement for such LDA shall be substituted for the PJM Region Reliability Requirement and, for Delivery Years through May 31, 2018, the LDA Short-Term Resource Procurement Target shall be substituted for the PJM Region Short-Term Resource Procurement Target. For purposes of calculating the Capacity Emergency Transfer Limit under this section, all generation resources located in the PJM Region that are, or that qualify to become, Capacity Resources, shall be modeled at their full capacity rating, regardless of the amount of capacity cleared from such resource for the immediately preceding Delivery Year.

For each such LDA, for the 2018/2019 Delivery Year and subsequent Delivery Years, the Office of the Interconnection shall (a) determine the Net Cost of New Entry for each Zone in such LDA, with such Net Cost of New Entry equal to the applicable Cost of New Entry value for such Zone minus the Net Energy and Ancillary Services Revenue Offset value for such Zone, and (b) compute the average of the Net Cost of New Entry values of all such Zones to determine the Net Cost of New Entry for such LDA; provided however, that the Net Cost of New Entry for an LDA may

be greater than, but shall be no less than, the Net Cost of New Entry determined for any other LDA in which the first LDA resides (immediately or successively) including the Net Cost of New Entry for the RTO. The Net Cost of New Entry for use in an LDA in any Incremental Auction for the 2015/2016, 2016/2017, and 2017/2018 Delivery Years shall be the Net Cost of New Entry used for such LDA in the Base Residual Auction for such Delivery Year.

iii) Procedure for ongoing review of Variable Resource Requirement Curve shape.

Beginning with the Delivery Year that commences June 1, 2018, and continuing no later than for every fourth Delivery Year thereafter, the Office of the Interconnection shall perform a review of the shape of the Variable Resource Requirement Curve, as established by the requirements of the foregoing subsection. Such analysis shall be based on simulation of market conditions to quantify the ability of the market to invest in new Capacity Resources and to meet the applicable reliability requirements on a probabilistic basis. Based on the results of such review, PJM shall prepare a recommendation to either modify or retain the existing Variable Resource Requirement Curve shape. The Office of the Interconnection shall post the recommendation and shall review the recommendation through the stakeholder process to solicit stakeholder input. If a modification of the Variable Resource Requirement Curve shape is recommended, the following process shall be followed:

A) If the Office of the Interconnection determines that the Variable Resource Requirement Curve shape should be modified, Staff of the Office of the Interconnection shall propose a new Variable Resource Requirement Curve shape on or before May 15, prior to the conduct of the Base Residual Auction for the first Delivery Year in which the new values would be applied.

B) The PJM Members shall review the proposed modification to the Variable Resource Requirement Curve shape.

C) The PJM Members shall either vote to (i) endorse the proposed modification, (ii) propose alternate modifications or (iii) recommend no modification, by August 31, prior to the conduct of the Base Residual Auction for the first Delivery Year in which the new values would be applied.

D) The PJM Board of Managers shall consider a proposed modification to the Variable Resource Requirement Curve shape, and the Office of the Interconnection shall file any approved modified Variable Resource Requirement Curve shape with the FERC by October 1, prior to the conduct of the Base Residual Auction for the first Delivery Year in which the new values would be applied.

iv) Cost of New Entry

A) For the Incremental Auctions for the 2015/2016, 2016/2017, and 2017/2018 Delivery Years, the Cost of New Entry for the PJM Region and for each LDA shall be the respective value used in the Base Residual Auction for such Delivery Year and LDA. For the Delivery Year commencing on June 1, 2018, and continuing thereafter unless and until changed pursuant to subsection (B) below, the Cost of New Entry for the PJM Region shall be the average of the Cost of New Entry for each CONE Area listed in this section as adjusted pursuant to subsection (a)(iv)(B).

Geographic Location Within the PJM Region Encompassing These Zones	Cost of New Entry in $/MW-Year
PS, JCP&L, AE, PECO, DPL, RECO ("CONE Area 1")	132,200
BGE, PEPCO ("CONE Area 2")	130,300
AEP, Dayton, ComEd, APS, DQL, ATSI, DEOK, EKPC, Dominion ("CONE Area 3")	128,900
PPL, MetEd, Penelec ("CONE Area 4")	130,300

B) Beginning with the 2019/2020 Delivery Year, the CONE for each CONE Area shall be adjusted to reflect changes in generating plant construction costs based on changes in the Applicable United States Bureau of Labor Statistics ("BLS") Composite Index, in accordance with the following:

(1) The Applicable BLS Composite Index for any Delivery Year and CONE Area shall be the most recently published twelve-month change, at the time CONE values are required to be posted for the Base Residual Auction for such Delivery Year, in a composite of the BLS Quarterly Census of Employment and Wages for Utility System Construction (weighted 20%), the BLS Producer Price Index for Construction Materials and Components (weighted 50%), and the BLS Producer Price Index Turbines and Turbine Generator Sets (weighted 30%), as each such index is further specified for each CONE Area in the PJM Manuals.

(2) The CONE in a CONE Area shall be adjusted prior to the Base Residual Auction for each Delivery Year by applying the Applicable BLS Composite Index for such CONE Area to the Benchmark CONE for such CONE Area.

(3) The Benchmark CONE for a CONE Area shall be the CONE used for such CONE Area in the Base Residual Auction for the prior Delivery Year (provided, however that the Gross CONE values stated in subsection (a)(iv)(A) above shall be the Benchmark

CONE values for the 2018/2019 Delivery Year to which the Applicable BLS Composite Index shall be applied to determine the CONE for subsequent Delivery Years).

(4) Notwithstanding the foregoing, CONE values for any CONE Area for any Delivery Year shall be subject to amendment pursuant to appropriate filings with FERC under the Federal Power Act, including, without limitation, any filings resulting from the process described in section 5.10(a)(vi)(C) or any filing to establish new or revised CONE Areas.

v) Net Energy and Ancillary Services Revenue Offset

A) The Office of the Interconnection shall determine the Net Energy and Ancillary Services Revenue Offset each year for the PJM Region as (A) the annual average of the revenues that would have been received by the Reference Resource from the PJM energy markets during a period of three consecutive calendar years preceding the time of the determination, based on (1) the heat rate and other characteristics of such Reference Resource; (2) fuel prices reported during such period at an appropriate pricing point for the PJM Region with a fuel transmission adder appropriate for such region, as set forth in the PJM Manuals, assumed variable operation and maintenance expenses for such resource of $6.47 per MWh, and actual PJM hourly average Locational Marginal Prices recorded in the PJM Region during such period; and (3) an assumption that the Reference Resource would be dispatched for both the Day-Ahead and Real-Time Energy Markets on a Peak-Hour Dispatch basis; plus (B) ancillary service revenues of $2,199 per MW-year.

B) For the Incremental Auctions for the 2015/2016, 2016/2017 and 2017/2018 Delivery Years, the Office of the Interconnection will employ for purposes of the Variable Resourcce Requirement Curves for such Delivery Years the same calculations of the sub-regional Net Energy and Ancillary Services Revenue Offsets that were used in the Base Residual Auctions for such Delivery year and sub-region. For the 2018/2019 Delivery Year and subsequent Delivery Years, the Office of the Interconnection also shall determine a Net Energy and Ancillary Service Revenue Offset each year for each Zone, using the same procedures and methods as set forth in the previous subsection; provided, however, that: (1) the average hourly LMPs for such Zone shall be used in place of the PJM Region average hourly LMPs; (2) if such Zone was not integrated into the PJM Region for the entire applicable period, then the offset shall be calculated using only those whole calendar years during which the Zone was integrated; and (3) a posted fuel pricing point in such Zone, if available, and (if such pricing point is not available in such Zone) a fuel transmission adder appropriate

to such Zone from an appropriate PJM Region pricing point shall be used for each such Zone.

vi) Process for Establishing Parameters of Variable Resource Requirement Curve

A) The parameters of the Variable Resource Requirement Curve will be established prior to the conduct of the Base Residual Auction for a Delivery Year and will be used for such Base Residual Auction.

B) The Office of the Interconnection shall determine the PJM Region Reliability Requirement and the Locational Deliverability Area Reliability Requirement for each Locational Deliverability Area for which a Variable Resource Requirement Curve has been established for such Base Residual Auction on or before February 1, prior to the conduct of the Base Residual Auction for the first Delivery Year in which the new values will be applied, in accordance with the Reliability Assurance Agreement.

C) Beginning with the Delivery Year that commences June 1, 2018, and continuing no later than for every fourth Delivery Year thereafter, the Office of the Interconnection shall review the calculation of the Cost of New Entry for each CONE Area.

1) If the Office of the Interconnection determines that the Cost of New Entry values should be modified, the Staff of the Office of the Interconnection shall propose new Cost of New Entry values on or before May 15, prior to the conduct of the Base Residual Auction for the first Delivery Year in which the new values would be applied.

2) The PJM Members shall review the proposed values.

3) The PJM Members shall either vote to (i) endorse the proposed values, (ii) propose alternate values or (iii) recommend no modification, by August 31, prior to the conduct of the Base Residual Auction for the first Delivery Year in which the new values would be applied.

4) The PJM Board of Managers shall consider Cost of New Entry values, and the Office of the Interconnection shall file any approved modified Cost of New Entry values with the FERC by October 1, prior to the conduct of the Base Residual Auction for the first Delivery Year in which the new values would be applied.

D) Beginning with the Delivery Year that commences June 1, 2018, and continuing no later than for every fourth Delivery Year thereafter, the Office of the Interconnection shall review the methodology set forth in this Attachment for determining the Net Energy and Ancillary Services Revenue Offset for the PJM Region and for each Zone.

1) If the Office of the Interconnection determines that the Net Energy and Ancillary Services Revenue Offset methodology should be modified, Staff of the Office of the Interconnection shall propose a new Net Energy and Ancillary Services Revenue Offset methodology on or before May 15, prior to the conduct of the Base Residual Auction for the first Delivery Year in which the new methodology would be applied.

2) The PJM Members shall review the proposed methodology.

3) The PJM Members shall either vote to (i) endorse the proposed methodology, (ii) propose an alternate methodology or (iii) recommend no modification, by August 31, prior to the conduct of the Base Residual Auction for the first Delivery Year in which the new methodology would be applied.

4) The PJM Board of Managers shall consider the Net Revenue Offset methodology, and the Office of the Interconnection shall file any approved modified Net Energy and Ancillary Services Revenue Offset values with the FERC by October 1, prior to the conduct of the Base Residual Auction for the first Delivery Year in which the new values would be applied.

b) Locational Requirements

The Office of Interconnection shall establish locational requirements prior to the Base Residual Auction to quantify the amount of Unforced Capacity that must be committed in each Locational Deliverability Area, in accordance with the PJM Reliability Assurance Agreement.

c) Resource Requirements and Constraints

Prior to the Base Residual Auction and each Incremental Auction for the Delivery Years starting on June 1, 2014 and ending May 31, 2017, the Office of the Interconnection shall establish the Minimum Annual Resource Requirement and the Minimum Extended Summer Resource Requirement for the PJM Region and for each Locational Deliverability Area for which the Office of the Interconnection is required under section 5.10(a) of this Attachment DD to establish a separate VRR Curve for such Delivery Year. Prior to the Base Residual Auction and

Incremental Auctions for the 2017/2018 Delivery Year, the Office of the Interconnection shall establish the Limited Resource Constraints and the Sub-Annual Resource Constraints for the PJM Region and for each Locational Deliverability Area for which the Office of the Interconnection is required under section 5.10(a) of this Attachment DD to establish a separate VRR Curve for such Delivery Year. Prior to the Base Residual Auction and Incremental Auctions for 2018/2019 and 2019/2020 Delivery Years, the Office of the Interconnection shall establish the Base Capacity Demand Resource Constraints and the Base Capacity Resource Constraints for the PJM Region and for each Locational Deliverability Area for which the Office of the Interconnection is required under section 5.10(a) of this Attachment DD to establish a separate VRR Curve for such Delivery Year.

d) Preliminary PJM Region Peak Load Forecast for the Delivery Year

The Office of the Interconnection shall establish the Preliminary PJM Region Load Forecast for the Delivery Year in accordance with the PJM Manuals by February 1, prior to the conduct of the Base Residual Auction for such Delivery Year.

e) Updated PJM Region Peak Load Forecasts for Incremental Auctions

The Office of the Interconnection shall establish the updated PJM Region Peak Load Forecast for a Delivery Year in accordance with the PJM Manuals by February 1, prior to the conduct of the First, Second, and Third Incremental Auction for such Delivery Year.

5.12 Conduct of RPM Auctions

The Office of the Interconnection shall employ an optimization algorithm for each Base Residual Auction and each Incremental Auction to evaluate the Sell Offers and other inputs to such auction to determine the Sell Offers that clear such auction.

a) Base Residual Auction

For each Base Residual Auction, the optimization algorithm shall consider:

- all Sell Offers submitted in such auction;
- the Variable Resource Requirement Curves for the PJM Region and each LDA;
- any constraints resulting from the Locational Deliverability Requirement and any applicable Capacity Import Limit;
- for Delivery Years starting June 1, 2014 and ending May 31, 2017, the Minimum Annual Resource Requirement and the Minimum Extended Summer Resource Requirement for the PJM Region and for each Locational Deliverability Area for which a separate VRR Curve is required by section 5.10(a) of this Attachment DD; for the 2017/2018 Delivery Year, the Limited Resource Constraints and the Sub-Annual Resource Constraints for the PJM Region and for each Locational Deliverability Area for which a separate VRR Curve is required by section 5.10(a) of this Attachment DD; and for the 2018/2019 and 2019/2020 Delivery Years, the Base Capacity Demand Resource Constraints and the Base Capacity Resource Constraints for the PJM Region and for each Locational Deliverability Area for which a separate VRR Curve is required by section 5.10(a) of this Attachment DD;
- For the Delivery Years through May 31, 2018, the PJM Region Reliability Requirement minus the Short-Term Resource Procurement Target;
- For the 2018/2019 Delivery Year and subsequent Delivery Years, the PJM Reliability Requirement.

The optimization algorithm shall be applied to calculate the overall clearing result to minimize the cost of satisfying the reliability requirements across the PJM Region, regardless of whether the quantity clearing the Base Residual Auction is above or below the applicable target quantity, while respecting all applicable requirements and constraints, including any restrictions specified in any Credit-Limited Offers. Where the supply curve formed by the Sell Offers submitted in an auction falls entirely below the Variable Resource Requirement Curve, the auction shall clear at the price-capacity point on the Variable Resource Requirement Curve corresponding to the total Unforced Capacity provided by all such Sell Offers. Where the supply curve consists only of

Sell Offers located entirely below the Variable Resource Requirement Curve and Sell Offers located entirely above the Variable Resource Requirement Curve, the auction shall clear at the price-capacity point on the Variable Resource Requirement Curve corresponding to the total Unforced Capacity provided by all Sell Offers located entirely below the Variable Resource Requirement Curve. In determining the lowest-cost overall clearing result that satisfies all applicable constraints and requirements, the optimization may select from among multiple possible alternative clearing results that satisfy such requirements, including, for example (without limitation by such example), accepting a lower-priced Sell Offer that intersects the Variable Resource Requirement Curve and that specifies a minimum capacity block, accepting a higher-priced Sell Offer that intersects the Variable Resource Requirement Curve and that contains no minimum-block limitations, or rejecting both of the above alternatives and clearing the auction at the higher-priced point on the Variable Resource Requirement Curve that corresponds to the Unforced Capacity provided by all Sell Offers located entirely below the Variable Resource Requirement Curve.

The Sell Offer price of a Qualifying Transmission Upgrade shall be treated as a capacity price differential between the LDAs specified in such Sell Offer between which CETL is increased, and the Import Capability provided by such upgrade shall clear to the extent the difference in clearing prices between such LDAs is greater than the price specified in such Sell Offer. The Capacity Resource clearing results and Capacity Resource Clearing Prices so determined shall be applicable for such Delivery Year.

b) Scheduled Incremental Auctions.

For purposes of a Scheduled Incremental Auction, the optimization algorithm shall consider:

- For the Delivery years through May 31, 2018, the PJM Region Reliability Requirement, less the Short-term Resource Procurement Target;
- For the 2018/2019 Delivery Year and subsequent Delivery Years, the PJM Reliability Requirement;
- Updated LDA Reliability Requirements taking into account any updated Capacity Emergency Transfer Objectives;
- The Capacity Emergency Transfer Limit used in the Base Residual Auction, or any updated value resulting from a Conditional Incremental Auction;
- All applicable Capacity Import Limits;
- For the Delivery Years through May 31, 2018, for each LDA, such LDA's updated Reliability Requirement, less such LDA's Short-Term Resource Procurement Target;
- For the 2018/2019 Delivery Year and subsequent Delivery Years, for each LDA, such LDA's updated Reliability Requirement

- For Delivery Years starting June 1, 2014 and ending May 31, 2017, the Minimum Annual Resource Requirement and the Minimum Extended Summer Resource Requirement for the PJM Region and for each LDA for which PJM is required to establish a separate VRR Curve for the Base Residual Auction for the relevant Delivery Year; for the 2017/2018 Delivery Year, the Limited Resource Constraints and the Sub-annual Resource Constraints for the PJM Region and for each Locational Deliverability Area for which a separate VRR Curve is required by section 5.10(a) of this Attachment DD; and for the 2018/2019 and 2019/2020 Delivery Years, the Base Capacity Demand Resource Constraints and the Base Capacity Resource Constraints for the PJM Region and for each Locational Deliverability Area for which a separate VRR Curve is required by section 5.10(a) of this Attachment DD;

- A demand curve consisting of the Buy Bids submitted in such auction and, if indicated for use in such auction in accordance with the provisions below, the Updated VRR Curve Increment;

- The Sell Offers submitted in such auction; and

- The Unforced Capacity previously committed for such Delivery Year.

(i) When the requirement to seek additional resource commitments in a Scheduled Incremental Auction is triggered by section 5.4(c)(2) of this Attachment, the Office of the Interconnection shall employ in the clearing of such auction the Updated VRR Curve Increment.

(ii) When the requirement to seek additional resource commitments in a Scheduled Incremental Auction is triggered by section 5.4(c)(1) of this Attachment, and the conditions stated in section 5.4(c)(2) do not apply, the Office of the Interconnection first shall determine the total quantity of (A) the amount that the Office of the Interconnection sought to procure in prior Scheduled Incremental Auctions for such Delivery Year that does not clear such auction, plus, for the Delivery Years through May 31, 2018, the Short-Term Resource Procurement Target Applicable Share for such auction, minus (B) the amount that the Office of the Interconnection sought to sell back in prior Scheduled Incremental Auctions for such Delivery Year that does not clear such auction, plus (C) the difference between the updated PJM Region Reliability Requirement or updated LDA Reliability Requirement and, respectively, the PJM Region Reliability Requirement, or LDA Reliability Requirement, utilized in the most recent prior auction conducted for such Delivery Year plus any amount required by section 5.4(c)(2)(ii), plus (D) the reduction in Unforced Capacity commitments associated with the transition provisions of sections 5.14B, 5.14C and 5.14E of this Attachment DD, minus (E) the quantity of new Unforced Capacity commitments for the 2016/2017 Delivery Year associated with the transition provisions in section 5.14D of this Attachment DD where this quantity is assumed to have been procured in the form of non-Capacity Performance Resources for purposes of this paragraph E. If the result of such equation is a positive quantity, the Office of the Interconnection shall employ in the clearing of such auction a portion of the Updated VRR

Curve Increment extending right from the left-most point on that curve in a megawatt amount equal to that positive quantity defined above, to seek to procure such quantity. If the result of such equation is a negative quantity, the Office of the Interconnection shall employ in the clearing of the auction a portion of the Updated VRR Curve Decrement, extending and ascending to the left from the right-most point on that curve in a megawatt amount corresponding to the negative quantity defined above, to seek to sell back such quantity.

(iii) When the possible need to seek agreements to release capacity commitments in any Scheduled Incremental Auction is indicated for the PJM Region or any LDA by section 5.4(c)(3)(i) of this Attachment, the Office of the Interconnection first shall determine the total quantity of (A) the amount that the Office of the Interconnection sought to procure in prior Scheduled Incremental Auctions for such Delivery Year that does not clear such auction, plus, for the Delivery Years through May 31, 2018, the Short-Term Resource Procurement Target Applicable Share for such auction, minus (B) the amount that the Office of the Interconnection sought to sell back in prior Scheduled Incremental Auctions for such Delivery Year that does not clear such auction, plus (C) the difference between the updated PJM Region Reliability Requirement or updated LDA Reliability Requirement and, respectively, the PJM Region Reliability Requirement, or LDA Reliability Requirement, utilized in the most recent prior auction conducted for such Delivery Year minus any capacity sell-back amount determined by PJM to be required for the PJM Region or such LDA by section 5.4(c)(3)(ii) of this Attachment, plus (D) the reduction in Unforced Capacity commitments associated with the transition provisions of sections 5.14B, 5.14C and 5.14E of this Attachment DD, minus (E) the quantity of new Unforced Capacity commitments for the 2016/2017 Delivery Year associated with the transition provisions in section 5.14D of this Attachment DD where this quantity is assumed to have been procured in the form of non-Capacity Performance Resources for purposes of this paragraph E; provided, however, that the amount sold in total for all LDAs and the PJM Region related to a delay in a Backbone Transmission upgrade may not exceed the amounts purchased in total for all LDAs and the PJM Region related to a delay in a Backbone Transmission upgrade. If the result of such equation is a positive quantity, the Office of the Interconnection shall employ in the clearing of such auction a portion of the Updated VRR Curve Increment extending right from the left-most point on that curve in a megawatt amount equal to that positive quantity defined above, to seek to procure such quantity. If the result of such equation is a negative quantity, the Office of the Interconnection shall employ in the clearing of the auction a portion of the Updated VRR Curve Decrement, extending and ascending to the left from the right-most point on that curve in a megawatt amount corresponding to the negative quantity defined above, to seek to sell back such quantity.

(iv) If none of the tests for adjustment of capacity procurement in subsections (i), (ii), or (iii) is satisfied for the PJM Region or an LDA in a Scheduled Incremental Auction, the Office of the Interconnection first shall determine the total quantity of (A) the amount that the Office of the Interconnection sought to procure in prior Scheduled Incremental Auctions for such Delivery Year that does not clear such auction, plus, for the Delivery Years through May 31, 2018, the Short-Term Resource Procurement Target Applicable Share for such auction, minus (B) the amount that the Office of the Interconnection sought to sell back in prior Scheduled Incremental Auctions for such Delivery Year that does not clear such auction. If the result of such equation is a positive quantity, the Office of the Interconnection shall employ in

the clearing of such auction a portion of the Updated VRR Curve Increment extending right from the left-most point on that curve in a megawatt amount equal to that positive quantity defined above, to seek to procure such quantity. If the result of such equation is a negative quantity, the Office of the Interconnection shall employ in the clearing of the auction a portion of the Updated VRR Curve Decrement, extending and ascending to the left from the right-most point on that curve in a megawatt amount corresponding to the negative quantity defined above, to seek to sell back such quantity. For the Delivery Years through May 31, 2018, if more than one of the tests for adjustment of capacity procurement in subsections (i), (ii), or (iii) is satisfied for the PJM Region or an LDA in a Scheduled Incremental Auction, the Office of the Interconnection shall not seek to procure the Short-Term Resource Procurement Target Applicable Share more than once for such region or area for such auction

(v) If PJM seeks to procure additional capacity in an Incremental Auction for the 2014-15, 2015-16 or 2016-17 Delivery Years due to a triggering of the tests in subsections (i), (ii), (iii) or (iv) then the Minimum Annual Resource Requirement for such Auction will be equal to the updated Minimum Annual Resource Requirement (based on the latest DR Reliability Targets) minus the amount of previously committed capacity from Annual Resources, and the Minimum Extended Summer Resource Requirement for such Auction will be equal to the updated Minimum Extended Summer Resource Requirement (based on the latest DR Reliability Targets) minus the amount of previously committed capacity in an Incremental Auction for the 2014-15, 2015-16 or 2016-17 Delivery Years from Annual Resources and Extended Summer Demand Resources. If PJM seeks to release prior committed capacity due to a triggering of the test in subsection (iii) then PJM may not release prior committed capacity from Annual Resources or Extended Summer Demand Resources below the updated Minimum Annual Resource Requirement and updated Minimum Extended Summer Resource Requirement, respectively.

(vi) If the above tests are triggered for an LDA and for another LDA wholly located within the first LDA, the Office of the Interconnection may adjust the amount of any Sell Offer or Buy Bids otherwise required by subsections (i), (ii), or (iii) above in one LDA as appropriate to take into account any reliability impacts on the other LDA.

(vii) The optimization algorithm shall calculate the overall clearing result to minimize the cost to satisfy the Unforced Capacity Obligation of the PJM Region to account for the updated PJM Peak Load Forecast and the cost of committing replacement capacity in response to the Buy Bids submitted, while satisfying or honoring such reliability requirements and constraints, in the same manner as set forth in subsection (a) above.

(viii) Load Serving Entities may be entitled to certain credits ("Excess Commitment Credits") under certain circumstances as follows:

(A) For either or both of the Delivery Years commencing on June 1, 2010 or June 1, 2011, if the PJM Region Reliability Requirement used for purposes of the Base Residual Auction for such Delivery Year exceeds the PJM Region Reliability Requirement that is based on the last updated load

forecast prior to such Delivery Year, then such excess will be allocated to Load Serving Entities as set forth below;

(B) For any Delivery Year beginning with the Delivery Year that commences June 1, 2012, the total amount that the Office of the Interconnection sought to sell back pursuant to subsection (b)(iii) above in the Scheduled Incremental Auctions for such Delivery Year that does not clear such auctions, less the total amount that the Office of the Interconnection sought to procure pursuant to subsections (b)(i) and (b)(ii) above in the Scheduled Incremental Auctions for such Delivery Years that does not clear such auctions, will be allocated to Load Serving Entities as set forth below;

(C) the amount from (A) or (B) above for the PJM Region shall be allocated among Locational Deliverability Areas pro rata based on the reduction for each such Locational Deliverability Area in the peak load forecast from the time of the Base Residual Auction to the time of the Third Incremental Auction; provided, however, that the amount allocated to a Locational Deliverability Area may not exceed the reduction in the corresponding Reliability Requirement for such Locational Deliverability Area; and provided further that any LDA with an increase in its load forecast shall not be allocated any Excess Commitment Credits;

(D) the amount, if any, allocated to a Locational Deliverability Area shall be further allocated among Load Serving Entities in such areas that are charged a Locational Reliability Charge based on the Daily Unforced Capacity Obligation of such Load Serving Entities as of June 1 of the Delivery Year and shall be constant for the entire Delivery Year. Excess Commitment Credits may be used as Replacement Capacity or traded bilaterally.

c) Conditional Incremental Auction

For each Conditional Incremental Auction, the optimization algorithm shall consider:

- The quantity and location of capacity required to address the identified reliability concern that gave rise to the Conditional Incremental Auction;
- All applicable Capacity Import Limits;
- the same Capacity Emergency Transfer Limits that were modeled in the Base Residual Auction, or any updated value resulting from a Conditional Incremental Auction; and
- the Sell Offers submitted in such auction.

The Office of the Interconnection shall submit a Buy Bid based on the quantity and location of capacity required to address the identified reliability violation at a Buy Bid price equal to 1.5 times Net CONE.

The optimization algorithm shall calculate the overall clearing result to minimize the cost to address the identified reliability concern, while satisfying or honoring such reliability requirements and constraints.

d) Equal-priced Sell Offers

If two or more Sell Offers submitted in any auction satisfying all applicable constraints include the same offer price, and some, but not all, of the Unforced Capacity of such Sell Offers is required to clear the auction, then the auction shall be cleared in a manner that minimizes total costs, including total make-whole payments if any such offer includes a minimum block and, to the extent consistent with the foregoing, in accordance with the following additional principles:

1) as necessary, the optimization shall clear such offers that have a flexible megawatt quantity, and the flexible portions of such offers that include a minimum block that already has cleared, where some but not all of such equal-priced flexible quantities are required to clear the auction, pro rata based on their flexible megawatt quantities; and

2) when equal-priced minimum-block offers would result in equal overall costs, including make-whole payments, and only one such offer is required to clear the auction, then the offer that was submitted earliest to the Office of the Interconnection, based on its assigned timestamp, will clear.

CERTIFICATE OF SERVICE

Pursuant to Rule 25(d) of the Federal Rules of Appellate Procedure and Rule 25(c) of the Circuit Rules of this Court, I hereby certify that on May 31, 2016, I electronically filed the foregoing document with the Clerk of the Court for the United States Court of Appeals for the District of Columbia Circuit by using the CM/ECF system. I certify that all participants in the case are registered CM/ECF users and that service will be accomplished by the CM/ECF system.

Respectfully submitted,

/s/ Cara J. Lewis

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United States Court of Appeals for District of Columbia Circuit

Notice of Docket Activity

The following transaction was entered on 05/31/2016 at 7:04:59 PM EDT and filed on 05/31/2016

Case Name:	PJM Power Providers Group v. FERC
Case Number:	15-1453
Document(s):	Document(s)

Docket Text:
JOINT PETITIONER BRIEF [1615796] filed by PJM Power Providers Group in 15-1453, PSEG Energy Resources & Trade LLC, PSEG Power LLC and Public Service Electric and Gas Company in 15-1455 [Service Date: 05/31/2016] [15-1453, 15-1455] (Carretta, Kenneth)

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