UNITED STATES OF AMERICA
BEFORE THE
FEDERAL ENERGY REGULATORY COMMISSION

PJM Interconnection, L.L.C.) Docket No. ER12-513-000

RESPONSE OF DR. SAMUEL A. NEWELL AND DR. KATHLEEN SPEES
ON BEHALF OF PJM INTERCONNECTION, L.L.C.

1. Our names are Dr. Samuel A. Newell and Dr. Kathleen Spees. We are employed by *The Brattle Group* ("*Brattle*"), as a Principal and an Associate, respectively. We are submitting this affidavit on behalf of PJM Interconnection, L.L.C. ("PJM") to respond to protests submitted in this docket regarding the administrative Cost of New Entry ("CONE") parameters to be used in PJM's capacity market, the Reliability Pricing Model ("RPM"). I, Dr. Newell, have previously submitted an affidavit in this docket in support of PJM's proposed adjustment to CONE based on a study we conducted with colleagues and CH2M HILL to estimate this parameter ("2011 CONE Study").[1]

2. Four interveners representing entities with a generation interest submitted protests stating that PJM's proposed adjustment to CONE is unreasonably low, at least in the eastern portions of PJM's footprint. The four sets of comments that we respond to here were submitted by The PJM Power Providers Group ("P3"); GenOn Energy Management, LLC, GenOn Mid-Atlantic, LLC, GenOn Chalk Point, LLC, GenOn Power Midwest, LP, and GenOn REMA, LLC (together, "GenOn"); Public Service Electric and Gas Company, PSEG Power LLC, and PSEG Energy Resources & Trade LLC (together, "PSEG"); and LS Power Associates, LP ("LS Power").

3. We first respond to these comments at a high level to show that our CONE estimates are in fact consistent with previous FERC-approved values and trends in developer costs. We then respond to the largest individual cost components identified by the protestors.

I. INTRODUCTION AND SUMMARY

4. Four supplier entities have submitted protests in this docket stating that PJM's proposed update to CONE is unreasonably low, at least in the eastern portions of PJM's territory. They claim that CONE should be 6 to 101% above the estimates provided in our 2011 CONE Study, at least in the EMAAC and SWMAAC CONE Areas.[2] In particular:

– GenOn stated that our estimate of the capital cost estimate for a Combustion Turbine ("CT") should be increased by 101% in the Eastern Mid-Atlantic Area

[1] See Spees, K., S. Newell, R. Carlton, B. Zhou, and J. Pfeifenberger. (2011) *Cost of New Entry Estimates for Combustion-Turbine and Combined-Cycle Plants in PJM.*August 24, 2011. Available from http://www.brattle.com/_documents/UploadLibrary/Upload971.pdf

[2] GenOn's reported EMAAC estimate was 101% above Brattle's estimates; however, corrected for financing costs, GenOn's estimate in EMAAC is 90% above the Brattle estimate.

Council ("EMAAC") CONE Area and 77% in Southwest Mid-Atlantic Area Council ("SWMAAC") CONE Area. For the Combined Cycle ("CC") cost estimate, GenOn stated that our capital cost estimate should be increased by 83% in EMAAC and 71% in SWMAAC;[3]

- PSEG stated that our CT and CC capital cost estimates should be increased by 51% and 40% in EMAAC respectively;[4]
- LS Power stated that tax and contingency cost adjustments should be made to increase our CT cost estimates by 6-8% depending on the CONE Area;[5] and
- P3 summarized the comments of the above entities, stating that the proposed CONE update is low, but did not propose a specific adjustment.[6]

5. However, as we will demonstrate in this affidavit, the proposed CONE values are clearly within a range of reasonableness, and the interveners' estimates are not:

- These interveners are correct that the proposed CONE is slightly below the escalated values used in the latest RPM Base Residual Auction ("BRA," for capacity delivery in 2014/15). However, **the proposed CONE for CTs is higher than the nominal value last approved by FERC in 2009 (for delivery in 2012/13), in all but one CONE Area**.[7] The magnitude of the nominal increase relative to the 2009 FERC-approved values has been moderated by the economic recession, as well as by technology improvements that increased turbine economies of scale. As we explain further below, the proposed adjustments are consistent with power plant cost indices.
- **The proposed costs are also consistent with actual projects currently under development**. We refer to LS Power's West Deptford Energy project, which reveals certain information about its costs in its publicly-available MOPR filing.
- **The interveners' estimates are unrealistically high and do not support increasing the proposed CONE values**, for three reasons. First, several of **their claims that individual cost components should be higher – in some cases by more than a factor of 10 – are based on flawedanalyses**. We explain below the errors made in interpreting data sources, applying flawed methodologies, and in making unrealistic site assumptions and other unsupported assumptions. Our response focuses on the largest differences between the interveners' cost estimates and ours, including electrical interconnection costs, gas interconnection costs, major equipment costs, contingency costs, financing costs, and labor costs. Second, in several cost categories **the interveners have developed conflicting estimates of the cost components**; with

3 See GenOn filing from December 22, 2011, p. 2.

4 See PSEG filing from December 22, 2011, p. 12.

5 See LS Power filing from December 22, 2011, Attachment A p.1 and Attachment B p. 1.

6 See P3 filing from December 22, 2011, p. 5.

7 The values approved by FERC in 2009 were developed in 2008 and used in the RPM BRA for 2012/13; PJM then escalated the values by the Handy-Whitman Index for the subsequent 2013/14 and 2014/15 auctions. See FERC Order from March 26, 2009 date in Docket Nos. ER05-1410-000, *et al.*, pp. 9-17; and PJM 2012/13, 2013/14, and 2014/15 RPM planning period parameters, available from http://www.pjm.com/markets-and-operations/rpm/rpm-auction-user-info.aspx

one's estimate being consistent with ours while the other's is much higher. And third, **none of the interveners has presented a full CONE study** that independently addresses all cost and financing components that make up the CONE parameter. Instead, every one of the interveners has chosen to accept some of our estimates (possibly those where they believed ourestimates to be on the high end) while developing higher estimates for other individual components (possibly where they believed ourestimates to be on the low end). Selectively addressing only components on the low end while accepting estimates on the high end would result in unreasonably high overall estimates.

- Finally, **the Independent Market Monitor ("IMM") agrees that GenOn's capital cost estimate is unrealistically high and that our estimates are reasonable.**The IMM's January 6, 2012 filing in this docket states:"The Market Monitor's calculations are generally consistent with the Brattle Group's calculations. The GenOn study does not adequately support the inclusion of the much higher values for these items than the values included in the Brattle Group Report."[8] Separately, the IMM has reported CONE estimates that were developed independently by Pasteris Energy, Inc. ("Pasteris")forthe IMM's 2010 State of the Market (SOM) report. The Pasteris EMAAC CONE estimate shown in the SOM report is$131/kW-y for a CT (compared to our $134/kW-y) and $175/kW-y for a CC (compared to our$168/kW-y).[9] This sameCC CONE is also reported in the PJM tariff, and was usedfor the purposes of establishing the MOPR threshold in the 2014/15 auction.[10]

II. THE PROPOSED UPDATE TO CONE IS CONSISTENT WITH GENERATION CAPITAL COST TRENDS AND ECONOMIES OF SCALE WITH LARGER TURBINES

6. The interveners have expressed concern that PJM's proposed CONE update, based on our 2011 CONE Study, represents a reduction in the parameter relative to the value most recently used in RPM auctions (for delivery year 2014/15).[11] However, compared to the CONE values that FERC approved for PJM's 2012/13 delivery year the proposed update actually represents an

8 See Monitoring Analytics, LLC Motion to Answer and Answer of the Independent Market Monitor for PJM under ER12-513, pp. 5-6. Posted at: http://elibrary.ferc.gov/idmws/common/OpenNat.asp?fileID=12859801

9 See Monitoring Analytics, LLC 2010 State of the Market Report, Energy Market Part II, p. 176. Posted at: http://www.monitoringanalytics.com/reports/PJM_State_of_the_Market/2010/2010-som-pjm-volume2-sec3.pdf

10 As shown on PJM Tariff page 2298, the CC CONE used for establishing the MOPR threshold for EMAAC in the 2014/15 Base Residual Auction is listed as $175/kW-year.

11 Relative to PJM's escalated 2014/15 parameter, the proposed update represents a 13% decrease to a 1% increase depending on the CONE Area. PJM obtained the values for 2013/14 and 2014/15 by inflated its CONE value each year according to the Handy-Whitman Index. See FERC Order from March 26, 2009 date in Docket Nos. ER05-1410-000, *et al.*, pp. 9-17; and PJM 2012/13, 2013/14, and 2014/15 RPM planning period parameters, available from http://www.pjm.com/markets-and-operations/rpm/rpm-auction-user-info.aspx

increase, and the scale of this increase is consistent with changes in major power plant cost indices.

7. Table 1 shows that the proposed CT CONE update is 2% below to 15% above the value that FERC approved in 2009, representing a modest increase over the three-year period. It also shows that the proposed CC CONE update is 7% below to 4% above the value approved in 2011 (and used for delivery year 2014/15).

8. The scale of the proposed three-year increase in CT CONE is consistent with the changes observed in major generation plant cost indices as shown in Figure 1 The figure shows that over the most recent three-year period available, the Handy-Whitman index has increased by 11%, and the *Gas Turbine World* CT Plant index has increased by 6%, but other major power plant capital cost indices have decreased.[12] The CERA Power Capital Cost Index ("PCCI") has decreased by 1% and the *Gas Turbine World* CC Plant Index has decreased by 5%. In combination, these indices suggest that a reasonable updated CT CONE may be approximately 5% below to 11% above the previously-approved CONE.

9. In a previous FERC docket, one of the interveners, LS Power, observed that costs have been decreasing, not increasing. "WDE [West Deptford Energy] has observed a discount to power island equipment pricing from mid-2010 and significantly more so from mid-2008. While an estimate of $240 million [used in PJM's 2011 CC CONE update] may have been applicable in mid-2008, when power island equipment prices were at a high, it is not an appropriate estimate for today."[13]

10. In light of these indices and observations by LS Power, it is reasonable that PJM's proposed updates are within several percent of past approved values. By comparison, GenOn and PSEG have proposed alternative CONE values that would represent 66-121% increases relative to the CT CONE values approved in 2009.[14] These alternative values are substantially beyond the reasonable range of increases indicated by generation cost indices and LS Power's observations about cost trends.

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12 The period 2007 through 2010 is used only because that is the most recently available three-year period, although the period 2008 through 2011 period would be a preferable comparison to reflect the exact time period over which the CONE parameters were developed. Alternatively, using the shorter time period 2008 through 2010 shows even less growth or more reduction in each of these major indices.

13 See West Deptford Energy, LLC public filing on February 22, 2011, in Docket No. ER11-2936-000, Joint Affidavit, p. 11.

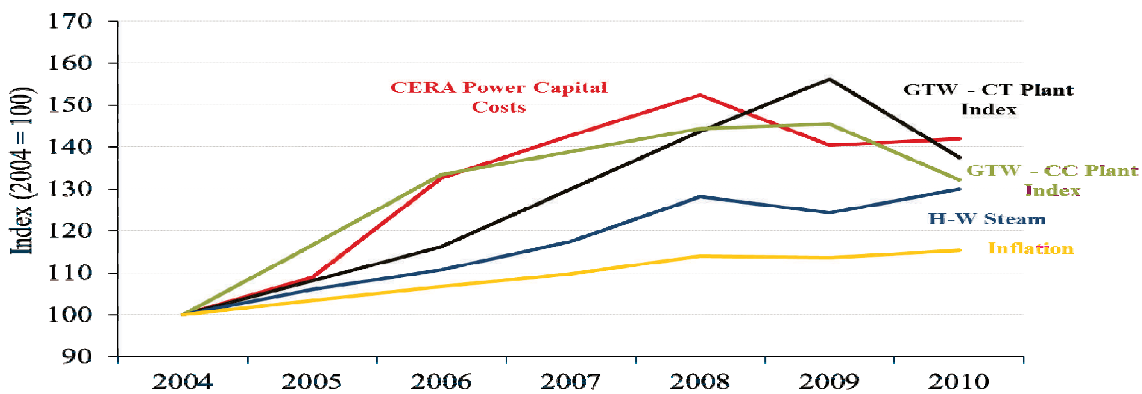
14 Although both interveners addressed the capital cost of building a plant, neither of them presented a complete, levelized CONE estimate. The percentages shown are developed based on the ratio between their capital cost estimates and ours and the ratio between our CONE and the Commission-approved CONE. The GenOn CT estimate would be 121% higher than the 2009 Commission-approved value in EMAAC and 94% higher in SWMAAC. The PSEG estimate would translate to a levelized cone that is 66% higher in EMAAC.

Table 1
Change in Proposed CT and CC CONE Relative to Previously-Approved Values

CONE Area	CONE Used in RPM Auctions			Proposed	Proposed Increase (Decrease)	
	2012/13	2013/14	2014/15	2014/15	Above 2012/13	Above 2014/15
	($/kW-y)	*($/kW-y)*	*($/kW-y)*	*($/kW-y)*	*(%)*	*(%)*
Simple Cycle						
1 Eastern MAAC	$122	$132	$139	$134	10%	-3%
2 Southwest MAAC	$113	$122	$128	$124	10%	-4%
3 Rest of RTO	$115	$125	$132	$123	7%	-6%
4 Western MAAC	$113	$122	$128	$130	15%	1%
5 Dominion	$113	$122	$128	$111	-2%	-13%
Combined Cycle						
1 Eastern MAAC	n/a	n/a	$175	$168	n/a	-4%
2 Southwest MAAC	n/a	n/a	$155	$148	n/a	-5%
3 Rest of RTO	n/a	n/a	$164	$162	n/a	-1%
4 Western MAAC	n/a	n/a	$155	$162	n/a	4%
5 Dominion	n/a	n/a	$155	$144	n/a	-7%

Sources and Notes:
Proposed CONE update from PJM filing on December 1, 2011 in this docket, p 12.
CONE values for 2012/13-2014/15 from PJM planning period parameters and MOPR Screen.

Figure 1
Comparison Generation Plant Cost Indices



Sources and Notes:
Handy-Whitman line is "Total Steam Production Plant" index for the North Atlantic region.
Gas Turbine World (2010). Gas Turbine World 2010 GTW Handbook. Fairfield, CT: Pequot Publishing Inc.

11. The proposed plant capital cost increase is also moderated by the larger size and greater economies of scale achieved with the new 7FA.05 turbine relative to the 7FA.03 turbine assumed in the previous CT CONE update. The new 7FA.05 turbine has also created economies of scale in the proposed CC CONE relative to the 7FA.04 turbine assumed in the previous CC CONE

update.[15] The new turbine has a total nominal capacity rating of 211 MW per turbine while previous two models were rated at 175 MW and 183 MW, respectively.[16] These 21% and 15% increases in the power output provide substantial economies of scale that reduce capital costs on a per-kW basis.[17] Note that the impact of this turbine's economy of scale would not necessarily be proportionally reflected in the industry-wide generation plant cost indices shown in Figure 1 which represent a portfolio of technologies.

12. LS Power described the substantial cost advantages from economies of scale obtained by using the 7FA.05 model in the previous FERC docket mentioned above. In that docket regarding their West Deptford CC project in New Jersey, LS Power explained:

> "Importantly, the Generic CC [used to determine the PJM 2014/15 CONE parameter] uses the GE 7FA.04 CTG, which is approximately 25 MW smaller (per CTG) than the newer GE 7FA.05 design or the Siemens SGT6-5000F4. As a result, the output of the Station is estimated at 650 MW at 92ºF as compared to the Generic CC output of 600.9 MW at 92ºF. The additional output generated by the larger CTG to be used in the Station provides considerable economies of scale at little additional expense as compared to the Generic CC. The Joint Affidavit provides WDE's estimate of the total installed capital costs of the Station. This amount is comparable to the installed cost of the Generic CC, which is estimated at approximately $694 million, although the Station is approximately 50 MW larger than the PJM Generic CC."[18]

13. These same cost improvements were incorporated into our 2011 CONE Study, reflecting the economies of scale with the 7FA.05 turbine.

III. THE PROPOSED CONE IS CONSISTENT WITH CURRENT PROJECTS

14. The proposed CC and CT CONE updates reflect costs that are consistent with current generation projects, based on current data and trends. The largest cost components of the project including turbine, major equipment, labor, engineering, procurement, and construction costs, were developed by CH2M HILL using the same database and estimation tools that they use to develop indicative bids for building power plants.[19]CH2M HILL is a major engineering, procurement, and construction ("EPC") contractor whose estimates draw on extensive experience designing and constructing CC and CT plants of various configurations. CH2M HILL is active in the PJM market, including acting as the EPC contractor for LS Power to build

15 See Stantec Consulting Services, Inc. (2011). *Combined Cycle Cost Estimate: 2x1 GE 7fA Reference Plant (2011 Update).* Prepared for Pasteris Energy, Inc. p. 2. Filed as an attachment to the PJM filing before FERC on February 11, 2011 in Docket No. ER11-2875-000.

16 General Electric (2011). "About the New 7FA." Retrieved from http://www.ge-7fa.com/businesses/ge-7fa/en/about-7FA.html

17 For further discussion comparing total capital and levelized costs, see the *Brattle* CONE study, p. 2.

18 See West Deptford Energy, LLC public filing on February 22, 2011, in Docket No. ER11-2936-000, p. 25.

19 The EPC estimate for the 2011 *Brattle* CONE study included certain siting assumptions for the EPC estimate.

their West Deptford Energy plant in New Jersey.[20] This project is nearly identical in configuration and size to that assumed in our 2011 CONE Study.[21]

15. With its current project development experience, LS Power would be a unique position to show whether ourCONE estimate is unreasonably low as the other interveners have claimed. However, they have chosen not to do so, presumably because the costs of the West Deptford project are comparable to or below those estimated in our 2011 CONE Study. In fact, as LS Power explained in detail in a previous FERC filing, various site and financing advantages have reduced the West Deptford project's costs to substantially below the 2014/15 PJM CC CONE value.[22] Because the previous EMAAC CC CONE is only 4% higher than the proposed update, as shown in Table 1, it seems that LS Power's previous comments before the FERC also indicate that the total cost of their West Deptford project is similarly below the 2011 CONE Study estimate. This is likely because the various site and financing advantages that LS Power described for the West Deptford project were not assumed to apply in ourstudy.

16. Even so, the West Deptford project's advantages are not extraordinarily unique, as many new electric projects are similarly developed at sites with various cost or site advantages. For example, some new CCs and CTs are built as additions to existing plants to repower a plant where another unit has recently retired, factors which can substantially reducing electric, gas, land, and other costs (to near zero in some cases).

IV. THE INTERVENERS' ESTIMATES ARE UNREALISTICALLY HIGH AND DO NOT INDICATE THAT THE PROPOSED CONE SHOULD BE INCREASED

17. Aside from addressing the interveners' comments that the overall level of CONE is unreasonably low, we have also examined the merits of the largest individual cost components identified by the protesters as sources of concern. We first present a summary of the interveners' cost estimates and then individually discuss the largest discrepancies. As we explain, the largest sources of discrepancy are caused by flawed methodologies, unrealistic site assumptions, and other unsupported assumptions that have inflated the protestors' estimates. Further, the interveners have introduced upward bias by selectively developing alternative, higher estimates for only some cost components, while accepting other cost and financing estimates. Finally, for several cost components, one or the other of the interveners has developed estimates consistent with ourestimates while the other has developed a higher estimate. Overall, these factors have

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[20] See "CH2M Hill Awarded EPC Contract For 738 MW New Jersey Power Plant," MarketWire (December 1, 2011). Posted at: http://www.marketwire.com/press-release/ch2m-hill-awarded-epc-contract-for-738-mw-new-jersey-power-plant-1593771.htm.

[21] The West Deptford project, like the theoretical plant assumed in our2011 CONE Study, is a 2x1 combined cycle plant using 7FA.05 turbines (although WDE has maintained flexibility to use a different Siemens SGT6-500F turbine) with duct firing. See West Deptford Energy, LLC public filing on February 22, 2011, in Docket No. ER11-2936-000, p. 25-26; 2011 CONE Study, pp. 17-18.

[22] Some of these site advantages include a favorable location with respect to electric, gas, and water infrastructure. See West Deptford Energy, LLC public filing on February 22, 2011, in Docket No. ER11-2936-000, pp. 4-5, 23-28.

contributed to the interveners' proposed CONE adjustments that are substantially above the reasonable range.

A. The Interveners' Proposed Increases are Based on Unrealistic Overestimates of Several of the CONE Cost Components

18. Comparisons of costs estimated by each of the interveners and our estimates are shown in Table 2 through Table 5. These interveners have not identified the same set of major cost discrepancies, although there is some overlap. However, considering all of the interveners' estimates and comments, it appears that the largest cost discrepancies are from electric interconnection costs, gas interconnection costs, financing fees and financing during construction, owner furnished equipment, contingency costs, and labor costs. We address each of these major cost categories individually in the following sections by evaluating the adjustments proposed by the interveners as well as explaining and further supporting the approaches we used to develop the estimates in our 2011 CONE Study.

19. Table 2 and Table 3 show the cost estimates developed by GenOn's consultant Sargent and Lundy ("S&L") compared to our 2011 CONE Study estimates. The largest discrepancies include electric interconnection, major equipment, gas interconnection, and contingency. GenOn also identifies financing costs as a major discrepancy, but this is based on its misinterpretation of ourstudy. As we explain further below, S&L incorrectly assumed that wehad not included the equity costs of financing during construction in our estimate. Adjusted for the correct financing cost comparison, GenOn's total cost estimate for a CT is $307 million higher (+90%) and $209 million higher (+67%) than PJM's proposed value in EMAAC and SWMAAC, respectively. GenOn's total cost estimate for a CC is $495 million higher (+70%) and $362 million higher (+59%) than PJM's proposed values in EMAAC and SWMAAC, respectively.

Table 2
Comparison of GenOn and *Brattle* Combustion Turbine Estimates

	Eastern MAAC			Southwest MAAC		
	Brattle *($mil)*	GenOn *($mil)*	Difference *($mil)*	Brattle *($mil)*	GenOn *($mil)*	Difference *($mil)*
Total Capital Costs (As Reported by GenOn)	**$323**	**$649**	**$326**	**$294**	**$520**	**$226**
Electric Interconnection	$11	$211	$200	$11	$85	$74
Owner Furnished Equipment	$115	$138	$24	$115	$138	$24
Gas Interconnection	$16	$16	$0	$16	$73	$57
Financing Costs (As Reported by GenOn)	$14	$38	$24	$13	$31	$18
Contingency (EPC + Owner)	$16	$26	$11	$14	$24	$10
Construction Labor, Materials & BOP Equipment	$99	$114	$14	$80	$91	$11
Owner's Project Mangement & Misc Engr.	$0	$7	$7	$0	$6	$6
Owner's Development Costs (incl. mkt studies, permitting)	$6	$16	$10	$6	$14	$8
Other	$46	$82	$36	$41	$59	$18
Total Capital Costs (w/ Corrected Financing Comparison)	**$341**	**$649**	**$307**	**$311**	**$520**	**$209**
Financing Costs (w/ Correct Brattle Interpretation)	$33	$38	$6	$30	$31	$1

Sources and Notes:

See GenOn's December 22, 2011 filing, Ungate Affidavit, Exhibit B.

See Section IV.A.1 below regarding the correction to appropriately compare financing costs.

Table 3
Comparison of GenOn and *Brattle* Combined Cycle Estimates

	Eastern MAAC			Southwest MAAC		
	Brattle *($mil)*	GenOn *($mil)*	Difference *($mil)*	Brattle *($mil)*	GenOn *($mil)*	Difference *($mil)*
Total Capital Costs (As Reported by GenOn)	**$658**	**$1,204**	**$545**	**$570**	**$975**	**$405**
Electric Interconnection	$16	$212	$196	$16	$86	$70
Owner Furnished Equipment	$176	$228	$52	$176	$231	$55
Gas Interconnection	$16	$16	$0	$16	$73	$57
Financing Costs (As Reported by GenOn)	$37	$133	$96	$32	$109	$77
Contingency (EPC + Owner)	$36	$59	$23	$29	$51	$22
Construction Labor, Materials & BOP Equipment	$272	$334	$62	$209	$261	$52
Owner's Project Mangement & Misc Engr.	$0	$15	$15	$0	$12	$12
Owner's Development Costs (incl. mkt studies, permitting)	$8	$35	$27	$8	$29	$21
Other	$99	$172	$73	$84	$122	$38
Total Capital Costs (w/ Corrected Financing Comparison)	**$708**	**$1,204**	**$495**	**$613**	**$975**	**$362**
Financing Costs (w/ Correct Brattle Interpretation)	$87	$133	$46	$75	$109	$34

Sources and Notes:
See GenOn's December 22, 2011 filing, Ungate Affidavit, Exhibit C.
See Section IV.A.1 below regarding the correction to appropriately compare financing costs.

20. Table 4 shows the cost differences between our and PSEG's capital costs for a CT and CC in EMAAC. The largest discrepancies include contingency, labor costs, and materials and equipment. PSEG's estimate is $158 million above the proposed capital costs for the CT in EMAAC (51% higher) and is $251 million above the proposed capital costs for the CC (40% higher). Note that a smaller number of individual cost components are compared here (6 components as opposed to GenOn's 9 components) because PSEG did not separately report major cost components such as gas interconnection similarly to how we reported these values.

Table 4
Comparison of PSEG and *Brattle* Combined Cycle and Simple Cycle Estimates

	CT Eastern MAAC			CC Eastern MAAC		
	Brattle *($mil)*	PSEG *($mil)*	Difference *($mil)*	Brattle *($mil)*	PSEG *($mil)*	Difference *($mil)*
Total Capital Costs	**$308**	**$466**	**$158**	**$621**	**$872**	**$251**
Owner Furnished Equipment	$115	$119	**$5**	$176	$181	**$5**
Contingency (EPC + Owner)	$15	$43	**$28**	$36	$84	**$48**
Pilings	$0	$8	**$8**	$0	$13	**$13**
EPC Labor Costs	$44	$69	**$26**	$132	$160	**$29**
EPC Materials and Equipment	$28	$58	**$30**	$79	$115	**$37**
Other	$106	$168	**$62**	$199	$319	**$119**

Sources and Notes:
See PSEG filing from December 22, 2011, p. 12 and PSEG RCMT EPC Comparison Cost Estimates to the PJM Interconnection Study.
Total *Brattle* numbers in this table are lower than in the previous tables because they exclude interest during construction ("IDC"), consistent with the PSEG estimates.

21. Table 5 shows the components of the cost increases proposed by LS Power. The two cost components that LS Power examined were contingency costs and property taxes in each of the

five CONE areas. LS Power's proposed CONE increases range from 6% to 8% for each of the five CONE Areas.

Table 5
Comparison of Major Cost Line Items from LS Power

CONE Area	Brattle	LS Power Proposed Increase			Difference
	CONE	Property Tax	Contigency	CONE	
	($/kW-y)	*($/kW-y)*	*($/kW-y)*	*($/kW-y)*	*($/kW-y)*
1 Eastern MAAC	$134	$3	$8	$145	$11
2 Southwest MAAC	$124	$2	$7	$133	$9
3 Rest of RTO	$124	$0	$7	$131	$7
4 Western MAAC	$130	$0	$7	$137	$7
5 Dominion	$111	$3	$6	$120	$9

Sources and Notes:
See LS Power December 22, 2011 filing, Attachment A p.1 and Attachment B p. 1.

1. Financing Fees and Financing During Construction

22. GenOn's consultant S&L has identified financing costs as a substantial source of discrepancy, although the real discrepancy is much smaller than S&L has stated due to a misinterpretation of ourresults. While S&L presented a table showing discrepancies of $18-24 million for the CTs and $77-$96 million for the CCs, the real discrepancy is a fraction of that at $1-6 million for the CTs and $34-46 million for the CCs. The incomplete comparison presented by S&L and the corrected comparison are shown in Table 2 and Table 3 above.

23. As S&L's representative Mr. Ungate stated in his affidavit, he was not able to replicate ourlevelized CONE calculations and explained that "clarifications on the assumptions used in the CONE Study might resolve these differences."[23] This incomplete understanding of our calculations resulted in an installed cost comparison that did not account for all of the financing costs applied in our calculation prior to the online date. The installed costs that Mr. Ungate presented included the equity portion of construction financing costs in the S&L estimate, but excluded those same costs from our estimate.[24] However, ourestimate of levelized CONE does account for these costs and therefore those costs should have been included in the table.[25,26] Further, GenOn's statement that "Sargent & Lundy was unable to completely assess the reasonableness of the 2011 CONE Study's financing assumptions due to the lack of transparency and backup support," is incorrect.[27] The entirety of our calculations was provided to

23 See GenOn's December 22, 2011 filing, Ungate Affidavit, p. 20.
24 See December 22, 2011 filing, Ungate Affidavit, Tables 1 and 2 on pp. 9-10.
25 Alternatively, they could have been excluded from the S&L estimate in order to show the numbers on a comparable basis. This alternative would have been consistent with how our total costs were reported in Tables 42 and 43 of the 2011 CONE Study.
26 Table 47 of the 2011 CONE study does not explicitly show the equity cost of financing during construction and was the cause of most of the discrepancy.
27 See GenOn's December 22, 2011 filing, p. 18.

stakeholders in Excel format in August 2011, and an explanation of these calculations is contained in our2011 CONE Study.[28]

24. After correcting the comparison, S&L financing cost estimate is still $1-6 million higher for the CTs and $34-46 million higher for the CCs. This is not because S&L has different financing assumptions, but rather because the financing rates are applied to an unrealistically high plant construction cost estimate, as explained in the remainder of our affidavit.

2. Electrical Interconnection Costs

25. GenOn claims that interconnection costs, which we estimated to be $24-28/kW for both CTs and CCs, should be $541/kW for a CT in EMAAC, $323/kW for a CC in EMAAC, $218/kW for a CT in SWMAAC, and $131 for a CC in SWMAAC. These discrepancies account for 60-61% of the total cost increase proposed by GenOn in EMAAC and 31-33% of their proposed increase in SWMAAC.

26. However, our approach is based on actual interconnection costs paid by actual projects and thus produces a realistic estimate for new projects. Our sample is larger than GenOn claims. Although there are only 4 in the CT size class (300-500 MW), each of the other size classes shown in Table 30 of the *Brattle* 2011 CONE Study have approximately the same cost per kW of installed capacity. This subset of projects was selected based on filters that we applied to a much larger data set based on capacity and voltage after extensively reviewing the dataset. Further, GenOn's claim that we did not consider locational differences is incorrect.[29] The 16 projects included in our averages were from across the PJM region, including seven in EMAAC. We found that actual interconnection costs of individual projects varied (from $1 to $69 per kW), but costs were not systematically above average in any LDA.

27. GenOn's estimate of electric interconnection costs is substantially overstated because it is based on a misinterpretation of interconnection feasibility studies. Feasibility studies present preliminary, worst-case costs estimates because they include for each project 100% of network upgrade costs that are caused by that project in combination with output from all projects ahead in the queue, as derated by a commercial probability factor. These worst-case estimates do not recognize that many upgrades will not ultimately be needed when other projects in unfavorable locations drop out of the queue, and remaining upgrade costs will be shared among all projects that contribute to the overload. Actual costs paid by projects are typically a small fraction of what is indicated in feasibility studies for those particular projects. Further, the sites with the highest final costs (as indicated in the Interconnection Service Agreement that PJM conducts later) may be rejected by developers in favor of other sites with the best overall characteristics.

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28 The Excel file is available under the August 18, 2011 Markets and Reliability Committee meeting materials, available from http://www.pjm.com/committees-and-groups/committees/mrc.aspx#27
The explanation documenting these financing assumptions is in the *Brattle* 2011 CONE Study, Section VI.

29 GenOn, page 13: "The 2011 CONE Study prepared an interconnection cost estimate by studying historical costs for similarly sized facilities, however, the study does not indicate that these facilities were actually located in the specific locations chosen for each CONE Area's Reference Resource. To the extent Brattle utilized interconnection costs for facilities located across the PJM system instead of reasonable proxies for that location, it is a significant methodological flaw, given that the cost estimate would not reflect actual costs of new entry in the region of the CONE Area selected for the Reference Resource."

Finally, GenOn claims that interconnection costs for a CT would be as high as for a much larger CC, whereas we observe that costs scale with size, as one would expect. Table 30 of the 2011 CONE Study shows an average cost of $24-28/kW for each size class, with lower total costs for smaller sizes.

28. GenOn's estimates for EMAAC are the most exaggerated. Examination of the two Feasibility Studies their consultant relied upon reveals that most of the potential upgrades and associated costs listed for one project are the same as for the other project. They double-count these upgrade costs by assigning the entire upgrade cost to each generation project, when the costs would really be shared by the two projects (and several others) and might be avoided altogether if not all the plants in the queue are developed. Perhaps GenOn's expert did not notice that the Feasibility Studies caution that upgrade costs will later be assigned an allocation factor.[30] There is ample evidence that ultimate interconnection costs are much less than indicated in feasibility studies. For example, interconnection costs indicated in the feasibility studies for 13 actual projects included in our sample (feasibility studies were not available for the other 3 actual projects) ranged from $0 to $283 million, or $40 million on average. Yet these same projects ultimately had to pay only $0.1 to $38 million in interconnection costs, or $13 million on average. Among thoseprojects with feasibility study cost estimates greater than $100 million, the amounts ultimately paidwere less than one-eighth of the estimate.

29. GenOn's expert made similar methodological errors in his estimation of interconnection costs in Maryland. The higher cost sites he referred to (studied by Siemens for Mirant, which was one of GenOn's predecessor companies) appear to correspond to several sites where Mirant had entered into the queue, but later withdrew their interconnection requests.[31,32] It is not reasonable to use interconnection costs from sites that have since been rejected by the developer. Doing so would be comparable to using construction costs from sites that developers considered but rejected because they had severe environmental or other liabilities that made those locations unsuitable.

30. The only project that GenOn's consultant considered that is still active in the queue is at Kelson Ridge (corresponding to the proposed Competitive Power Ventures ("CPV") project in St. Charles County, where we assumed a reference plant would be located). Their consultant indicates much lower network upgrade costs there, $31 million, than at the sites rejected by Mirant. Yet, and even these upgrade costs were exaggerated. The System Impact Study relied

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[30] "Contribution to Previously Identified System Reinforcements (Overloads initially caused by prior Queue positions with additional contributions to overloading by this project. This project may have a % allocation cost responsibility which will be calculated and reported for the Impact Study.)" See http://www.pjm.com/pub/planning/project-queues/feas_docs/w4021_fea.pdf.

[31] The documentation provided by Siemens does not provide all of the assumptions, such as whether they included all active queue projects. However, it appears to be similar to PJM's Feasibility Studies for these sites which do include all active queue projects and assign 100% of upgrade costs to each project that contributes to them.

[32] The withdrawn 750 MW project at the Burches Hill site queue number V3-001. The withdrawn 600 MW projects at Chalk Point and Dickerson are U2-081 and U2-084. There are other projects at Burches Hill and Dickerson that have just submitted interconnection requests in late 2011 to be studied under a different queue number. http://www.pjm.com/planning/generation-interconnection/generation-queue-withdraw.aspx

on did not study a single 725 MW plant at Kelson Ridge. It studied adding a 725 MW unit *assuming there is already another 725 MW unit there* that entered earlier in the queue(although the first project was derated using PJM's commercial probability factor).[33] That assumption was unrealistic since a pre-existing plant is not there now, and only a single 725 MW plant has been proposed.[34] In any event, adding the second request compounds the impacts of the first request and exaggerates the need for upgrades. Without the second plant, the interconnection costs would be much less. PJM also conducted a System Impact Study for just the first 725 MW plant at that site and found only $19.5 million interconnection costs are necessary.[35] This yields interconnection costs per kW that are essentially the same as in our CONE Study for a 656 MW unit ($15.5 million).

3. Gas Interconnection Costs

31. GenOn's consultant Sargent & Lundy, LLC ("S&L") has identified gas interconnection costs as a major source of discrepancy for both the CC and CT technologies in SWMAAC. This discrepancy has a total capital cost impact of $57 million and makes up 25% of the discrepancy between our estimates and GenOn's estimates.[36] GenOn indicated no gas interconnection cost discrepancy for the EMAAC, while PSEG's filing did not specifically address or break out the costs of gas interconnection.

32. In supporting its assertion that ourgas interconnection estimate for SWMAAC is low, S&L argues that the Dominion Cove Point pipeline ("DCP") is not a feasible interconnection point for a gas CC or CT because the pipeline lacks operational flexibility.[37] S&L bases its claim of operational inflexibility on the recent lack of LNG imports at the Cove Point terminal, citing a recent Commission order.[38] S&L references the following statement in the Commission order "the resulting decline in LNG cargoes to the Terminal is causing significant operating concerns because the Terminal was not designed to operate for sustained periods without the arrival of LNG cargoes."[39] S&L then makes the undocumented assertion that "[w]ithout the availability of LNG gas, which can be vaporized at hourly rates to balance the disparity between the hourly fuel usage of a CT plant or the daily cycling of a CC plant and uniform hourly gas deliveries, Cove Point Pipeline has no ability to handle the swing in fuel requirements necessitated by a CT or CC plant."[40] S&L therefore assumes that the plant would have to

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[33] This fact is indicated in the Impact Study that GenOn's expert refers to, which stated that the project would be adding to overload from the project with earlier queue number V3-017 still being studied at the same site. It is also evident from the Active Queue page on PJM's website, which shows 1450 MW at the site under the "MW" column. See http://www.pjm.com/planning/generation-interconnection/generation-queue-active.aspx

[34] Note that it is common for developers to submit multiple queue requests at one or multiple locations that represent the same project. These requests are submitted when the projects are in a speculative stage to secure a position in the queue and gain a better understanding of various interconnection options.

[35] See http://www.pjm.com/pub/planning/project-queues/impact_studies/v3017_imp.pdf.

[36] See GenOn December 22, 2011 filing, p. 15, Ungate Affidavit, p. 5.

[37] *Id*.

[38] S&L also makes the statement that it "reviewed GenOn's experience with the Dominion Cove Point Pipeline." (See Ungate Affidavit, p. 14.) However, S&L does not provide any information about the nature of its review or of GenOn's prior experience.

[39] See Ungate Affidavit, fn.8, 135 FERC ¶ 61,261 (2011), pp.2-3.

[40] See Ungate Affidavit, pp. 14-15.

interconnect to the Transcontinental ("Transco") pipeline with a 25-mile gas pipeline lateral, compared to the 5-mile lateral off DCP that we assumed.

33. S&L misrepresents the Commission order discussion, which is unrelated to DCP pipeline's operational flexibility, and actually only relates to the operational functionality of the cryogenic facilities at the LNG import terminal itself.[41] In fact, the DCP pipeline has substantial flexibilityto serve load as a large,*bi-directional* pipeline with interconnections to three major interstate pipelines: Columbia Gas Transmission, Dominion Transmission, and Transcontinental.[42,43] As a result, shippers on the DCP pipeline enjoy access to diverse sources of domestic natural gas supplies (at the western end of the pipeline) in addition to LNG from the import terminal (at the eastern end of the pipeline).[44,45]Figure 2shows a snapshot of scheduled volumes flowing from various interstate pipelines into the DCP pipeline system on several days over the last few months. This is clear evidence that substantial volumes of gas do flow on a regular basis from the pipeline's interconnection with interstate pipelines to delivery points on DCP pipeline's system.

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41 Specifically, DCP stated that the lack of imports is hampering its ability to keep the cryogenic facilities at the terminal cool and that the warming of those facilities could cause damage to the terminal. DCP did not however indicate that the operational flexibility of the DCP pipeline is hampered by this issue. See 135 FERC ¶ 61,261 (2011), pp. 2-3.

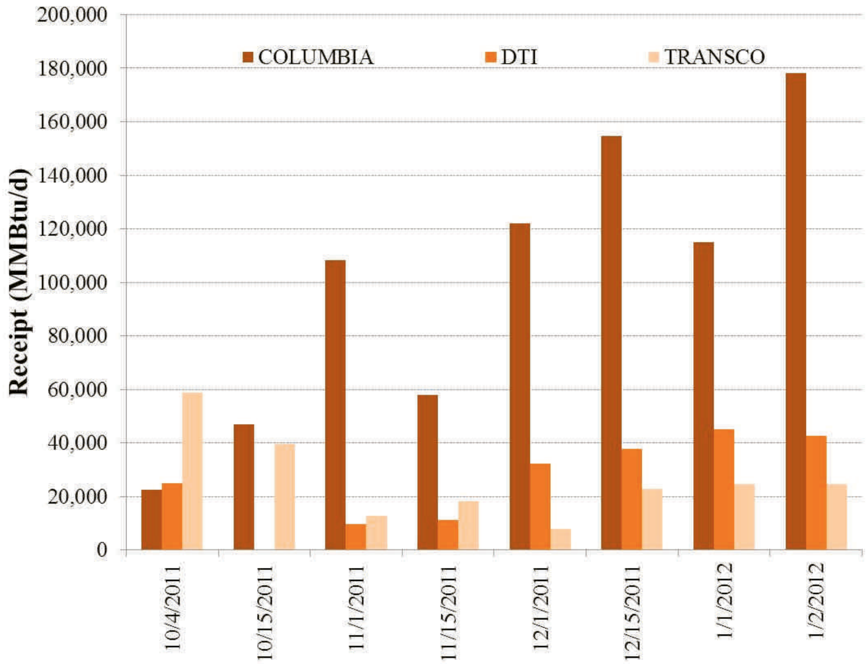
42 Total design receipt capacity of the system is 1.8 Bcf/d at the Cove Point LNG plant, roughly 0.76 Bcf/d at interconnection with DTI, 0.31 Bcf/d at interconnection with Columbia, and 0.20 Bcf/d at interconnection with Transco. See DCP's operationally available unscheduled capacity report as of Intraday 2 on January 4, 2012 available on DCP's informational postings.

43 DCP interconnects with Columbia Gas Transmission ("Columbia"), Dominion Transmission ("DTI"), and Transcontinental ("Transco").See "Application of Dominion Cove Point, LP for Long-Term Authorization to Export LNG to Free Trade Agreement Countries," FE11-115-LNG, pp. 4&7.

44 Substantial volumes of gas are received on DCP from these pipelines when import LNG quantities are low. See Dominion Cove Point LNG informational postings at http://escript.dom.com/servlet/InfoPostServlet?region=null&company=cpt&method=headers&category=Capacity&subcategory=Operationally+Available.

45 Indeed, the significance of domestic natural gas supplies to the DCP pipeline is highlighted by DCP's recent application to the US Department of Energy for an export license to export domestic natural gas supplies to other countries. DCP is proposing to flow 1 Bcf/d of domestic supplies to the Cove Point terminal for export. See DOE/FE Order no. 3019, pp. 2-3.

Figure 2
Volumes Scheduled to Flow from Interstate Pipelines into DCP System



Sources and Notes:
Dominion Cove Point LNG informational postings. Scheduled volumes shown are as of the last nomination cycle of the gas day (intraday 2).

34. Through these domestic and LNG terminal supplies, DCP already provides gas to twomajor gas-fired generators, the 230 MW Panda-Brandywine Cogeneration Plant and the Possum Point Power Station.[46] The Possum Point Power Station has three gas-fired units: Units 3 (96MW), Unit 4 (220 MW), and Unit 6 (559 MW combined-cycle).[47]Analysis of these plants' hourly operating history shows substantial day-to-day and hour-to-hour swings in gas consumption and that the Dominion Cove Point pipeline supports this flexible operation.[48]

35. Further, the proposed 640 MW CPV St. Charles project, which is the largest gas-fired plant under development in SWMAAC, plans to interconnect to DCP's pipeline.[49] In its state

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46 In fact, Cove Point states on its corporate website that "[it] is positioned to serve existing Dominion Energy gas-fired generation facilities. These include Possum Point, Remington, Ladysmith and Fairless Works." See http://www.dom.com/business/gas-transmission/cove-point/index.jsp (accessed January 5, 2012). Also, Panda used to subscribe to firm capacity of 24,000 Dth/d on the DCP pipeline for the cogeneration facility. Currently, Sempra Energy Trading, which has a FTS contract for 24,000 Dth/d on the DCP pipeline, provides fuel for the Panda-Brandywine facility. See Cove Point LNG Index of Customers effective January 1, 2012, 97 FERC ¶ 61,043, p. 7.

47 See http://www.dom.com/about/stations/fossil/possum-point-power-station.jsp (accessed January 5, 2012).

48 Based on fuel consumption as reported in the EPA Continuous Emissions Monitoring System database, obtained through Ventyx Energy Velocity Suite.

49 Plant development data from Ventyx Energy Velocity Suite (2011). The project description and planned gas interconnection point are from:
http://cpvstcharles.com/about-sc.php

regulatory approval filings, CPV has indicated that proximity to the Cove Point Pipeline is a site advantage that will require only a 1.5 mile gas lateral.[50]

36. Finally, S&L has not explained why they have accepted our $16 million estimate of gas interconnection costs in EMAAC. This is substantially higher than the $5.7 million estimate that the same consultants have developed for a very recent NYISO CONE study.[51] As I explain below, this contributes to the appearance that S&L has opted to adopt our assumptions in cases where those assumptions would tend to increase S&L's fully independent estimates.

4. Owner-Furnished Equipment Costs

37. GenOn's consultant S&L has identified owner-furnished equipment ("OFE") as another source of discrepancy. The GenOn-S&L total OFE cost estimate is $24 million higher for the CT and $52-55 million higher for the CC, or 21-31% above our estimate (accounting for 7-10% of the total capital cost discrepancy for the CTs and 16-24% of the discrepancy for the CCs). However, PSEG's consultant RCM Technologies ("RCMT") has an estimate very close to ours.

38. The S&L estimate is substantially higher than PSEG and ourestimates primarily because of differences in estimated turbine costs. S&L states that our 2011 CONE Study estimate of $46.5 million per turbine is below today's costs, suggesting that $57 million per turbine would be more accurate. Our 2011CONE Study estimate of $46.5 million was calculated using an average of firm price quotes and budgetary quotes that CH2M HILL obtained for similar 7FA.05 machines with dry low-NO_X burners over the past 18 months. CH2M HILL also made an appropriate adjustment between the machines that required dual-fuel and single-fuel capability.[52] In addition, CH2M HILL has two firm quotes for similar machines as of late 2011 that are consistent with the $46.5 million estimate. Finally, PSEG's consultant RCMT agrees with the proposed estimate of $46.5 million per turbine, stating that the proposed estimates are "very close" to the RCMT estimates, thus also refuting S&L's claim.[53]

5. New Jersey Labor Costs

39. In its filing, PSEG has identified New Jersey labor costs as a cause of discrepancy between our estimates and those of PSEG's consultant RCMT due to high wages and low productivity in that location. The discrepancy in labor costs between our and PSEG's studies is $26 million for the CT and $29 million for the CC, or 16% and 11% of the total discrepancies shown in Section IV.A.

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[50] See p. 8 and Vol. 1, p. 3-21 in CPV's filing before the Maryland Public Service Commission: http://webapp.psc.state.md.us/Intranet/Casenum/submit_new.cfm?DirPath=C:\Casenum\9100-9199\9129\Item_001\&CaseN=9129\Item_001

[51] See p. 103 of the NERA and S&L 2010 CONE Study, Attached to: http://www.nyiso.com/public/webdocs/documents/regulatory/filings/2010/11/NYISO_DCR_2010_filing_11-30-10.pdf

[52] Specifically, the cost of the dual-fuel turbines assumed everywhere but CONE Area 3 was estimated at $46.5 million per turbine while the cost of the single-fuel turbine in CONE Area 3 was estimated at $45 million per turbine.

[53] See PSEG filing from December 22, 2011, See RCMT EPC Comparison Cost Estimates to the PJM Interconnection Study p. 8.

40. The labor costs in our 2011 CONE Study were estimated by CH2M HILL as were other costs under the EPC contractor scope.[54] In developing these estimates, CH2M HILL contacted and used published data from the New Jersey Department of Labor. In addition, CH2M HILL included fringes and legalities to define the union labor rate. No per diem was added, and the rate included the over-time portion of the nominal 50-hour work week at a "time-and-a-half" rate. This resulted in an average rate of $85.16/hr. CH2M verified that this labor rate is consistent with the realized rate on their projects in New Jersey.

6. Contingency Costs of Plant Owner and Engineering Procurement and Construction Contractor

41. GenOn, PSEG, and LS Power claimed that we underestimated contingency costs by $10-21 million for the CT and $22-48 million for the CT, as shown in Tables 2-5. Most of this discrepancy is caused by the higher capital costs estimated by these interveners, which translates into higher contingency costs because contingency is applied on a percentage basis. For PSEG and LS Power however, the increase is also related to a higher assumed percentage contingency. This higher percentage contingency is greater than the contingency levels included in CONE studies previously approved by the Commission and appears to be based on the incorrect treatment of contingency "reserve funds" that assumes all of the funds would be expected to be spent.

42. Table 6 summarizes the contingency estimates developed in the *Brattle* study and compares these to those proposed by the protestors. In several of these filings, the interveners reported either the EPC contingency or the owner's contingency estimate separately and only discussed one or the other. However, these estimates cannot be compared in isolation because the contingency risk borne by the owner depends on the level of contingency risk assumed by the EPC contractor as explained in the *Brattle* CONE study.[55]Table 6 shows the combined level of EPC and Owner's contingency assumed in each filing on a percentage basis. When the total EPC and Owner's contingency costs are considered, ourcontingency estimate is 4.8-5.4% of total project costs, the PSEG contingency is 9.3-9.6%, and the GenOn contingency is approximately 4.1-5.3%.[56] As the table shows, GenOn's total contingency estimate is similar to our estimate on a percentage basis despite their statements our estimates are low, once both EPC and owner contingency are considered. However, the PSEG estimate is substantially higher and LS Power proposes a higher percentage but only discusses owner's contingency.[57]

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[54] See *Brattle* 2011 CONE Study, Appendices A and B.

[55] See the *Brattle* 2011 CONE study, pp. 24-25.

[56] GenOn did not report owner's contingency separately but rather combined owner's contingency costs in with other owner's cost items. These owner's cost items vary "from 0.25-2.0% of OFE and EPC contract costs", although it is not reported what portion of those costs would be considered contingency. See December 22, 2011 filing, Ungate Affidavit pp. 18-19.

[57] Note that the overall contingency assumed in the GenOn S&L study is similar to the *Brattle* estimate despite GenOn's consultant's comments that the *Brattle* estimate is low.

Table 6
Comparison of Owner and EPC Contingency Costs

Estimate	EPC Contingency	Owner's Contingency	Total
Brattle	5% of EPC costs.	3% of total non-contingency overnight costs.	4.8-5.4% of overnight costs.
GenOn	10% of EPC costs.	Reported as zero, but S&L states that a small contingency is included within miscellaneous owner's cost categories.	4.1-5.3% of overnight costs.
PSEG	1.1-8.1% of overnight costs by category.	5% of total non-contingency overnight costs.	9.3-9.6% of overnight costs.
LS Power	Not estimated.	10% of total total non-contingency overnight costs (stating that 5% would be reasonable for the contracting approach assumed by Brattle.)	Not estimated.

Sources and Notes:
Total contingency is reported as the percent over all overnight costs (including contingency), calculated from the Tables in Section IV.A.
GenOn estimates are from the December 22, 2011 filing, pp. 17-20, Ungate Affidavit pp. 6, 18-19.
PSEG estimates are from the December 22, 2011 filing, Estimate Detail Report, pp. 91, 118.
LS Power estimates are from December 22, 2011 filing, p. 11.
Brattle's EPC contingency estimate ranges from 2-7% of EPC costs by category

43. In LS Power's filing, it comments that an owner's contingency at 10% of project costs should be included. The filing states:

> "Brattle did not include all of the contingency costs, or 'reserve funds,' that would be necessary to fund construction. The fact that the funds may or may not be spent is the definition of contingency. A new entrant will have to justify its investment and raise funds based on a more typical level of contingency, regardless of whether the entire contingency will be expended."[58]

It is correct that contingency reserves that "may or may not be spent" will need to be set aside and financed, but it is not correct that this full contingency reserve should be treated as a cost in the CONE estimate. This is because any portion of a contingency fund that is not spent would later need to be counted as a "credit" against total capital costs once the reserves are released. Ultimately, the only portions of the contingency reserve that should be counted as a cost are: (1) the portion of the contingency reserves actually spent; and (2) the financing charges associated with setting aside a contingency reserve that went unspent, which are small relative to the total contingency amount.

44. Even without acknowledging these distinctions, LS Power admits that "it might be possible to achieve a lower level of contingency (*e.g.*, five percent) through the EPC contracting approach suggested by Brattle."[59] In this statement, LS Power is referring to our assumption that a substantial portion of all contingency risk will be assumed by the EPC contractor and therefore included in the EPC cost. Consistent with that assumption, CH2M HILL's EPC cost estimates include a 2-7% contingency cost adder, varying by cost category. Despite acknowledging that

[58] See LS Power December 22, 2011 filing, p. 11.
[59] Id.

this type of arrangement could reduce owner's required contingency reserves to 5% in their estimate, LS Power maintains the seemingly inconsistent position that a total 10% contingency cost adder should have been used.

45. PSEG's filing also proposes a higher contingency, although PSEG's primary concern is based on an incorrect statement that "The Brattle CONE Study cost estimates do not appear to include any owner's contingency."[60] As discussed above, the estimate from our CONE study *does*, in fact, include owner's contingency costs as well as EPC contingency costs.[61] PSEG does not support its higher proposed contingency level with further arguments or documentation.

46. Overall, while contingency costs are difficult to document from publicly available sources, it appears that neither LS Power nor PSEG has adequately supported a large increase relative to our study and other previously-approved FERC CONE studies. Other FERC-approved CONE rates for PJM were based on studies with owner's contingency ranging 2.5-5% of total EPC costs, a range in line with the *Brattle* study. [62,63]

B. The Interveners Introduced Upward Bias in Their Proposed CONE Adjustments by Selecting Unfavorable Plant and Cost Assumptions

47. In a bottom-up analysis developed from hundreds of individual cost components, independent determinations of total plant costs and individual cost categories are likely to vary substantially. These variations may be caused by a number of factors including reasonable variations in assumed plant and site characteristics or different data sources used for the underlying component cost estimates. However, arguments that individual line items within ourestimate are too low do not constitute evidence that the overall CONE estimate is too low. This is because one could choose to focus on cost categories or plant assumptions that, while potentially reasonable in isolation, are selected in such a way as to represent only those changes in assumptions that would increase the total.

48. For example, LS Power's protest examines only two cost categories, property taxes and contingency, and concludes that the CT CONE estimate should be increased by 6-8% depending on the CONE Area (see Table 5 above). However, LS Power did not present a full line-by-line cost examination of our 2011 CONE Study estimate.[64] In fact, it would have been more informative for LS Power to present a comprehensive comparison of individual cost components between our study and their West Deptford project that is currently under development in New Jersey.[65] By failing to present a comprehensive line-by-line cost comparison, or even a total all-

60 See PSEG December 22, 2011 filing, p. 27.

61 See *Brattle* 2011 CONE Study, pp. 24-25, 42-43, A-10, B-10.

62 See Pasteris Energy 2011 Cost of New Entry Combined Cycle Power Plant Revenue Requirements for PJM Interconnection, LLC, p. 13. Posted at http://www.pjm.com/~/media/documents/ferc/2011-filings/20110211-er11-2875-000.ashx

63 See Power Project Management, LLC 2008 Update of Cost of New Entry Combustion Turbine Power Plant Revenue Requirements, p. 10. Posted at http://www.pjm-miso.com/documents/ferc/documents/2008/20081212-er09-xxx-000.pdf

64 See LS Power December 22, 2011 filing, pp. 1-2, Attachment A p.1 and Attachment B p. 1.

65 See http://www.lspower.com/projects.htm and http://www.njspotlight.com/stories/11/1130/2126/

in cost comparison, LS Power has not presented evidence that the total proposed CONE update is low.

49. Even the GenOn and PSEG estimates, which do present a full line-by-line comparison of various cost categories, include a selection bias. In this case, the selection bias was introduced by: (1) accepting some of ourestimates as "reasonable" without developing their own independent estimates, (2) assuming unfavorable plant and siting assumptions that result in unreasonably inflated overall costs, and (3) accepting our financing assumptions and nominal levelization but not ourplant overnight cost. For example, one of our estimates that GenOn's subcontractor Sargent and Lundy ("S&L") accepted was the EMAAC gas interconnection cost of $16 million, which is substantially higher than the $5.7 million estimate that S&L recently developed for a NYISO CONE study.[66] Accepting our estimates for cost categories where wemay have a higher estimate than S&L, while accepting S&L estimates when those are higher, results in higher overall costs than either study would determine independently.

50. A related problem arises from making certain unfavorable plant and siting assumptions. GenOn's consultant S&L assumes an unfavorable siting location for electric interconnection in EMAAC and unfavorable gas interconnection opportunities in SWMAAC. These assumptions, together with the other methodological errors identified above, resulted in inflated interconnection cost estimates as discussed above. Similarly, the PSEG estimate assumes that an Eastern MAAC plant would need to be located near water and therefore would require pile foundation, although it is more likely that a developer would avoid that disadvantage by finding a better overall site within the large multi-state region. While a developer might be willing to proceed at a site with one substantial cost disadvantage, it would be unlikely for such a project to go forward unless that location also had some other major cost or revenue advantage. For example, a project might proceed with higher electric interconnection costs if that same location enabled lower gas interconnection costs.

51. This concludes our affidavit.

[66] See p. 103 of the NERA and S&L 2010 CONE Study, Attached to: http://www.nyiso.com/public/webdocs/documents/regulatory/filings/2010/11/NYISO_DCR_2010_filing_11-30-10.pdf
See GenOn December 22, 2011 filing, Ungate Affidavit p. 9-10, 15.

	)	Commonwealth of Massachusetts
SS:	)	
	)	County of Middlesex

AFFIDAVIT OF DR. SAMUEL A. NEWELL

Dr. Samuel A. Newell, being first duly sworn, deposes and states that he has read the foregoing "Response of Dr. Samuel A. Newell and Dr. Kathleen Spees on Behalf of PJM Interconnection, L.L.C.," that he is familiar with the contents thereof, and that the matters and things set forth therein are true and correct to the best of his knowledge, information and belief.

/s/ ______________________

Dr. Samuel A. Newell

Subscribed and sworn to me on this 13th day of January, 2012.

DEBRA A. PAOLO
Notary Public
Commonwealth of
Massachusetts
Commission Expires Sep 30, 2016

/s/ ______________________

Debra A. Paolo, Notary Public

My Commission expires: September 30, 2016

DEBRA A. PAOLO
NOTARY
PUBLIC

) Commonwealth of Massachusetts

SS:)

) County of Middlesex

AFFIDAVIT OF DR. KATHLEEN SPEES

Dr. Kathleen Spees, being first duly sworn, deposes and states that he has read the foregoing "Response of Dr. Samuel A. Newell and Dr. Kathleen Spees on Behalf of PJM Interconnection, L.L.C.," that he is familiar with the contents thereof, and that the matters and things set forth therein are true and correct to the best of his knowledge, information and belief.

/s/ Kathleen Spees

Dr. Kathleen Spees

Subscribed and sworn to me on this 13th day of January, 2012.

DEBRA A. PAOLO
Notary Public
Commonwealth of
Massachusetts
Commission Expires Sep 30, 2016

/s/ Debra A. Paolo

Debra A. Paolo, Notary Public

My Commission expires: September 30, 2016

DEBRA A. PAOLO
NOTARY PUBLIC
COMMONWEALTH OF MASSACHUSETTS

CERTIFICATE OF SERVICE

I hereby certify that I have this day served the foregoing document each person designated on the official service list compiled by the Secretary in this proceeding.

Dated at Washington, D.C., this 13th day of January, 2012.

/s/ Paul M. Flynn