

STATE OF INDIANA

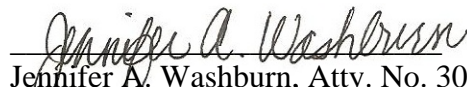
INDIANA UTILITY REGULATORY COMMISSION

VERIFIED PETITION OF INDIANAPOLIS )  
POWER & LIGHT COMPANY (“IPL”), AN )  
INDIANA CORPORATION, FOR (1) )  
CERTIFICATES THAT PUBLIC CONVENIENCE )  
AND NECESSITY (“CPCN”) WILL BE SERVED )  
BY COMPLIANCE PROJECTS TO ALLOW IPL )  
TO COMPLY WITH FEDERALLY MANDATED )  
REQUIREMENTS AT PETERSBURG )  
GENERATING STATION; (2) APPROVAL OF )  
ASSOCIATED ACCOUNTING AND ) CAUSE NO. 44794  
RATEMAKING TREATMENT, INCLUDING )  
COST RECOVERY IN ACCORDANCE WITH )  
IND. CODE § 8-1-8.4-7 AND AUTHORITY TO )  
DEFER COSTS UNTIL SUCH COSTS ARE )  
REFLECTED IN RATES; AND 3) TO THE )  
EXTENT NECESSARY OR APPROPRIATE )  
ISSUANCE OR MODIFICATION OF CPCN FOR )  
THE USE OF CLEAN COAL TECHNOLOGY )  
PURSUANT TO IND. CODE CH. § 8-1-8.7 )

**SUBMISSION OF REDACTED TESTIMONY ON THE SETTLEMENT**

Citizens Action Coalition of Indiana, Inc., and Sierra Club, Inc., by counsel, respectfully submit the following redacted prefiled testimony and exhibits on the settlement of Mr. Schlissel in the above captioned Cause to the Indiana Utility Regulatory Commission.

Respectfully submitted,

  
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**CERTIFICATE OF SERVICE**

The undersigned hereby certifies that the foregoing was served by electronic mail or U.S.

Mail, first class postage prepaid, this 22<sup>nd</sup> day of December, 2016, to the following:

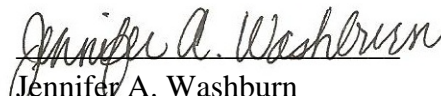
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Respectfully submitted,

  
Jennifer A. Washburn  
Citizens Action Coalition

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CAUSE NO. 44794

SETTLEMENT TESTIMONY OF DAVID A. SCHLISSEL  
ON BEHALF OF  
CITIZENS ACTION COALITION OF INDIANA AND SIERRA CLUB  
DECEMBER 22, 2016

**CONFIDENTIAL INFORMATION REDACTED**

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1           **INTRODUCTION**

2           **Q.     Please state your name and business address.**

3           A.     My name is David A. Schlissel. I am the President of Schlissel Technical Consulting,  
4           Inc., 45 Horace Road, Belmont, Massachusetts 02478.

5           **Q.     On whose behalf are you testifying?**

6           A.     I am testifying on behalf of the Citizens Action Coalition of Indiana and Sierra Club  
7           ("Joint Intervenors").

8           **Q.     Have you previously filed testimony in this proceeding?**

9           A.     Yes. I filed Direct Testimony on October 4, 2016, and corrections on December 5,  
10          2016.

11          **Q.     What is the purpose of this Settlement Testimony?**

12          A.     I have been asked to review and comment on the Settlement Testimony of IPL  
13          Witness Soller and the new economic modeling analyses she presents.

14          **Q.     Please summarize your findings.**

15          A.     My findings are that:

16                 1.     The results of Ms. Soller's new modeling analyses use the same very high  
17                         assumptions for future natural gas prices, energy market prices and capacity  
18                         prices that distorted the results of her original modeling analyses to bias them  
19                         in favor of completing the proposed environmental upgrades and continuing to  
20                         operate Petersburg Units 1-4.

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- 1           2.     Although IPL has refused to provide the more recent ABB natural gas, energy  
2                   market and capacity market forecasts that have been released in 2016, public  
3                   information shows that ABB has projected lower natural gas prices in its  
4                   Spring 2016 Forecast than it had in the Fall 2015 Forecast used by Ms. Soller  
5                   in her new modeling. Likely, ABB's Spring 2016 forecasts of peak and off-  
6                   peak energy market prices are similarly lower than the prices Ms. Soller has  
7                   used.
- 8           3.     IPL has never attempted to verify the accuracy of the ABB Forecasts of  
9                   natural gas and energy market prices that it relies on by comparing prior  
10                  years' ABB Forecasts to subsequent actual market prices.
- 11          4.     As with IPL's original analysis, ABB's Low Gas Price forecast is the most  
12                  reasonable one to use as a base case to evaluate the proposed Settlement.<sup>1</sup>
- 13          5.     The continued operation of all four Petersburg units is uneconomic as the  
14                  Company's projected costs of operating the plant are higher than the  
15                  forecasted energy market revenues.
- 16          6.     Ms. Soller's Low Gas Price analyses rely on an extreme forecast of future  
17                  capacity prices that, if realized, would be far higher than have been  
18                  experienced to-date in MISO, PJM or any of the other regional Independent  
19                  System Operators. Substituting those faulty assumptions with a more  
20                  plausible capacity price forecast shows that the proposed NAAQS and CCR  
21                  upgrades will not provide net benefits.

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<sup>1</sup> IPL should also run high and low gas sensitivity studies around a revised base case, with the new base case derived from the ABB Fall 2015 Low Gas Price forecast. See Direct Testimony of David A. Schlissel, page 8, lines 4-8.

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- 1           7.     The proposed Settlement should be rejected. Instead, IPL should be directed  
2                     to develop a plan that would (1) evaluate retirement of each of the Petersburg  
3                     units within the next few years, and (2) develop the most cost-effective  
4                     alternative portfolio of demand-side measures and supply-side options  
5                     including market purchases, new wind and solar resources, and new natural  
6                     gas-fired capacity.
- 7           8.     If the IURC does approve the proposed Settlement, it should attach the  
8                     condition that IPL bears the risk in the event that actual natural gas, energy  
9                     market, and capacity prices are lower than forecasted by IPL. As I explained  
10                    in my Direct Testimony:

11                             ... the Company's economic analyses showing that there  
12                             would be a net benefit to completing the proposed NAAQS  
13                             and CCR environmental upgrades and continuing to  
14                             operate Petersburg Units 1-4 through the scheduled ends of  
15                             their service lives is premised on unreasonable projections  
16                             for future natural gas prices, energy market prices, plant  
17                             generation, and especially capacity market prices, that  
18                             represent significant departures from the recent past. For  
19                             this reason, the Company's proposal for a CPCN exposes  
20                             ratepayers to the significant risk that the costs of continuing  
21                             to produce power at Petersburg will exceed, perhaps by a  
22                             substantial margin, the revenues it will be able to earn from  
23                             selling the plant's energy, capacity, and auxiliary services  
24                             into the MISO markets.

25                             Therefore, I believe that the IURC should adopt a  
26                             mechanism so that IPL (and its owner) would bear the risks  
27                             that its projections in this proceeding are not accurate.  
28                             More specifically, I am proposing that in any year in which  
29                             the total revenues from selling Petersburg's energy,  
30                             capacity and auxiliary services into the MISO markets do  
31                             not fully cover the total costs of producing power at  
32                             Petersburg (including fuel, non-fuel O&M (both variable  
33                             and fixed), capital expenditures and emissions costs,  
34                             including the costs of CO2 emissions when prices are set),  
35                             the Company, not the ratepayers, would bear the net  
36                             shortfall.

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1                   In addition, to protect ratepayers against the possibility that  
2                   IPL will retire Petersburg after making the investments for  
3                   the NAAQS and CCR environmental upgrades, the  
4                   Commission should adopt the condition on granting the  
5                   CPCN that it adopted in Cause 44242. Specifically, the  
6                   Commission found in the Order in that Cause (at page 36)  
7                   that, “in the event that [Harding Street Station Unit 7] is  
8                   taken out of service, . . . IPL should not continue to collect  
9                   depreciation expense for the [Harding Street Station Unit 7]  
10                  clean energy projects that are . . . approved in this Order.”<sup>2</sup>

11                  **NATURAL GAS AND ENERGY MARKET PRICES**

12   **Q.     Figure 3 in your Direct Testimony compared actual natural gas prices at the**  
13   **Henry Hub for the first eight months of 2016 with the low, base, and high gas**  
14   **prices in ABB’s Fall 2015 Forecast. Have you updated this comparison to**  
15   **include additional months in 2016?**

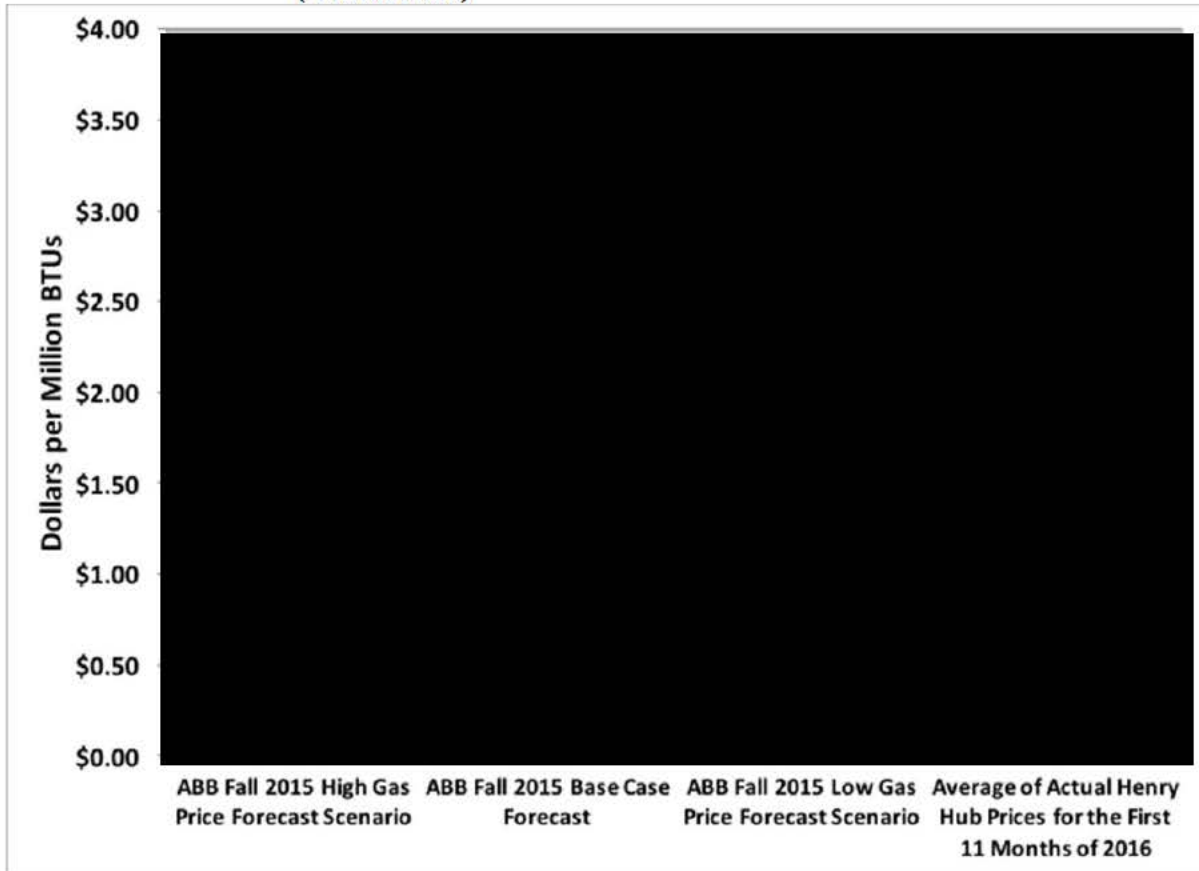
16   **A.     Yes. As illustrated in Figure S1 below, I have compared the actual average natural**  
17   **gas price at Henry Hub for the first eleven months of 2016 with ABB’s forecasts for**  
18   **the same period.**

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<sup>2</sup>                  At pages 49-50.

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**Figure S1: ABB Fall 2015 Natural Gas Price Forecasts vs. Actual 2016 Prices (Confidential)**



1 Actual natural gas prices at Henry Hub averaged \$2.41 per MMBTU from January  
2 through November 2016. This was significantly [REDACTED] than ABB had forecasted in its  
3 Base and High Gas price scenarios.

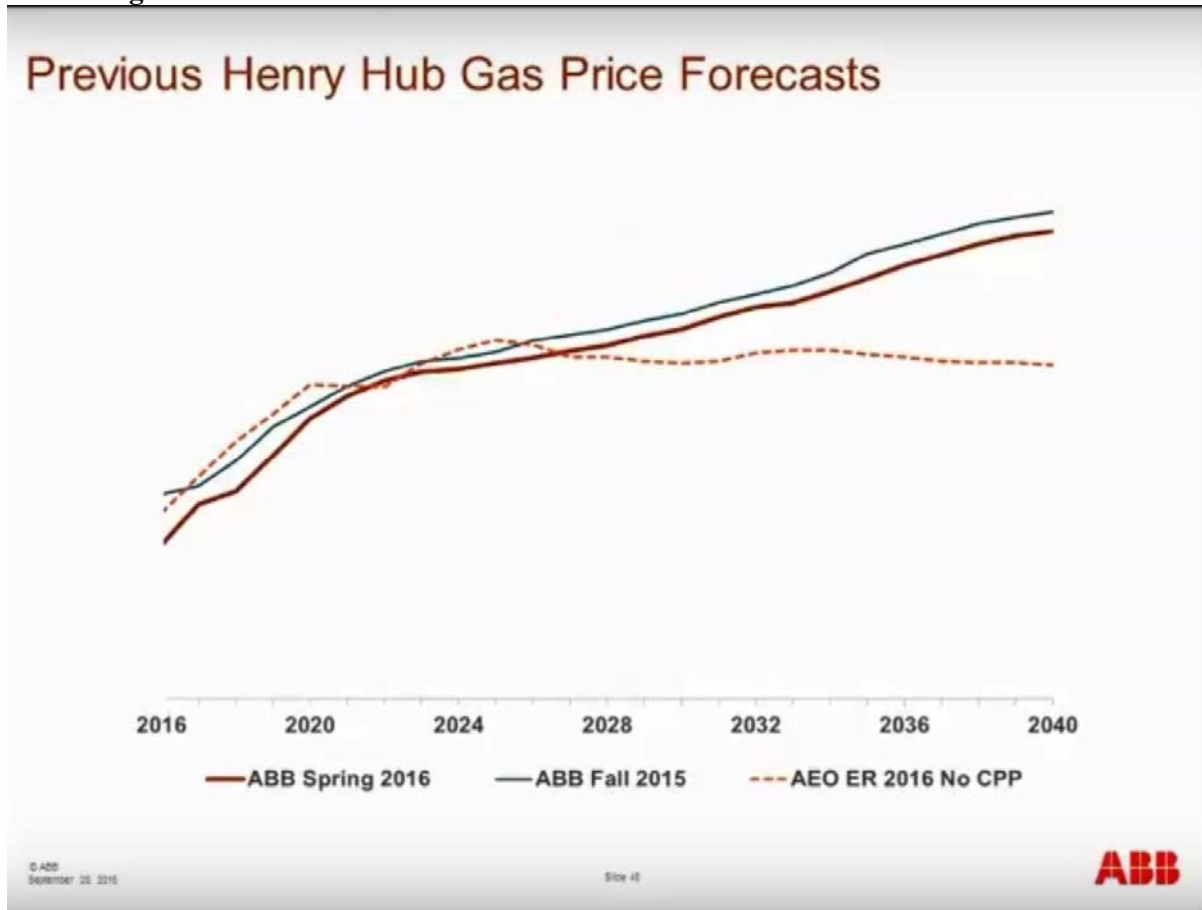
4 **Q. Have you seen any evidence that ABB has since reduced its natural gas price**  
5 **projections below those in the Fall 2015 Forecast?**

6 A. Yes. ABB held webcasts on March 18 and October 3, 2016, prior to the release of its  
7 Spring 2016 and Fall 2016 forecasts, respectively. It is clear from these presentations  
8 that ABB's Spring 2016 Forecast projected lower natural gas prices than did its Fall  
9 2015 Forecast. Figure S2, below, is the slide from the October 3 webcast showing  
10 that the natural gas prices in ABB's Spring 2016 Forecast were lower, and in some  
11 years, significantly lower than in the Fall 2015 Forecast.



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Figure S2: Chart from ABB Fall 2016 Webcast



- 1 **Q. Have your clients requested that IPL provide ABB’s Spring and Fall 2016**  
2 **Forecasts of natural gas, energy market and capacity prices?**
- 3 A. Yes. We requested ABB’s new forecasts in order to evaluate how much they have  
4 changed as compared to the numbers used in IPL’s modeling analyses. Unfortunately,  
5 IPL has refused to provide the new ABB Forecasts.

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1 **Q. What do the more recent and lower natural gas price forecasts shown in Figure**  
2 **S2 suggest regarding the projected energy market prices in ABB’s new 2016**  
3 **Forecasts?**

4 A. Given the experience in MISO and the other ISOs in recent years, it is reasonable to  
5 anticipate that lower natural gas prices will lead to lower energy market prices. There  
6 is no reason to expect that it will not continue in coming years.

7 **Q. What does this mean for validity of the natural gas and energy market prices**  
8 **used in IPL’s modeling?**

9 A. It means that IPL is using outdated numbers that ABB has since updated, and very  
10 likely reduced.

11 **Q. Has IPL made any effort to evaluate how accurate ABB’s forecasts of natural**  
12 **gas and energy market prices have been in recent years?**

13 A. No. We asked IPL to provide copies of all assessments by either it or ABB which  
14 compared actual Henry Hub, MISO energy market prices, and MISO or PJM capacity  
15 prices with the prices forecast by ABB since January 1, 2013. IPL responded that it  
16 “is not aware of any such work products.”<sup>3</sup> IPL’s response leads us to believe that  
17 IPL has not evaluated the accuracy of ABB’s forecasts. As a result, IPL appears to  
18 take it on faith that ABB’s Fall 2015 Forecast is reliable, even though it projects a  
19 sharp increase in natural gas prices that is inconsistent with recent history, actual  
20 market prices in 2016, and futures markets.

21 **Q. IPL has criticized reliance on forward price curves because of their volatility.**  
22 **Have you seen any evidence that forward MISO energy market prices have been**  
23 **very volatile in recent months?**

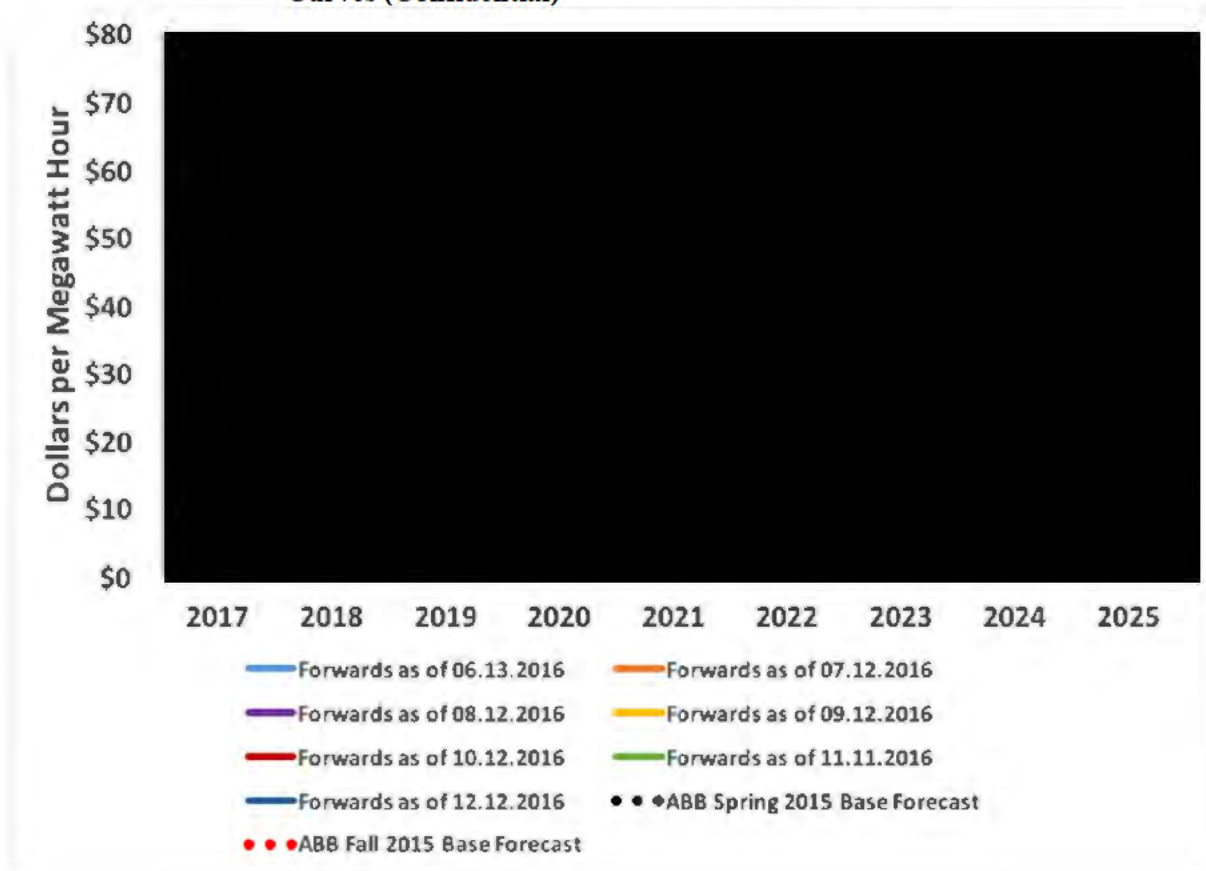
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<sup>3</sup> IPL Responses to Data Requests CAC 5-24 to 5-32 (Attachment DS-1S).

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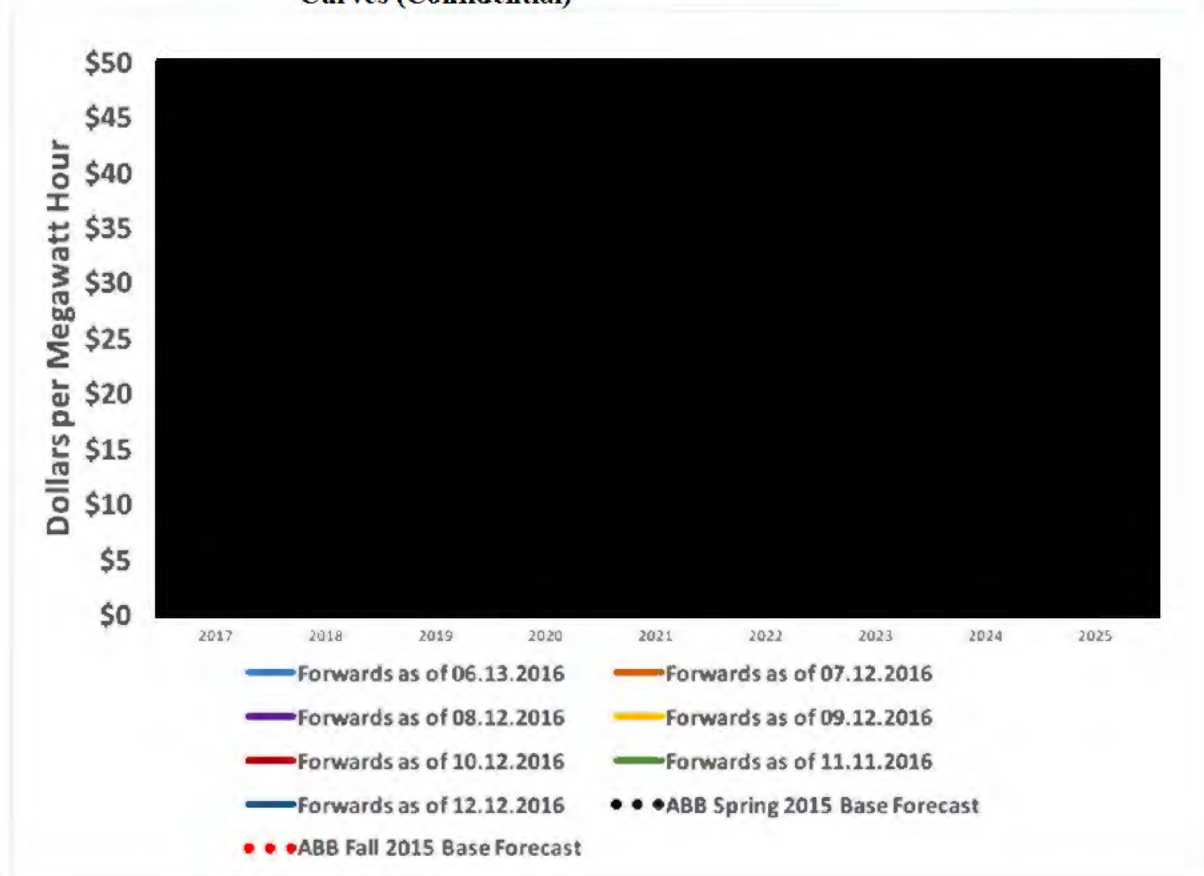
1 A. No. The solid lines in Figures S3 and S4, below, show the annual forward MISO  
2 energy market price curves as of the middle of the last seven months (June –  
3 December 2016). The two dotted lines represent the base energy market prices for  
4 Indiana in ABB’s 2015 Spring and Fall Forecasts.

**Figure S3: Peak ABB 2015 Forecasts and 2015 Forward Energy Market Price Curves (Confidential)**



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Figure S4: Off-Peak ABB 2015 Forecasts and 2015 Forward Energy Market Price Curves (Confidential)



1 Some variances between forward curves can be expected because the forward prices  
2 are the result of market transactions and changing circumstances. However, as can be  
3 seen in Figures S3 and S4, there is not much change (and certainly no serious  
4 volatility) in the forward curves during this seven-month period for either peak or off-  
5 peak prices. In fact, the changes in projected peak energy prices between ABB's  
6 Spring and Fall 2015 Forecasts were substantially more significant than any variance  
7 in the forward price curves. The same is appears to be true for off-peak prices, as  
8 well.

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1 **Q. Did IPL provide any analyses to support its claim that using recent costs and**  
2 **forward curves would result in a much less robust assessment of potential fuel**  
3 **cost risks?**

4 A. Yes. IPL looked at the Henry Hub forward prices for the years 2017-2020 on each  
5 day of the period September 14, 2016 through October 31, 2016 and uses the data  
6 from that area to claim these forward curves have varied significantly day to day.<sup>4</sup>

7 **Q. Does that data actually show any significant day-to-day volatility in the forward**  
8 **curves for Henry Hub forward gas prices?**

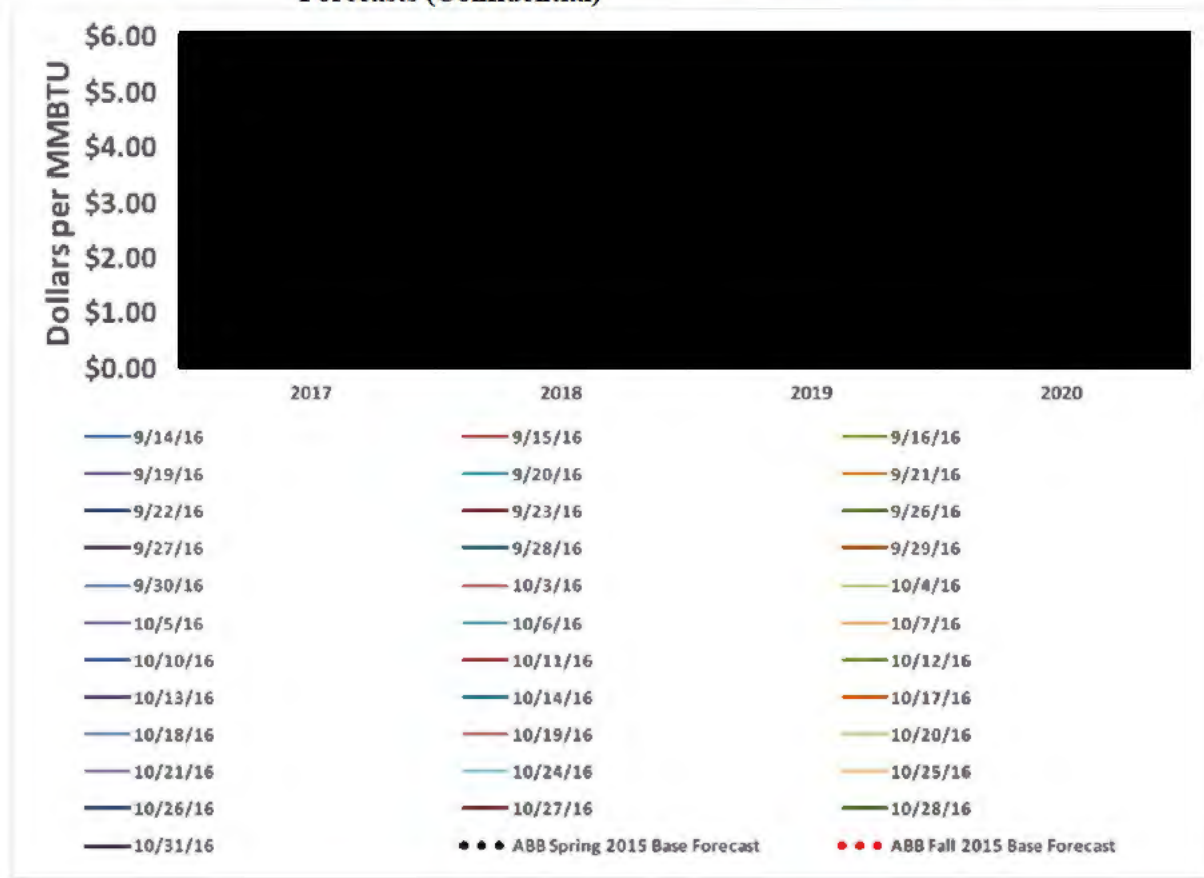
9 A. No. As shown in Figure S5, below, there was some minor variation between the daily  
10 Henry Hub forward price curves during this period, but that minor variation is  
11 insignificant in comparison with the substantial changes in ABB's projected Henry  
12 Hub prices, especially in years 2019 and 2020.

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<sup>4</sup> IPL Response to Data Request CAC DR5-10 (Attachment DS-2S).

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Figure S5: Henry Hub Natural Gas Prices – Forward Curves vs. ABB 2015 Forecasts (Confidential)

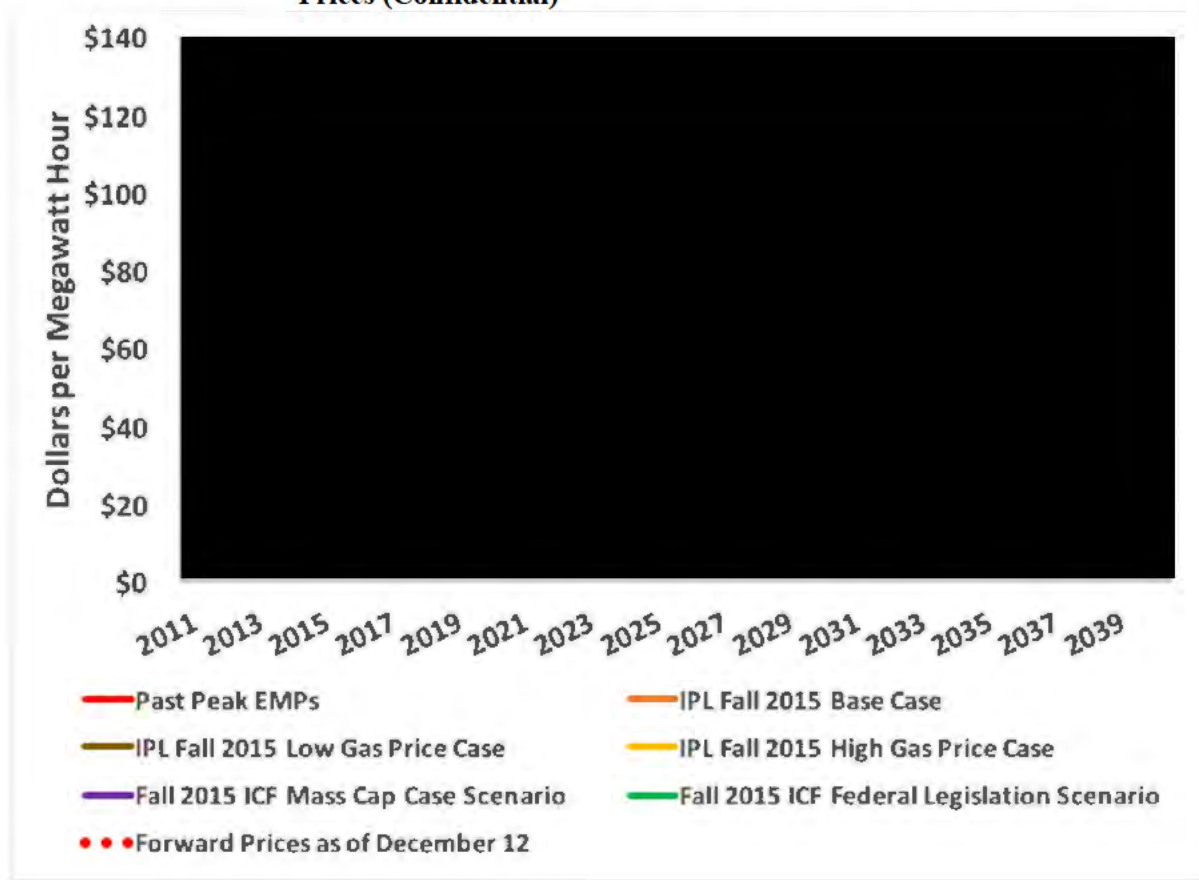


1 Q. Have the forward curves for MISO energy market prices changed very much  
2 since the September 14, 2016 date you used in your Direct Testimony?

3 A. No. As shown in Figures S6 and S7, below, recent forward energy market price  
4 curves remain very low and reasonably closely track the energy market prices in  
5 ABB's 2015 Fall Low Forecast. And they remain far below the energy market prices  
6 in ABB's Base and High forecasts, and the two ICF price forecasts that IPL uses in its  
7 modeling.

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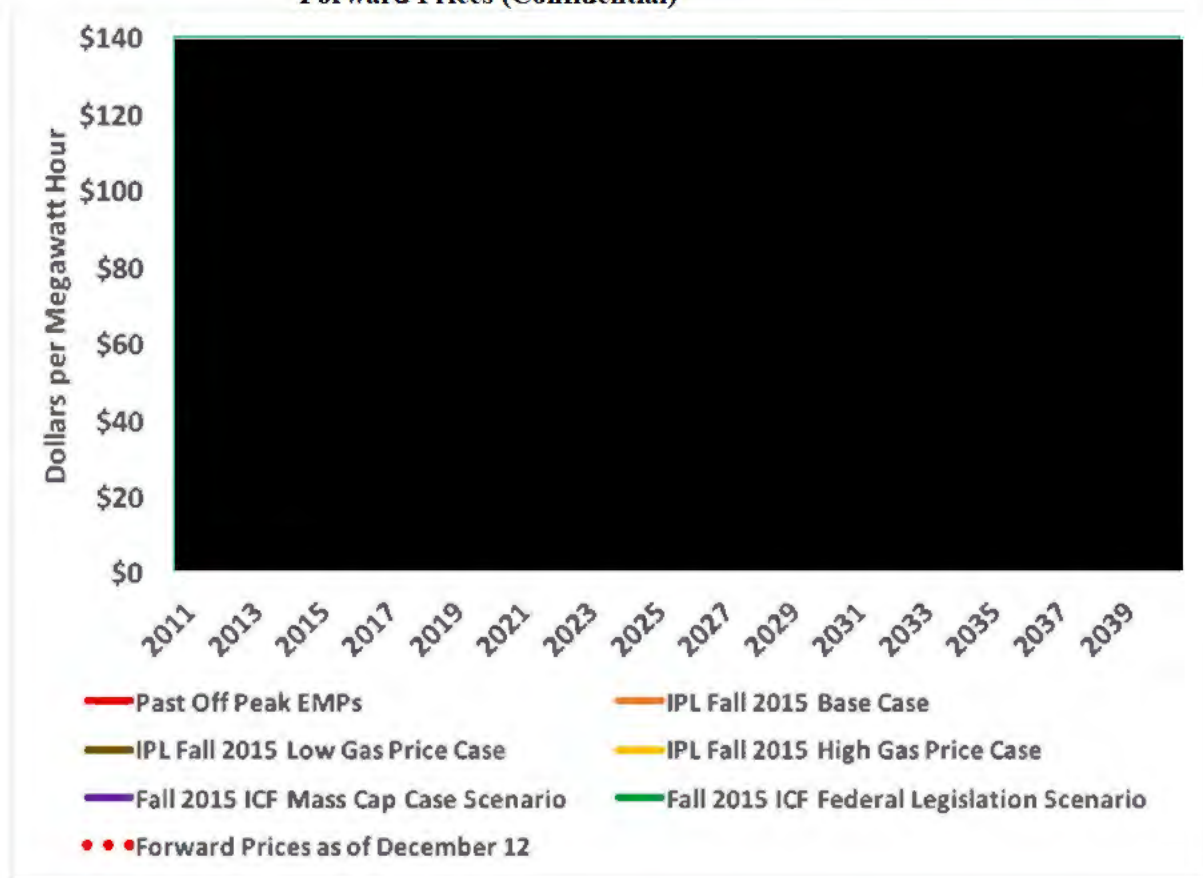
Figure S6: IPL Forecast Peak Energy Market Price Forecast vs. Recent Forward Prices (Confidential)





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**Figure S7: IPL Forecast Off-Peak Energy Market Price Forecast vs. Recent Forward Prices (Confidential)**



1 **Q. Just to be clear, did you actually use the September 14, 2016 forward prices in**  
2 **the economic analysis in your Direct Testimony?**

3 A. No. I used the forward natural gas and energy market prices as support for using  
4 ABB's Low price forecasts as the base case and for dismissing ABB's Base and High  
5 price forecasts as unreasonably high.

6 **Q. Are you using the December 12, 2016 forward prices in your new economic**  
7 **analysis in your Settlement Testimony?**

8 A. No. Again, I am using ABB's Low natural gas and energy market prices and using  
9 the forward curves as support for doing so.

10



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1           **CAPACITY PRICES**

2   **Q.   IPL Witness Soller has claimed that “Capacity prices are forecasted to approach**  
3       **the Cost of New Entry (“CONE) over time ....”<sup>5</sup> Ms. Soller also notes that MISO**  
4       **may have cited a cost-of-new-entry (CONE) price of \$260/MW-day in its**  
5       **calculations for the 2017-2018 planning year.<sup>6</sup> Does this provide any meaningful**  
6       **support for the extremely high capacity prices that IPL uses in its modeling of**  
7       **the NAAQS and CCR environmental upgrades at Petersburg?**

8   **A.   No. In fact, when asked to identify any instances in which a capacity price determined**  
9       **in any annual or forward capacity auction in any of the ISOs in the U.S. has reached**  
10      **the calculated CONE, IPL answered that it “is not aware of any such occurrence.”<sup>7</sup> I**  
11      **agree with the Company’s acknowledgement and observation that capacity prices**  
12      **determined in annual or forward auctions generally are significantly below the**  
13      **calculated CONE.**

14           For example, Figure S8, below compares the annual CONE determined by PJM for  
15           its RTO region each year in preparation for its upcoming forward auction with the  
16           price actually achieved for the planning year. As can be seen in this Figure, in each of  
17           the past six auctions, the capacity price resulting from the capacity auction has been  
18           between 45 percent and 82 percent below the calculated CONE.

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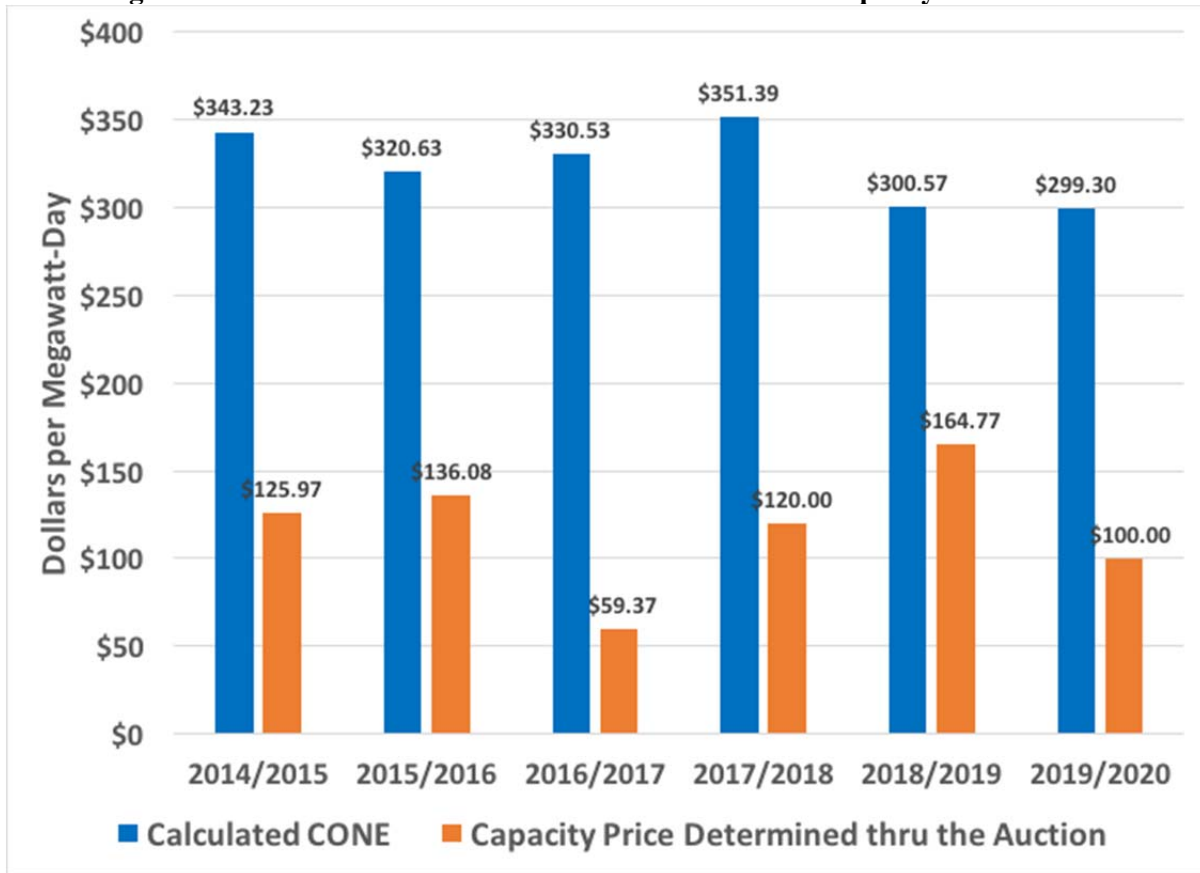
<sup>5</sup> Rebuttal Testimony of IPL Witness Joan M. Soller, at page 24, line 18, to page 25, line 1.

<sup>6</sup> *Id.*

<sup>7</sup> Response to Data Request CAC DR 5-16 (Attachment DS-3S).

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**Figure S8: CONE and Actual Results of Recent PJM Capacity Auctions**



1 The results of capacity auctions, whether annual or forward, are determined by the  
2 law of supply and demand – how much capacity is needed, how much is being  
3 offered, and the prices at which the capacity is being offered. As Figure S8, above,  
4 shows, it is incorrect to assume that the results of the auction actually will approach  
5 or reach the calculated CONE.

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1 **Q. In Figure 21 of your Direct Testimony, you showed how the very high capacity**  
2 **prices used by IPL in its modeling affect the results of the Company's analyses of**  
3 **the proposed NAAQS and CCR environmental upgrades.<sup>8</sup> Do these very high**  
4 **capacity prices have a similar effect on the results of the new modeling analyses**  
5 **discussed by Ms. Soller in her Settlement Testimony?**

6 A. Yes. As I noted in my Direct Testimony,<sup>9</sup> a power plant's Gross Margin is the  
7 difference between the total cost of producing power at the plant and the revenues  
8 that its owner earns from selling its output into the competitive MISO wholesale  
9 energy markets. A negative Gross Margin means that the plant is uneconomic to  
10 operate without considering the capacity revenues it may achieve.

11 Figures S9 through S12, below, show the Net Revenues from each of the four  
12 Petersburg Units with and without capacity revenues. It is important to note that the  
13 annual Gross Margins and Capacity Revenues used to prepare these Figures were  
14 taken directly from the outputs for each of the Low Gas Endpoints modeled by IPL  
15 with ABB's assistance. Thus, they reflect the Company's own data, using ABB's  
16 methodology for calculating Gross Margins.

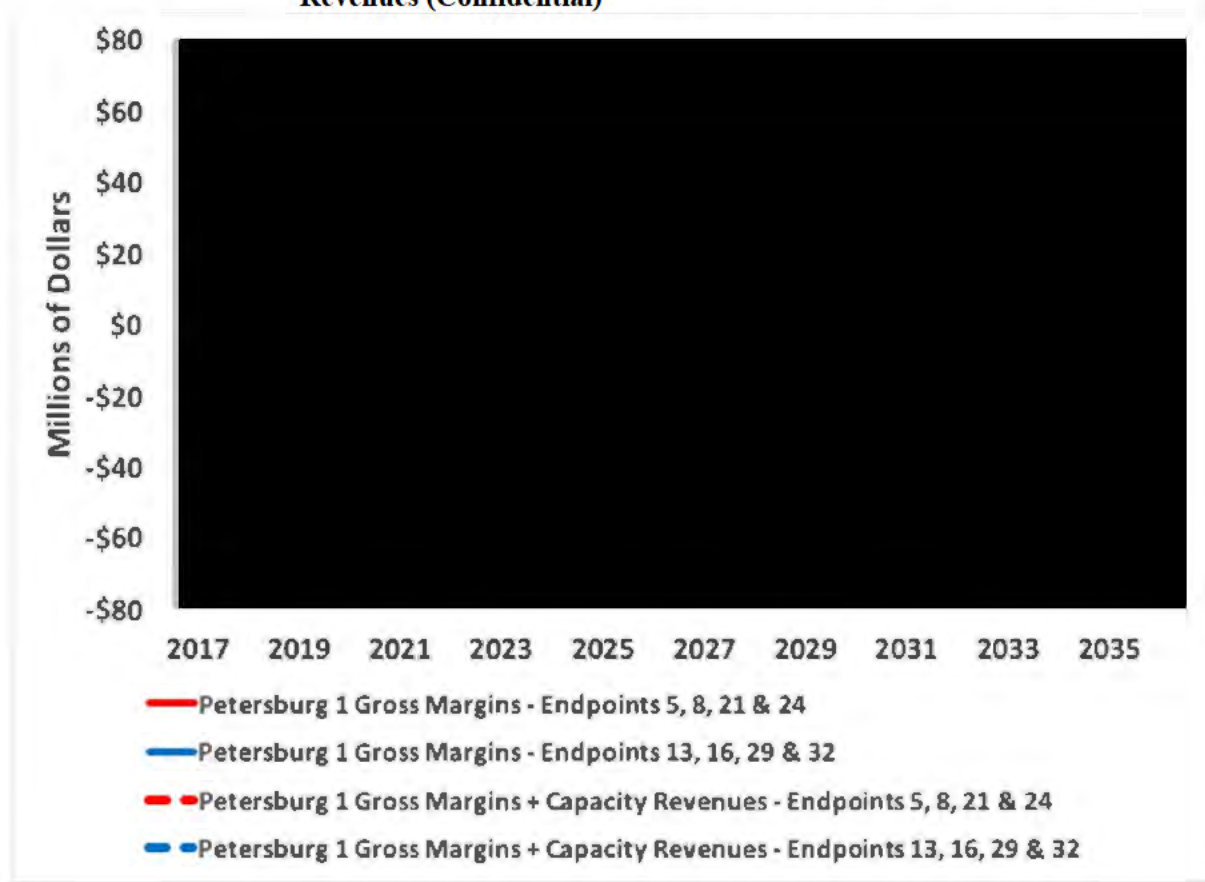
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<sup>8</sup> *Id.* at page 34, line 3, to page 36, line 2.

<sup>9</sup> *Id.*

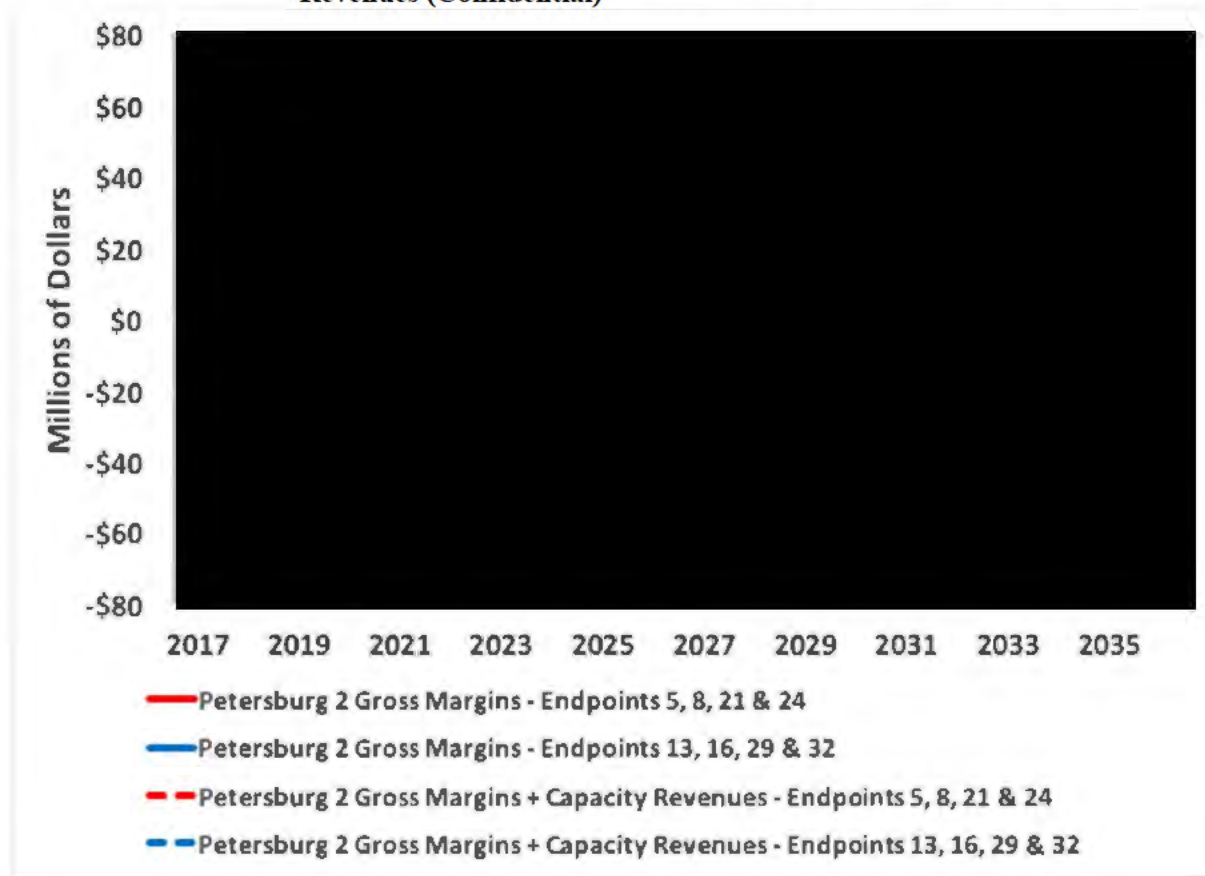
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**Figure S9: Net Revenues from Petersburg Unit 1 With and Without Capacity Revenues (Confidential)**



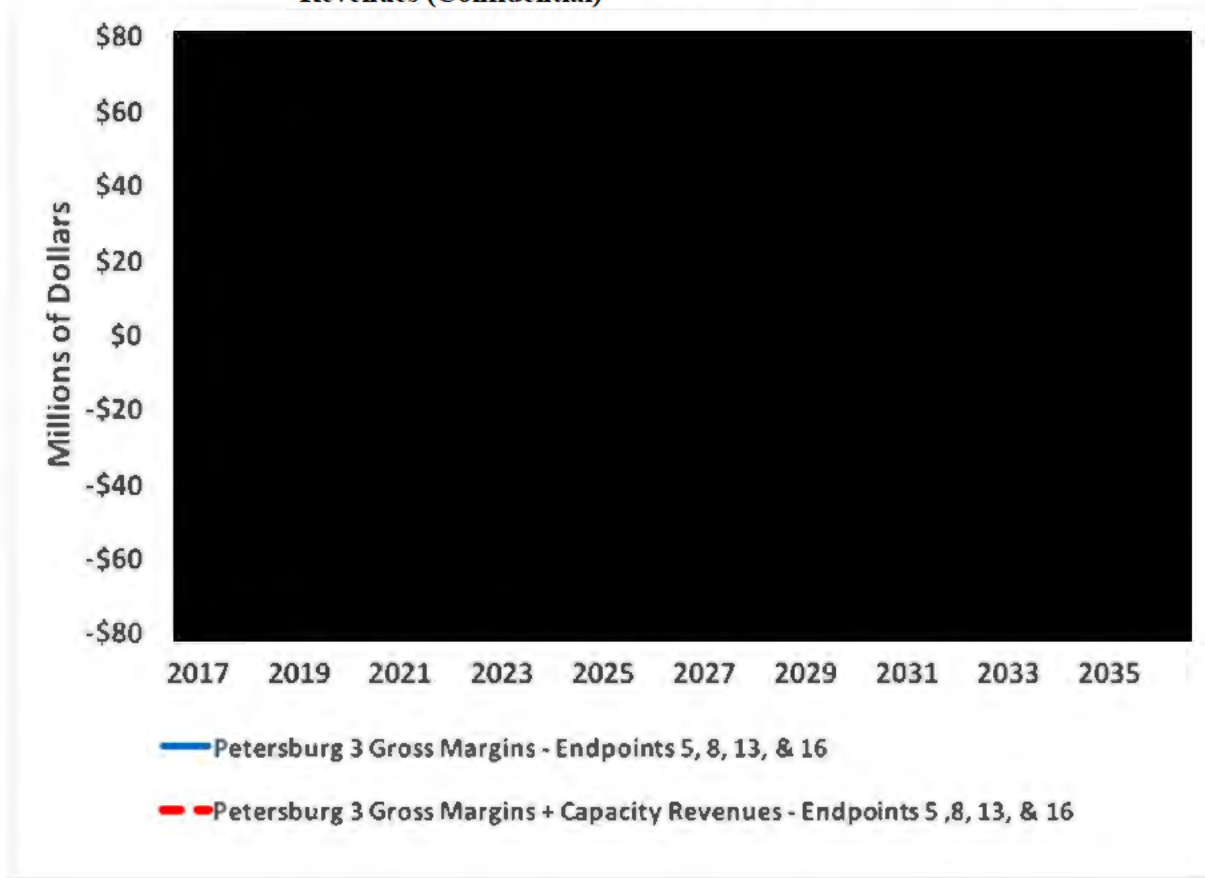
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**Figure S10: Net Revenues from Petersburg Unit 2 With and Without Capacity Revenues (Confidential)**



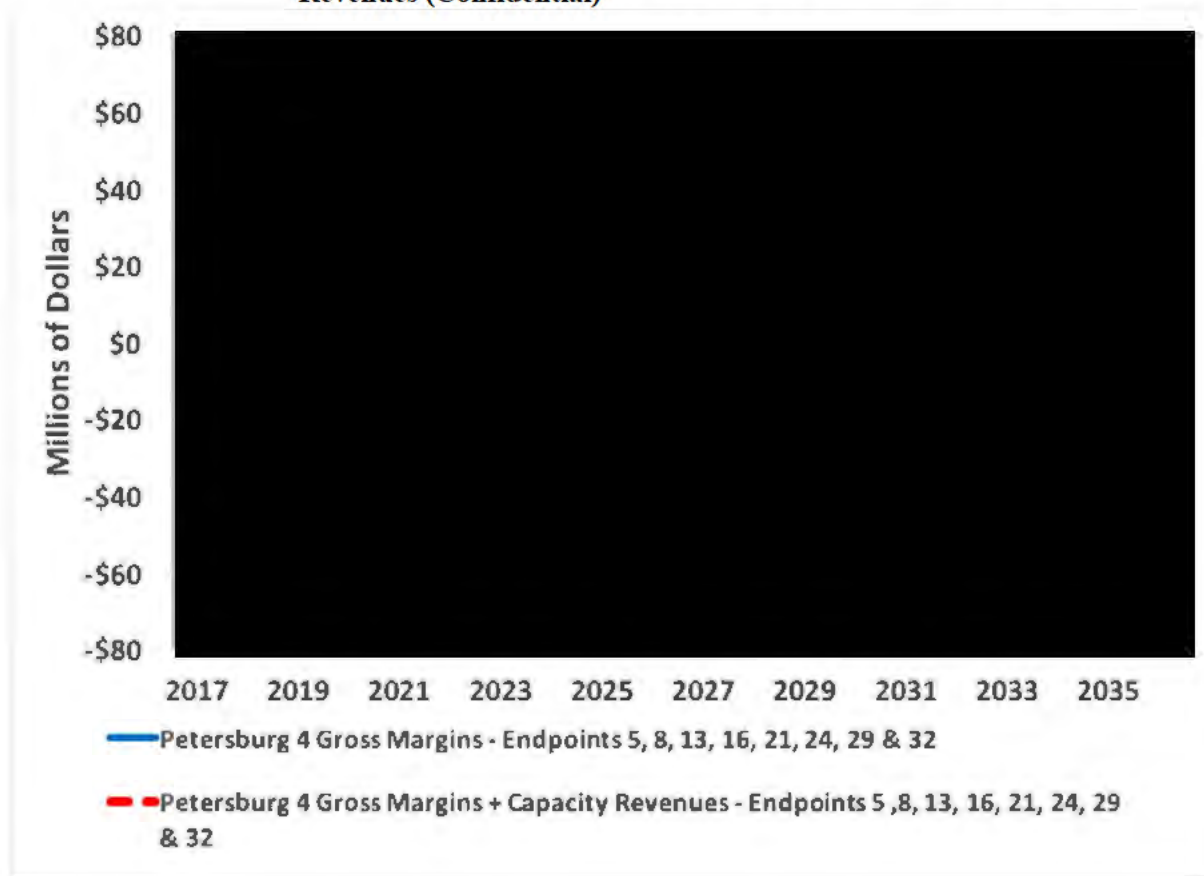
CONFIDENTIAL INFORMATION REDACTED

**Figure S11: Net Revenues from Petersburg Unit 3 With and Without Capacity Revenues (Confidential)**



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**Figure S12: Net Revenues from Petersburg Unit 4 With and Without Capacity Revenues (Confidential)**



1 As can be seen in Figures S9 through S12, the Company's own modeling shows that  
2 each of the annual Gross Margins in all of the eight Low Gas Price Endpoints  
3 modeled for Petersburg Units 1, 2 and 4 and the four Low Gas Price Endpoints  
4 modeled for Petersburg Unit 3 are negative. Thus it would be false to claim that  
5 positive Gross Margins prevail in all scenarios in IPL's modeling of the Petersburg  
6 NAAQS and CCR upgrades.

7 **Q. Why are there two separate lines for the Gross Margins and the Gross Margins**  
8 **+ Capacity Revenues for Petersburg 1 and 2 in Figures S9 and S10 but only one**  
9 **set of lines for Petersburg 3 and 4 in Figures S11 and S12?**

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1 A. The output files for Petersburg 1 and 2 in IPL's modeling show lower annual  
2 generation for these units in Endpoints 5, 8, 21 and 24 than in Endpoints 13, 16, 29  
3 and 32. I have included the information for both of these sets of Endpoints in Figures  
4 S9 and S10. The output files for Petersburg 3 and 4 show the same levels of annual  
5 generation all four of the Endpoints IPL analyzed for Petersburg 3 and all eight of the  
6 Endpoints it analyzed for Petersburg 4. Consequently, there is only one set of lines in  
7 Figures S11 and S12.

8 **ECONOMIC ANALYSES**

9 **Q. Should the IURC give any weight to the economic analyses presented in the**  
10 **Settlement Testimony of IPL Witness Soller?**

11 A. No. As was the case with the analyses presented in Ms. Soller's Direct Testimony,  
12 these new IPL economic analyses are heavily biased in favor of the completion of the  
13 proposed NAAQS and CCR environmental upgrades and their results are not  
14 credible.

15 **Q. Please explain.**

16 A. As I explained in my Direct Testimony and earlier in this Settlement Testimony, IPL  
17 has used high-to-very-high natural gas prices and energy market prices in its Base  
18 Case and High Gas Price Case Endpoint analyses. Given the methodology that IPL  
19 uses to weigh the results of the 32 Endpoints it examined, and the probabilities used  
20 to weigh these results, these high-to-very-high gas and energy market prices distort  
21 the analyses in favor of the continued operation of Petersburg Units 1-4. In addition,  
22 as I have explained in my Direct Testimony and above, IPL used extreme projections  
23 for capacity prices that have a dramatic impact on the results of its modeling analyses.  
24 Finally, as I demonstrated in Figure 24 of my Direct Testimony, IPL was projecting  
25 much lower growth in the cost of producing power in its economic analyses than the



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1 plant actually experienced between 2005 and 2015. This remained true in the revised  
2 modeling analyses presented in Ms. Soller's Settlement Testimony.

3 **Q. Have you prepared any alternative economic analyses?**

4 A. Yes. I have examined the net revenues from each Petersburg Unit using the output  
5 from IPL's new modeling analyses for the eight Endpoints that used ABB's Fall 2015  
6 Low Natural Gas Price forecast. These were Endpoints 5, 8, 13, 16, 21, 24, 29 and 32  
7 for Petersburg 1, 2 and 4 and Endpoints 5, 8, 13 and 16 for Petersburg 3. The only  
8 change I made was to assume that capacity prices will ramp up from the current \$72  
9 per MW-day to \$100 per MW-day in 2019 and will remain, on average, at that level  
10 in subsequent years.<sup>10</sup>

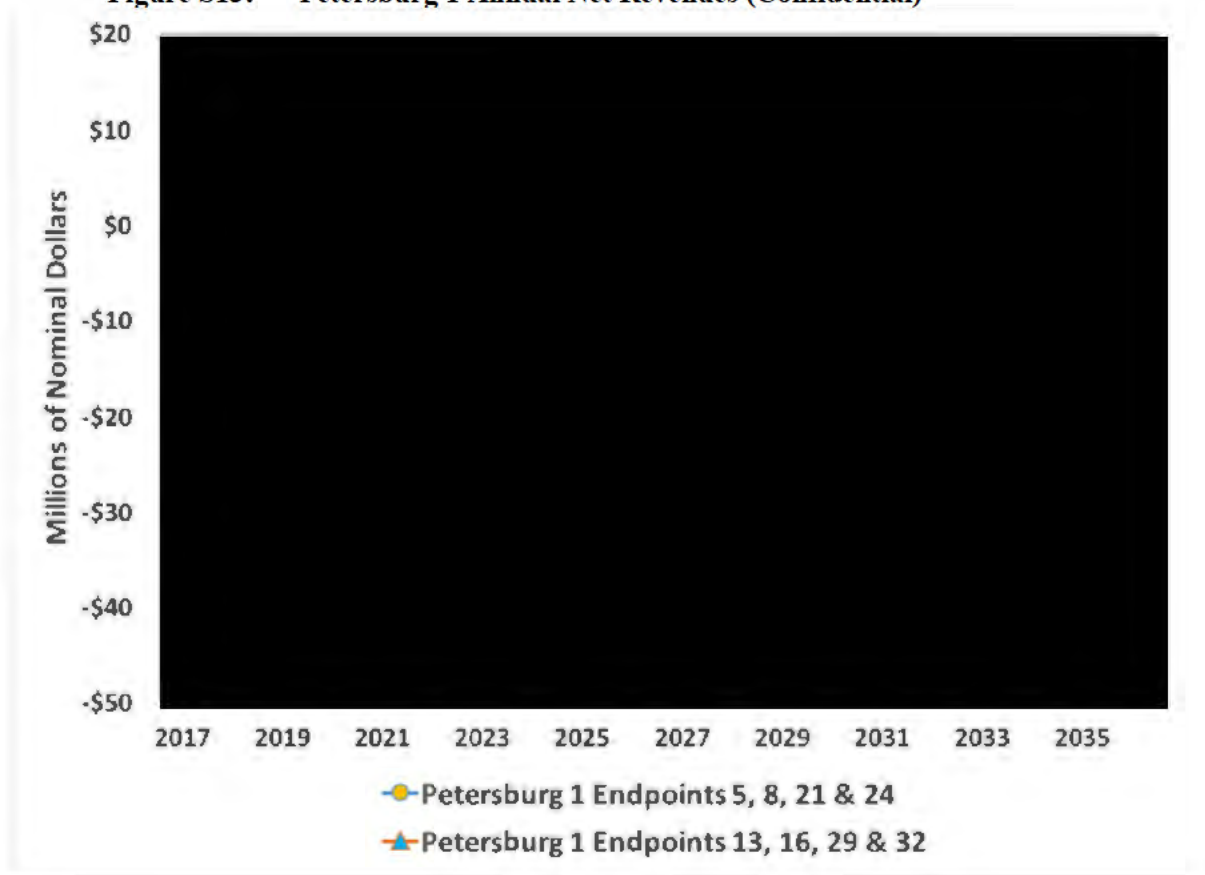
11 The results of my analyses are presented in Figures S13 through S16 and Table 1,  
12 below.

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<sup>10</sup> As I stated in my direct testimony, I think it is reasonable to expect that long-term annual capacity prices in MISO, including in Zone 6, will continue to see-saw up and down as they have in recent years, perhaps around the level near the current \$100 per MW-day prices in PJM. Direct Testimony of David A. Schlissel, at page 39, lines 9-12.

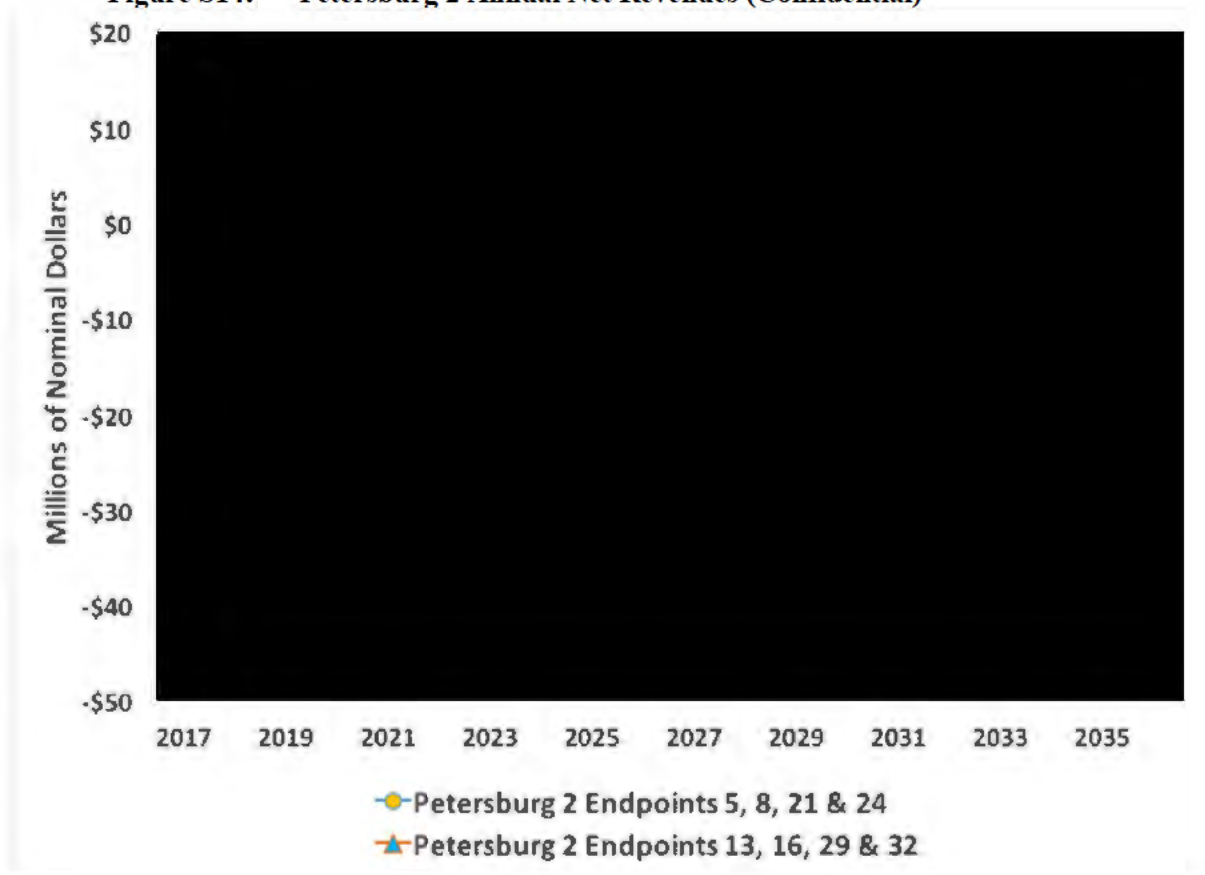
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Figure S13: Petersburg 1 Annual Net Revenues (Confidential)



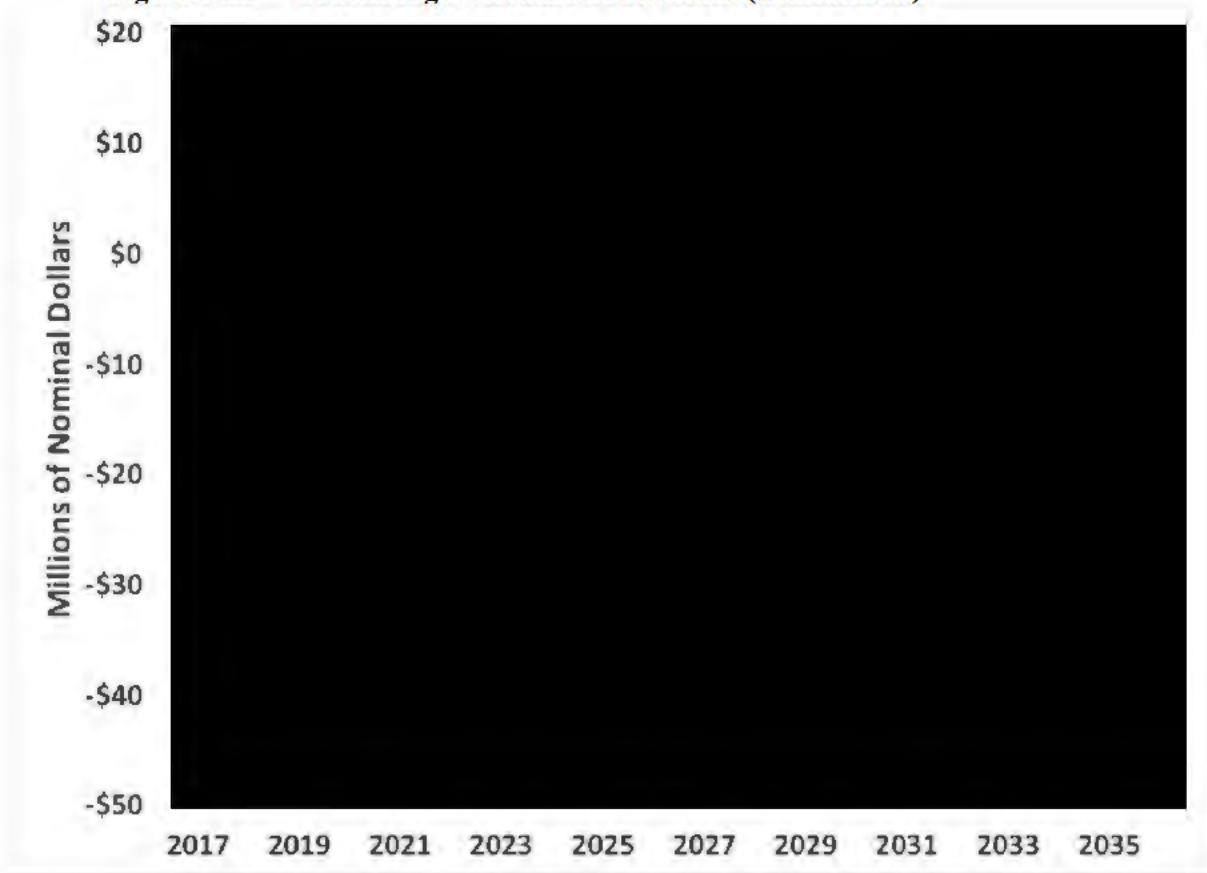
CONFIDENTIAL INFORMATION REDACTED

Figure S14: Petersburg 2 Annual Net Revenues (Confidential)



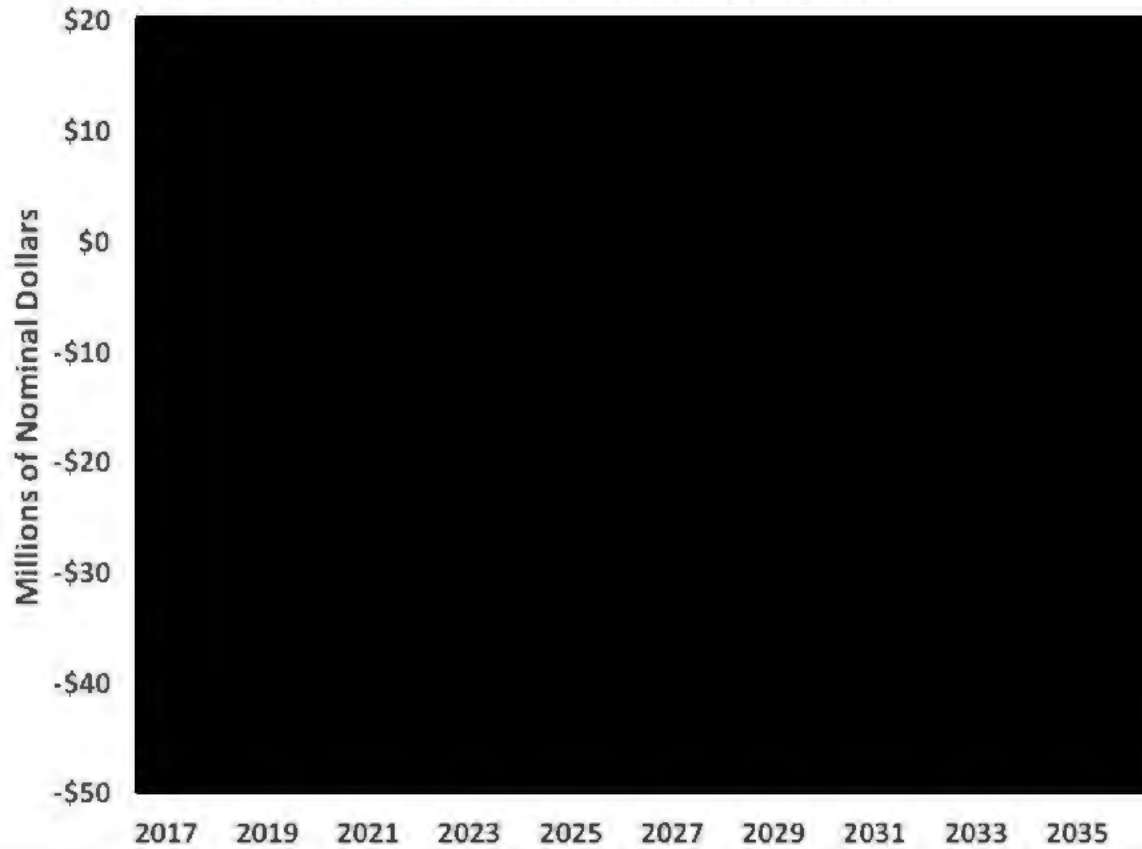
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Figure S15: Petersburg 3 Annual Net Revenues (Confidential)



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**Figure S16: Petersburg 4 Annual Net Revenues (Confidential)**



**Table 1: Petersburg’s Cumulative Economic Benefit/Cost for the Years 2017-2036**

	NPV	Nominal Dollars
	(Millions of Dollars)	
Petersburg 1 Endpoints 5, 8, 21 & 24	-\$66.6	-\$117.8
Petersburg 1 Endpoints 13, 16, 29 & 32	-\$55.4	-\$97.8
Petersburg 2 Endpoints 5, 8, 21 & 24	-\$144.0	-\$274.8
Petersburg 2 Endpoints 13, 16, 29 & 32	-\$121.9	-\$230.4
Petersburg 3	-\$9.3	-\$37.8
Petersburg 4	-\$78.0	-\$149.1

**CONFIDENTIAL INFORMATION REDACTED**

1 **Q. Why are there two sets of results in Figures S13 for Petersburg 1 and S14 for**  
2 **Petersburg 2 while there is only one set of results in Figures S15 for Petersburg 3**  
3 **and S14 for Petersburg 6?**

4 A. As I discussed earlier with respect to Figures S9 through S12, the outputs for IPL's  
5 modeling of Petersburg 1 and 2 have two distinct levels of generation, one for  
6 Endpoints 5, 8, 21 and 24, the other for Endpoints 13, 16, 29 and 32. Therefore, there  
7 are two economic results in Figures S11 and S12, reflecting these different levels of  
8 generation.

9 **Q. Did IPL include any CO<sub>2</sub> prices in its analyses of the Endpoints with low natural**  
10 **gas prices?**

11 A. No. Contrary to what Figure 3 in Ms. Soller's Direct Testimony suggested, IPL did  
12 not include any CO<sub>2</sub> prices in its modeling of the low gas price Endpoints that I have  
13 been discussing in this testimony. That is clear because all of Low Gas Price  
14 Endpoints in the modeling outputs for each of the Petersburg Units have \$0 for total  
15 CO<sub>2</sub> costs for every year through 2052. These are Endpoints 5, 8, 13, 16, 21, 24, 29  
16 and 32 for Petersburg 1, 2, and 4 and Endpoints 5, 8, 13 and 16 for Petersburg 3.

17 **Q. What impact would including CO<sub>2</sub> prices have on the annual net revenues**  
18 **shown in Figures S11 through S14, above?**

19 A. Given that coal-fired generators like Petersburg are the most carbon-intensive  
20 facilities on the MISO grid, for those hours during which less carbon-intensive  
21 facilities set the market-clear prices including CO<sub>2</sub> prices in the analysis would raise  
22 the cost of producing power at Petersburg by more than it would increase the energy  
23 market price. This would reduce the annual net revenues shown in Figures S13  
24 through S16 which would make Petersburg even less economic than shown in those  
25 Figures.

26 **Q. Does this complete your Settlement Testimony?**

27 A. Yes.

**VERIFICATION**

I, David A. Schlissel, affirm under penalties of perjury that the foregoing representations are true and correct to the best of my knowledge, information and belief.

David A. Schlissel

December 22, 2016

David A. Schlissel

Date

# **ATTACHMENT DS-1S**



**Data Request CAC DR 5 - 24**

Please provide all assessments prepared by or for IPL since January 1, 2013, or in its possession, that compared actual Henry Hub natural gas prices with the prices forecast by ABB.

**Objection:**

IPL objects to the Request on the grounds and to the extent the request seeks a compilation, analysis or study that IPL has not performed and to which IPL objects to performing. Subject to and without waiver of the foregoing objections, IPL provides the following response.

**Response:**

In response to DR 5-24 through 5-31, IPL is not aware of any such work products.

**Data Request CAC DR 5 - 25**

Please provide all assessments prepared by or for IPL since January 1, 2013, or in its possession, that compared actual on-peak MISO energy market prices with the prices forecast by ABB.

**Objection:**

IPL objects to the Request on the grounds and to the extent the request seeks a compilation, analysis or study that IPL has not performed and to which IPL objects to performing. Subject to and without waiver of the foregoing objections, IPL provides the following response.

**Response:**

See IPL's response to DR 5-24.

**Data Request CAC DR 5 - 26**

Please provide all assessments prepared by or for IPL since January 1, 2013, or in its possession, that compared actual off-peak MISO energy market prices with the prices forecast by ABB.

**Objection:**

IPL objects to the Request on the grounds and to the extent the request seeks a compilation, analysis or study that IPL has not performed and to which IPL objects to performing. Subject to and without waiver of the foregoing objections, IPL provides the following response.

**Response:**

See IPL's response to DR 5-24.

**Data Request CAC DR 5 - 27**

Please provide all assessments prepared by or for IPL since January 1, 2013, or in its possession, that compared actual MISO or PJM capacity market prices with the prices forecast by ABB.

**Objection:**

IPL objects to the Request on the grounds and to the extent the request seeks a compilation, analysis or study that IPL has not performed and to which IPL objects to performing. Subject to and without waiver of the foregoing objections, IPL provides the following response.

**Response:**

See IPL's response to DR 5-24.

**Data Request CAC DR 5 - 28**

Please provide all assessments prepared by or for ABB since January 1, 2013, or in its possession, that compared actual Henry Hub natural gas prices with the prices forecast by ABB.

**Objection:**

IPL objects to the Request on the grounds and to the extent the request seeks a compilation, analysis or study that IPL has not performed and to which IPL objects to performing. Subject to and without waiver of the foregoing objections, IPL provides the following response.

**Response:**

See IPL's response to DR 5-24.

**Data Request CAC DR 5 - 29**

Please provide all assessments prepared by or for ABB since January 1, 2013, or in its possession, that compared actual on-peak MISO energy market prices with the prices forecast by ABB.

**Objection:**

IPL objects to the Request on the grounds and to the extent the request seeks a compilation, analysis or study that IPL has not performed and to which IPL objects to performing. Subject to and without waiver of the foregoing objections, IPL provides the following response.

**Response:**

See IPL's response to DR 5-24.

**Data Request CAC DR 5 - 30**

Please provide all assessments prepared by or for ABB since January 1, 2013, or in its possession, that compared actual off-peak MISO energy market prices with the prices forecast by ABB.

**Objection:**

IPL objects to the Request on the grounds and to the extent the request seeks a compilation, analysis or study that IPL has not performed and to which IPL objects to performing. Subject to and without waiver of the foregoing objections, IPL provides the following response.

**Response:**

See IPL's response to DR 5-24.

**Data Request CAC DR 5 - 31**

Please provide all assessments prepared by or for ABB since January 1, 2013, or in its possession, that compared actual MISO or PJM capacity market prices with the prices forecast by ABB.

**Objection:**

IPL objects to the Request on the grounds and to the extent the request seeks a compilation, analysis or study that IPL has not performed and to which IPL objects to performing. Subject to and without waiver of the foregoing objections, IPL provides the following response.

**Response:**

See IPL's response to DR 5-24.



- a. Please indicate which natural gas price forecast (low, base or high) was used in each of the following Endpoint analyses: 1, 2 ,9, 10, 17, 18, 25, 26.
- b. If the answer is that the analyses for any of these Endpoints did not use the low, base or high natural gas price forecast, please identify the annual natural gas prices used in that analysis.

**Objection:**

IPL objects to the Request on the grounds and to the extent the request seeks information that is confidential, proprietary, competitively-sensitive and/or trade secret. IPL further objects to the request on the grounds and to the extent the request is vague and ambiguous, particularly to the extent the request does not identify for which units the information is requested. Subject to and without waiver of the foregoing objections, IPL provides the following response.

**Response:**

- a. These endpoints began with the base natural gas prices, which were then adjusted to reflect the specific CO<sub>2</sub> scenarios.
- b. The natural gas prices correlate to CO<sub>2</sub> scenarios for these endpoints as described in Witness Crockett direct testimony on page 5. The specific endpoints referenced include these prices referenced below. See CAC DR 5-32 Confidential Attachment 1 for the actual data.

Unit	Endpoint	Correlated natural gas prices	Data Source
Pete 1, 2 and 4	1,9,17,25	High CO <sub>2</sub> ICF Federal Legislation	Confidential Attachment CAC DR 5-32 (column N)
Pete 1, 2 and 4	2,10,18,26	Moderate CO <sub>2</sub> ICF (labeled as Mass Cap)	Confidential Attachment CAC DR 5-32 (column M)
Pete 3	1,9	High CO <sub>2</sub> ICF Federal Legislation	Confidential Attachment CAC DR 5-32 (column N)
Pete 3	2,10	Moderate CO <sub>2</sub> ICF (labeled as Mass Cap)	Confidential Attachment CAC DR 5-32 (column M)

# **ATTACHMENT DS-2S**

**Data Request CAC DR 5 - 10**

With reference to page 20, lines 9-10, of the Rebuttal Testimony of IPL witness Soller, please provide the evidence that shows that forward curves have varied significantly day-to-day since Mr. Schlissel's testimony was filed in this proceeding.

**Objection:**

**Response:**

See IPL's response to 5.7 and CAC DR 5-10 Attachment 1 which shows the fluctuations in daily forward curve Henry Hub natural gas prices from September 15 to October 31, 2016 as an example.

See column AY in CAC DR 5-10 Attachment 1 for the calendar year pricing. On September 14, 2016, calendar year 2017 ("Cal 17") strip natural gas traded at \$3.13. Cal 17 traded as high as \$3.43 and as low as \$3.09 between September 14 and October 31, 2016, which represents the time period between CAC's filing and IPL's rebuttal filing.

# **ATTACHMENT DS-3S**

**Data Request CAC DR 5 - 16**

Please provide each example, of which Ms. Soller or IPL are aware, in which the capacity market price determined in any annual or forward capacity auction in any of the ISOs in the U.S. that have capacity markets (ISO-NE, NYISO, PJM and MISO) has reached the calculated CONE.

**Objection:**

IPL objects to the Request on the grounds and to the extent it is overly broad and unduly burdensome, particularly in that it is not limited in time. IPL further objects to the Request on the grounds and to the extent the request solicits information that exceeds the scope of this proceeding and is not reasonably calculated to lead to the discovery of relevant or admissible evidence, particularly to the extent the request seeks information related to capacity markets in which IPL does not participate. Subject to and without waiver of the foregoing objections, IPL provides the following response.

**Response:**

IPL is not aware of any such occurrence. IPL notes that MISO does not currently have a capacity market; rather it has a capacity construct and capacity auction.