

**BEFORE
THE PUBLIC UTILITIES COMMISSION OF OHIO**

In the Matter of the Application of the Ohio)	
Edison Company, the Cleveland Electric)	
Illuminating Company and the Toledo Edison)	Case No. 14-1297-EL-SSO
Company for Authority to Provide for a Standard)	
Service Offer Pursuant to R.C. 4928.143)	
In the Form of an Electric Security Plan)	

**Direct Testimony of
Tyler Comings**

Redacted Version

**On Behalf of
Sierra Club**

December 22, 2014

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Exhibit TFC-1: Tyler Comings resume

Competitively Sensitive Confidential Exhibit TFC-2: Attachments JLL-1 and -2
Competitively Sensitive Confidential; Attachment JLL-3 - Revised OVEC
Competitively Sensitive Confidential; Lisowski Workpaper Pg 2 - Revised OVEC
Competitively Sensitive Confidential

Competitively Sensitive Confidential Exhibit TFC-3: FES Subpoena Response
Attachment 4 (Outputs) - Competitively Sensitive Confidential; SC Set 1-INT
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Pg 2 - Revised OVEC (Competitively Sensitive Confidential)

Competitively Sensitive Confidential Exhibit TFC-4: FES Subpoena Response,
Attachments 1-3 revised (Competitively Sensitive Confidential); SC Set 1-INT
54(a) Attachments 1-3 (Competitively Sensitive Confidential)

Exhibit TFC-5: Lisowski Public Depo. Tr. (Dec. 19, 2014) (excerpts)

Exhibit TFC-6: SC Set 1-RPD-54

Competitively Sensitive Confidential Exhibit TFC-7: SC Set 5-INT-112 Competitively
Sensitive Confidential

Competitively Sensitive Confidential Exhibit TFC-8: Lisowski Confidential Depo. Tr.
(Dec. 19, 2014) (excerpts)

Exhibit TFC-9: P3-EPSC Set 1-INT-2

Exhibit TFC-10: SC Set 2-INT-76

Exhibit TFC-11: IEU Set 1-INT-25 Attachment 1

Competitively Sensitive Confidential Exhibit TFC-12: SC Set 1-RPD-49 Attachment 5
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Exhibit TFC-15: OEC/EDF Set 1-INT-5

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1 and 2 Competitively Sensitive Confidential

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Competitively Sensitive Confidential (attached as Competitively Sensitive
Confidential Ex. TFC-25)

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Exhibit TFC-28: OCC Set 1-INT-19

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Competitively Sensitive Confidential Exhibit TFC-31: SC Set 1-INT-55 Competitively
Sensitive Confidential

Competitively Sensitive Confidential Exhibit TFC-32: SC Set 4-RPD-91
Competitively Sensitive Confidential.

Competitively Sensitive Confidential Exhibit TFC-33: Model Output_SC Runs 1-2
and Model Output_SC Runs 3-4.

1 **I. INTRODUCTION AND PURPOSE OF TESTIMONY**

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

3 **A** My name is Tyler Comings. I am a Senior Associate with Synapse Energy
4 Economics, Inc. (Synapse), which is located at 485 Massachusetts Avenue, Suite
5 2, in Cambridge, Massachusetts.

6 **Q Please summarize your work experience and educational background.**

7 **A** I have nine years of experience in economic research and consulting. At Synapse,
8 I have worked extensively in the energy planning sector, including work on
9 integrated resource plans, costs of regulatory compliance, and economic impact
10 analyses. I have provided consulting services for many clients including: U.S.
11 Department of Justice, District of Columbia Office of the People’s Counsel,
12 District of Columbia Government, Maryland Office of the People’s Counsel, New
13 Jersey Division of Rate Counsel, West Virginia Consumer Advocate Division,
14 Illinois Attorney General, Nevada State Office of Energy, Sierra Club,
15 Earthjustice, Citizens Action Coalition of Indiana, Consumers Union, Energy
16 Future Coalition, American Association of Retired Persons, and Massachusetts
17 Energy Efficiency Advisory Council.

18 I have provided testimony on electricity planning and economic impacts in
19 District of Columbia, Indiana, Kentucky, Maryland, and New Jersey.

20 Prior to joining Synapse, I performed research in consumer finance for Ideas42
21 and economic analysis of transportation and energy investments at Economic
22 Development Research Group.

23 I hold a B.A. in Mathematics and Economics from Boston University and an
24 M.A. in Economics from Tufts University.

1 My full resume is attached as Exhibit TFC-1.

2 **Q Please describe Synapse Energy Economics.**

3 **A** Synapse Energy Economics is a research and consulting firm specializing in
4 energy and environmental issues, including electric generation, transmission and
5 distribution system reliability, ratemaking and rate design, electric industry
6 restructuring and market power, electricity market prices, stranded costs,
7 efficiency, renewable energy, environmental quality, and nuclear power.

8 Synapse's clients include state consumer advocates, public utilities commission
9 staff, attorneys general, environmental organizations, federal government
10 agencies, and utilities.

11 **Q On whose behalf are you testifying in this case?**

12 **A** I am testifying on behalf of Sierra Club.

13 **Q Have you submitted testimony in other recent regulatory proceedings?**

14 **A** Yes. I have submitted testimony on utility planning proceedings before the
15 Indiana Utility Regulatory Commission (Cause No. 44339), the Kentucky Public
16 Service Commission (Case No. 2013-00259) and the Oklahoma Corporation
17 Commission (Cause No. PUD 201400229). I have also submitted testimony on
18 the proposed merger between Exelon Corporation and Pepco Holdings, Inc. in
19 three jurisdictions: District of Columbia, Maryland, and New Jersey.

20 **Q Have you testified before the Public Utilities Commission of Ohio previously?**

21 **A** No, I have not.

22 **Q What is the purpose of your testimony?**

23 **A** I was retained by the Sierra Club to review the application of Ohio Edison
24 Company, Cleveland Electric Illuminating Company, and Toledo Edison
25 Company ("the Companies") for approval of an electric security plan ("ESP").

Direct Testimony of Tyler Comings
Redacted Version

1 My testimony focuses on the assumptions and analysis used by the Companies to
2 support the proposed Retail Rate Stability Rider (“Rider RRS”) and related inter-
3 affiliate agreement between the Companies and FirstEnergy Solutions Corp. (“the
4 transaction”). I focus on the policy implications and risks associated with the
5 proposed transaction, including market-price risk and carbon-cost risk.

6 **Q Are there any exhibits that accompany your testimony?**

7 **A** Yes. I am attaching my resume as Exhibit TFC-1 and discovery responses and
8 modeling results as Exhibits TFC-2 to -33.

9 **II. SUMMARY OF TESTIMONY**

10 **Q What are the Companies proposing in this ESP?**

11 **A** The Companies have proposed to take on the costs and revenues of several plants
12 owned by FirstEnergy Solutions Corp. (“FES”), their unregulated corporate
13 affiliate (each of the Companies, and FES, are subsidiaries of FirstEnergy
14 Corporation). These plants include the Davis-Besse Nuclear Power Station, W.H.
15 Sammis coal-fired power plant, and FES’s contractual share¹ of the output and
16 costs from the two coal-fired power plants owned by the Ohio Valley Electric
17 Corporation (“OVEC”), Clifty Creek and Kyger Creek (collectively, “the RRS
18 Plants”). The Companies are proposing that the difference between the total costs
19 of the RRS Plants (including a return on capital) and the market revenues received
20 from selling the output of the RRS Plants into the PJM energy, capacity, and
21 ancillary services markets be passed on to customers through a non-bypassable
22 charge or credit. If, in a given year, market revenues from the sale of output from
23 the RRS Plants are greater than the total costs of these plants, the difference
24 would be credited to the Companies’ customers via the Rider RRS; but if the total
25 costs of the RRS Plants are greater than market revenues, then customers would

¹ FES is entitled to 4.85% of the output of the two OVEC plants and must pay 4.85% of total costs. See OVEC Annual Report — 2013, p. 1, *available online at*: <http://www.ovec.com/FinancialStatements/AnnualReport-2013-Signed.pdf>.

1 be charged the difference. The Companies have proposed that this arrangement
2 last from June 1, 2016, to May 31, 2031.²

3 If approved, the proposed inter-affiliate agreement and Rider RRS would have the
4 effect of guaranteeing full cost recovery for FES for all of the affected generation
5 units. And because those costs would then be passed along to customers through a
6 non-bypassable charge, the Companies would have a “zero position” on the
7 contract, meaning that they would neither profit nor lose money. Just the
8 Companies’ customers will be subject to risk—they could earn a cumulative
9 credit or incur a cumulative charge over the term of the contract.

10 **Q What are your findings regarding the Company’s proposal and justification?**

11 **A** The Companies have not provided sufficient justification for adopting this plan,
12 given the following reasons:

13 1. The construct of Rider RRS itself is inappropriate. Ohio has chosen a de-
14 regulated system to insulate customers from the performance or non-
15 performance of individual units. By forcing the Companies’ customers to
16 accept this rider, the customers effectively become the owners of the units;
17 however, they would get virtually none of the benefits of ownership, such
18 as control over costs and strategic decisions, and would not be entitled to
19 the type of regulatory oversight that protects customers in a regulated
20 system.

21 2. Even assuming the rider were an appropriate mechanism—which it is
22 not—the Companies have not provided sufficient analysis either in their
23 application and pre-filed testimony or in discovery to justify such a long-
24 term transaction. To justify such a significant transaction, the Companies
25 should have stress tested this portfolio of generation units under future
26 uncertainties. They also should have conducted more sophisticated

² Direct Testimony of Jay A. Ruberto, p. 4.

1 modeling than that done with the use of a Microsoft Excel based
2 spreadsheet model. FES and the Companies have continued to use the
3 same unsophisticated model, although they now propose to shift the risk of
4 further losses onto ratepayers.

5 3. The Companies use carbon prices that are likely too low, therefore, they
6 do not adequately assess carbon cost risk.

7 4. The Companies' view of the energy and capacity markets is likely too
8 optimistic—inflating the value of the Plants in question.

9 5. The Companies neglected to address other future environmental risks and
10 costs associated with the coal units, mainly the high likelihood that
11 additional NOx controls would be required at several units—Sammis units
12 1-5 and Clifty Creek unit 6.

13 **Q What costs would be passed on to the Companies' ratepayers in this**
14 **transaction?**

15 **A** Over the course of the 15-year contract period (June 1, 2016 to May 31, 2031),
16 the Companies are projecting that the transaction will cost [REDACTED], in terms
17 of net present value ("NPV").³

18 **Q How much revenue are the units associated with this transaction projected to**
19 **make from the PJM markets?**

20 **A** Over the course of the same 15-year period, the Companies are projecting that the
21 transaction will produce [REDACTED] in revenue (NPV).⁴

³ Net present value of "total costs" and "total return" for Sammis, Davis-Besse, and OVEC plants, taken from the Microsoft Excel spreadsheet versions of Attachments JIL-1 and -2 Competitively Sensitive Confidential, revised Attachment JIL-3 Competitively Sensitive Confidential, and Lisowski Workpaper Pg 2 - Revised OVEC Competitively Sensitive Confidential. These spreadsheets were produced in response to Kroger Set 2 INT-2, and PDF copies of them can be found in the confidential attachments to Mr. Lisowski's testimony, the Errata filed by the Companies on November 14, and Mr. Lisowski's competitively sensitive confidential work papers. These spreadsheets are also reproduced in Competitively Sensitive Confidential Exhibit TFC-2.

1 **Q How did the Companies conduct a valuation of the Rider RRS?**

2 **A**The Companies established an EDU team, led by Jay Ruberto, which evaluated
3 the transaction proposed by FES, including evaluation of costs to operate each of
4 the plants involved. Judah Rose provided projections of energy and market prices.
5 Jason Lisowski then conducted modeling of costs and revenues to determine the
6 valuation of the transaction.⁵

7 **Q Were the model runs provided in this filing consistent?**

8 **A**No. As I will describe later, in response to a subpoena, FES provided modeling
9 output files that did not match those presented by the Companies.

10 **Q What do the Companies' projections show in terms of net costs and revenues**
11 **over the term of the transaction?**

12 **A**The projections the Companies submitted with their application show a projected
13 net revenue (i.e. profit) of \$770 million over the 15-year term of the transaction.⁶
14 This represents a [REDACTED] profit margin on the transaction.⁷ In terms of cumulative net
15 present value, Sammis and OVEC plants would [REDACTED] under
16 the Companies' forecasts presented by Mr. Lisowski.⁸ Davis-Besse [REDACTED]
17 [REDACTED], over the 15-year analysis period. The
18 entire proposal (including the Davis-Besse plant) [REDACTED].
19 The results for the OVEC units [REDACTED] to what Duke Energy Ohio produced
20 in their recent ESP filing now pending before the Commission (Case No. 14-841-

⁴ Net present value of revenues for Sammis, Davis-Besse, and OVEC plants, taken from the Excel versions of Attachments JIL-1 and -2 Competitively Sensitive Confidential, revised Attachment JIL-3 Competitively Sensitive Confidential, and Lisowski Workpaper Pg 2 - Revised OVEC Competitively Sensitive Confidential (reproduced in Competitively Sensitive Confidential Ex. TFC-2).

⁵ See Direct Testimony of Jay Ruberto.

⁶ See Attachment JAR-1.

⁷ The NPV of revenue from the transaction divided by the NPV of costs is 1.06 or a 6% margin.
[REDACTED]

1 EL-SSO). Duke's cash flow model showed cumulative NPV losses for the OVEC
2 units through at least 2024.⁹

3 Even under the Companies' analysis, however, the transaction loses money for
4 customers in the first several years of the proposed arrangement¹⁰—with annual
5 NPV losses of \$155 million in 2016, \$167 million in 2017 and \$82 million in
6 2018, for a combined loss of \$404 million in the first three years of the
7 transaction. For some of the plants, the net present value of the transaction turns
8 [REDACTED], during the term of the transaction.

9 **Q Did these results match those presented by FES in response to the subpoena**
10 **served by Sierra Club on FES in this case?**

11 **A** [REDACTED] The modeling inputs and outputs produced in response to Sierra Club's
12 subpoena show [REDACTED] than the modeling
13 presented by Mr. Lisowski on behalf of the Companies.¹¹ Mr. Lisowski, who
14 claims to have supervised both sets of modeling, explained that the subpoena
15 modeling used [REDACTED]
16 [REDACTED], while in the modeling discussed in Mr.
17 Lisowski's pre-filed testimony (i.e., the modeling presented by the Companies'
18 application), those inputs were substituted with forecasts developed by Mr.
19 Rose.¹²

⁹ See Case No. 14-0841-EL-SSO, Direct Testimony of Sarah Jackson, Figure 1, p.7, Amended Redactions, Public Version. This figure was originally labeled confidential but was later unredacted pursuant to the Attorney Examiners' rulings in that case.

¹⁰ See Attachment JAR-1.

¹¹ Output files: FES Subpoena Response, Attachment 4 was compared to SC Set 1-INT-054(a) Attachment 4 Competitively Sensitive Confidential and Lisowski Workpaper Pg 2 - Revised OVEC (Competitively Sensitive Confidential). These output files are reproduced in Competitively Sensitive Confidential Exhibit TFC-3.

Input files: FES Subpoena Response, Attachments 1-3 revised (Competitively Sensitive Confidential) were compared with the SC INT - 54(a) Attachments 1-3 (Competitively Sensitive Confidential). These input files are reproduced in Competitively Sensitive Confidential Exhibit TFC-4.

¹² Lisowski Public Depo. Tr. at 66-73 (attached as Ex. TFC-5).

1 **Q When do the plants [REDACTED] using the FES modeling outputs?**

2 **A** Using the FES outputs obtained by subpoena, Sammis [REDACTED]
3 [REDACTED] OVEC [REDACTED] and Davis-Besse
4 [REDACTED]
5 The entire portfolio [REDACTED] projected in the
6 Application. [REDACTED]

7 **Q Why do the [REDACTED] from what was presented by Mr. Lisowski?**

8 **A** FES is assuming [REDACTED] in the subpoena modeling than what was
9 used in the Application modeling. Also, the [REDACTED] in the
10 FES subpoena modeling [REDACTED] what was used by the Companies before
11 [REDACTED], causing the plants to [REDACTED] [REDACTED]
12 [REDACTED]
13 [REDACTED]. Relative
14 to the Companies' results, [REDACTED] used by FES causes Sammis
15 and OVEC plants to [REDACTED] while Davis-Besse [REDACTED]. This effect is due
16 to [REDACTED]
17 [REDACTED].

18 **Q Is the projected nearly \$800 million value of the transaction subject to**
19 **uncertainties?**

20 **A** Absolutely. The costs of operating Sammis and OVEC units include fuel, variable
21 operations and maintenance ("O&M"), fixed O&M, on-going capital investments,
22 and environmental compliance costs (fixed and variable). The revenue estimates
23 are based on projections of capacity market prices, energy prices, and the amount

¹³ FES Subpoena Response, Attachments 1-3 (Competitively Sensitive Confidential) were compared with the SC INT - 54(a) Attachments 1-3 (Competitively Sensitive Confidential)

¹⁴ FES Subpoena Response, Attachments 1-3 revised (Competitively Sensitive Confidential) were compared with the SC INT - 54(a) Attachments 1-3 (Competitively Sensitive Confidential). These input files are reproduced in Competitively Sensitive Confidential Exhibit TFC-4.

1 of time the units are dispatched (the capacity factor)—all of which are subject to
2 change.

3 **Q Did the Companies conduct any sensitivity analyses to test the value of the**
4 **transaction?**

5 **A** No. Even with the myriad uncertainties, the Companies projected one set of costs
6 and revenues, without any assessment of the risk inherent in such projections.

7 **Q Did you perform an alternative analysis of valuation for the RRS Plants?**

8 **A** Yes. I tested a number of scenarios using a range of different and more reasonable
9 assumptions regarding key factors in the analysis. While the Companies refused
10 to produce a copy of their model—and did not use a model that was otherwise
11 commercially available—they agreed to run a handful of alternative scenarios
12 using revised inputs that I provided. Pursuant to that agreement, I provided the
13 Companies inputs for carbon prices and energy prices, and the Companies
14 produced to Sierra Club the results of modeling runs that the Companies present
15 as reflecting the changes I provided. I also evaluated the impacts on the market
16 valuation of the plants of using capacity prices that differed from those used in the
17 Companies’ analysis, and of the costs associated with adding selective catalytic
18 reduction (“SCR”) on Sammis units 1 through 5 and Clifty Creek unit 6. These
19 results are not meant to be final but illustrate how the value of the proposed
20 transaction changes given uncertain future conditions that were not explored by
21 the Companies in their Application.

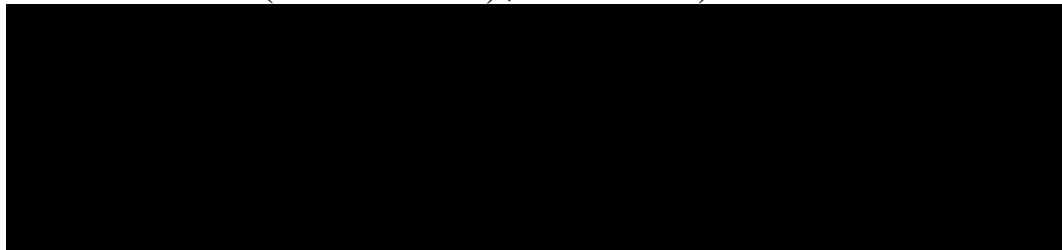
22 **Q Is it reasonable to base a multi-billion dollar decision on one set of**
23 **assumptions?**

24 **A** No. There are too many risks at stake in this transaction for the Companies to
25 avoid stress testing the portfolio under future uncertainties, yet they apparently
26 signed off on the proposal on the basis of only a single set of assumptions. The
27 only other sets of results to compare against are: 1) FES modeling which used [REDACTED]
28 [REDACTED]

1 [REDACTED] than those used in the Companies' modeling; and 2) my analysis of
2 alternative assumptions, including modeling performed for changes to energy
3 prices and carbon prices by the Companies at my request.

4 COMPETITIVELY SENSITIVE CONFIDENTIAL Table 1 shows the changes to
5 market valuation NPV for the modeling runs conducted in this case. Relative to
6 the Companies' modeling, the FES results [REDACTED]
7 [REDACTED]. My
8 alternative results show sensitivity to additional SCR investments that could be
9 required at Sammis units 1-5 and Clifty Creek unit 6, lower capacity prices,
10 higher energy prices (10% above the Companies') and a lower energy price (10%
11 below the Companies'). Notably, the energy prices used in the FES modeling
12 provided in response to Sierra Club's subpoena were [REDACTED], than
13 those assumptions used by the Companies from [REDACTED]
14 [REDACTED]).

15 **COMPETITIVELY SENSITIVE CONFIDENTIAL Table 1:**
16 **Summary of Modeling Results**
17 **(NPV 2016-2031, \$2015 millions)**



18
19 COMPETITIVELY SENSITIVE CONFIDENTIAL Table 2 shows the changes to
20 the [REDACTED] of each plant investment. The FES results showed that the
21 plants would [REDACTED] in the Companies' modeling using Mr.
22 Rose's assumptions. My adjusted results show [REDACTED]
23 with a simple energy price sensitivity 10% lower and higher, respectively, than
24 those used by the Companies.

1 **COMPETITIVELY SENSITIVE CONFIDENTIAL Table 2: Plant**
2 **for Each Modeling Results**

3



4 **Q Should your adjusted analysis be considered “final” by this Commission?**

5 **A** No. My results show changes in net present value of market valuation with critical
6 uncertainties that were not explored by the Companies. I would recommend that
7 the Companies conduct a more thorough analysis of the units—including a unit-
8 by-unit analysis and rigorous sensitivity analysis rather than basing this decision
9 on one set of modeling runs.

10 **Q Would you consider the model used by the Companies and FES**
11 **sophisticated?**

12 **A** No. While I was denied access to FES’s model [REDACTED]
13 [REDACTED] I learned through Mr. Lisowski’s deposition that the model is an
14 Excel spreadsheet based model.¹⁶ This spreadsheet “dispatches” the units [REDACTED]
15 [REDACTED]¹⁷ I cannot recall any case I have
16 reviewed where a company that did dispatch modeling used a model with any [REDACTED]
17 [REDACTED]. Further, I know of no Company that uses an [REDACTED]
18 [REDACTED] as a dispatch model. Models such as those provided by PCI and
19 Ventyx are commonly used by utilities in planning. The Companies’ model has

¹⁵ SC Set 1-RPD-054 (public version) (attached as Ex. TFC-6). Note: for clarify, unless otherwise noted, my testimony refers to the Companies’ discovery responses by citing the request number itself, rather prefacing each response by noting that it is the Companies’ response to such request.

¹⁶ Lisowski Public Depo. Tr. at 31(attached as Ex. TFC-5).

¹⁷ SC Set 5-INT-112 Competitively Sensitive Confidential (attached as Competitively Sensitive Confidential Exhibit TFC-7); Lisowski Public Depo. Tr. at 47.

1 been used as far back as 2004 and Mr. Lisowski was not able to identify any time
2 when the model [REDACTED].¹⁸

3 **Q Have the Sammis and OVEC plants been [REDACTED] in the past five years?**

4 **A [REDACTED]**, as I will discuss later. Mr. Lisowski testified that he had full confidence in
5 the model but could not say if the model had predicted [REDACTED]
6 [REDACTED].¹⁹ Given the [REDACTED] performance of these plants, a
7 reasonable utility would reassess its modeling and resource planning. Instead,
8 FES and the Companies continue to use the same unsophisticated model while
9 shifting the risk of [REDACTED] onto ratepayers.

10 **Q What are your recommendations for the Commission?**

11 **A**I recommend that this Rider RRS be denied. It is inappropriate to tie the fate of
12 the merchant-owned coal units to ratepayers' bottom line. Even if the rider were
13 appropriate in a competitive market environment, which it is not, there has been a
14 troubling lack of transparency or consistency from the Companies and FES.. The
15 Sammis and OVEC plants [REDACTED]
16 [REDACTED] and are subject to high regulatory risks in the near future, much of
17 which has not been accounted for in the Companies' unsophisticated modeling.

18 **III. THE TRANSACTION IS NOT CONSISTENT WITH OHIO'S**
19 **TRANSITION TO COMPETITION IN ELECTRIC MARKETS**

20 **Q Is the proposed Rider RRS consistent with the state's transition to a**
21 **competitive retail market?**

22 No. The proposed Rider RRS is not an appropriate mechanism as it is not
23 consistent with a fully competitive market or a fully regulated market. The
24 Commission has been working to transition its largest utilities to a fully
25 competitive retail energy market. FirstEnergy is already required to purchase 100

¹⁸ Lisowski Public Depo. Tr. at 31, 142-43; Lisowski Confidential Depo. Tr. at 170-71 (attached as Competitively Sensitive Confidential Exhibit TFC-8).

¹⁹ Lisowski Public Depo. Tr. at 143; Lisowski Confidential Depo. Tr. at 170-75.

1 percent of its electricity for its SSO customers through competitive auctions.
2 These auctions are staggered, by design, to insulate customers from price
3 volatility. The resulting rates represent a blending of these staggered auctions of
4 different time intervals.

5 The proposed Rider RRS concept runs counter to the state's transition to a fully
6 competitive retail market. Essentially, the proposed Rider RRS would turn the
7 Companies' ratepayers into de-facto merchant generators who will make or lose
8 money on the markets. However, unlike traditional merchant operators, the
9 Companies' ratepayers would have only limited control over the plants despite
10 being stuck with all of the costs of those plants.

11 **Q How does this arrangement compare to traditional electric regulation?**

12 **A** This contract passes the costs and revenues of merchant-owned plants to
13 ratepayers over a 15-year period. Therefore, ratepayers will become de-facto
14 merchant operators by incurring net costs or revenues in each year, depending on
15 how the plants perform in the PJM capacity and energy markets. As explained
16 below, however, it seems that the costs and revenues associated with this
17 transaction will not be subject to the same regulatory oversight and scrutiny as
18 would a plant in traditional, fully-regulated jurisdiction.

19 **Q The Companies refer to the arrangements with the RRS Plants as a purchase**
20 **power agreement. How is the proposed Rider RRS different from a typical**
21 **Purchase Power Agreement or PPA?**

22 **A** The proposed Rider RRS would have the Companies enter into contracts with
23 their generation-owning subsidiary, FES, to pass through the costs and revenues
24 associated with the plants' operations. Since the output of the plants is dependent
25 on how they fare in the PJM markets, their operations are uncertain. This runs
26 counter to a traditional PPA—such as for a wind farm—where the cost of contract
27 is laid out beforehand and generally involves purchase of power at a *fixed* price,
28 with fluctuations allowed for fuel cost (if necessary).

1 **Q What kind of regulatory oversight does the Company propose for Rider**
2 **RRS?**

3 **A** The Company contends that Rider RRS costs will be subject to “two separate
4 reviews.”²⁰ The first review does not appear to address the reasonableness or
5 prudence of any costs included in the Rider RRS, but instead is simply a review
6 by PUCO Staff for mathematical errors and to ensure consistency with
7 Commission-approved rate designs and previous audit results. The Companies
8 portray the second review—the audit by PUCO Staff of costs and revenues
9 included in Rider RRS—as allowing the Staff to “confirm that the actual costs
10 and actual revenues included in the RRS are not unreasonable.”²¹ The Staff would
11 draft an audit report that, after review by the Companies, would be filed with the
12 Commission, and then the Commission could decide whether to hold a hearing.
13 The Companies propose that there would be a presumption that any costs incurred
14 were prudent.²²

15 It is unclear what the effect of this audit procedure would be and whether it could
16 provide any real protections for the Companies ratepayers. If the Commission
17 approves the proposed Rider RRS, it should at a minimum, establish a process for
18 reviewing the reasonableness and prudence of costs charged to customers that
19 matches the standards of review that would occur in a fully regulated system—
20 including putting the burden on the Companies and FES to demonstrate that costs
21 were reasonably and prudently incurred, reviewing major capital investments or
22 cost increases in the context of an open and transparent hearing process, and
23 clearly defining how any imprudently incurred costs would be credited back to
24 ratepayers.

²⁰ Direct Testimony of Eileen M. Mikkelsen, p. 14.

²¹ Mikkelsen Testimony, p. 15.

²² P3-EPSC Set 1-INT-2 (attached as Exhibit TFC-9).

1 **Q Could FES terminate the transaction before the end of the 15 year period?**

2 **A**I am not aware of any guarantee that FES could not withdraw from or cancel the
3 15-year transaction early if, for example, the RRS Plants become profitable again.
4 Given that the purported benefits to ratepayers of this proposal are back-loaded in
5 the out years of the agreement, this is an especially big risk for ratepayers as they
6 could be charged with covering the costs of these Plants while they are losing
7 money but then not receive the benefits if the Plants started generating profits in
8 the future.

9 Uncertainty about whether FES would be bound to stay in the deal for the full 15
10 years is increased by the fact that the Companies and FES have apparently not yet
11 drafted the “purchase power agreement” that would govern the transaction for
12 which the Companies are seeking approval.²³ A complete negotiated agreement
13 would be necessary for the Commission and parties to fully assess the
14 reasonableness of the Companies’ Application.

15 When asked in discovery about whether FES could terminate the transaction
16 before the 15-year period had run, the Companies referred to a draft term sheet.²⁴
17 With one limited exception, that term sheet does not directly address the ability of
18 FES or the Companies to terminate the agreement early. It does, however,
19 propose to limit damages for any breach of the agreement to “direct damages
20 only,” with no party being liable for “indirect damages, lost profits or other
21 business interruption damages.”²⁵ As such, the draft term sheet appears to provide
22 little real assurance that FES could not terminate the agreement early in the event
23 that the profits that are projected to occur in the later years of the agreement
24 actually materialize.²⁶

²³ SC Set 2-INT-76 (attached as Ex. TFC-10).

²⁴ Ex. TFC-10 (SC Set 2-INT-76). The draft term sheet was produced as Attachment 1 to the Companies’ response to IEU Set 1-INT-25, and is reproduced here as Exhibit TFC-11.

²⁵ Ex. TFC-11 (Attachment 1 to IEU Set 1-INT-25, ¶ 19).

²⁶ Mr. Lisowski could not speak to whether FES would commit to not terminating the agreement before its 15 year term; *see* Lisowski Public Depo. Tr. at 215-6.

1 **Q Would the Companies be able to remove a unit from the transaction if the**
2 **need for a major capital expenditure were to make one or more of the units**
3 **uneconomic?**

4 **A**The draft term sheet includes a provision that purports to allow for the removal of
5 a unit from the transaction in the event that a required “Capital Expenditure would
6 render the affected Facility to be uneconomic.”²⁷ The protection from such
7 provision, however, appears to be questionable at best. For one thing, the
8 provision is in a draft term sheet, not in a fully negotiated agreement, so important
9 details such as how a unit would be determined to be uneconomic are unclear at
10 best. Second, the removal of a unit from the transaction could only occur upon the
11 agreement of both FES and the Companies, and FES would have little incentive to
12 agree, given that it would be guaranteed total cost recovery regardless. Third, the
13 removal of a unit from the transaction after a few years would do nothing to make
14 up for the fact that the Companies and their customers are projected to lose money
15 on these units for at least the first few years of the agreement.²⁸

16 **Q Who will bear the risks under Rider RRS?**

17 **A**Ratepayers will be fully responsible for the risks under the proposed Rider RRS.
18 Merchant-owned generation turns a profit if uncertain revenues from the market
19 can more than cover uncertain capital and operating costs. Ratepayers will now be
20 put in the position of acting as a de-facto merchant generating entity and,
21 therefore, assuming the risk regarding how those uncertainties turn out.

22 **Q What kind of incentives do the Companies have to manage these risks?**

23 **A**If FES no longer bears the costs and revenues of operating the plants, there is little
24 incentive for it to operate them efficiently or maximize profits. Further, since the
25 Companies (and FES) would have a “zero position” on this contract, they have

²⁷ Ex. TFC-11 (Attachment 1 to IEU Set 1-INT-25, ¶ 8).

²⁸ See Attachment JAR-1.

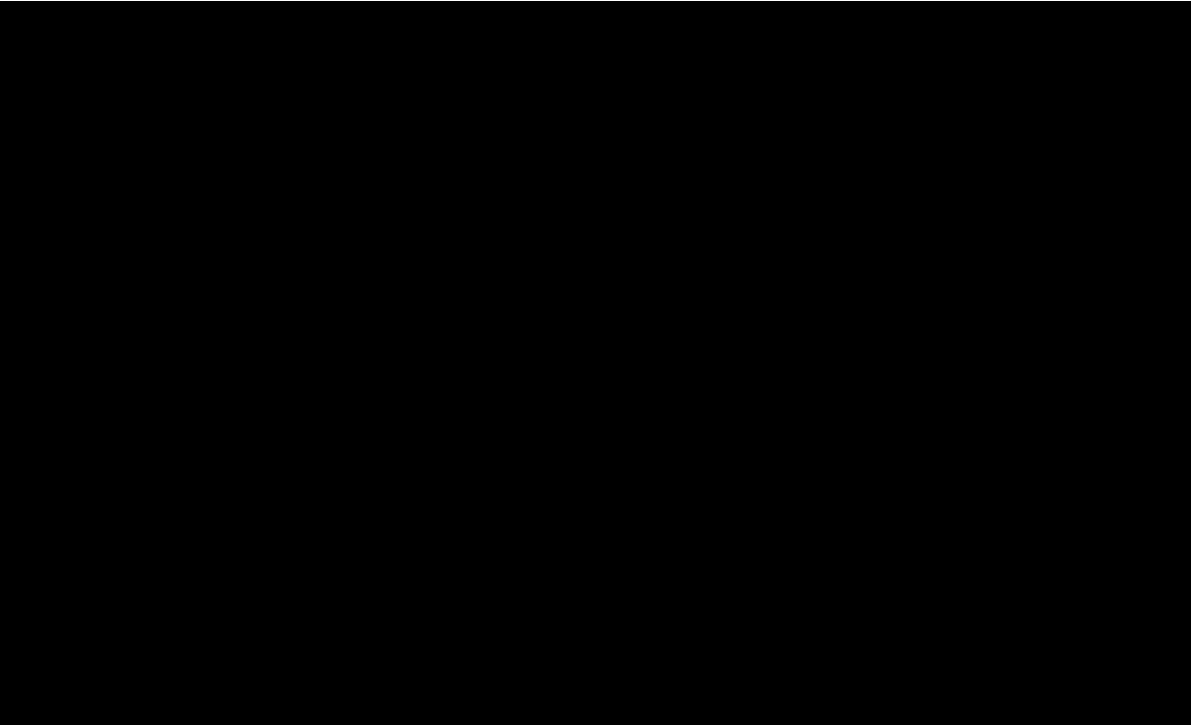
1 little incentive to engage in optimal bidding strategy when they bid energy and
2 capacity into PJM.

3 **IV. THE COMPANIES HAVE LIKELY OVERVALUED THE**
4 **TRANSACTION**

5 **A. THE COMPANIES' ANALYSIS SHOWS THAT RATEPAYERS WILL HAVE TO**
6 **WAIT TO SEE PROFITS OR MAY NEVER SEE THEM**

7 **Q Has the Sammis plant been turning a profit on the market in recent years?**

8 **A** [REDACTED] According to data on costs and revenues provided by the Companies, Sammis
9 has generated [REDACTED]—as far back as the data
10 provided by the Companies.²⁹



11

12 **COMPETITIVELY SENSITIVE CONFIDENTIAL Figure 1: Sammis**
13 **Historical Revenues and Costs³⁰**
14

²⁹ SC Set 1-RPD-49 Attachment 5 Competitively Sensitive Confidential (attached as Competitively Sensitive Confidential Exhibit TFC-12).

³⁰ *Id.*

1 **Q Have the OVEC plants been turning a profit on the market in recent years?**

2 **A** [REDACTED] According to data on costs and revenues provided by the Companies, OVEC
3 plants have generated [REDACTED]—as far back as the data
4 provided by the Companies.³¹

5

6 COMPETITIVELY SENSITIVE CONFIDENTIAL Figure 2: FES Share of
7 OVEC Plants Historical Revenues and Costs³²

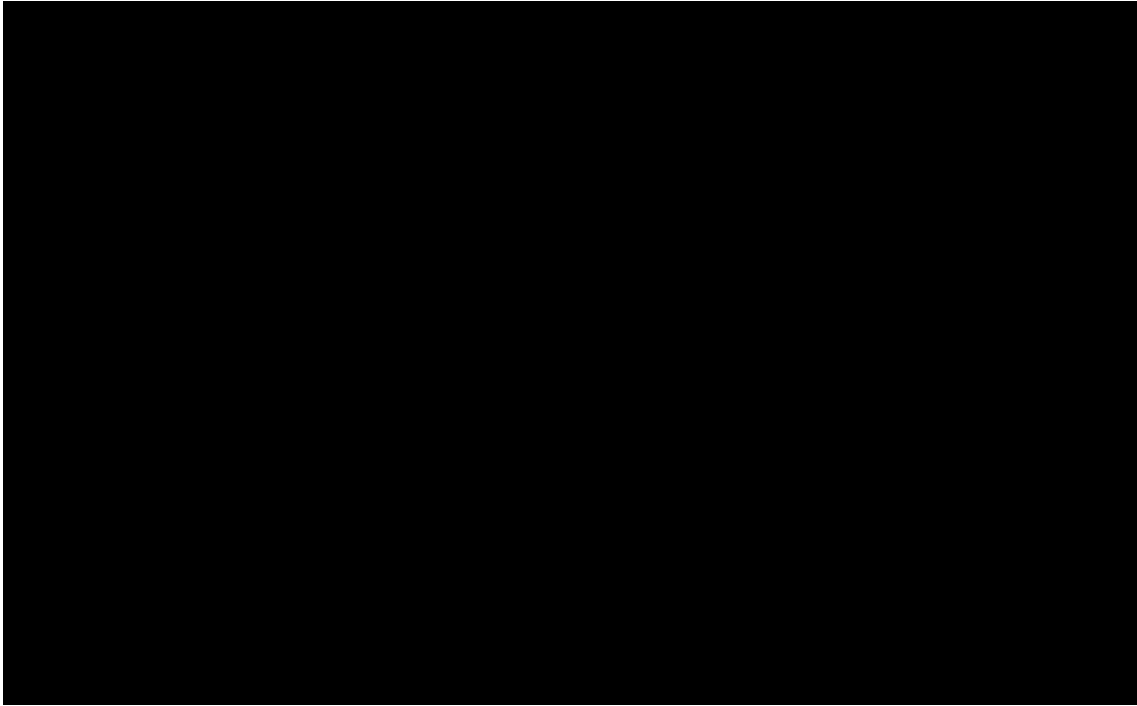
8 **Q** **Has the Davis-Besse plant been turning a profit on the market in recent**
9 **years?**

10 **A** [REDACTED]. According to data on costs and revenues
11 provided by the Companies, Davis-Besse [REDACTED] [REDACTED] in
12 the past five years.³³

³¹ *Id.*

³² *Id.*

³³ *Id.*



1

2 **COMPETITIVELY SENSITIVE CONFIDENTIAL Figure 3: Davis-Besse**
3 **Historical Revenues and Costs**³⁴

4 **Q Are the plants at issue projected to have a positive or negative market value**
5 **in the 15-year analysis period?**

6 **A** According to the results presented by Mr. Lisowski—in terms of 15-year net
7 present value—the Davis-Besse plant is projected to have a [REDACTED]
8 while the Sammis and OVEC plants are projected to have a [REDACTED].

9 **Q How is the market value of the plants estimated?**

10 **A** The Companies conducted a market analysis of each of the plants, estimating the
11 market value (in terms of net present value) by comparing projected costs (-) with
12 projected revenues earned on the PJM markets (+):

- 13 - Fixed operating costs
14 - Variable operating costs (including fuel)
15 - Financing of capital investments

³⁴ *Id.*

- 1 + PJM capacity market revenue
- 2 + PJM energy market revenue
- 3 + PJM ancillary service market revenue

4 Each plant was dispatched using FES's Microsoft Excel-based model if its
5 variable costs were lower than the market price.³⁵ Therefore, both variable
6 operating cost (including fuel costs and variable operations and maintenance) and
7 energy price assumptions determine how often the plants operate. Fixed operating
8 costs, capital investments, and capacity and ancillary market revenue do not
9 change with how often the plants operate.

10 **Q What is the estimated market value of each of the plants, according to the**
11 **Companies?**

12 **A** COMPETITIVELY SENSITIVE CONFIDENTIAL Figure 4 and
13 COMPETITIVELY SENSITIVE CONFIDENTIAL Table 1 show the market
14 value (in terms of NPV) for the plants associated with the transaction. The results
15 of the Companies' analysis for each plant shows that over the 15 year period of
16 the transaction:

- 17 • The Sammis plant is estimated to have a market value of [REDACTED]
18 [REDACTED].³⁶
- 19 • The OVEC plants are estimated to have a market value of [REDACTED]
20 [REDACTED].³⁷
- 21 • The Davis-Besse plant is estimated to have a market value of [REDACTED]
22 [REDACTED].³⁸

³⁵ Lisowski Public Depo. Tr. at 31-32, 35.

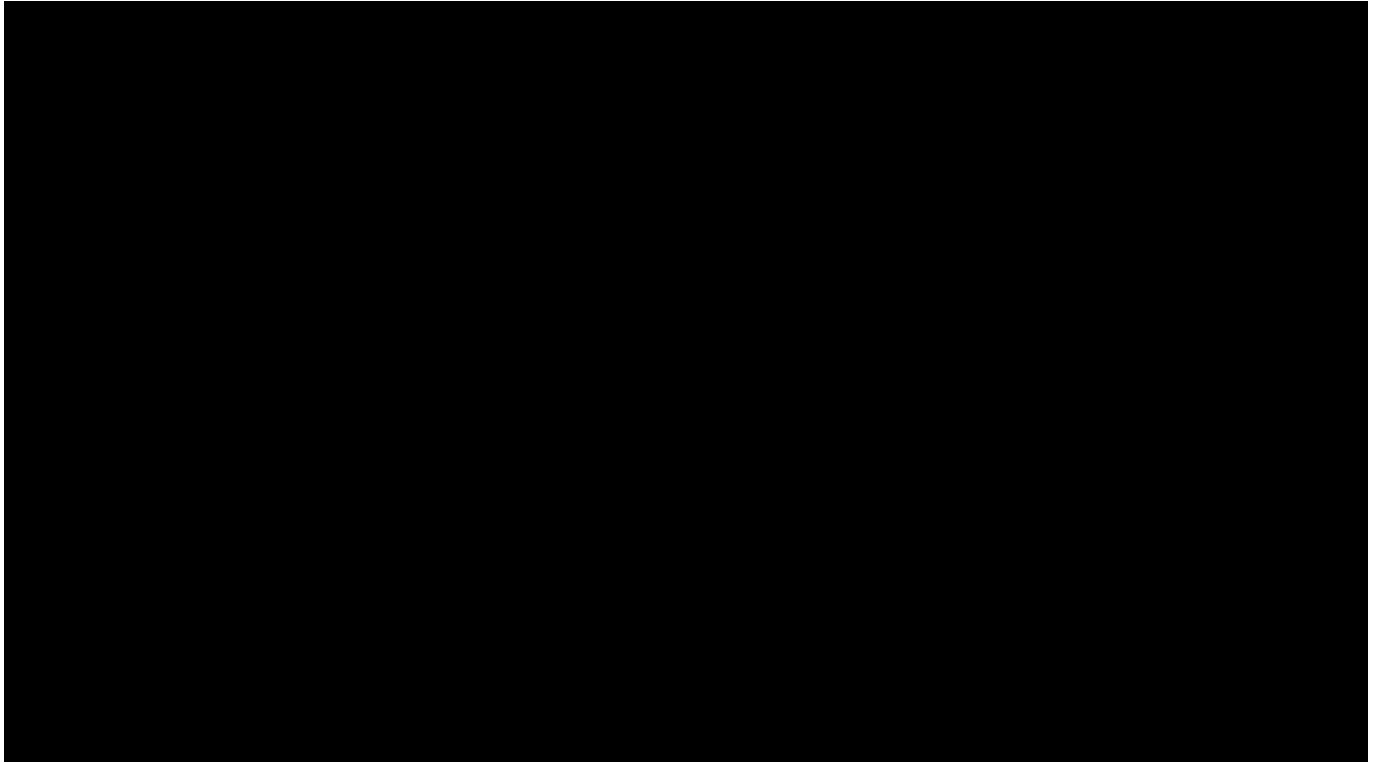
³⁶ SC Set 1-RPD-49 Attachment 1 Competitively Sensitive Confidential at p. 21 (attached as Competitively Sensitive Confidential Ex. TFC-13); SC Set 1-RPD-49 Attachment 7 Competitively Sensitive Confidential (attached as Competitively Sensitive Confidential Ex. TFC-14).

³⁷ The Companies' original filing projected that the OVEC plants [REDACTED]
[REDACTED], see Competitively Sensitive Confidential Ex. TFC-14, but that [REDACTED]
[REDACTED]. See Competitively Sensitive Confidential Ex. TFC-2.
Competitively Sensitive Confidential TFC-13 at p. 22; Competitively Sensitive Confidential Ex. TFC-14.

1 The lines in COMPETITIVELY SENSITIVE CONFIDENTIAL Figure 4 present
2 the cumulative net present value of the plants, which shows when they [REDACTED]
3 [REDACTED] or become [REDACTED]. Sammis and OVEC plants [REDACTED]
4 [REDACTED] until [REDACTED] under the Companies' assumptions presented by Mr.
5 Lisowski.³⁹ Davis-Besse [REDACTED]
6 [REDACTED], over the 15-year analysis period.

7 This means that the Companies' own modeling finds that ratepayers would have
8 to [REDACTED]
9 [REDACTED]. Given the fact that
10 the Sammis and OVEC plants [REDACTED]
11 [REDACTED] and the myriad uncertainties facing coal units (mostly regarding carbon
12 and other environmental costs) in the near-term, it seems unlikely that the
13 Companies' market valuations will be achieved. This chart illustrates NPV of the
14 plants using the Companies' projections:

³⁹ See Competitively Sensitive Confidential Exhibits TFC-2, -13, and -14.



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**COMPETITIVELY SENSITIVE CONFIDENTIAL Figure 4: Companies’
Valuation of OVEC, Sammis and Davis-Besse Plants (Cumulative NPV, \$2015 mil)⁴⁰**

**COMPETITIVELY SENSITIVE CONFIDENTIAL Table 3:
Companies’ Valuation of OVEC, Sammis and Davis-Besse Plants
(Cumulative NPV 2015-2031, \$2015 mil)⁴¹**

A black rectangular redaction box covering the table content.

9

10

⁴⁰ *Id.*

⁴¹ *Id.*

1 **Q Did these results match those presented by FirstEnergy Solutions (FES) in**
2 **response to the subpoena filed by Sierra Club in this case?**

3 **A** [REDACTED] In response to a subpoena issued by the Sierra Club, FES produced a
4 modeling run that used different inputs than those in the modeling presented in
5 the Companies' Application,⁴² and [REDACTED] than
6 presented in the Application.⁴³

7 **Q Is FES's market valuation higher for the three plants combined?**

8 **A** [REDACTED] As shown in COMPETITIVELY SENSITIVE CONFIDENTIAL
9 Figure 5 and COMPETITIVELY SENSITIVE CONFIDENTIAL Table 4, the
10 value of Sammis and the OVEC units [REDACTED], while the value
11 of Davis-Besse [REDACTED]:

- 12 • The Sammis plant is estimated to have a market value of [REDACTED]
13 [REDACTED]
- 14 • The OVEC plants are estimated to have a market value of [REDACTED]
15 [REDACTED]
- 16 • The Davis-Besse plant is estimated to have a market value of [REDACTED]
17 [REDACTED]

18 **Q When do the plants [REDACTED] using the FES modeling outputs?**

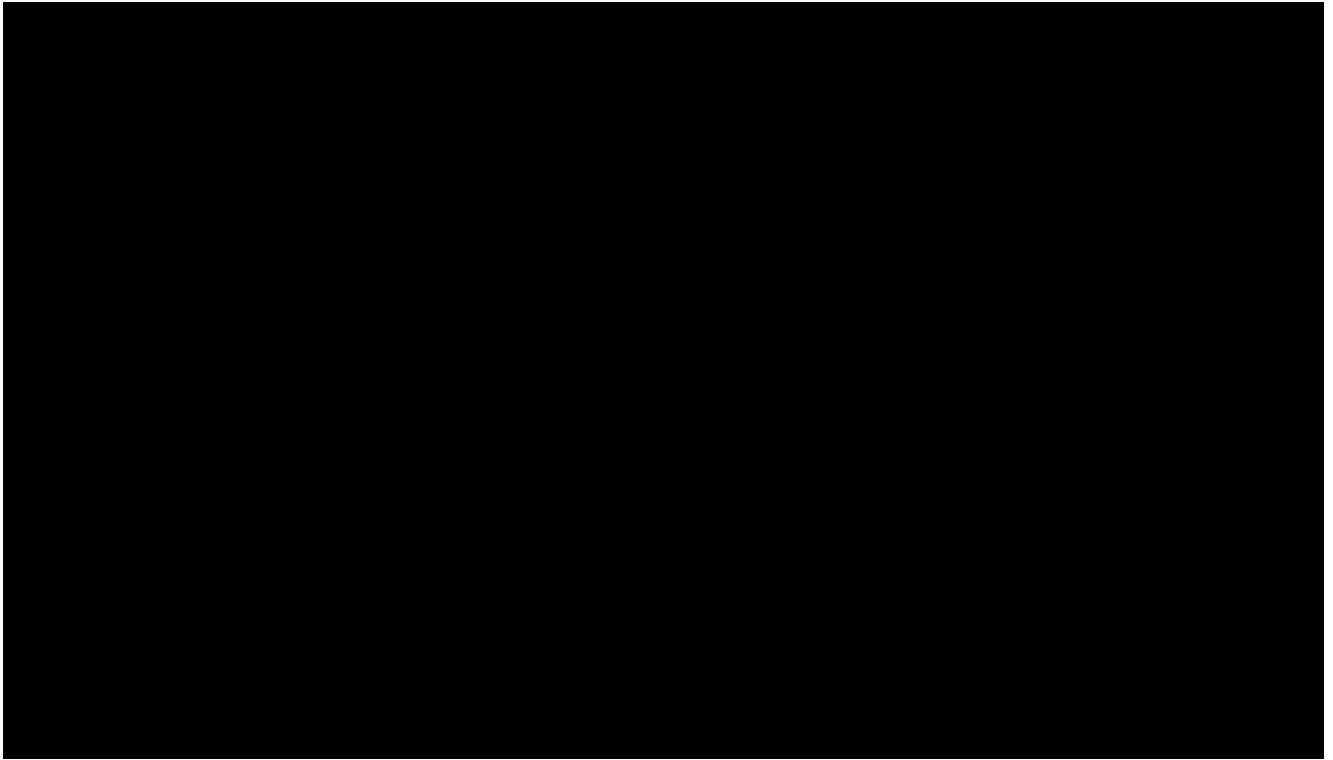
19 **A** Using the FES outputs, Sammis [REDACTED], OVEC
20 [REDACTED], and Davis-Besse [REDACTED]
21 [REDACTED] The entire portfolio (i.e., all plants combined) [REDACTED]

⁴² FES Subpoena Response, Attachments 1-3 revised (Competitively Sensitive Confidential) were compared with the SC Set 1 INT-54(a) Attachments 1-3 (Competitively Sensitive Confidential). *See* Competitively Sensitive Confidential Exhibit TFC-4.

⁴³ FES Subpoena Response, Attachment 4 was compared to SC Set 1-INT-054(a) Attachment 4 Competitively Sensitive Confidential and Lisowski Workpaper Pg 2 - Revised OVEC (Competitively Sensitive Confidential). *See* Competitively Sensitive Confidential Ex. TFC-3.

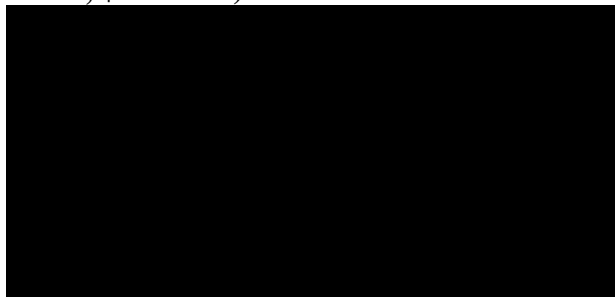
⁴⁴ Competitively Sensitive Confidential Exhibits TFC-3, -4.

1 [REDACTED]. CONFIDENTIAL Figure 1
2 illustrates the NPV of the plants using FES's projections:



3
4 **COMPETITIVELY SENSITIVE CONFIDENTIAL Figure 5: FES Valuation of**
5 **OVEC, Sammis, and Davis-Besse Plants (Cumulative NPV, \$2015 mil)⁴⁵**

6
7 **COMPETITIVELY SENSITIVE CONFIDENTIAL Table 4 : FES**
8 **Valuation of OVEC, Sammis and Davis-Besse Plants (Cumulative**
9 **NPV 2015-2031, \$2015 mil)⁴⁶**



10

⁴⁵ *Id.*

⁴⁶ *Id.*

1 **Q Were you granted access to the input files that matched FES's results?**

2 **A** Yes but not until the evening of December 19th: less than three days before this
3 testimony was due. The original input files presented by FES in response to the
4 subpoena [REDACTED] those from the Companies' modeling from the Application.
5 However, given that the outputs for the FES subpoena modeling [REDACTED]
6 [REDACTED], Sierra Club asked FES [REDACTED]
7 [REDACTED].

8 **Q Why do the results of the modeling run based on FES's internally created**
9 **projections [REDACTED] what was presented in the Companies' Application?**

10 **A** Based on the deposition testimony of Mr. Lisowski, the modeling produced by
11 FES in response to the Sierra Club subpoena [REDACTED]
12 [REDACTED]
13 [REDACTED]
14 [REDACTED].⁴⁷ The FES projections [REDACTED]
15 [REDACTED]
16 [REDACTED]. Also, the energy market prices [REDACTED]
17 [REDACTED], causing the plants to [REDACTED]
18 [REDACTED]. FES modeling projects that the transaction [REDACTED]
19 [REDACTED], the FES energy prices [REDACTED]
20 [REDACTED]. Relative to
21 the Companies' results, [REDACTED]
22 [REDACTED]. This effect is due to a
23 [REDACTED] non-carbon emitting resources on the market over
24 carbon-intensive generation.

⁴⁷ Lisowski Public Depo. Tr. at 66-68.

1 **B. THE COMPANIES DID NOT ASSESS MARKET UNCERTAINTY**

2 **Q What are the implications if capacity and energy prices do not generate**
3 **enough revenue to offset the costs of the transaction?**

4 **A** If PJM market capacity and energy prices are not sufficient to support the
5 investment and continued operation of these units, then the Companies and
6 certainly their ratepayers would be better served by rejection of Rider RRS. Table
7 5, below, illustrates a decision matrix for a proposal like this, depending on
8 whether the utility actually requires the capacity to meet its requirements, and
9 whether the market prices ultimately support the investment. Here, the Companies
10 are acting like a merchant generator with respect to this project (i.e. producing
11 power for profit, rather than to serve obligations).

12 **Table 5: Decision Matrix for Investment**

	Company requires project capacity	Company <u>does not</u> require project capacity
Market prices support investment	Company acts as vertically integrated utility, hedges against market prices.	Company acts as merchant generator, passes profits to ratepayers.
Market prices <u>do not</u> support investment	Company acts as vertically integrated utility, captive ratepayers pay above market rates for energy and/or capacity.	Company acts as merchant generator, ratepayers pay above market prices <u>and</u> stranded investment.

13

14 **Q Is the market valuation of the transaction project dependent on the assumed**
15 **PJM market energy price forecasts?**

16 **A** Yes. These plants at issue sell their energy into the PJM wholesale market. The
17 amount of energy generated by the plants multiplied by the energy price
18 determines the energy revenue. The total energy revenue minus the total variable
19 costs of generation represents the “energy margin.”

1 **Q Are the energy price forecasts related to forecasts for natural gas price?**

2 **A** Yes. Natural gas and energy prices are historically highly correlated, increasingly
3 so in recent years. Mr. Rose discusses this in his testimony.⁴⁸

4 **Q Are the natural gas price forecasts used by the Companies reasonable?**

5 **A** I don't believe so. Mr. Rose used NYMEX natural gas price forwards to generate
6 his forecast of 2015 and 2016 prices.⁴⁹ However, a recent update of these
7 forwards shows that they have since decreased between 11 and 18%.

8 **Table 6: Updated Natural Gas Price Forwards⁵⁰**

	ICF Forecast (based on NYMEX Futures)	NYMEX Futures pulled on 12/17/14	% change from ICF forecast
2015	\$4.34	\$3.58	-18%
2016	\$4.28	\$3.80	-11%

9
10 While directional price changes from the ICF modeling to the present day may
11 not be indicative of long-term trends, it does indicate that these prices—even
12 near-term forecasts—are subject to uncertainty.

13 **Q What is a reasonable long-term natural gas price forecast?**

14 **A** The U.S. Energy Information Administration's Annual Energy Outlook ("AEO")
15 is a publicly available natural gas price forecast used by other utilities.

16
17

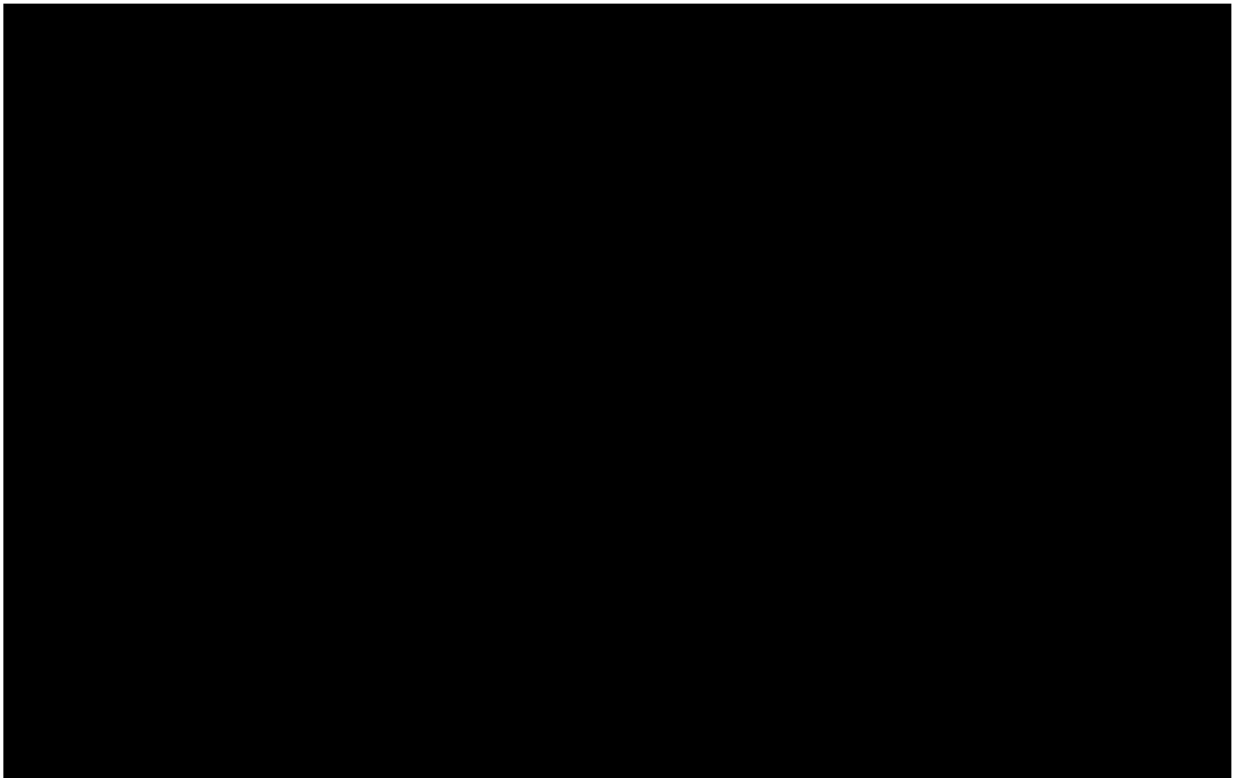
⁴⁸ Direct Testimony of Judah Rose, p. 23, Figure 4.

⁴⁹ Direct Testimony of Judah Rose, p. 47, Table 8.

⁵⁰ *Id.* NYMEX forwards from December 17, 2014 were pulled from:

http://www.cmegroup.com/trading/energy/natural-gas/natural-gas_quotes_settlements_futures.html

Direct Testimony of Judah Rose, p. 47, Table 8.



CONFIDENTIAL Figure 6: Natural Gas Price Forecasts (\$/MMbtu)⁵¹

Q How would using the AEO 2014 price change the energy price forecasts?

A Given that Mr. Rose's natural gas price [REDACTED] in most years—all else equal—using the AEO forecast would [REDACTED] the projected energy prices in most years. The AEO 2014 is [REDACTED] than Mr. Rose's forecast in [REDACTED] and higher than recent natural gas price futures for 2015 and 2016 (shown in CONFIDENTIAL Table 6). [REDACTED] both Mr. Rose's forecast and AEO 2014 may be too high in the short-term.

Q If Mr. Rose used more up-to-date NYMEX futures would his energy price forecasts change for 2015 and 2016?

A Yes; all else equal, the energy prices in 2015 and 2016 would decrease.

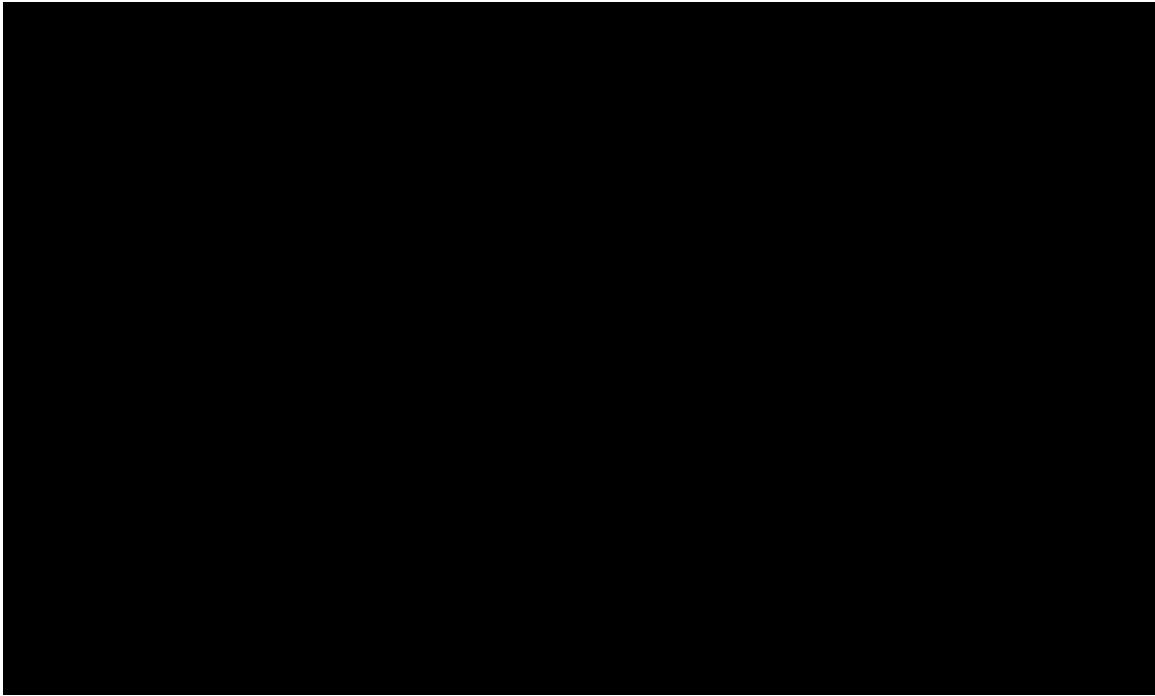
⁵¹ Rose Confidential Workpapers, Attachment II. AEO 2014 prices are available here: <http://www.eia.gov/oiaf/aeo/tablebrowser/>

1 **Q** **Is the market valuation of the transaction dependent on the assumed PJM**
2 **market capacity price forecasts?**

3 **A** Yes. These plants would bid into PJM Base Residual Auctions. If the plants clear
4 in the auction, they are paid a fixed amount, the clearing price (\$/MW-day), for
5 being available. The capacity market clearing price multiplied by the number of
6 days in the year and amount of capacity (MW) equates to the capacity revenue.

7 **Q** **Is the capacity price forecast used by the Companies reasonable?**

8 **A** I do not believe so. Given the results of previous auctions, it is unreasonable to
9 project that capacity prices will [REDACTED]
10 [REDACTED]
11 [REDACTED]
12 [REDACTED]
13 [REDACTED]
14 [REDACTED].
15



CONFIDENTIAL Figure 7: Past PJM Auction Results through 2017/2018, and Projected Capacity Price after 2017/2018 (\$/MW-day)

C. THE COMPANIES DID NOT ADEQUATELY ACCOUNT FOR FUTURE ENVIRONMENTAL RISKS IN EVALUATING THE TRANSACTION

Q Did the Companies consider the potential for costs associated with carbon dioxide emissions in its market valuation?

A Yes. The Companies used a carbon price forecast developed by Mr. Rose.

Q Do these price forecasts adequately account for carbon cost risk?

A No. Mr. Rose's forecasts are based on a blend of possible carbon regulations [REDACTED]

[REDACTED]. The EPA's proposed Clean Power Plan which regulates carbon emissions from existing power plants, calls for carbon emission rate or mass-based reductions, relying on state-specific targets starting in 2020. EPA developed estimates from its modeling of the shadow price in each state or region.

Carbon compliance costs remain uncertain at this time, but coal plants are the most carbon intensive source of electric generation, and as such, any plan to

1 reduce carbon pollution from the electric sector could involve requiring increased
2 capital expenditures for coal-burning units, less utilization of coal-burning units,
3 or both. EPA’s proposed Clean Power Plan rule, while not requiring any specific
4 measures, calls for capital expenditures at coal-fired units to improve efficiency
5 (Building Block 1) and increased utilization of gas, renewable energy, and energy
6 efficiency (Building Blocks 2, 3, and 4).⁵² These measures would likely decrease
7 the profitability of coal-burning units like Sammis and the OVEC plants either by
8 driving up costs or by decreasing utilization (or both).

9 **Q Have the Companies provided an analysis of compliance with the proposed**
10 **Clean Power Plan?**

11 **A** No. It appears that the Companies have not conducted such an analysis.⁵³

12 **Q Do other utilities in Ohio incorporate a carbon price forecasts?**

13 **A** Yes. American Electric Power (“AEP”) and Duke Energy—co-owners of the
14 OVEC units with FirstEnergy and other utilities—use a carbon price in their
15 respective Integrated Resource Plans base or reference cases in other state
16 jurisdictions. CONFIDENTIAL Figure 8 compares the price forecasts used by the
17 Companies with those used by AEP and Duke, as well as the EPA CO₂ price
18 modeled for Ohio 111(d) state compliance.

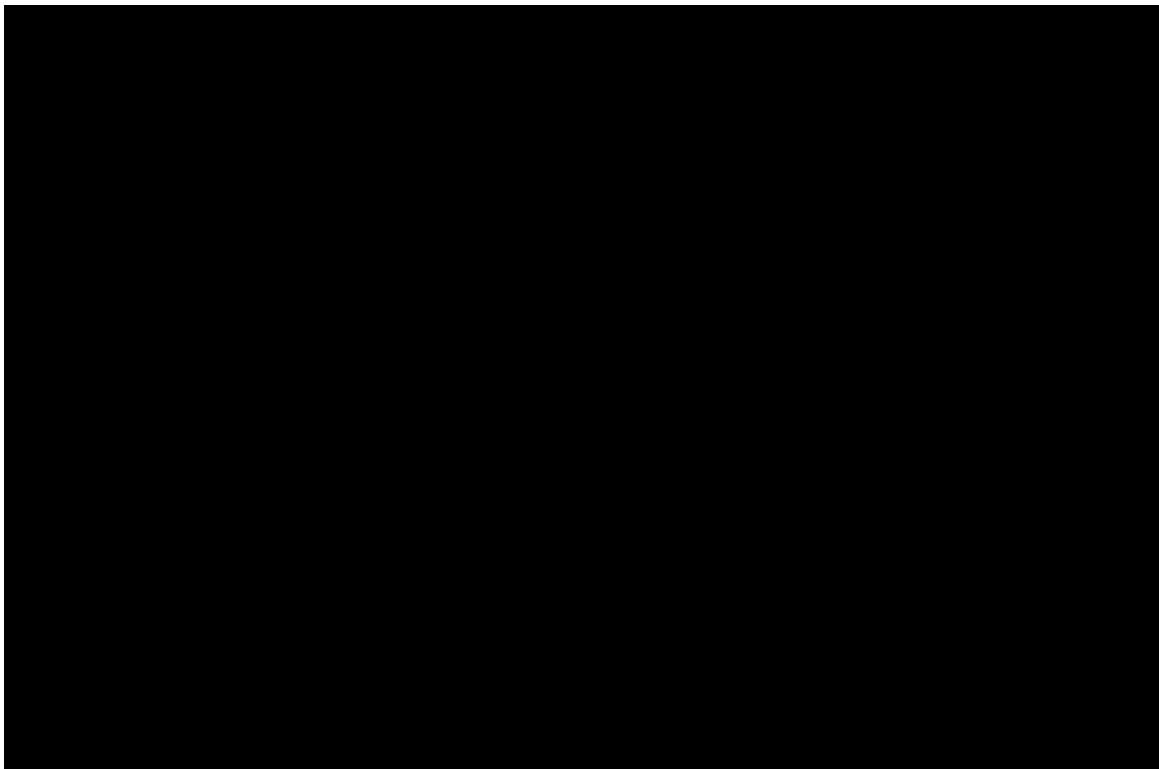
⁵² See 79 Fed. Reg. 34,830, 34,858 (June 18, 2014) (summary of building blocks).

⁵³ See OEC/EDF Set 1 – INT-5 (attached as Ex. TFC-15);

1

2 **CONFIDENTIAL Figure 8: Comparison of Carbon Price Forecasts**⁵⁴

3



4

5 **Q Why should the Companies consider a higher carbon price in its valuation?**

6 **A** Over the long term, the inclusion of a reasonable carbon cost in utility resource
7 modeling protects the Companies and its ratepayers from exposure to the costs
8 from greenhouse gas regulations. If the Companies fail to include a reasonable

⁵⁴ EPA's prices, which were prepared by ICF, are from Option 1 State - April 2014 Draft EnvironmentalMeasures.xlsx (available at:

<http://www.epa.gov/airmarkets/powersectormodeling/cleanpowerplan.html>).

Duke CO₂ prices are taken from Duke Energy Indiana 2013 IRP Reference Scenario, p.10 (available at:

http://www.duke-energy.com/pdfs/Indiana_Public_IRP.PDF) and Duke Carolinas 2013 IRP, p.45

(available at: http://www.energy.sc.gov/files/view/DUKE_2013_IRP_10.23.2013.pdf). It is public

knowledge that Duke Energy Ohio used a carbon price in their Ohio ESP filing.

Mr. Rose's CO₂ prices were developed based on ICF's assumption. Note that even though ICF prepared the EPA projections, Mr. Rose used different inputs for the projections he provided to the Companies. *See* SC-INT-65 (attached as Ex. TFC-17).

1 carbon price forecast, the result will be a carbon-intensive fleet more vulnerable
2 to escalating costs under either the Clean Power Plan or future carbon regulations.
3 The Companies should explore cost uncertainties going forward by running
4 sensitivities with multiple carbon prices to account for different possible
5 compliance costs.

6 **Q Did Duke Energy conduct a cash flow analysis of the OVEC units in a**
7 **separate proceeding before this Commission using its own carbon price?**

8 **A** Yes, in a similar proceeding in which Duke Energy Ohio is seeking a rider very
9 similar to the Rider RRS in order to pass through costs from its share in the
10 OVEC plants to its customers.

11 **Q What was the result of Duke's analysis, using their carbon price?**

12 **A** Duke estimated that, over the period of Duke's proposed ESP (June 2015-May
13 2018) its rider would result in a net present value cost to its customers of over \$21
14 million (\$2015).⁵⁵ For the ten year period analyzed by Duke Energy Ohio, the
15 company found that customers would not realize cumulative net benefits. Figure 9
16 below illustrates the net effect the Duke Energy Ohio rider would have on
17 customers through 2024.

⁵⁵ Case No. 14-0841-EL-SSO, Direct Testimony of Sarah Jackson, p. 27, Amended Redactions, Public Version.

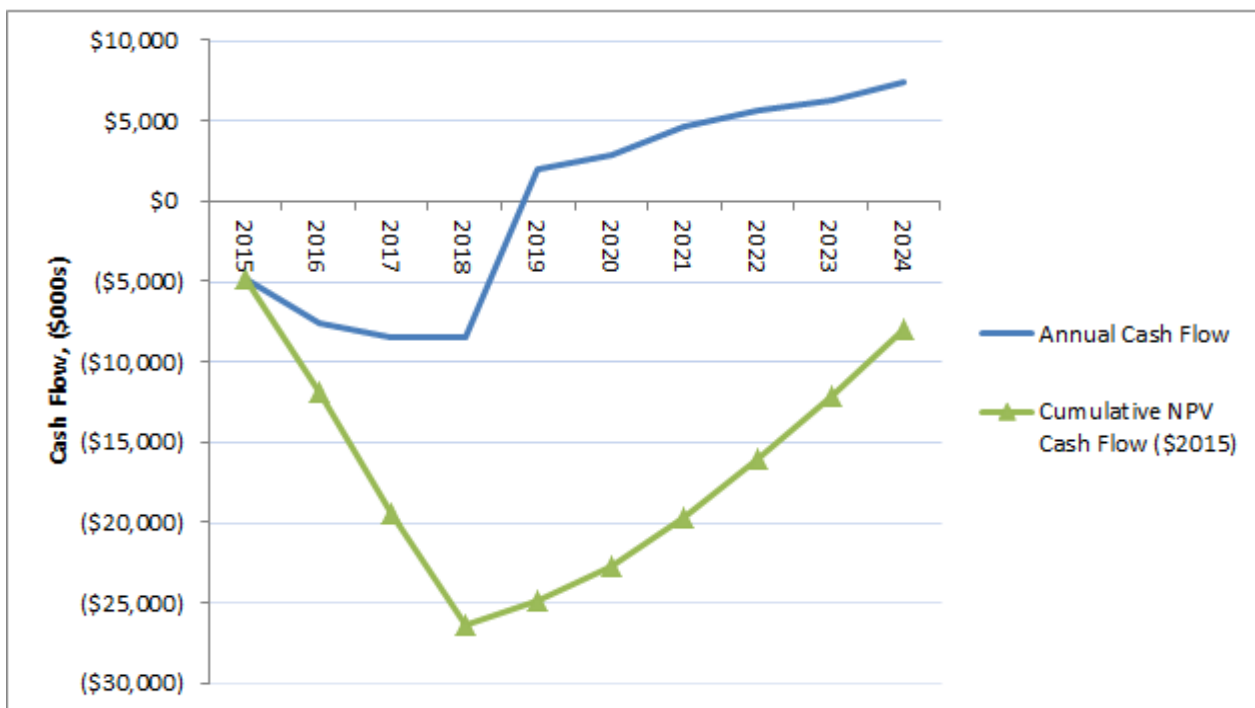


Figure 9: Impact of Proposed Duke rider through 2024⁵⁶

Q What additional cost risks do the Rider RRS Plants face?

A Environmental regulations other than CO₂ regulations also pose risks that may lead to higher costs for these units in the future. While the coal plants are fairly well-controlled in terms of current criteria air pollutant requirements (such as SO₂, NO_x, ozone, particulate matter), over the next fifteen years these facilities are likely to be impacted by increasingly stringent environmental standards.

A number of regulations covering air, water, and waste pollution from electric generators have been proposed or are under development by the EPA that could increase compliance costs at the W.H. Sammis, Kyger Creek, and Clifty Creek plants. These include Effluent Limitations Guidelines and Standards (“ELG”), Disposal of Coal Combustion Residuals, Section 316(b) Cooling Water Intake Structures at Existing Facilities rule, National Ambient Air Quality Standards

⁵⁶ Case No. 14-0841-EL-SSO, Direct Testimony of Sarah Jackson, p.7, Amended Redactions, Public Version. This figure was originally labeled confidential but was later unredacted.

1 (“NAAQS”) for ozone, PM, and sulfur dioxide, and the Cross State Air Pollution
2 Rule (“CSAPR”).

3 **Q What analyses have the Companies provided regarding the Plants’ potential**
4 **future environmental costs?**

5 **A** The Companies have provided very little information regarding such analyses. In
6 discovery, Sierra Club sought evaluations of the pollution controls that would be
7 needed, or the estimated costs that would be incurred, to bring each of the coal
8 units into compliance with several pending or proposed environmental
9 regulations. The Companies responded to that request by providing [REDACTED]

10 [REDACTED]
11 [REDACTED]
12 [REDACTED].⁵⁷ When Sierra Club subsequently sought confirmation that the
13 Companies had [REDACTED], the Companies
14 [REDACTED]
15 [REDACTED].⁵⁸
16 [REDACTED]
17 [REDACTED].⁵⁹

18 **Q Did the Companies include costs to comply with CCR, 316b, or ELG rules in**
19 **the market valuation analysis of the plants?**

20 **A** Based on the Companies’ discovery responses and statements from Mr. Lisowski,
21 it appears that the Companies included capital costs for compliance [REDACTED]
22 [REDACTED].⁶⁰ The

⁵⁷ Competitively Sensitive Confidential Ex. TFC-16 (SC Set 1-RPD-12); SC Set 1 RPD-12 Attachments 1 and 2 Competitively Sensitive Confidential (attached as Competitively Sensitive Confidential Ex. TFC-18).

⁵⁸ Competitively Sensitive Confidential SC Set 2-INT-61 (attached as Competitively Sensitive Confidential Ex. TFC-19).

⁵⁹ Competitively Sensitive Confidential TFC-16 (SC Set 1-RPD-12); SC Set 3-RPD-90 Competitively Sensitive Confidential (attached as Competitively Sensitive Confidential Ex. TFC-20).

⁶⁰ SC Set 5-INT-116(b) Competitively Sensitive Confidential (attached as Competitively Sensitive Confidential Ex. TFC-21); Competitively Sensitive Confidential Ex. TFC-18 (SC Set 1-RPD-12 Attachment 1).

1 Companies, however, apparently [REDACTED]
2 [REDACTED]
3 [REDACTED]
4 [REDACTED]
5 [REDACTED].⁶¹ In
6 deposition, Mr. Lisowski was unable to say whether [REDACTED]
7 [REDACTED]
8 [REDACTED]
9 [REDACTED].⁶⁴ OVEC produced estimates of compliance
10 with [REDACTED], and [REDACTED] for the Clifty Creek and Kyger
11 Creek plants.⁶⁵ However, because of the way this information has been presented
12 by the Companies, I am unsure if these estimates were incorporated into the
13 Companies' cost estimates for the OVEC units presented in this filing.

14 **Q Did the Companies include costs to comply with future NAAQS or CSAPR in**
15 **the market valuation analysis of the plants?**

16 **A [REDACTED]**

17 **Q Is there a risk that these rules could require additional compliance costs at**
18 **these plants over the lifetime of the Rider RRS?**

19 **A** Yes. Each of these rules requires periodic review and update. It is likely that in
20 the next 15 years these rules will be revised to require additional controls. When
21 NAAQS have been revised during the history of the Clean Air Act, they have
22 typically been revised downward, i.e., made more stringent as improved scientific

⁶¹ SC Set 4-INT-103(d) Competitively Sensitive Confidential (attached as Competitively Sensitive Confidential Ex. TFC-22); Lisowski Confidential Depo. Tr. at p. 234 line 15 through p. 239 line 5 (Competitively Sensitive Confidential Ex. TFC-8).

⁶² Lisowski Confidential Depo. Tr. at p. 239 line 6 through p. 240 line 1.

⁶³ Competitively Sensitive Confidential Ex. TFC-18 (SC Set 1-RPD-12 Attachment 2).

⁶⁴ Lisowski Confidential Depo. Tr. at p. 240 lines 2 to 11.

⁶⁵ OVEC Future Environmental Impacts – CONFIDENTIAL (attached as Competitively Sensitive Confidential Ex. TFC-23)

⁶⁶ Competitively Sensitive Confidential Ex. TFC-19 (SC Set 2-INT-61).

1 understanding has confirmed public health harms at lower levels or shorter
2 duration of exposure.

3 **Q Please briefly describe the purpose and impact of the NAAQS.**

4 **A** NAAQS set maximum air quality limitations that must be met at all locations
5 across the nation for specific pollutants. Compliance with the NAAQS can be
6 determined through data collected from air quality monitoring stations or through
7 air quality dispersion modeling. If, upon evaluation, a state has areas found to be
8 in “nonattainment” of a particular NAAQS, the state is required to set enforceable
9 requirements to reduce emissions from sources contributing to nonattainment
10 such that the NAAQS are attained and maintained. EPA has established short-
11 term and/or annual NAAQS for six pollutants: sulfur dioxide (SO₂), nitrogen
12 dioxides (NO₂), carbon monoxide (CO), ozone, particulate matter (measured as
13 particulate matter less than or equal to 10 micrometers in diameter (PM₁₀) and
14 particulate matter less than or equal to 2.5 micrometers in diameter (PM_{2.5})), and
15 lead. EPA is required to periodically review and evaluate the need to strengthen
16 the NAAQS if science indicates that doing so is necessary to protect public health
17 and welfare. For example, EPA is currently evaluating the NAAQS for ozone and
18 is likely to make that standard more stringent based on the latest science regarding
19 health effects.

20 In nonattainment areas, existing sources must comply with emission reduction
21 requirements known as “Reasonably Available Control Technology” (“RACT”)
22 to bring the areas into attainment of the NAAQS. New major sources, including
23 major modifications at existing sources, must comply with very strict emissions
24 reductions consistent with “lowest achievable emissions reductions” (“LAER”) as
25 well as obtain emission offsets.

26 **Q: Which NAAQS are most likely to impact the OVEC plants?**

27 **A** The 1-hour SO₂ NAAQS and the 8-hour Ozone NAAQS, as well as the CSAPR,
28 are likely to have the greatest impacts on coal-fired units.

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Redacted Version

1 **Q Please briefly describe the 1-hour SO₂ NAAQS.**

2 **A**In 2010, the EPA promulgated a new 1-hour standard for SO₂, which became
3 effective in June of that year. The new 1-hour SO₂ standard set a limit—75 ppb or
4 195 µg/m³—on the allowable concentration of SO₂ in the ambient air for each
5 hour of the day. An area is in compliance with—or attaining—the standard if the
6 three-year average of the fourth highest daily maximum 1-hour average
7 concentration for each year is less than or equal to 75 ppb.

8 As mentioned above, for most NAAQS, EPA determines whether an area is
9 attaining the standard by reviewing ambient air quality monitoring data from the
10 area. With SO₂, however, EPA found that, due to the limited geographic coverage
11 of the existing monitoring network, there was not sufficient monitoring data
12 available in all areas to determine whether the standard was being met. Because of
13 these data limitations, and because of the “source-oriented” nature of the 1-hour
14 SO₂ standard, EPA determined that refined dispersion modeling may also be used
15 to determine whether an area with significant SO₂ sources meets the standard.⁶⁷

16 **Q What is the current status of the 1-hour SO₂ NAAQS in Ohio and Indiana**
17 **where the RRS Plants are located?**

18 **A**In July 2013, EPA made initial “non-attainment” designations for a limited
19 number of areas that had sufficient monitoring data to demonstrate
20 noncompliance with the 1-hour SO₂ standard. EPA found that only 29 areas in 16
21 states had sufficient monitoring data to make these initial non-attainment
22 findings.⁶⁸ In Ohio, four areas covering parts of six counties were designated as
23 non-attainment.⁶⁹ In Indiana, four areas spanning five counties were designated

⁶⁷ U.S. Environmental Protection Agency, “Next Steps for Area Designations and Implementation of the Sulfur Dioxide National Ambient Air Quality Standard,” February 6, 2013.

⁶⁸ U.S. EPA, 2013. Final Nonattainment Areas for the 2010 SO₂ Standards, Round 1 – July 2013.
<http://www.epa.gov/airquality/sulfurdioxide/designations/pdfs/july2013SO2nonattainmentcounties.pdf>

⁶⁹ U.S. EPA Green Book, Ohio SO₂ Nonattainment Areas (2010 Standard), available at:
http://www.epa.gov/airquality/greenbook/ohso2_2010.html

1 non-attainment in the first round of designations.⁷⁰ The OVEC plants are located
2 in Jefferson County, Indiana (Clifty Creek) and Gallia County, Ohio (Kyger
3 Creek), where compliance status has not yet been determined. The W.H. Sammis
4 plant is located in Jefferson County, Ohio, part of which was designated non-
5 attainment for the 1-hour SO₂ standard, though the portion of the county in which
6 the W.H. Sammis plant is located was not the portion designated.⁷¹ When Ohio
7 proposes its plan to reach attainment in of this standard in Jefferson County, it
8 could include more stringent emissions limits for Sammis. In addition, another
9 round of designations is anticipated based on either the installation of new
10 ambient air monitors or the submission of dispersion modeling.

11 **Q What are the implications of the 1-hour SO₂ NAAQS for the RRS Plants?**

12 [REDACTED]
13 [REDACTED]
14 However, the next round of non-attainment designations will likely be focused on
15 areas with significant sources of SO₂ emissions—like large coal-fired power
16 plants. If dispersion modeling shows that the SO₂ emissions from any of the RRS
17 Plants are causing or contributing to violations of the 1-hour SO₂ NAAQS, the
18 areas could be designated as non-attainment areas and the owners of the plants
19 may need to take steps to further reduce SO₂ emissions.

20 **Q Please briefly describe the 8-hour Ozone NAAQS.**

21 **A** The 8-hour ozone NAAQS is intended to protect public health and welfare from
22 the dangerous effects of exposure to ground-level ozone. These effects include

⁷⁰ U.S. EPA Green Book, Indiana SO₂ Nonattainment Areas (2010 Standard), available at:
http://www.epa.gov/airquality/greenbook/inso2_2010.html

⁷¹ U.S. EPA “2010 Sulfur Dioxide Standards — Region 5 Initial Nonattainment Designations,” available
at: <http://www.epa.gov/airquality/sulfurdioxide/designations/region5i.html>

⁷² SC Set 1-INT-10 Attachment 2-Competitively Sensitive Confidential (attached as Competitively
Sensitive Confidential Ex. TFC-24).

1 harm to the respiratory system, aggravation of asthma and other lung diseases,
2 and premature death.⁷³

3 In March 2008, EPA strengthened the 8-hour ozone standard from 84 ppb (parts
4 per billion) to 75 ppb—which was still less stringent than recommended by EPA’s
5 panel of science advisors. On September 16, 2009, in response to numerous
6 petitions for reconsideration, EPA announced that it would reconsider the 75 ppb
7 standard. In January 2010, EPA proposed lowering the 75 ppb primary ozone
8 standard to between 60 and 70 ppb.

9 On September 2, 2011, however, the Obama Administration announced that EPA
10 would not finalize its proposed reconsideration of the 75 ppb standard ahead of
11 the Agency’s regular 5-year NAAQS review cycle. The next 5-year review for 8-
12 hour ozone was due in 2013 and EPA did in fact begin its review late last year.

13 On November 25, 2014, EPA released its proposal to strengthen the 8-hour ozone
14 NAAQS to a standard in the 65 to 70 ppb range, based on extensive scientific
15 evidence about ozone’s negative health effects. EPA is also taking comments on
16 whether a 60 ppb standard would be appropriate.

17 **Q What is the status of the Ozone NAAQS in Ohio and Indiana where the RRS**
18 **Plants are located?**

19 **A** Several counties in Ohio and Indiana are still not meeting the current 2008 ozone
20 standard of 75 ppb, and it appears likely that additional areas in these states will
21 be designated as non-attainment for the new, more stringent standard when it is
22 finalized.⁷⁴ In particular, Clark County in Indiana, which borders Jefferson
23 County, where the Clifty Creek plant is located, is currently exceeding the 75 ppb
24 standard based on 2011-2013 monitoring data (there is no ozone monitor located
25 in Jefferson County, Indiana) and other nearby counties are also exceeding the 70

⁷³ U.S. Environmental Protection Agency Fact Sheet on Ozone and Health, November 25, 2014, available at: <http://www.epa.gov/airquality/ozonepollution/pdfs/20141125fs-health.pdf>

⁷⁴ See US EPA, 2014. Counties Violating the Primary Ground-level Ozone Standard: <http://www.epa.gov/airquality/ozonepollution/pdfs/20141126-20112013datatable.pdf>

1 ppb standard.⁷⁵ There are no ozone monitors in Gallia County in Ohio, where the
2 Kyger Creek is located, but neighboring counties with monitors do exceed the
3 proposed standard. In Jefferson County, Ohio, where W.H. Sammis is located, the
4 2011-2013 ozone monitoring data shows that the area is exceeding a 70 ppb limit
5 and will likely be designated as a non-attainment area under the revised ozone
6 standard.⁷⁶

7 **Q What are the implications of the 8-hour Ozone NAAQS for the RRS Plants?**

8 **A** NO_x is a precursor to ozone, meaning that areas that are found to be in non-
9 attainment for ozone will need to seek the most effective source controls for NO_x.
10 Since large emissions sources—such as coal-fired generating stations—contribute
11 disproportionately to emissions of NO_x and are effectively controlled with post-
12 combustion controls such as selective catalytic reduction (SCR), I assume that if
13 areas of Ohio and Indiana within the dispersion area of the W.H. Sammis plant or
14 the Kyger and Clifty Creek plants are found to be in non-attainment for the ozone
15 standard, the states and EPA could require rigorous NO_x controls or operational
16 limits at these units to meet the standards. An ozone standard in the 65-70 ppb
17 range would cause many of the monitors in Ohio and southern Indiana to show
18 violations,⁷⁷ and hence would require these states to develop rigorous State
19 Implementation Plans with tight limits on NO_x emissions from major sources.

20 Specifically, it would mean that Clifty Creek Unit 6 would likely need to be
21 retrofit with an SCR, and W.H. Sammis units 1 through 5 may need to upgrade
22 their selective non-catalytic reduction (SNCR) controls to significantly more
23 effective SCRs in order to comply with a more stringent 8-hour ozone standard.⁷⁸
24 I estimate that SCRs on W.H. Sammis units 1 through 5 would require capital
25 costs of approximately \$343 million (overnight costs, 2012\$) and that an SCR on

⁷⁵ *Id.*

⁷⁶ *Id.*

⁷⁷ See <http://www.epa.gov/airquality/ozonepollution/pdfs/CountyPrimaryOzoneLevels0608.pdf>

⁷⁸ See OVEC Annual Report – 2013, p. 29 available at:
<http://www.ovec.com/FinancialStatements/AnnualReport-2013-Signed.pdf>

1 Clifty Creek Unit 6 would cost approximately \$68 million (overnight costs,
2 2012\$). These are not engineering estimates but rather reasonable estimates based
3 on publicly available cost estimates developed by Sargent & Lundy.⁷⁹

4 Under the proposed Rider RRS, FirstEnergy customers would be required to pay
5 the Companies' 4.85 percent of the total capital costs to install the SCR on Clifty
6 Creek Unit 6. Customers would be on the hook for the total costs of any upgrades
7 required on the W.H. Sammis units.

8 **Q Please briefly describe the purpose and impact of the Cross State Air**
9 **Pollution Rule.**

10 **A** The Cross State Air Pollution Rule ("CSAPR"), issued in July 2011, addressed
11 Clean Air Act requirements concerning the interstate transport of air pollution.
12 CSAPR established the obligations of 28 states, including Ohio and Indiana, to
13 reduce emissions of nitrogen oxides and/or sulfur dioxide that significantly
14 contribute to another state's PM_{2.5} and ozone non-attainment problems.⁸⁰

15 CSAPR was subsequently stayed by the D.C. Circuit on December 30, 2011 and
16 then vacated on August 21, 2012. However, on April 29, 2014, the U.S. Supreme
17 Court reversed the D.C. Circuit's decision and remanded the matter. On October
18 23, 2014, the D.C. Circuit granted EPA's request to lift the stay on CSAPR and to
19 toll all compliance deadlines by three years (reflecting the delay caused by the
20 litigation). The rule and its requirements have now been restored to the status that
21 would have existed but for the stay, albeit three years later. Compliance with
22 Phase 1 of CSAPR now begins on January 1, 2015, while compliance with Phase
23 2 will begin on January 1, 2017.

⁷⁹ EPA IPM v.5.13 Appendix 5-3 (Sargent & Lundy) – *Revisions to Cost and Performance for APC Technologies: SCR Cost Development Methodology*, available at:
http://www.epa.gov/powersectormodeling/docs/v513/attachment5_3.pdf

⁸⁰ CSAPR was designed to help downwind states meet the 1997 8-hour Ozone NAAQS and the 2006 PM_{2.5} NAAQS, which have each subsequently been revised and made more stringent.

1 **Q How will the reinstated CSAPR impact the RRS Plants?**

2 Now that the interstate transport rule has been reinstated, large NO_x sources in
3 Ohio and Indiana may be required to install additional controls or purchase NO_x
4 allowances in order to meet Phase 1 requirements by January 1, 2015 and/or the
5 more stringent Phase 2 requirements by January 1, 2017. This would almost
6 certainly require the installation of an SCR on Clifty Creek Unit 6,⁸¹ and may
7 require SCRs to be installed on some of the W.H. Sammis units as well.

8 Furthermore, based on the promulgation of new NAAQS, I'd expect that the next
9 version of CSAPR will be more rigorous than the original rule, which is modeled
10 on helping states comply with out-dated NAAQS.

11 **Q Is OVEC aware of the potential need for an SCR on Clifty Creek unit 6?**

12 **A** Yes. In its 2013 Annual Report, OVEC states that "additional NO_x allowances or
13 additional NO_x controls may be necessary for Clifty Creek Unit 6 either under a
14 reinstated CSAPR rule or any promulgated replacement rule."⁸² With that rule
15 now reinstated, it seems very likely that additional NO_x controls will be required
16 at Clifty Creek Unit 6.

17 **D. THE COMPANIES DID NOT REVIEW THE TRANSACTION WITH**
18 **SUFFICIENT RIGOR GIVEN THE STAKES OF THE PROPOSAL**

19 **Q Please summarize how the Companies reviewed the contract.**

20 **A** In May 2014, after the FES apparently made a verbal overture, the Companies
21 created an EDU team to evaluate and negotiate the contract.⁸³ This team

⁸¹ See OVEC Annual Report – 2013, p. 29 available at:

<http://www.ovec.com/FinancialStatements/AnnualReport-2013-Signed.pdf>

⁸² OVEC Annual Report – 2013, p. 29, available online at:

<http://www.ovec.com/FinancialStatements/AnnualReport-2013-Signed.pdf>

⁸³ Competitively Sensitive Confidential TFC-13 at 1 (SC Set 1-RPD-49 Attachment 1); SC Set 1-RPD-49 Competitively Sensitive Confidential (attached as Competitively Sensitive Confidential Ex. TFC-25).

1 communicated with FES throughout to get information on the plants.⁸⁴ It also
2 reviewed modeling on the market value of the Sammis, OVEC, and Davis-Besse
3 plants. Both the entire EDU team and most of the team representing FES appear
4 to have been employees of FirstEnergy Service Company.⁸⁵ No independent third
5 party was involved in the review or negotiation of the proposed transaction.⁸⁶

6 **Q Did the EDU team review all relevant information regarding the plants?**

7 **A** No. As I have stated elsewhere, it does not appear that the EDU team reviewed or
8 asked for additional environmental costs that these plants could incur in the
9 future. Also, the OVEC units were modeled as [REDACTED] so there was no way for
10 the EDU team to look at the economic viability of each unit individually. The
11 Sammis units were modeled [REDACTED] but the EDU team does not appear to
12 have reviewed the [REDACTED].

13 **Q Did the EDU team consider other portfolios or plants as alternatives?**

14 **A** It does not appear so. The Companies were approached by FES with this proposed
15 contract and there is no record of them considering anything else such as offering
16 an RFP. The Companies not only eschewed doing an RFP, it also appears that
17 they failed to assess any other resource options for achieving the goals of Rider
18 RRS.⁸⁷

19 **Q What did the EDU Team compare the plants against, for comparison**
20 **purposes, when reviewing the contract?**

21 **A** They compared running costs for Davis-Besse and Sammis to those [REDACTED]
22 [REDACTED].⁸⁸

⁸⁴ Competitively Sensitive Confidential TFC-13; SC Set 1-RPD-49 Attachment 2 Competitively Sensitive Confidential (attached as Competitively Sensitive Confidential Ex. TFC-26); SC Set 1-RPD-49 Attachment 3 Competitively Sensitive Confidential (attached as Competitively Sensitive Confidential Ex. TFC-27).

⁸⁵ OCC Set 1-INT-19 (attached as Ex. TFC-28).

⁸⁶ SC Set 1-INT-53 (attached as Ex. TFC-29).

⁸⁷ SC Set 2-INT-79 (attached as Ex. TFC-30).

⁸⁸ Competitively Sensitive Confidential Ex. TFC-25 (SC Set 1-RPD-49).

1 **Q Did the Companies' modeling include changes to the inputs used in the FES**
2 **model?**

3 **A** Yes. Mr. Lisowski claims that he was instructed to use Mr. Rose's forecasts
4 instead of the inputs that FES had been using in the model.⁸⁹ The modeling was
5 then conducted by FES Business Development and reviewed by Mr. Lisowski.⁹⁰

6 **Q Did the EDU Team model changes to these inputs or sensitivities?**

7 **A** [REDACTED], the EDU team [REDACTED]
8 [REDACTED]. The EDU team [REDACTED] the dispatch model using the
9 [REDACTED].⁹¹

10 **Q Is the model used by FES and the Companies more or less sophisticated than**
11 **what you have seen in other planning case?**

12 **A** It is much less sophisticated. I can only assess the model based on the inputs and
13 outputs since the Companies did [REDACTED] the model itself and claim that it has
14 no [REDACTED].⁹² However, based on what I learned from Mr.
15 Lisowski, it appears that the Company's dispatch model is actually an Excel
16 workbook with some FES-specific calculations or algorithms added in.⁹³ This
17 spreadsheet [REDACTED]
18 [REDACTED]. I cannot recall any case I have reviewed where a company that did
19 dispatch modeling used [REDACTED]. Further,
20 I know of no Company that uses an Excel spreadsheet as a dispatch model. For
21 instance, in a recent case I reviewed, the Company used Ventyx's PROMOD
22 model and PCI Gentrader, [REDACTED].

⁸⁹ Lisowski Public Depo. Tr. at 72-73.

⁹⁰ *Id.* at 19, 25.

⁹¹ SC Set 1-INT-55 Competitively Sensitive Confidential (attached as Competitively Sensitive Confidential Ex. TFC-31).

⁹² SC Set 4-RPD-91 Competitively Sensitive Confidential (attached as Competitively Sensitive Confidential TFC-32).

⁹³ Lisowski Public Depo. Tr. at p. 31 line 20 through p. 33 line 15.

1 **Q Have the Sammis and OVEC plants been [REDACTED] in the past five years?**

2 **A [REDACTED]**, as I showed in COMPETITELY SENSITIVE CONFIDENTIAL Figure 1
3 and COMPETITELY SENSITIVE CONFIDENTIAL Figure 2. Mr. Lisowski
4 testified that he had [REDACTED]
5 [REDACTED].⁹⁴ Given
6 the [REDACTED] of these plants, a reasonable utility would reassess its
7 modeling and resource planning. Instead, FES and the Companies continue to use
8 the same unsophisticated model while shifting the risk of [REDACTED] onto
9 ratepayers.

10

11 **IV. ALTERNATIVE MODELING RESULTS**

12 **Q Did you analyze sensitivities using the Company's models?**

13 **A**Yes. I submitted alternative carbon and energy prices for the Companies to run in
14 their dispatch model. The lowest carbon price that I used was based on the EPA
15 111(d) shadow price for Ohio, which is the price that would contribute to favoring
16 the dispatch of natural gas generation over coal—one of the building blocks for
17 compliance with the Clean Power Plan. I also provided Duke's carbon price used
18 in other jurisdictions outside of Ohio. I have not explored risks associated with
19 nuclear generation so did not request model runs for the Davis-Besse plant.

20 **Q Did you analyze changes in carbon price assumptions?**

21 **A**Yes. I submitted the EPA 111(d) and Duke carbon prices as alternative carbon
22 price assumptions (see CONFIDENTIAL Figure 8).⁹⁵ I provided these inputs to
23 the Companies who then provided adjusted outputs from their model.⁹⁶

⁹⁴ Lisowski Public Depo. Tr. at 143; Lisowski Confidential Depo. Tr. at 170-75.

⁹⁵ EPA's prices, which were prepared by ICF, are from Option 1 State - April 2014 Draft EnvironmentalMeasures.xlsx (available at: <http://www.epa.gov/airmarkets/powersectormodeling/cleanpowerplan.html>).

1 **Q Did you analyze costs of new SCR units that could be required at Sammis units 1-**
2 **5 and Clifty Creek unit 6?**

3 **A** Yes. As described earlier, it is possible that these plants will require additional
4 NOx reductions to comply with the updated NAAQS or CSAPR. I estimated the
5 annual costs of SCR units, including fixed operations and maintenance, depreciation
6 and rate of return. The capital and fixed costs were developed from Sargent and
7 Lundy estimates used by EPA.⁹⁷ The capital costs were assumed to depreciate
8 over 20 years while the undepreciated balance was added to rate base, and a rate
9 of return. I did not include additional variable operating costs as these would have
10 to be run in the Companies' dispatch model.

11 **Q Did you analyze a [REDACTED] capacity price forecast?**

12 **A** Yes. I analyzed a sensitivity where capacity prices maintain their historical
13 average of approximately 50% of the net cost of new entry (CONE) that is set by
14 annually by PJM.⁹⁸ This represents the [REDACTED] capacity price than what
15 was proposed by Mr. Rose.

16 **Q Did you analyze combinations of carbon cost changes with additional SCR**
17 **costs and lower capacity prices?**

18 **A** Yes. My adjusted results in COMPETITIVELY SENSITIVE CONFIDENTIAL
19 Table 7 and COMPETITIVELY SENSITIVE CONFIDENTIAL Table 8 show the
20 [REDACTED] with changes to capacity prices, carbon prices and the
21 addition of SCR units that may be required for NOx reductions at Sammis and

Duke CO2 prices are taken from Duke Energy Indiana 2013 IRP Reference Scenario, p.10 (available at: http://www.duke-energy.com/pdfs/Indiana_Public_IRP.PDF) and Duke Carolinas 2013 IRP, p.45 (available at: http://www.energy.sc.gov/files/view/DUKE_2013_IRP_10.23.2013.pdf). It is public knowledge that Duke Energy Ohio used a carbon price in their Ohio ESP filing.

⁹⁶ [REDACTED] PDF versions of these files are attached as Competitively Sensitive Confidential Ex. TFC-33.

EPA IPM v.5.13 Appendix 5-3 (Sargent & Lundy) – *Revisions to Cost and Performance for APC Technologies: SCR Cost Development Methodology*, available at: http://www.epa.gov/powersectormodeling/docs/v513/attachment5_3.pdf

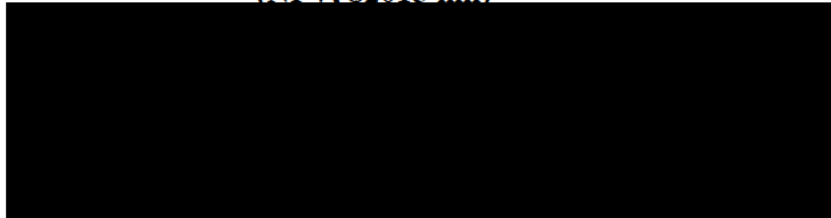
⁹⁸ The net CONE estimate changes each year. I assumed the latest PJM 2017/2018 net CONE of approximately \$350/MW-day escalating at 2.5% inflation each year. The average price relative to net CONE was calculated as the capacity-weighted average over the past eight auctions.

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1 Clifty Creek. The Companies' valuation is shaded (in the upper left corner) of
2 each table with changes to carbon costs across the columns and changes to fixed
3 variables (capacity prices and SCR costs) across the rows.

4 As the results for Sammis show, the use of a [REDACTED] and requirement
5 of SCR systems on Sammis units 1 through 5 would render the entire plant
6 [REDACTED] using the Companies' model—a [REDACTED] over the 15-
7 year period. The use of the Companies' carbon price with [REDACTED] capacity prices
8 and SCR costs, would [REDACTED] the market value to [REDACTED].

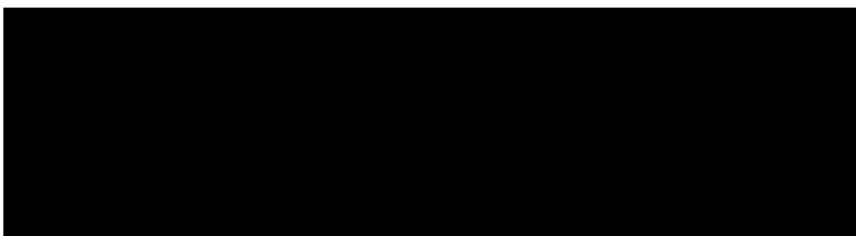
9 **COMPETITIVELY SENSITIVE CONFIDENTIAL Table 7:**
10 **Sammis Plant Market Value with Sensitivities**
11 **(NPV, \$2015 mil)**

A large rectangular area of the document is completely redacted with a solid black box, covering the content of Table 7.

12

13 As the results for the OVEC units show, the use of a [REDACTED] and
14 requirement of an SCR system on Clifty Creek unit 6 would [REDACTED] the
15 valuation of the units from [REDACTED] to [REDACTED] over the 15-year period using
16 the Companies' model. The use of the Companies' carbon price with [REDACTED]
17 capacity prices and SCR costs, [REDACTED] the market value to [REDACTED].

18 **COMPETITIVELY SENSITIVE CONFIDENTIAL Table 8:**
19 **OVEC Plants Market Value with Sensitivities**
20 **(NPV, \$2015 mil)**

A large rectangular area of the document is completely redacted with a solid black box, covering the content of Table 8.

22

1 **Q Did you also analyze energy price changes?**

2 **A Yes.** I submitted simple sensitivities of a 10% increase and 10% decrease in
3 energy prices relative to those used by the Companies (provided by Mr. Rose). I
4 did not have access to Mr. Rose’s energy forecast modeling. However, as I have
5 discussed previously, the NYMEX forwards he uses as a natural gas price forecast
6 for 2015 and 2016 are now between 11 and 18% lower (see Table 4). His long-
7 term natural gas price forecast is also [REDACTED] than the AEO 2014 forecast.
8 Lowering the natural gas price forecast would lower energy prices (all else equal).
9 Therefore, [REDACTED] on the low energy price sensitivity.

10 **Q Did you analyze combinations of energy price changes with additional SCR**
11 **costs and lower capacity prices?**

12 **A Yes.** My adjusted results in COMPETITIVELY SENSITIVE CONFIDENTIAL
13 Table 9 and COMPETITIVELY SENSITIVE CONFIDENTIAL Table 10 show
14 the changes in market value with changes to capacity prices, energy price, and the
15 addition of SCR costs. The Companies’ valuation is shaded (in the upper middle
16 cell) of each table with changes to energy prices across the columns and changes
17 to fixed variables (capacity prices and SCR costs) across the rows.

18 The results show how sensitive the plants’ valuation is to energy prices. The use
19 of a 10% lower energy price would [REDACTED]
20 [REDACTED]
21 [REDACTED]
22 [REDACTED]
23 Adding SCR costs or using the [REDACTED] forecast would [REDACTED]
24 [REDACTED]. A higher market price would increase market value,
25 not surprisingly; however, as I have discussed, there is likely more downside than
26 upside risk for energy prices.

27

1

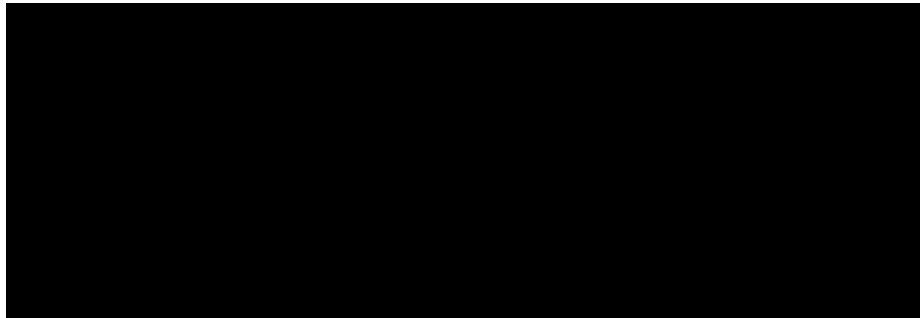
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**COMPETITIVELY SENSITIVE CONFIDENTIAL Table 9: Sammis Plant
Market Value with Sensitivities
(NPV, \$2015 mil)**

3


4

5



6

7

The results for the OVEC units show a similar story. The results 

8

. The use of a 10% lower energy

9

price and requirement of an SCR system on Clifty Creek or 

10

would result in a .

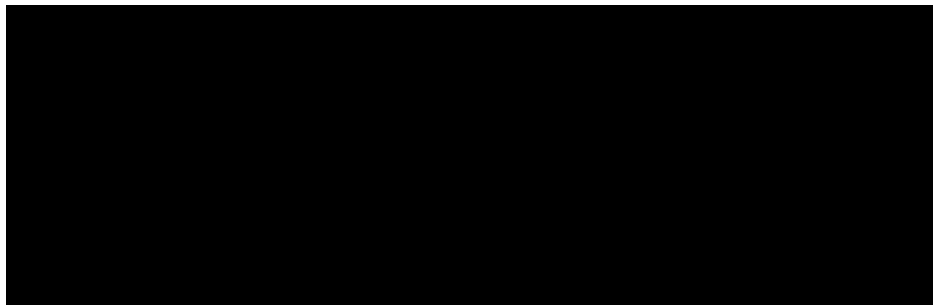
11

**COMPETITIVELY SENSITIVE CONFIDENTIAL Table 10: OVEC Plants
Market Value with Sensitivities
(NPV, \$2015 mil)**

12

13

14



15

16 **Q**

Did the results of your sensitivities use the same model that you criticized for being unsophisticated?

17

18 **A**

Yes, because that is what the Companies used in this case. The sensitivities that I ran were intended to assess some of the uncertainties in the Companies' proposal, not to present the type of sophisticated modeling that should be required of an applicant seeking approval of a transaction that puts billions of dollars of ratepayer money on the line for the next 15 years. No such proposal should be

19

20

21

22

Direct Testimony of Tyler Comings
Redacted Version

1 approved unless, at a minimum, it is supported by sophisticated modeling that all
2 intervenors, the Staff, and the Commission have had a full and fair opportunity to
3 evaluate and test.

4 **Q How should your alternative analysis inform the Companies' decision?**

5 **A** My alternative analysis illustrates critical risks associated with the contract that
6 the Companies should have explored in their evaluation. In addition to using an
7 unsophisticated model, the Companies did not sufficiently address carbon cost
8 risk. They also neglected to adequately account for future environmental
9 compliance costs. The energy and capacity prices assumed by the Companies in
10 this modeling, which differ from FES's own internal projections, likely overvalue
11 what these plants would make on the PJM energy and capacity markets. The
12 market valuation provided by FES (which differs from what was provided by the
13 Companies) shows risks of [REDACTED] and [REDACTED]. Even if
14 the Companies disagree with my assumptions, they should at least agree all of
15 these are uncertainties that cannot be captured in the one set of assumptions used
16 to justify the proposed contract.

17 **V. FINDINGS AND RECOMMENDATIONS**

18 **Q What are your findings?**

19 **A** The Company has not provided sufficient justification for adopting this plan,
20 given the following reasons:

- 21 1. The construct of Rider RRS itself is inappropriate. Ohio has chosen a de-
22 regulated scheme to insulate customers from the performance or non-
23 performance of individual units. By forcing the Companies' customers to
24 accept this rider, the customers effectively become the owners of the units
25 without any of the benefit of ownership, such as control over costs and
26 strategic decisions, and yet have little ability to call on regulatory
27 oversight

2. Even assuming the rider were an appropriate mechanism—which it is not—the Companies have not provided sufficient analysis either in their application and pre-filed testimony or in discovery to justify such a long-term transaction. To justify such a significant transaction, the Companies should have used sophisticated, hourly dispatch modeling, rather than an Excel spreadsheet model, and stress tested the results under a reasonable range of future uncertainties. FES and the Companies continue to use the same unsophisticated model while shifting the risk of further losses onto ratepayers.
3. The Companies use carbon prices that are likely too low, therefore, they do not adequately assess carbon cost risk.
4. The Companies’ view of the energy and capacity markets is likely too optimistic, and unreasonably assumes that capacity prices will [REDACTED] [REDACTED]—inflating the value of the Plants in question.
5. The Companies neglected to address other future environmental risks and costs associated with the coal units, mainly the high likelihood that additional NOx controls would be required at several units—Sammis units 1-5 and Clifty Creek unit 6.

Q What are your recommendations to this Commission?

A I recommend that this Rider RRS be denied. It is inappropriate to tie the fate of the merchant-owned coal units to ratepayers’ bottom line. Even if the rider were appropriate in a competitive market environment, which it is not, there has been a troubling lack of transparency or consistency from the Companies and FES. The Sammis and OVEC plants [REDACTED] money on the market in [REDACTED] [REDACTED] and are subject to high regulatory risks in the near future, much of which has not been accounted for in the Companies’ unsophisticated modeling.

1 **Q** **Does this conclude your testimony?**

2 **A** Yes, it does. However, I reserve the right to update or supplement my testimony
3 based on new information that may become available.

CERTIFICATE OF SERVICE

I hereby certify that a true and accurate copy of the foregoing *Direct Testimony of Tyler Comings – Redacted Version* was served upon the following parties via electronic mail on December 22, 2014:

/s/ Christopher J. Allwein

Service List

Thomas.mcnamee@puc.state.oh.us	sam@mwncmh.com
Thomas.lindgren@puc.state.oh.us	fdarr@mwncmh.com
Ryan.orourke@puc.state.oh.us	mpritchard@mwncmh.com
mkurtz@BKLawfirm.com	cmooney@ohiopartners.org
kboehm@BKLawfirm.com	callwein@wamenergylaw.com
jkylercohn@BKLawfirm.com	joliker@igsenergy.com
stnourse@aep.com	mswhite@igsenergy.com
mjsatterwhite@aep.com	Bojko@carpenterlipps.com
yalami@aep.com	Allison@carpenterlipps.com
joseph.clark@directenergy.com	hussey@carpenterlipps.com
ghull@eckertseamans.com	barthroyer@aol.com
myurick@taftlaw.com	athompson@taftlaw.com
zkravitz@taftlaw.com	Christopher.miller@icemiller.com
Schmidt@sppgrp.com	Gregory.dunn@icemiller.com
ricks@ohanet.org	Jeremy.grayem@icemiller.com
tobrien@bricker.com	blanghenry@city.cleveland.oh.us
mkl@bbrslaw.com	hmadorsky@city.cleveland.oh.us
gas@bbrslaw.com	kryan@city.cleveland.oh.us
ojk@bbrslaw.com	tdougherty@theOEC.org
wttpmlc@aol.com	finnigan@edf.org
lhawrot@spilmanlaw.com	meissnerjoseph@yahoo.com
dwilliamson@spilmanlaw.com	trhayslaw@gmail.com
Kevin.moore@occ.ohio.gov	TODonnell@dickinson-
sauer@occ.state.oh.us	wright.com
leslie.kovacik@toledo.oh.gov	dstinson@bricker.com
jscheaf@mcdonaldhopkins.com	drinebolt@ohiopartners.org
marilyn@wflawfirm.com	mitch.dutton@fpl.com
matt@matthewcoxlaw.com	Ccunningham@Akronohio.Gov
gkrassen@bricker.com	Jeanne.Kingery@duke-
dborchers@bricker.com	energy.com
mfleisher@elpc.org	toddm@wamenergylaw.com
selisar@mwncmh.com	gthomas@gtpowergroup.com

Amy.Spiller@duke-energy.com	stheodore@epsa.org
jeffrey.mayes@monitoringanalytics.com	glpetrucci@vorys.com
mhpetricoff@vorys.com	gpoulos@enernoc.com
laurac@chappelleconsulting.net	david.fein@constellation.com
mjsettineri@vorys.com	asonderman@keglerbrown.com
sechler@CarpenterLipps.com	msoules@earthjustice.org
cynthia.brady@constellation.com	mdortch@kravitzllc.com
lael.campbell@exeloncorp.com	rparsons@kravitzllc.com
tony.mendoza@sierraclub.org	tcomings@synapse-energy.com
burkj@firstenergycorp.com	
cdunn@firstenergycorp.com	
jlang@calfee.com	
talexander@calfee.com	
dakutik@jonesday.com	



Tyler Comings, Senior Associate

Synapse Energy Economics | 485 Massachusetts Avenue, Suite 2 | Cambridge, MA 02139 | 617-453-7050

tcomings@synapse-energy.com

PROFESSIONAL EXPERIENCE

Synapse Energy Economics Inc., Cambridge, MA. *Senior Associate*, July 2014 – present, *Associate*, July 2011 – July 2014.

Conducts research on energy system planning and coal plant economics, and performs economic modeling and analysis in support of a wide range of projects. Performs economic impact and benefit-cost analyses, statistical modeling, and research on environmental issues. Recent work includes developing economic impacts of energy efficiency programs in Vermont and a scenario of clean energy investments for the U.S.

Ideas42, Boston, MA. *Senior Associate*, 2010 – 2011.

Organized studies analyzing behavior of consumers regarding finances, and worked with top researchers in behavioral economics. Managed implementation and data analysis for a study of mitigation of default for borrowers that were at-risk of delinquency. Performed case studies for World Bank on financial innovations in developing countries.

Economic Development Research Group Inc., Boston, MA. *Research Analyst, Economic Consultant*, 2005 – 2010.

Performed economic impact modeling and benefit-cost analyses using IMPLAN and REMI for transportation and renewable energy projects, including support for Federal stimulus applications. Performed statistical modeling, including results on the timing of effects of highway construction on economic growth in Appalachia. Developed a unique Web-tool for the National Academy of Sciences on linkages between economic development and transportation, and presented findings to state government officials around the country. Created economic development strategies and improvements to company's economic development software tool.

Harmon Law Offices, LLC., Newton, MA. *Billing Coordinator, Accounting Liaison*, 2002 – 2005.

Allocated IOLTA and Escrow funds, performed bank reconciliation and accounts receivable. Projected legal fees and costs for cases at the firm.

Massachusetts Department of Public Health, Boston, MA. *Data Analyst (contract)*, 2002.

Designed statistical programs using SAS based on data taken from health-related surveys. Extrapolated trends in health awareness and developed benchmarks for performance of clinics and other healthcare facilities for statewide assessment.

EDUCATION

Tufts University, Medford, MA

Master of Arts in Economics, 2007

Boston University, Boston, MA

Bachelor of Arts in Mathematics and Economics, 2002. *Cum Laude*, Dean's Scholar.

ADDITIONAL SKILLS

Software: MS Office, STATA, SPSS, SAS, REMI, IMPLAN, Mathematica

Programming: C++

Languages: Conversant in French

PUBLICATIONS

Takahashi, K. 2014. *Maximizing Public Benefit through Energy Efficiency Investments*. Synapse Energy Economics for Sierra Club.

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Bower, S., S. Huntington, T. Comings, W. Poor. 2012. *Economic Impacts of Efficiency Spending in Vermont: Creating an Efficient Economy and Jobs for the Future.* Optimal Energy, Synapse Energy Economics, and Vermont Department of Public Service for American Council for an Energy-Efficient Economy (ACEEE).

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Economic Development Research Group and Navigant Consulting. 2008. *Economic Potential of an Advanced Biofuels Sector in Massachusetts*. Prepared for the Massachusetts Office of Energy and Environmental Affairs.

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TESTIMONY

Oklahoma Corporation Commission (Cause No. PUD 201400229): Direct testimony evaluating the assumptions in the analysis supporting Oklahoma Gas & Electric's request for authorization and cost recovery of a Clean Air Act compliance plan and Mustang modernization. On behalf of Sierra Club. December 16, 2014.

Maryland Public Service Commission (Case No. 9361): Direct testimony on the economic impact analysis filed by Exelon Corporation and Pepco Holdings, Inc. in their joint petition for the merger of the two entities. On behalf of the Maryland Office of the People's Counsel. December 8, 2014.

State of New Jersey Board of Public Utilities (Docket No. EM14060581): Direct testimony on the economic impact analysis filed by Exelon Corporation and Pepco Holdings, Inc. in their joint petition for the merger of the two entities. On behalf of the New Jersey Division of Rate Counsel. November 14, 2014.

District of Columbia Public Service Commission (Formal Case No. 1119): Direct testimony evaluating the economic impact analysis of the proposed Exelon-Pepco merger. On behalf of the District of Columbia Government. November 3, 2014.

Kentucky Public Service Commission (Case No. 2013-00259): Direct and supplemental testimony regarding East Kentucky Power Cooperative's Application for Cooper Station Retrofit and Environmental Surcharge Cost Recovery. On behalf of Sonia McElroy and Sierra Club. November 27, 2013 and December 27, 2013.

Indiana Utility Regulatory Commission (Cause No. 44339): Direct testimony in the Matter of Indianapolis Power & Light Company's Application for a Certificate of Public Convenience and Necessity

for the Construction of a Combined Cycle Gas Turbine Generation Facility. On behalf of Citizens Action Coalition of Indiana. August 22, 2013.

Resume dated December 2014

Redacted

Redacted

Redacted

Jason Lisowski

IN THE PUBLIC UTILITIES COMMISSION OF OHIO

- - -

In the Matter of the :
 Application of Ohio Edison:
 Company, The Cleveland :
 Electric Illuminating :
 Company, and The Toledo :
 Edison Company for : Case No. 14-1297-EL-SSO
 Authority to Provide for :
 a Standard Service Offer :
 Pursuant to R.C. 4928.143 :
 in the Form of an Electric:
 Security Plan. :

- - -

DEPOSITION

of Jason Lisowski, taken before me, Karen Sue Gibson,
 a Notary Public in and for the State of Ohio, at the
 offices of FirstEnergy Corporation, 76 South Main
 Street, Akron, Ohio, on Friday, December 19, 2014, at
 8 a.m.

- - -

ARMSTRONG & OKEY, INC.
 222 East Town Street, Second Floor
 Columbus, Ohio 43215-5201
 (614) 224-9481 - (800) 223-9481
 FAX - (614) 224-5724

- - -

Armstrong & Okey, Inc., Columbus, Ohio (614) 224-9481

1 APPEARANCES:

2 FirstEnergy Corp.
3 By Mr. James W. Burk
4 and Ms. Carrie M. Dunn
5 76 South Main Street
6 Akron, Ohio 44308

7 Calfee, Halter & Griswold LLP
8 By Mr. N. Trevor Alexander
9 The Calfee Building
10 1405 East Sixth Street
11 Cleveland, Ohio 44114

12 On behalf of the Applicants.

13 Bruce E. Weston, Ohio Consumers' Counsel
14 By Mr. Larry Sauer (via speakerphone)
15 Assistant Consumers' Counsel
16 10 West Broad Street, Suite 1800
17 Columbus, Ohio 43215-3485

18 On behalf of the Residential Consumers of
19 Ohio Edison Company, The Cleveland
20 Electric Illuminating Company, and The
21 Toledo Edison Company.

22 Earthjustice
23 By Mr. Shannon Fisk
24 Northeast Office
1617 John F. Kennedy Boulevard, Suite 1675
Philadelphia, Pennsylvania 19103

Earthjustice
By Mr. Michael Soules (via speakerphone)
1625 Massachusetts Avenue NW, Suite 702
Washington, D.C. 20036

On behalf of the Sierra Club.

Bricker & Eckler, LLP
By Mr. Dane Stinson (via speakerphone)
100 South Third Street
Columbus, Ohio 43215-4291

On behalf of the NOPEC.

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2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24

APPEARANCES: (Continues)

Ohio Partners for Affordable Energy
By Ms. Colleen Mooney(via speakerphone)
231 West Lima Street
Findlay, Ohio 45846

On behalf of the Ohio Partners for
Affordable Energy.

McNees, Wallace & Nurick LLC
By Mr. Matthew Pritchard (via speakerphone)
21 East State Street, 17th Floor
Columbus, Ohio 43215

On behalf of the Industrial Energy Users
of Ohio.

IGS Energy
By Mr. Joseph Oliker (via speakerphone)
6100 Emerald Parkway
Dublin, Ohio 43016

On behalf of the IGS Energy.

Vorys, Sater, Seymour & Pease, LLP
By Mr. Michael Settineri (via speakerphone)
52 East Gay Street
Columbus, Ohio 43215

On behalf of RESA.

Carpenter Lipps & Leland LLP
By Ms. Rebecca Hussey(via speakerphone)
280 North High Street, Suite 1300
Columbus, Ohio 43215

On behalf of the Ohio Manufacturers'
Association Energy Group.

Environmental Law & Policy Center
By Ms. Madeline Fleisher (via speakerphone)
1207 Grandview Avenue, Suite 201
Columbus, Ohio 43212

1 Policy Center.

2
3 APPEARANCES: (Continued)

4 Taft, Stettinius & Hollister LLP
By Mr. Devin Parram (via speakerphone)
5 65 East State Street, Suite 1000
Columbus, Ohio 43215

6 On behalf of the The Kroger Company.

7 Taft, Stettinius & Hollister LLP
By Mr. Adrian D. Thompson (via speakerphone)
8 200 Public Square, Suite 3500
9 Cleveland, Ohio 44114

10 On behalf of the Cleveland Schools

11 Exelon Generation Company, LLC
By Ms. Cynthia A. Brady (via speakerphone)
12 550 West Washington Street
Chicago, Illinois 60661

13 On behalf of the Exelon Generation
14 Company, LLC.

15 Mike DeWine, Ohio Attorney General
By Mr. William L. Wright, Section Chief
16 Public Utilities Section
Mr. Ryan O'Rourke (via speakerphone)
17 Assistant Attorney General
18 180 East Broad Street, 6th Floor
Columbus, Ohio 43215

19 On behalf of the Staff of the PUCO.

20 ALSO PRESENT:

21 Ms. Katie Kline.

22 - - -
23
24

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- - -

1 Q. Okay. And what's that in?

2 A. Business management.

3 Q. Okay. And where from?

4 A. Cuyahoga Community College.

5 Q. Okay. Anything else?

6 A. No.

7 Q. No, okay. And do you feel that you have
8 any other educational background relevant to your
9 current job duties besides the ones listed in your
10 testimony?

11 A. No.

12 Q. No, okay. And do you have any -- have
13 you had any training relevant to your job duties?

14 A. What do you mean by training?

15 Q. Any sort of courses that you've taken or
16 training that FirstEnergy offers of how to do your
17 job.

18 A. Yes.

19 Q. Okay. Have you had any training
20 specifically in modeling of power plants?

21 A. Could you rephrase the question?

22 Q. So you offer testimony in this proceeding
23 regarding the results of economic dispatch modeling;
24 is that correct?

1 A. That's correct.

2 Q. Okay. And have you had any training in
3 economic dispatch modeling?

4 A. No.

5 Q. Okay. Did you -- the economic dispatch
6 modeling that you discuss in your testimony, did you
7 do that modeling?

8 A. It was done under my supervision.

9 Q. Under your supervision, okay. Who
10 actually did the modeling?

11 A. It was done under my supervision by a
12 group within our FirstEnergy Service Company.

13 Q. Okay. And what group?

14 A. Business development.

15 Q. Business development. Okay. And do you
16 know who in particular at -- in the business
17 development group did the modeling?

18 A. There's a number of people in that group.
19 I have no -- I don't know specifically who actually
20 ran the model.

21 Q. Okay. And so have you ever personally
22 run an economic dispatch model?

23 A. What do you mean by run the model?

24 Q. Actually input the data into -- into the

1 model and made all the settings in the model and then
2 gotten the outputs.

3 A. The person that's just keying the numbers
4 into the model, pushing a button, getting the
5 outputs, that doesn't require a lot of technical
6 expertise associated with doing that. It's more
7 relevant -- let me take that back. It's more -- it
8 doesn't really matter in terms of who the actual
9 person is that's pushing the button or actually
10 putting in the model. It depends on the results.

11 Q. So you're saying that anyone can run an
12 economic dispatch model?

13 A. No, that's not what I said.

14 Q. Okay. So have you personally ever run
15 the model?

16 MR. ALEXANDER: Objection. By run are
17 you saying hit the button?

18 MR. FISK: Well, he just defined it.

19 A. Could you clarify?

20 Q. Put the inputs into the system, decided
21 what assumptions the model should be running on, and
22 gotten the outputs.

23 A. So when you mean run, putting inputs in,
24 understanding the assumptions, and then understanding

1 the outputs?

2 Q. Yes.

3 A. Or just putting in inputs, pushing the
4 button, here are the outputs.

5 Q. No, the full process of putting the
6 inputs in, understanding what assumptions are going
7 into the modeling, getting outputs from it.

8 A. Okay. So that process that you just laid
9 out isn't done by just one person.

10 Q. Okay.

11 A. There's a number of people that are
12 involved in that process.

13 Q. Okay. And what -- have you had any role
14 in that process?

15 A. My role is understanding the assumptions
16 that were input --

17 Q. Okay.

18 A. -- understanding how the model works, and
19 among other things understanding the outputs of the
20 model.

21 I want to clarify something. A couple of
22 questions ago you asked if I had any formal training
23 on the model or how to do modeling -- I'm sorry, I
24 believe you said did I have any training on how to

1 model, and I said no. I want to clarify that. I've
2 never had formal training like a college course on
3 how to do modeling. But in my role as the assistant
4 controller, understanding the financials and the
5 finance impacts associated with the model, I've had
6 numerous understanding and training and discussions
7 with how the model works, so I do understand all
8 those aspects. So as I think about it more, I
9 would -- I would say that those items have trained me
10 on how the model works and understanding how the
11 model produces what it produces.

12 Q. Okay. Was that training formal training?

13 A. What do you mean by formal?

14 Q. Like a course or --

15 A. Not a -- not a course, no.

16 Q. Not a course, okay. And have you ever
17 been the person that's actually sat down and put the
18 inputs in and hit the button to get the results from
19 the model?

20 A. No.

21 Q. Okay. And would you -- would you
22 understand how to evaluate the model itself in terms
23 of whether it's producing good results?

24 A. What do you mean by good results?

1 A. What I said was the actual people that
2 push the button that run the model was business
3 development.

4 Q. Okay.

5 A. The model assumptions, all those items
6 were run under my supervision.

7 Q. Okay. And so did you -- you gave them
8 the inputs to use in the model?

9 A. The -- I was not the one that developed
10 all the inputs.

11 Q. Okay. Who developed the inputs?

12 A. If you look at my testimony page 2, lines
13 4 and 5, we talk about the market price estimates.
14 That's an input that was provided by Company Witness
15 Rose.

16 Q. Okay.

17 A. There is an example. We also talk about
18 row 10 that there is FES -- other internal cost
19 projections provided by FES --

20 Q. Okay.

21 A. -- that was an input.

22 Q. Okay. And those internal cost
23 projections, who provided those?

24 A. Which internal cost projections?

1 Q. The ones you are referring to on line 10
2 of page 2 of your testimony.

3 A. Those are FES internal cost projections
4 related to these plants.

5 Q. Okay. So someone from FES provided those
6 cost projections to you; is that correct?

7 A. They are -- FES has them available.

8 Q. Okay.

9 A. That I have access to in my role at FES.

10 Q. Okay. So you obtained them from FES, the
11 cost projections.

12 A. The cost projections, yes.

13 Q. And then you provided those to whoever in
14 the business development group actually pressed the
15 button on the model.

16 A. These cost projections that FES provided
17 have no impact on the actual dispatch model.

18 Q. Okay. But they were used as part of the
19 model or no?

20 A. They were.

21 Q. Okay.

22 A. Let me take that back. I'm sorry. Could
23 you repeat the question?

24 Q. Were they used as part of the model, the

1 cost projections?

2 A. As part of the model, no.

3 Q. No, okay. Then we have Witness Rose's
4 market price estimates, correct?

5 A. That's correct.

6 Q. Okay. And so he provided those to you?

7 A. Yes.

8 Q. Okay. And then you provided them to
9 whoever in the business development group is doing --
10 running, pressing the button on the model?

11 A. That's correct.

12 Q. And did you do anything to verify the
13 market price estimates provided by Mr. Rose?

14 A. What do you mean by verify?

15 Q. To assess whether they are reasonable.

16 A. I'm not in a position to determine
17 whether Witness Rose's projections are reasonable or
18 not.

19 Q. Okay. So you -- do you feel you have any
20 expertise in -- in market price projections?

21 A. No.

22 Q. Okay. So you are not offering any
23 opinions on those projections.

24 A. When you say those projections, Witness

1 Rose's projections?

2 Q. Yes.

3 A. No.

4 Q. Okay. You testified a few minutes ago
5 that -- I believe that you have an understanding of
6 how the model works; is that correct?

7 A. That's correct.

8 Q. Okay. Can you generally describe to me
9 how the model works?

10 A. If you look on page 5 of my testimony,
11 starting on row 11 continuing through row 23, I
12 discuss how the forecasting model works.

13 Q. Okay. And -- okay. So you said -- you
14 testify on lines 12 to 13 that the forecasting
15 model -- the proprietary monthly dispatch model that
16 incorporates financial and operational inputs; is
17 that correct?

18 A. That's correct.

19 Q. Okay. And the financial and operational
20 inputs, where did those inputs come from for the
21 modeling in this proceeding?

22 MR. ALEXANDER: Objection. Go ahead.

23 A. Could you rephrase the question?

24 Q. The financial and operational inputs that

1 you are referring to in your testimony, where did --
2 where did those inputs come from?

3 MR. ALEXANDER: Objection. Go ahead.

4 A. Could you rephrase the question?

5 Q. Okay. You said that -- you've stated
6 that your model incorporates financial and
7 operational inputs, correct?

8 A. That's correct.

9 Q. Okay. Do you know what those inputs are?

10 MR. ALEXANDER: Objection. Go ahead.

11 A. If I read on beyond row 13, it discusses
12 those inputs and where they came from.

13 Q. Okay, okay. So there's a reference to
14 Company Witness Rose providing energy prices again.
15 Am I correct that there are other inputs besides
16 energy prices?

17 A. Yes.

18 Q. Okay. And where -- so you also list
19 generation capabilities of each FES generation
20 facility, correct?

21 MR. ALEXANDER: Objection. Are we
22 referring to the model generally, or are you
23 referring to the modeling done for this case for his
24 testimony?

1 MR. FISK: The modeling done in this
2 case.

3 MR. ALEXANDER: Thank you.

4 A. Could you repeat the question?

5 Q. So you refer on lines 14 to 15 the model
6 incorporates the generation capabilities of each FES
7 generation facility, correct?

8 A. That's correct.

9 Q. Okay. And where did the inputs regarding
10 the generation capabilities of each FES generation
11 facility come from?

12 A. Those are already developed within the
13 model. Those are already inputs in the model.

14 Q. Okay. From -- from previous modeling
15 runs or?

16 A. Right. Remember, FES will use this model
17 beyond just this -- this case. We will use this
18 model constantly. We use this in many other cases
19 and so a lot of these inputs, for example, on the
20 generation capabilities are already in the model and
21 we -- FES will review those and make sure if they are
22 accurate and appropriate.

23 Q. And do you know who developed the model?

24 A. The model in general?

1 Q. Yes.

2 A. No, I don't.

3 Q. Okay. Did you have any role in
4 developing the model in general?

5 A. No.

6 Q. Okay. Do you know how long FES has used
7 this model?

8 A. As long as I've been at FES, we have been
9 using this model and even prior to that. I don't
10 know what year we started using it, but for as long
11 as I can remember, we have been using this model
12 for -- for all of our internal projections.

13 Q. Okay. Do you know, is the model ever
14 updated or -- updated?

15 A. What do you mean by updated?

16 Q. Like, is there a new version of the
17 model, you know, like how you have a computer
18 program, you have Microsoft Word 7.0, 8.0? Is there
19 ever a new version of the model?

20 A. We've previously disclosed that it is
21 Microsoft Excel based. So if we upgrade Microsoft
22 Excel, I suppose you could say that in terms of how
23 you are responding to it, but the model doesn't have
24 a brand new model that we come out with. It's the

1 same model. If we know things like generation
2 capabilities as we talked about earlier have changed
3 or things have happened with the plant, FES will
4 update those assumptions within the model, but we
5 don't come out with new models or new versions of the
6 model, no.

7 Q. Okay. When you say it's Microsoft Excel
8 based, what does that mean?

9 A. It means the model is run by -- it's --
10 let me take that back. It's -- the model
11 calculations are within a Microsoft Excel
12 application.

13 Q. Okay. So -- so you're plugging various
14 inputs into some version of a Microsoft Excel and
15 that's running -- running the data and giving you
16 outputs?

17 A. We're -- we're plugging it into our
18 internal proprietary model which is Microsoft Excel
19 based.

20 Q. Okay. Do you know if any changes made --
21 have been made to the Microsoft Excel program for
22 your proprietary model?

23 MR. ALEXANDER: Objection. Are you
24 referring to Excel as a program, or are you referring

1 to the coding in Excel?

2 MR. FISK: Excel as a program.

3 A. No.

4 Q. Okay. And how about the coding in Excel?

5 A. I'm sorry, the coding in Microsoft Excel?

6 Q. So, I mean -- I mean, are you just --
7 basically you have Microsoft Excel 97 or whatever and
8 you are putting numbers into Microsoft Excel and
9 Microsoft Excel is running it or is there something
10 added to Microsoft Excel that makes this somehow
11 different than just doing a spreadsheet?

12 A. No. Our -- what's proprietary about it
13 is it's -- it's a Microsoft Excel workbook that we've
14 built calculations within it that can then produce
15 the modeling outputs.

16 Q. Okay.

17 MR. ALEXANDER: Let's go off the record.

18 (Discussion off the record.)

19 Q. Okay. And are you -- are you generally
20 aware that there are other commercially available
21 economic dispatch models that can be used to, you
22 know, project operation of power plants?

23 A. Yes.

24 Q. Okay. And, for example, have you ever

1 heard of Strategist?

2 A. No.

3 Q. Okay. Have you ever -- do you know of
4 any particular other types of modeling programs that
5 can be used to economically dispatch?

6 A. I don't know the names of them.

7 Q. Okay. Have you ever been involved in any
8 cases using some other type of economic dispatch
9 model?

10 A. No.

11 Q. Okay. Do you know if FirstEnergy has
12 ever run some sort of other economic dispatch model
13 besides its internal proprietary one?

14 A. What do you mean run?

15 Q. Evaluated its generation fleet or one of
16 its plants using some sort of commercially available
17 economic dispatch model.

18 A. No.

19 Q. You don't know or they haven't?

20 A. Not that I am aware of.

21 Q. Okay. Okay. So turning back to the
22 question of -- I believe when I asked you your
23 understanding of how the model works, you referred me
24 to your testimony page 5, lines 1 to 23; is that

1 correct?

2 A. Yes.

3 Q. Okay. So am I correct there are -- so
4 there are some inputs that you put into the model
5 including forecasted energy prices, and then the
6 model then projects how often the plants will run; is
7 that correct?

8 A. That's correct.

9 Q. Okay. And that projection, am I correct,
10 is based on comparing the variable cost of operating
11 the plant to the market energy price?

12 A. That's correct.

13 Q. Okay. And so if the variable operating
14 cost for the plant is under the market energy price,
15 the model will assume that the plant operates?

16 A. That's correct.

17 Q. Okay. And if the variable operating cost
18 is over the market energy price, then the model will
19 assume that the plant won't operate?

20 A. No.

21 Q. Okay. What would the model assume then?

22 MR. ALEXANDER: At this point I am going
23 to ask we move any further discussion to the
24 confidential portion because we are starting to get

1 close to that line.

2 MR. FISK: Okay. I can -- I can do that.
3 Questions about the -- where the inputs came is
4 still --

5 MR. ALEXANDER: That's fine.

6 MR. FISK: -- in the public. Okay.

7 Q. We will table that conversation to later.
8 Okay. Well, so I want to go back to the inputs -- so
9 the inputs are looking at the variable operating
10 costs for the plant, correct?

11 A. I'm sorry, could you restate the
12 question?

13 Q. One of your inputs into the model is the
14 various elements of the variable operating costs of
15 the plant, correct?

16 A. That's correct.

17 Q. And for this proceeding you ran your
18 model through the life of the proposed rider which I
19 believe is 2031, correct?

20 A. No.

21 Q. No, you didn't run it through there or
22 that's not the correct year?

23 A. It was run through the term of the PPA,
24 not the term of the rider.

1 Q. Okay. The term of the PPA which would be
2 through 2031, correct?

3 A. No, through May 31 of 2031.

4 Q. Okay. May 31, 2031, okay. And so you
5 project -- you input projections of the variable
6 operating costs for the Sammis units into the model;
7 is that correct?

8 A. Yes.

9 Q. And where did those projections come
10 from?

11 A. Look at -- starting on page 4 of my
12 testimony, row 22, we talk about Sammis where the
13 inputs for the fuel costs were provided by Company
14 Witness Rose.

15 Q. Okay. And did you do anything to assess
16 whether those projections from Company Witness Rose
17 were reasonable?

18 A. I just used what he provided me.

19 Q. Okay. So you don't have any opinions
20 regarding whether those projections are reasonable or
21 not?

22 A. I do not.

23 Q. Okay. And then I guess turning over to
24 page 5 of your testimony, the nuclear fuel and other

1 fuel-related expenses were forecasted using internal
2 forecasts; is that correct?

3 A. That's correct.

4 Q. Okay. And do you know who did those
5 internal forecasts?

6 A. Again, those are items we have regularly
7 available within the model that FES would evaluate
8 whether they are appropriate or not.

9 Q. Okay. And did you have any role in
10 evaluating whether those were appropriate?

11 A. I looked at them. They seemed reasonable
12 to me, and so I didn't have any reason to believe
13 otherwise.

14 Q. Okay. Do you have any expertise in
15 forecasting nuclear fuel and other fuel-related
16 expenses?

17 A. I -- as part of our normal forecasting
18 process, I understand and see what the projections
19 are provided for those items and so based on my --
20 what I've experienced as those costs, evaluated from
21 that perspective.

22 Q. Okay. But outside of that you don't have
23 any -- do you claim any expertise in projecting
24 nuclear fuel expenses?

1 A. No.

2 Q. Okay. And then the variable fuel costs
3 for the OVEC units were provided by OVEC; is that
4 correct?

5 A. Some of them were.

6 Q. Okay. Which ones were?

7 A. The fuel and fuel-related expenses.

8 Q. Okay.

9 A. Coal in particular were provided by OVEC
10 and that's what we used.

11 Q. Were there other -- other variable costs
12 for OVEC that were not provided by OVEC?

13 A. Yes.

14 Q. Which ones were those?

15 A. Company Witness Rose provided a carbon
16 assumption and a carbon price that was used as an
17 input.

18 Q. Okay. And that carbon price was provided
19 for -- by Mr. Rose for -- also for Sammis; is that
20 correct?

21 A. That's correct.

22 Q. And did -- did you personally do anything
23 to evaluate whether Mr. Rose's carbon price
24 projection was reasonable?

1 A. No.

2 Q. Okay. Are you offering any opinions
3 regarding the reasonableness of his price projection?

4 A. No.

5 MR. ALEXANDER: Can we take a brief
6 break?

7 MR. FISK: Go off.

8 (Discussion off the record.)

9 Q. Okay. And the variable fuel costs
10 projection that you received from OVEC, did you do
11 anything to evaluate the reasonableness of that
12 projection?

13 A. No.

14 Q. Okay, okay. And then Mr. Rose also
15 provided to you projected capacity prices; is that
16 correct?

17 A. Yes.

18 Q. Okay. And did you do anything to
19 evaluate the reasonableness of those capacity price
20 projections?

21 A. No.

22 Q. No. And are you offering any opinions
23 regarding capacity price projections?

24 A. No.

1 Q. No, okay. Okay. So -- and let me know
2 if I start encroaching on confidential again, but you
3 plug all these variable operating costs into the
4 model. You plug an energy price into the model. Any
5 other inputs you put into the model?

6 A. Yes.

7 Q. And what else?

8 A. We would input any operational-related
9 matters as an input.

10 Q. Okay. And that's things like outages,
11 forced outage rates, planned outages, those sorts of
12 things?

13 A. Like I talk about on page 5 of my
14 testimony, starting on row 14, items such as assumed
15 unavailability, forced losses, EFOR, planned outages,
16 et cetera.

17 Q. Okay. Any other inputs?

18 MR. ALEXANDER: Objection. Just to
19 clarify does the model itself incorporate any other
20 inputs, or did Mr. Lisowski alter or provide any
21 other inputs?

22 MR. FISK: Let's start did Mr. Lisowski
23 provide any other inputs into the model for purposes
24 of the modeling that was done in this case.

1 A. No. I didn't provide any other inputs.

2 Q. Okay, okay. So you have those -- you
3 have the -- all the inputs about the operating costs
4 and operation of the plants. You have an energy
5 price input, and then the model compares the
6 operating costs and any operational restrictions to
7 the energy price and then projects dispatch; is that
8 right?

9 A. Very oversimplified, yes.

10 Q. Okay. And then the model itself has some
11 built-in assumptions; is that also correct?

12 A. What do you mean by built-in assumptions?

13 Q. Well, for example, do you know when -- do
14 you know what I mean when I say must run?

15 A. I guess if you could define it just to
16 make sure.

17 Q. Sure. So if -- you can tell the model
18 this unit has to run any time -- has to run all the
19 time versus is only dispatched economically.

20 A. Okay.

21 Q. Do you know, were there any assumptions
22 regarding must run versus economic dispatch in this
23 model?

24 A. I'm sorry, could you restate the

1 question?

2 Q. Were -- the modeling that you did for
3 this proceeding, did you -- did you have the model
4 assume that the units would be economically
5 dispatched or that they would be must-run units?

6 A. Economically dispatched.

7 Q. Okay, okay. And do you know in actual
8 practice whether the Sammis units are economically
9 dispatched or whether they are must run?

10 A. What period of time are we talking?

11 Q. In the past five years.

12 A. FES changes its strategies around how the
13 units are dispatched.

14 Q. Okay.

15 A. There might have been times it was
16 economically run. There may have been times when it
17 was a must run. I don't know specifically. I am not
18 involved with the dispatching of the plant.

19 Q. Okay. Who made the decision to have the
20 model assume that the units were economically
21 dispatched versus must run?

22 A. Again, FES uses this model in many other
23 cases as part of its normal course, and it's always
24 been run on an economic dispatch.

1 Q. Okay, okay. So you personally didn't do
2 anything to verify whether that economic dispatch
3 assumption is consistent with how the units are
4 actually operated?

5 A. What do you mean I verified, whether I
6 verified?

7 Q. Did you -- did you -- did you do anything
8 to check whether an assumption of economic dispatch
9 versus must run is consistent with how actual
10 operations occur?

11 A. I know FES looks at its units and at
12 times has run the units economically and other times
13 has run possibly as must run. Overall they use it as
14 an economic dispatch. We believe that was
15 appropriate in terms of the forecast that was used
16 here as well which is consistent.

17 Q. Which was consistent with?

18 A. How FES would forecast this plant and any
19 other case of an internal forecast.

20 Q. Okay. It's consistent with how they
21 forecast, but if they -- if they sometimes must run
22 their units, that's inconsistent with how they
23 actually operate the units, correct?

24 A. I mean, if FES -- I don't know why FES if

1 they were going -- if they knew that the units run as
2 a must run all the time, I don't know why they would
3 ever say that and use internal projections and
4 internal forecasts that's using some type of
5 different assumption behind that.

6 Q. Okay. But you've never -- you haven't
7 personally sat down and compared the actual
8 operations with the assumption of economic dispatch,
9 correct?

10 A. I don't know why FES would be using a
11 different assumption in a forecast versus how they
12 know the plants operate. But, no, I did not go
13 through and actually compare what -- historically how
14 the Sammis plant has been dispatched.

15 Q. Okay. And do you know where the
16 assumption of economic dispatch in the modeling came
17 from?

18 A. Again, FES uses that forecast in all
19 cases, and so it was already built into the forecast.

20 Q. Okay. And does the model that you used
21 in this proceeding, does it only assess the
22 dispatching of the units at issue versus the market
23 price of energy, or does it also evaluate dispatching
24 in competition with the rest of PJM?

1 A. Could you repeat the question?

2 Q. Sure. Let me take a step back. Would
3 you agree that FES's generating units, Sammis,
4 Davis-Besse, the OVEC units, they dispatch in
5 competition with other units in PJM; is that correct?

6 A. I'm not involved with the daily
7 dispatching of FES's units.

8 Q. Okay. Do you generally know how the PJM
9 system dispatches?

10 A. In very high level general terms.

11 Q. Would you agree that -- that PJM gets --
12 gets bids and then tries to dispatch the least cost
13 resources to operate?

14 MR. ALEXANDER: Objection. Beyond the
15 scope of his testimony. Go ahead.

16 A. I am not involved with the daily
17 dispatching with PJM of our units --

18 Q. Okay.

19 A. -- and what the offers are. I am not
20 involved with any of that.

21 Q. Okay. Do you know if your model assumes
22 a -- that FES's units are having to compete for
23 dispatch with any other units outside of the FES
24 system?

1 A. Just to make sure I am clear, you are
2 asking me if the model incorporates some type of
3 analysis that -- of how non-FES plants are also going
4 to be dispatching or bidding their --

5 Q. Yes.

6 A. No, the model doesn't incorporate any of
7 that.

8 Q. Okay. So the model only looks at
9 FES-specific units.

10 A. Based on the inputs that were provided.

11 Q. Okay. And do you -- do you have the
12 opinion as to whether just looking at the FES units
13 in the modeling is an accurate reflection of how
14 dispatching would occur in reality?

15 A. Like I said, I am not involved with the
16 dispatching. I am not involved with all the rules
17 that PJM has for dispatching, so I wouldn't be in
18 that position.

19 Q. Okay. And your modeling, am I correct,
20 was done on a monthly basis?

21 A. That's correct.

22 Q. Okay. But the results are produced on an
23 annual basis only?

24 A. That's correct.

1 Q. Okay. And so -- so the Excel program
2 itself converts the monthly data into annual outputs?

3 A. Oversimplified, generally speaking,
4 that's correct.

5 Q. Do you know what the process is?

6 MR. ALEXANDER: Let's save that for the
7 confidential portion.

8 MR. FISK: Save that? Okay.

9 Q. Okay. I'll move on from that area then.
10 Okay. So you've run your modeling program. You've
11 gotten results from the -- from the model. What did
12 you do with those results for purposes of this
13 proceeding?

14 A. I used the results to prepare the
15 attachments in my testimony.

16 Q. Okay. And you're referring to JJR-1, 2,
17 and 3, I believe; is that correct?

18 A. That's correct.

19 Q. Okay. And so those -- those results --
20 you check the results of your modeling and then
21 which -- strike that.

22 The modeling only looks at the cost of
23 operation of the units versus the energy revenue that
24 would be created from such operation, correct?

1 A. No.

2 Q. What else does the modeling look at?

3 A. It looks at the variable costs of
4 operation.

5 Q. Okay. Variable costs of operation versus
6 the energy revenue that would be produced, correct?

7 A. That's correct.

8 Q. Okay. And then in your exhibits you
9 then, am I correct, added -- added in capacity
10 revenue from the units?

11 A. I'm sorry, could you repeat the question?

12 Q. Is your -- you then in your -- in your
13 Exhibits JJL-1, 2, and 3, you then added capacity
14 revenue that you're expecting from the units?

15 A. Witness Rose provided the capacity
16 assumptions. Based on those assumptions, we
17 calculated the forecasted capacity revenues which I
18 then incorporated into JJL-1 through 3.

19 Q. Okay. And then -- and then you also
20 incorporated any ancillary revenues from the units?

21 A. That's correct.

22 Q. Okay. And then you incorporated on the
23 costs -- did you incorporate anything additionally on
24 the cost side of the units?

1 Q. Okay. And is it your understanding that
2 there -- that this proposed sale of the output is
3 part of a proposed purchase power agreement?

4 A. Yes.

5 Q. Okay. And that would be -- that purchase
6 power agreement would be between the companies, which
7 is Ohio Edison, Cleveland Electric, and Toledo Edison
8 on one hand and FES on the other hand?

9 A. Yes.

10 Q. Okay. And did you have any role in
11 negotiating that proposed purchase power agreement?

12 A. What do you mean negotiating?

13 Q. In determining whether such an agreement
14 should move forward, what the terms of it were,
15 should be.

16 A. Yes.

17 Q. Okay. And what was your role?

18 A. I was involved with some communications
19 on some of the PPA terms.

20 Q. Okay. Which terms?

21 A. I believe there was a discovery response
22 on a term sheet or proposed term sheet for the
23 proposed PPA and that's -- that's specifically what I
24 am referring to.

1 Q. You are referring to a discovery
2 response?

3 A. Let me clarify. In the discovery
4 response I believe we've provided a proposed term
5 sheet associated with the proposed PPA.

6 Q. Yes.

7 A. For that term sheet there was some
8 communications around that term sheet's creation.

9 Q. Okay. And is that term sheet
10 confidential?

11 MR. ALEXANDER: Yes. I believe it is.

12 MR. FISK: So we'll kick that to the
13 afternoon.

14 Q. Did you have any other role in the
15 negotiating --

16 A. No.

17 Q. -- the agreement? Okay. Did you have
18 any other role in evaluating whether the agreement
19 should move forward?

20 A. I'm sorry. I don't understand.
21 Evaluating, what do you mean evaluating?

22 Q. Assessing whether it's reasonable for
23 this agreement, proposed agreement, to move forward.

24 A. Not -- not that I recall.

1 Q. Okay. Were you -- are you aware as to
2 whether there was an FES team put together with
3 regards to this proposal?

4 A. Yes.

5 Q. Okay. And are you a member of that FES
6 team?

7 A. I was.

8 Q. Okay. And what was your -- what did you
9 do as a member of that FES team?

10 A. Primarily to discuss the term sheet
11 associated with the proposed PPA.

12 Q. Okay.

13 MR. ALEXANDER: Could we go off?

14 (Discussion off the record.)

15 Q. Okay. We're back on. Okay. So any
16 other role as a member of the FES team?

17 A. Not that I recall.

18 Q. Okay. And what is your understanding of
19 what -- of what the FES team's purpose was?

20 A. What FES team?

21 Q. The one we were just discussing.

22 A. Okay. I'm sorry, could you repeat the
23 question?

24 Q. What was the purpose of the FES team that

1 we were just discussing?

2 A. As I said before, primarily to discuss
3 the term sheet for the proposed PPA.

4 Q. Okay. Do you know who else was on the
5 FES team?

6 A. There was a number of people on the team.
7 I don't recall every single individual member.

8 Q. Do you recall any of them?

9 A. I know Sharon Noewer was on the team.

10 Q. Okay.

11 A. A Nick Fernandez was on the team.

12 Q. Okay.

13 A. I don't remember -- I can't recall
14 specifically who else was on the team.

15 Q. But you believe other people besides
16 those two were on the team?

17 A. There was, yes.

18 Q. Okay. And did the team meet -- have
19 meetings?

20 A. Yes.

21 Q. Okay. Did you attend those meetings?

22 A. Not all the meetings.

23 Q. Do you know approximately how many
24 meetings there were?

1 A. I don't recall.

2 Q. I mean, are we talking 2 or 10 or?

3 A. I prefer not to guess on how many
4 meetings there were.

5 Q. Okay. How many did you attend?

6 A. I don't recall how many I attended.

7 Q. Okay. Do you recall anything about these
8 meetings?

9 A. I recall we had more than one meeting.

10 Q. Okay. Anything else about the meetings?

11 A. We discussed the term sheet for the
12 proposed PPA with the EDU team.

13 Q. Okay. And when did you first find out
14 about the proposed PPA?

15 A. I don't remember the specific date.

16 Q. Approximately. I mean, are we talking
17 May? June?

18 A. It was around the May -- April, May, June
19 time period, somewhere in there.

20 Q. Okay. And do you recall who told you
21 about it?

22 A. Yes.

23 Q. And who?

24 A. A Kelley Mendenhall.

1 Q. And who is that?

2 A. At that time Kelly worked for FirstEnergy
3 Solutions.

4 Q. And what was his or her role?

5 A. Her role, she had a number of
6 responsibilities, one of which was associated with
7 FES strategy. She had retail back office
8 responsibilities, and she had several other
9 responsibilities as well.

10 Q. Okay. And what did she -- what did she
11 tell you about the proposed PPA?

12 A. She shared with me a request provided by
13 Jim Haney requesting some forecasted information
14 associated with Sammis, Davis-Besse, and FES's share
15 of OVEC.

16 Q. And who is Jim Haney?

17 A. I don't know Jim Haney's exact title.

18 Q. Do you know who he works for?

19 A. He works on -- on the utility side of
20 FirstEnergy.

21 Q. So what entity would that be?

22 MR. ALEXANDER: Objection.

23 A. I don't know.

24 Q. And who -- did someone assign you to

1 provide the modeling and projections that you provide
2 in your testimony?

3 A. I'm sorry, can you repeat the question?

4 Q. Did someone assign you to work on doing
5 the modeling that you have provided in this case?

6 A. What do you mean by assigned?

7 Q. Did someone tell you this is -- here, we
8 need you to do this?

9 A. I was asked if I could get involved and
10 provide some of the forecast information.

11 Q. Okay. Who asked you to do that?

12 A. Kelley Mendenhall through the request
13 from Jim Haney.

14 Q. So someone from FES asked you.

15 A. No.

16 Q. I thought you said Ms. Mendenhall worked
17 for FES.

18 A. Kelley works for FES, but the request was
19 coming from Jim Haney.

20 Q. Okay. But you don't report to either of
21 those two people, right?

22 A. That's correct, I do not.

23 Q. Did you ever discuss this request with
24 your direct report, the, the person you report to?

1 A. Yes.

2 Q. Okay. And what did -- did he have any
3 opinions as to whether you should work on this?

4 A. Not that I recall, no.

5 Q. Okay, okay. You state in your testimony
6 that part of your responsibilities of your job is to
7 work -- I am reading from page 1, line 18, actively
8 participate with FES and Generation business
9 executive management and leadership teams on
10 financial accounting and forecasting planning
11 matters. What -- what sort of work have you done on
12 forecasting planning matters?

13 A. A lot of -- a lot of items when FES has
14 needed to produce forecasts.

15 Q. Okay. Do you -- so does FES produce
16 forecasts of, say, the revenue from its generating
17 units on a regular basis or?

18 A. Yes.

19 Q. And what -- how often?

20 A. It can vary greatly year to year.

21 Q. Okay. So it's not -- it's not like on a
22 consistent schedule; it's not like every six months
23 they do it.

24 A. No, not necessarily.

1 Q. Do you recall the last time you were
2 asked to project revenues from FES's generating
3 units?

4 A. Project it for this PPA, the proposed
5 PPA?

6 Q. Outside of this PPA.

7 A. For FES's internal management.

8 Q. Yes.

9 A. I don't recall the specific date. A
10 couple of months ago.

11 Q. A couple of months ago. More recently
12 than the projections that you provided in your
13 testimony in this proceeding?

14 A. Yes.

15 Q. Okay. And what sort of -- what sort of
16 projections were those that you did?

17 MR. ALEXANDER: Objection. Relevance.

18 Q. You can answer.

19 A. I'm sorry, can you repeat the question?

20 Q. What sort of projections did you do?

21 A. Projections --

22 MR. ALEXANDER: Objection. Are you
23 asking for a general category or the results of those
24 forecasts?

1 MR. FISK: First, general category.

2 MR. ALEXANDER: Okay. The concern is
3 these are internal FES proprietary forecasts, and I
4 don't want to get too far down that path so I
5 understand, I think, where you are getting. Let's
6 just be cognizant of that.

7 MR. FISK: Sure. We can punt to the
8 afternoon.

9 MR. ALEXANDER: Even in the afternoon I
10 would have objection to non-PPA forecasts if you ask,
11 but we can cross that bridge when we come to it.

12 MR. FISK: We can deal with that then.

13 A. Make sure I clarify, your question was
14 when -- what kind of forecasts has FES done since the
15 PPA?

16 Q. Yeah.

17 A. What the forecast is going to be for is
18 the competitive business of the FirstEnergy Solutions
19 for over the next couple of years.

20 Q. Okay. Any other projections?

21 A. No.

22 Q. Okay. Have you modeled the projected
23 operation of any of the Sammis plant or any of the
24 Sammis units since your testimony in this proceeding?

1 A. No.

2 Q. Okay. And have you projected revenues or
3 costs for any of the Sammis units since your
4 testimony in this proceeding?

5 A. No.

6 Q. Okay. Outside of this proceeding have
7 you modeled the projected operation of any of the
8 Sammis units any time in the past year?

9 A. Yes.

10 Q. Okay. And when was that?

11 A. In the August timeframe we projected what
12 the plants are doing not just -- I'm sorry, let me
13 clarify. We forecasted all of FES's plants and their
14 operations over -- over the near term.

15 Q. When you say near term, what -- how --

16 A. Typically four, four years out.

17 Q. Okay. And you did that in August?

18 A. That was in August, yes.

19 Q. Okay. And you did that through the same
20 model that you used in this proceeding?

21 MR. ALEXANDER: Objection. Beyond the
22 scope of his testimony. Go ahead.

23 A. The -- let me clarify something I said
24 earlier. In that same August timeframe we would have

1 also used this model to project out even longer term
2 including the years in this PPA for, again, not just
3 the Sammis, Davis-Besse, and FES's share of OVEC but
4 all of FES's assets and generation plants.

5 Q. In separate modeling from what you
6 presented in this proceeding?

7 A. No. It was using the same dispatch
8 model.

9 Q. Same dispatch model but different runs.

10 A. Different -- different inputs were used.

11 Q. Okay. And to your knowledge have any of
12 those modeling runs been presented to any of the
13 parties in this proceeding?

14 A. My understanding is using FES's
15 projections, they've been provided to the Sierra
16 Club.

17 MR. FISK: Can we go off?

18 (Discussion off the record.)

19 Q. We can go back on. So you're saying that
20 there were different modeling runs using different
21 inputs, but your belief is those were presented to
22 the Sierra Club?

23 A. My understanding was there was a subpoena
24 by the Sierra Club requesting that information.

1 Q. Okay. And outside of that, outside of
2 whatever may have been produced in the response to
3 that subpoena, were there any other modeling runs
4 that you have done in the past year evaluating the
5 projected revenues or operation of any of the FES
6 units?

7 A. No.

8 Q. Okay. And when did you do the modeling
9 that you presented in this proceeding in your
10 testimony?

11 A. I don't remember the specific dates, but
12 I started to work on it right after I had the
13 discussions with Kelley Mendenhall based on Jim
14 Haney's request.

15 Q. May, June timeframe?

16 A. Somewhere, I don't remember the specific
17 timeframe, in that area.

18 Q. Okay. So the August modeling runs that
19 you referred to a couple of minutes ago were more
20 recent than the ones that you presented in your
21 testimony here?

22 A. The August -- those August runs were not
23 using Witness Rose's inputs. Those were using FES's
24 inputs.

1 Q. Okay. We'll talk about those in the
2 afternoon. Those are probably confidential.

3 A. They are.

4 Q. Yes, so we will get to those. But the
5 question was those were done more recently than the
6 modeling that you did for the testimony you presented
7 here today.

8 A. Yes.

9 Q. Okay. And the near-term, four-year
10 approximately forecasts that you referenced earlier,
11 those were done more recently than your testimony in
12 this proceeding?

13 A. Those were done at around the same --
14 same period of time, may have been a little bit later
15 but it would have been in that same time period.

16 Q. And did those use different inputs than
17 what was -- what was used in modeling in this
18 proceeding?

19 MR. ALEXANDER: Objection. Go ahead.

20 A. Which inputs?

21 Q. Any of the inputs that you used in
22 your -- in the four-year, near-term forecast
23 different than the ones you used in the modeling you
24 presented in your testimony.

1 MR. ALEXANDER: Objection. Go ahead.

2 A. Well, near term, remember, we've got
3 different periods so this starts June 1 of 2016, so
4 we are talking there would only be an overlap of a
5 year and a half. Notwithstanding the forecast that
6 would have been run around that time period -- period
7 of time would have been consistent assumptions used,
8 FES assumptions, as we used in the longer-term
9 projected run.

10 Q. Okay. But the four-year forecast did not
11 use Mr. Rose's assumptions.

12 MR. ALEXANDER: Objection. Go ahead.

13 A. FES's -- the four-year projections were
14 used for FES forecasting. They would have been based
15 on FES's assumptions and inputs, so they did not use
16 Judah Rose's inputs.

17 Q. Okay. And to your knowledge have any of
18 those four-year forecasts been produced to any of the
19 parties in this proceeding?

20 MR. ALEXANDER: Objection both to form
21 and relevance.

22 A. What do you mean by -- can you repeat the
23 question?

24 MR. FISK: Can you read that question

1 back?

2 (Record read.)

3 A. Those forecasts, what do you mean by
4 those forecasts? We are talking about a lot of
5 forecasts here. I want to make sure we are clear.

6 Q. The four-year, near-term forecasts that
7 you mentioned in the last few minutes, were any of
8 those forecasts presented to any of the parties in
9 this proceeding?

10 MR. ALEXANDER: Same objection.

11 A. Those -- clarify, those four-year
12 forecasts that were run around the late August time
13 period, somewhere in that area; is that correct?
14 That's what you are asking me?

15 Q. Yes, yes.

16 A. Not that I am aware of, no.

17 Q. Okay. All right. Any other modeling
18 runs that you have done with regards to the Sammis,
19 Davis-Besse, or OVEC units in the past year?

20 A. We -- as I mentioned already, FES
21 continually will look at its plants, reforecast all
22 the plants, not just these plants. There would have
23 been other forecasts run prior to us preparing the
24 information that's laid out in my attachments. There

1 would have been forecasts that were done prior in the
2 normal course of FES's business.

3 Q. Within the past year.

4 A. Within the past year, yes.

5 Q. Were you involved in any of those?

6 A. Yes.

7 Q. Okay. And did any of those use
8 assumptions from Mr. Rose?

9 A. No.

10 Q. So did they all use FES assumptions?

11 A. When FES is forecasting, it is always
12 going to use their own internal projections.

13 Q. So then why -- why did you decide to use
14 Mr. Rose's assumptions in the modeling for this
15 proceeding when normally you forecast using FES's?

16 A. I didn't -- I didn't decide that.

17 Q. Do you know who did?

18 A. I was --

19 MR. ALEXANDER: Objection.

20 A. I don't know who decided to use it. I
21 was asked to run the forecast using Mr. Rose's
22 projections.

23 Q. And who -- who -- who asked you to use
24 Mr. Rose's projections?

1 A. That was a part of the request with Jim
2 Haney.

3 Q. Okay. And were you involved in any
4 discussions regarding whether to use Mr. Rose's
5 assumptions as opposed to FES's?

6 A. No.

7 MR. FISK: If we can go off for one
8 minute.

9 (Discussion off the record.)

10 MR. ALEXANDER: At this point let's go
11 back on the record. And, OCC, if you would like to
12 go next.

13 MR. SAUER: Thanks, Trevor.

14 - - -

15 CROSS-EXAMINATION

16 By Mr. Sauer:

17 Q. Good morning, Mr. Lisowski.

18 A. Good morning.

19 Q. My name is Larry Sauer. I am an attorney
20 with the Office of the Ohio Consumers' Counsel, and I
21 want to ask you a few questions about your testimony
22 this morning.

23 You were asked some questions regarding
24 kind of the modeling process, and I wonder if I could

1 updated since you have been working with -- since you
2 have been involved with this model.

3 MR. ALEXANDER: Objection. I think that
4 misstates prior testimony but go ahead.

5 A. You're asking have the -- the formulas,
6 the calculations within the software system, has that
7 been -- has that changed over the last several years;
8 that's your question?

9 Q. Yes, sir.

10 A. I believe I responded previously also
11 that I'm not aware of those formulas changing. They
12 are certainly not updated routinely.

13 Q. Okay. Are you aware of any studies or
14 analyses to determine the accuracy of the proprietary
15 dispatch model?

16 A. I'm sorry, can you repeat that question?

17 Q. Sure. Are you aware of any studies or
18 analysis that has been done by any entity to
19 determine the accuracy of the dispatch model?

20 A. FES routinely uses this forecast in its
21 internal projections. It's constantly relying on it.
22 It's constantly, you know, updating inputs if things
23 are known on the operational side. It uses it a lot.
24 So as part of just constantly using it and

1 understanding it, I would say that is constantly
2 being reviewed for accuracy in that regard.

3 Q. Okay. Have you -- has FES or anyone done
4 a study to actually go back and do a his -- take
5 historic -- I should say actual results and compare
6 those to what the forecasts were?

7 A. I don't know.

8 Q. You mentioned earlier that -- a minute
9 ago you mentioned FES regularly updates inputs and
10 things of that nature, but my question is do you
11 believe the proprietary dispatch model is an accurate
12 model?

13 A. Yes, I do.

14 Q. Okay. What do you base that on?

15 A. Based on the fact that we've used it to
16 project dispatch results in modeling for a number of
17 years and we continue to believe it's accurate. We
18 make decisions off of it. The business utilized it
19 and relies on it. That's why.

20 MR. SETTINERI: Okay. Thank you.

21 If we can go off the record,
22 Mr. Alexander, I can give you a flavor for what I
23 have left.

24 MR. ALEXANDER: Yeah, that would be

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(Open Record.)

9

MR. FISK: I would like to mark --
actually I believe this morning we concluded it was
confidential, and it is not marked confidential.

12

MR. ALEXANDER: Okay.

13

MR. FISK: But we are in confidential
session. So I am going to mark it nonconfidential.
It's not a confidential document.

16

MR. ALEXANDER: Yeah. If it's not marked

18

MS. DUNN: Draft term sheet? Oh, yeah, I

20

21

22

23

24

MR. FISK: So this is Exhibit 8.

MR. SETTINERI: If I could interrupt,
this is Mike Settineri with RESA, are we going to
mark this section of the transcript as
nonconfidential then?

1 MR. ALEXANDER: Yes. So let's now go --
2 we will mark this section and put it in the public
3 record from the introduction of the exhibit.

4 MR. FISK: Okay.

5 (EXHIBIT MARKED FOR IDENTIFICATION.)

6 Q. Okay. Mr. Lisowski, you have been handed
7 an exhibit labeled Exhibit 8; is that correct?

8 A. That's correct.

9 Q. And it is Attachment 1 to the companies'
10 response to IEU Set 1 Interrogatory 25; is that
11 correct?

12 A. That's what it states on the top.

13 Q. Okay. And is that -- does this appear to
14 be a draft term sheet between FES and the companies?

15 A. That appears to be correct.

16 Q. Okay. Have you seen this document
17 before?

18 A. I saw a number of draft term sheets. I
19 may or may not have seen this specific one.

20 Q. Okay. And what -- what involvement have
21 you had in the drafting or the negotiating of the
22 term sheet?

23 A. I was on the FES team.

24 Q. Okay.

1 A. That helped discuss the proposed -- or
2 the -- excuse me, the term sheet associated with the
3 proposed PPA.

4 Q. Okay. And how did you come to -- come to
5 be on the FES team?

6 A. I was asked to join the team.

7 Q. By whom?

8 A. Sharon Noewer.

9 Q. And who does she work for?

10 A. Who does she work for now?

11 Q. At the time.

12 A. At the time I believe -- strike that.
13 She worked for Kelley Mendenhall.

14 Q. Which entity? Which corporate entity?

15 A. She was FirstEnergy Solutions.

16 Q. Okay. And who does she work for now?

17 A. I don't know who she works for now.

18 Q. Okay. Is it common for you to be asked
19 to do things by people who are not your direct
20 employers?

21 A. I guess what do you mean?

22 Q. Well, you are not directly employed by
23 FirstEnergy Solutions, correct?

24 A. That's correct.

1 Q. Okay. So is it common for staff from
2 FirstEnergy Solutions to be asking you to do specific
3 tasks?

4 A. As my testimony outlines, I support,
5 among other things, FES in regards to accounting and
6 financial reporting matters including forecasting.

7 Q. And do people at FES have any input in
8 your -- the evaluation of your employment
9 performance?

10 A. My boss is the one -- my boss being John
11 Taylor is the one that gives me my performance
12 evaluation and review.

13 Q. Okay. Do you know if people at FES have
14 input into that?

15 A. I don't know.

16 Q. Okay. And when Miss Noewert?

17 A. Noewer, Sharon Noewer.

18 Q. Noewer, when she asked you to be on the
19 FES team, did she provide you with any instructions
20 on what you should be doing on the team?

21 A. No.

22 Q. Okay. And what was your -- as a member
23 of the FES team, what was your role in assessing
24 this -- this term sheet?

1 A. I attended meetings that were primarily
2 to discuss the term sheet on the proposed PPA.

3 Q. Okay. How many meetings did you attend?

4 A. I don't recall.

5 Q. More than five or?

6 A. I don't remember how many exact meetings
7 I attended.

8 Q. Okay. Do you recall any of the meetings
9 you attended?

10 A. What -- I recall attending meetings,
11 being there.

12 Q. Can you recall any issues that were
13 discussed at those meetings?

14 A. I don't recall the nature and specific
15 discussions that we had on specific items related to
16 the term sheet, no.

17 Q. Okay. And in those meetings were you
18 representing FES?

19 A. What do you mean was I representing FES?

20 Q. Well, these meetings were negotiating a
21 term sheet, correct?

22 A. That's correct.

23 Q. Okay. And the term sheet is between FES
24 and the companies, correct?

1 A. That's correct.

2 Q. Okay. Did -- you were there on behalf of
3 the FES team, correct?

4 A. I was there to discuss the terms and to
5 ensure I understood the terms and how it would impact
6 FES.

7 Q. Were you advocating for FES's position in
8 those negotiations?

9 A. What do you mean advocating FES's
10 positions?

11 Q. Well, I assume -- is it your opinion that
12 the term sheet was negotiated at arm's length?

13 A. Yes.

14 Q. Okay. And what -- in your mind what does
15 arm's length mean?

16 A. That could mean a lot of different
17 things. I think it means that it was negotiated fair
18 and reasonable between two parties, that's not more
19 advantageous to one party versus the other.

20 Q. Okay. And would that also mean that the
21 two parties are advocating for their own positions?

22 A. I think that would be a fair statement,
23 yes.

24 Q. Okay. So were you advocating for FES's

1 positions in negotiations of the term sheet?

2 A. I would say that I was there to ensure
3 that the transaction made economic sense for FES.

4 Q. Okay. And what did you do to ensure
5 that?

6 A. I participated in the discussions on the
7 term sheet for the proposed PPA.

8 Q. Okay. And were there any provisions of
9 the PPA that -- check that.

10 Were there any provisions of the term
11 sheet that were -- over which there was disagreement?

12 MR. ALEXANDER: Objection. Asked and
13 answered. Go ahead.

14 A. I don't recall the specific discussions
15 related to what was discussed and what was -- had
16 more discussion. I don't recall the specific
17 meetings and what was discussed.

18 Q. Do you recall taking a viewpoint on any
19 issue in any of these meetings on the term sheet?

20 MR. ALEXANDER: Objection, asked and
21 answered.

22 A. I don't recall the specific discussions
23 of everything that we had in terms of the term sheet.

24 Q. Do you recall any specific discussion?

1 MR. ALEXANDER: Objection, asked and
2 answered. Go ahead.

3 A. I can't improve on the answer I have
4 given you.

5 Q. So you don't know how many meetings you
6 attended, and you don't know anything that was
7 discussed at those meetings, correct?

8 MR. ALEXANDER: Objection, argumentative.

9 Q. Is that correct?

10 A. What's correct?

11 Q. That you don't know how many meetings you
12 attended and you don't know anything that was
13 discussed at those meetings.

14 MR. ALEXANDER: Objection, compound
15 question.

16 A. Could you separate -- could you repeat
17 the question you are asking me?

18 Q. I was asking is it correct that you don't
19 know how many meetings you attended regarding the
20 term sheet?

21 A. I did not state that.

22 Q. Okay. How many meetings did you attend?

23 A. I said I don't recall the number of
24 meetings that I attended.

1 Q. Okay. And you don't recall any
2 substantive issue that was discussed at those
3 meetings?

4 A. I don't recall the details of every
5 single meeting we talked about the term sheet.

6 Q. Okay. Can you identify any substantive
7 issue that was discussed about the term sheet in any
8 meetings that you attended?

9 A. Not that -- no, I cannot.

10 Q. In any of your work related to the
11 proposed PPA, was there ever any discussion as to
12 whether FirstEnergy Solutions would be able to
13 terminate the PPA before the 15-year period had
14 ended?

15 A. I'm sorry, could you repeat the question?

16 MR. FISK: Could you read the question
17 back.

18 (Record read.)

19 A. I don't recall being involved in any of
20 those discussions.

21 Q. Okay. Do you have any opinion as to
22 whether FirstEnergy Solutions would commit to not
23 canceling the PPA before the 15 years has run?

24 A. I don't have an opinion on that.

1 Q. Okay. Do you know who might know that?

2 A. I don't know who would.

3 Q. Okay. And do you know who else -- who
4 else was at the meetings regarding the term sheet?

5 A. Other members of the FES team.

6 Q. Okay. Anyone else?

7 A. Members of the EDU team would have been
8 there.

9 Q. Okay. Do you know anybody specifically?

10 A. Specifically on which team?

11 Q. On the EDU team that were at these
12 meetings.

13 A. I know Jay Ruberto was at several of the
14 meetings.

15 Q. Okay. Anyone else?

16 A. I know Tracy Ashton I recall being at
17 some of the meetings.

18 Q. Anyone else?

19 A. No one specifically. I can't recall.

20 Q. And who is Tracy Ashton?

21 A. Tracy Ashton at the time of the meetings
22 was the manager of financial reporting and technical
23 accounting.

24 Q. For who?

1 A. FirstEnergy Service Company.

2 Q. That's the same company you work for?

3 A. That's correct.

4 Q. Do you recall anyone on the EDU team
5 being at these meetings who actually works for any of
6 the companies?

7 A. I don't know that.

8 Q. Okay, okay. So are you offering any
9 opinions regarding any of the provisions in the draft
10 term sheet?

11 MR. ALEXANDER: Beyond his written
12 prefiled testimony?

13 MR. FISK: Right, which doesn't mention a
14 term sheet, so yes.

15 A. Do I have any opinions about the term
16 sheet?

17 Q. About any provision in the term sheet.
18 Do you have any opinions?

19 A. I guess I don't understand what you mean
20 do I have any opinions on the term sheet.

21 Q. Well, is there any provision in this term
22 sheet that you are planning to offer an opinion
23 about, for example, at the hearing?

24 A. Oh, no.

1 Q. No, okay. And you testified earlier that
2 you thought that the term sheet -- well, let me not
3 put words in your mouth. Do you have an opinion
4 about the term sheet as a whole?

5 MR. ALEXANDER: Objection, legal opinion.
6 What are you asking him?

7 Q. Not legal, you are not a lawyer, but
8 any -- you know, you were part of the FES team that
9 helped negotiate this term sheet. Do you have any
10 opinion about the draft term sheet that's come out of
11 those negotiations?

12 A. Could you clarify what you mean by
13 opinion? Do I think it's a well written document?
14 Do I --

15 Q. Do you think it's fair to all the parties
16 involved?

17 A. Yes.

18 Q. Okay. And why?

19 A. There's a number of reasons why --

20 Q. Okay.

21 A. -- outlined in other witnesses in this
22 case and why it's a fair contract for the utilities.

23 Q. But I am asking your opinion as to you --
24 you just stated that you believe it's a fair contract

1 for the utilities, and I am asking you the reasons
2 why you believe that.

3 MR. ALEXANDER: Objection. You asked him
4 if he was going to offer an opinion of the term sheet
5 two questions ago. He said no and then you circled
6 back now at this point to what he thinks about the
7 document itself. He testified he is not going to
8 offer an opinion as to the terms of the term sheet,
9 so I am going to object to this being well beyond the
10 scope of his testimony.

11 MR. FISK: So he is not going to testify
12 at the hearing that he thinks this term sheet is a
13 fair document to the companies.

14 MR. ALEXANDER: He is going to testify to
15 his prefiled direct testimony. You asked him on
16 clarification was he offering anything in addition to
17 his prefiled direct testimony on this point. He
18 testified the answer was no. So does that solve our
19 problem?

20 MR. FISK: Let me make sure he didn't say
21 anything about this in his testimony. If he is not
22 going to testify with regards to the term sheet at
23 the hearing, then that's fine.

24 MR. ALEXANDER: You have got his prefiled

1 written direct testimony so.

2 MR. OLIVER: Trevor, cross is available
3 on any matter relevant to the proceedings. It
4 doesn't have to be related to his direct testimony.

5 MR. ALEXANDER: Thank you.

6 Q. You just stated you believe that the term
7 sheet is fair and that you have a number of reasons
8 for that, correct? That was your testimony, correct?

9 A. I believe it's a fair contract for all
10 parties involved for the many reasons that I already
11 outlined in other people's testimony. I agree with
12 all of those items they have brought out and pointed
13 out in their testimony.

14 Q. Do you know what those items -- those
15 reasons are?

16 A. There's a large number of reasons.

17 Q. And can you name any of them?

18 A. There is \$2 billion in projected benefits
19 to the Ohio ratepayers based on this ESP that is
20 outlined in others' testimonies.

21 Q. Okay.

22 A. There is one example.

23 Q. Okay. Any other reasons you believe this
24 is fair?

1 MR. ALEXANDER: Objection. Go ahead.

2 A. You asked me for an example. I gave you
3 an example.

4 Q. And I am asking if you have any other
5 reasons. You said you had many reasons, and I am
6 wondering what your reasons are that you believe this
7 purchase power agreement is fair to the company.

8 A. This ensures the plants provide power in
9 Ohio. It provides economic benefits to the state of
10 Ohio, the regions, those cities and states. I mean,
11 many different levels. There's two more reasons.

12 Q. Do you have any other reasons?

13 MR. ALEXANDER: Okay. We are asking him
14 to summarize the witnesses that are going to be
15 testifying in this proceeding. You can ask them
16 based on their testimony. We have gotten well beyond
17 anything in his prefiled written direct testimony on
18 a document you asked him to clarify he wasn't going
19 to testify on. So I don't understand the point of
20 asking him to summarize another witness's testimony.
21 So is this going to lead somewhere soon or?

22 MR. FISK: Well, I am asking -- he has
23 now opined, I believe, the purchase power agreement
24 itself is a fair deal for the companies. It's

1 different than the term sheet. It's the purchase
2 power agreement itself. He said he has many reasons
3 he believes this. I am asking him what his reasons
4 are. That's a perfectly legitimate and relevant
5 issue to explore what his reasons are.

6 MR. ALEXANDER: But you said over --
7 objection, well beyond the scope of his testimony so
8 you have asked him a question. He's answered it
9 summarizing another witness's testimony.

10 So at this point could we take a 5-minute
11 break, and during that break I will follow up on your
12 document issue?

13 MR. FISK: Sure.

14 MR. ALEXANDER: All right. Thank you.

15 (Recess taken.)

16 Q. (By Mr. Fisk) Okay. In the interest
17 of -- in the interest of time I wanted to try to
18 clarify something, I hope. Did you have any
19 involvement with any evaluation of the proposed
20 agreement -- the proposed power purchase agreement
21 done by the EDU team?

22 A. No.

23 Q. Okay. And did you provide the EDU team
24 with any data for their analyses?

1 A. I provided them my attachments in my
2 testimony and then any other information that they
3 had requested of me during -- during those couple of
4 months that the analyses and model was being run.

5 Q. Okay. So did -- they did request other
6 information from you?

7 A. A good example Jim Haney had requested
8 some information. My understanding that went to the
9 EDU team.

10 Q. Okay. So -- so information that Jim
11 Haney requested from you you gave to Jim Haney, and
12 he may have sent it to the EDU team.

13 A. That's correct.

14 Q. You personally didn't send any other
15 information to the EDU team?

16 A. No.

17 Q. Modeling input files or?

18 A. I don't -- I don't recall if I gave them
19 the output files like -- like we've provided for you.

20 Q. Okay.

21 A. I don't recall if we have or not.

22 Q. Or the input files.

23 A. Or the input files.

24 Q. Okay. And you -- you had no role in any

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1 modeling they may or may not have done, the EDU team?

2 A. That's correct, that's correct.

3 Q. Okay, okay. That should clear out some
4 stuff. Okay.

5 (Confidential Portion Excerpted.)

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Sierra Club Set 1

Case No. 14-1297-EL-SSO
Ohio Edison Company, The Cleveland Electric Illuminating Company and
The Toledo Edison Company for Authority to Provide for a Standard Service Offer
Pursuant to R.C. § 4928.143 in the Form of an Electric Security Plan

REQUEST FOR PRODUCTION OF DOCUMENTS

**SC Set 1 –
RPD-54**

Refer to page 4, lines 12-18 and page 5, lines 16-20 of the Lisowski Testimony. With regards to the modeling referenced therein:

- a. Produce, in machine readable electronic format with all formulas intact, all modeling files, including input and output files, and workpapers used in such modeling.
- b. If Mr. Lisowski carried out any sensitivity analyses of the dispatching, costs, or revenues of any of the Plants, produce, in machine readable electronic format with formulas intact, all modeling files, including input and output files, and workpapers used in carrying out such analysis.

Response:

a. Objection. This request is overbroad, unduly burdensome, and seeks proprietary information which would reveal methods by which FES makes long term plans for dispatch and operation of *all* its generation assets, including generation assets not part of this case, which is irrelevant to the issues in the case. Therefore, the Companies further object because the request seeks confidential trade secret information that is neither relevant nor reasonably calculated to lead to the discovery of admissible evidence. The Companies object to providing this confidential trade secret information to any third party even pursuant to a protective agreement. Subject to the foregoing, the results of the model have been previously provided. See Lisowski Direct Testimony.

- b. Not applicable. See response to SC Set 1 – INT 59.

Redacted

Redacted

P3-EPSA Set 1
Witness: Eileen M Mikkelsen
As To Objection: Carrie M. Dunn

Case No. 14-1297-EL-SSO
Ohio Edison Company, The Cleveland Electric Illuminating Company and
The Toledo Edison Company for Authority to Provide for a Standard Service Offer
Pursuant to R.C. § 4928.143 in the Form of an Electric Security Plan

RESPONSES TO REQUEST

P3-EPSA Set 1 With respect to the statement quoted above from Ms. Mikkelsen's direct testimony, if the answer
– INT-2 to Interrogatory No. 1 is in the affirmative, how are the Company's expectations at the time the
investments were made tested to evaluate whether they were reasonable?

Response:

Preserving the objections made above in INT 1, the assessment that the costs and revenues included in Rider RRS are not unreasonable should be made in accordance with the following guidelines:

1. There should exist a presumption that the decisions made were prudent.
2. The standard of reasonableness under the circumstances should be used.
3. Hindsight should not be used in determining prudence.
4. Prudence should be determined in a retrospective, factual inquiry.

Sierra Club Set 2
Witness: Jay A. Ruberto

Case No. 14-1297-EL-SSO
Ohio Edison Company, The Cleveland Electric Illuminating Company and
The Toledo Edison Company for Authority to Provide for a Standard Service Offer
Pursuant to R.C. § 4928.143 in the Form of an Electric Security Plan

RESPONSES TO REQUEST

**SC Set 2 –
INT-76**

Under the proposed transaction upon which the proposed ESP IV is based, are there any circumstances in which FES and/or the Companies could terminate the agreement prior to its May 31, 2031 expiration?

- a. If so:
 - i. Identify each and every circumstance in which the Companies could terminate the agreement before its expiration, including any transactional provision permitting such termination.
 - ii. Identify each and every circumstance in which FES could terminate the agreement before its expiration date, including any transactional provision permitting such termination.

Response:

- a. The Companies object to the characterization contained in the data request. The Economic Stability Program is an element of the ESP IV proceeding.
 - i. No purchase power agreement has been drafted. In addition to typical contract remedies, there are no provisions for termination by the Companies, only remedies for non-performance of Operating Work in accordance with Good Utility Practice.
 - ii. No purchase power agreement has been drafted. In addition to typical contract remedies, see section 20 of IEU Set 1-INT-25 Attachment 1.

Term Sheet	
1. <i>Buyers:</i>	Ohio Edison Company, The Cleveland Electric Illuminating Company, The Toledo Edison Company; provided that each Buyer's obligation will be several (and not joint) and provided further that the Buyer's several <i>pro rata</i> obligations will be updated on June 1 st of each year during the term hereof based on each Buyer's average of the coincident MW peaks, including distribution losses, on the ATSI system from the months of June through September of the prior year.
2. <i>Seller:</i>	FirstEnergy Solutions Corp.
3. <i>Product:</i>	All of Seller's rights in the Capacity of each Facility, together with the associated Energy, Ancillary Services, and Environmental Attributes
4. <i>Facilities:</i>	<ul style="list-style-type: none"> i. W. H. Sammis Plant, a 2,220 MW coal-fired and 13 MW diesel-fired power plant located in Stratton, Jefferson County, Ohio ii. Davis-Besse Power Station, a 908 MW nuclear power plant located in Oak Harbor, Ottawa County, Ohio; subject to condition that the NRC renews the operating license for Davis-Besse Facility for a 20-year term iii. Seller's 4.85% entitlement in Ohio Valley Electric Corporation ("OVEC")¹
5. <i>Quantity/Buyers' Contractual Capacity:</i>	One hundred percent (100%) of Sellers rights to the Capacity of each Facility together with Sellers rights to the Energy and

¹ Representing the rights and obligations associated with OE's 0.85% and TE's 4.00% OVEC ownership interests that were transferred to FE Generation and subsequently to Seller.

	Ancillary Services output associated with such 100% of each Facility's Capacity; provided that this term "Buyers' Contractual Capacity" includes one hundred percent (100%) of Sellers' rights to any capacity derates, uprates or capacity expansions at any Facility during the term of this Agreement.
6. <i>Delivery Points for Energy and Ancillary Services</i>	The unit-specific LMP Points at each Facility (PJM Pnodes to be specified in PPA).
7. <i>Obligation to Deliver/Receive:</i>	Seller agrees to sell and deliver, and Buyers agree to purchase, receive, and pay for, Buyers' Contractual Capacity and the Energy and Ancillary Services associated with Buyers' Contractual Capacity delivered by Seller to the Delivery Points during each hour of the Delivery Period. Seller also agrees to sell and deliver, and Buyers agree to purchase and receive and pay for all Environmental Attributes associated with the Facilities; provided that at termination of the Agreement Buyers will assign to Seller, and Seller will accept without recourse, all Environmental Attributes for the Facilities and that are owned or controlled by Buyer that are effective or in effect for time periods after the termination date.
8. <i>Unit Contingent:</i>	<p>All Energy, Capacity and Ancillary Services associated with each Facility and all of (i) Seller's obligation to sell and deliver, and (ii) Buyers' obligation to purchase, receive, and pay for, the Energy, Capacity and Ancillary Services associated with each Facility are Unit Contingent.</p> <p>Unit Contingent means, with respect to Energy, Capacity or Ancillary Services, that such Energy, Capacity or Ancillary Services is intended to be supplied from a given Facility and Seller's failure to deliver such Energy, Capacity or Ancillary Services is excused to the extent that a given Facility or portion of a Facility is unavailable; provided that Seller's failure to</p>

	<p>delivery Capacity, Energy or Ancillary Services will not be excused if the Seller could have avoided such failure by exercise of Good Utility Practice; and provided further that if Seller's failure to deliver Capacity, Energy or Ancillary Services could not have been avoided by exercise of Good Utility Practice then the failure to deliver such Energy, Capacity and Ancillary Services will be excused for the first 180 consecutive days of such unavailability period, and for any remaining unavailability period beyond the initial 180 day period Seller will provide replacement Capacity, Energy, Ancillary Services and Environmental Attributes (as the case may be), delivered to the ATSI zone, or the financial equivalent thereof for such remaining unavailability period; and provided further that in the event that a Capital Expenditure is required for Facility operations but such Capital Expenditure would render the affected Facility to be uneconomic then upon Buyers and Seller's written agreement Seller will either replace the Facility's output of Energy, Capacity, Ancillary Services and Environmental Attributes (all to be delivered to the ATSI zone at Seller's cost), or the Facility will be dropped from the PPA and Seller's obligations under the PPA for supply with regard to such Facility will be reduced to reflect that the Facility was dropped from the PPA.</p>
<i>9. Effective Date:</i>	The date the Agreement is executed by all Parties.
<i>10. Delivery Period:</i>	June 1, 2016 to May 31 st , 2031.
<i>11. Operating Work:</i>	During the Delivery Period, Seller has an obligation to perform the Operating Work in accordance with Good Utility Practice.
<i>12. Capital Expenditures:</i>	As pertains to the W.H. Sammis Plant and Davis-Besse Power Station, from time to time during the Delivery Period as deemed

	<p>necessary by Seller, Seller shall perform, or cause to be performed, Capital Expenditures Work related to such W.H. Sammis Plant and such Davis-Besse Power Station.</p> <p>By 120 days prior to the 12-month period that starts on June 1st of each year during the term of this agreement, Seller will develop and submit to Buyer for Buyer's review and comment an annual written Capital Expenditures plan for all Capital Expenditures Work deemed necessary by Seller that is scheduled to be performed at the Sammis Plant and the Davis-Besse Power Station during the referenced 12-month period. Within twenty (20) days of Buyer's receipt of the referenced plan, Buyer shall provide in writing to Seller any comments or queries to such plan, and Seller shall respond in writing (including where appropriate with documents as attachments or exhibits) to Buyer's queries (if any) within twenty (20) days of receipt of the Buyer's comments or queries. By 90 days prior to the referenced 12-month period, Seller and Buyer shall meet and discuss Buyer's comments and queries, and Seller's responses thereto. By 60 days prior to the referenced 12-month period, Seller shall issue a revised annual written Capital Expenditure plan that to the extent reasonable takes into account, or responds to, Buyer's comments and queries, including for each instance where the Seller did not accept or adopt one or more of Buyer's comments, an explanation for such non-acceptance or non-adoption.</p>
13. Contract Price:	<p>The Monthly Payment will be Seller's sole compensation for Seller's sale and delivery to Buyers of the Energy, Capacity and Ancillary Services and Environmental Attributes associated with the Facilities.</p>

	<p>The Monthly Payment will comprise the sum of monthly charges for: (1) the W.H. Sammis Plant and Davis Besse Power Station; and (2) the OVEC entitlement interest.</p> <p>(1) For the W.H. Sammis Plant and Davis-Besse Power Station, the Monthly Payment will be equal to the sum of (i) a Fuel Payment, (ii) an O&M Payment, (iii) a Depreciation Payment, (iv) a Capacity Payment, and (v) a Tax Reimbursement Payment.</p> <ul style="list-style-type: none"> i. Fuel Payment: amount of Fuel Expenses incurred by Seller to operate some or all of the Facilities for each calendar month during each Contract Year. ii. O&M Payment: amount of Operation and Maintenance Expenses of each Facility incurred by Seller for each calendar month during each Contract Year. iii. Depreciation Payment: for each calendar month during each Contract Year, amount of depreciation, accretion and decommissioning expenses actually incurred by Seller during the relevant month and directly related to its ownership interest in each Facility. Except as may be required by law, adverse Governmental Authority action or due to an impairment of the asset due to Governmental Authority action(s) or change in law, Seller agrees not to charge accelerated depreciation (<i>i.e.</i>, advance the useful life of an asset) without Buyers' written agreement. iv. Capacity Payment: an amount for each calendar month during each Contract Year equal to:
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	<p style="text-align: center;"><u>SIC x WACOC</u> 12</p> <p>v. Tax Reimbursement Payment: amount of Income Taxes applicable to Buyers' Capacity Payment based on the effective tax rate of the Seller. The effective tax rate will be updated annually. .</p> <p>(2) For the OVEC entitlement interest, the Monthly Payment will be equal to those costs related to and deriving from Seller's 4.85% entitlement in OVEC, as provided for in the Amended and Restated Inter-Company Power Agreement ("ICPA") dated as of September 10, 2010 among OVEC and its Sponsoring Companies (as such ICPA is amended from time to time).²</p>
14. <i>Planned Outage Schedule:</i>	Seller will develop and implement, or cause to be developed and implemented, an annual scheduled outage program for each Facility. Seller will review with Buyers the annual scheduled outage program for each Facility by no later than 120 days prior to the 12-month period that starts on June 1 st during each year of the agreement. Seller agrees to notify Buyers of changes to the scheduled outage program as soon as reasonably practicable.
15. <i>Scheduling and Dispatch:</i>	Buyers will Schedule and Dispatch 100% of the Energy and Ancillary Services associated with each Facility in accordance with the Agreement and within the operating parameters of each of the Facilities, as such operating parameters are determined by Seller from time to time.

² As that term is defined in the ICPA, and which includes FirstEnergy Generation, LLC.

	<p>Upon the Effective Date, but no later than five (5) business days after the Effective Date, Seller will effect in PJM's eRPM system the transfer of capacity rights to Buyers for the Delivery Period. Buyers will be solely responsible for offering Buyers' Contractual Capacity into the PJM capacity auctions occurring after the Effective Date and covering PJM capacity delivery years within the Delivery Period.</p> <p>Seller assigns to Buyers, and Buyers accept, all rights and obligations for any portion of Buyers' Contractual Capacity in respect of the Delivery Period that has been offered or otherwise committed to PJM or another third party as of the Effective Date of the Agreement. Seller acknowledges Buyers' rights after the Effective Date to offer into the PJM capacity auctions Buyers' Contractual Capacity in respect of the Delivery Period that has not been offered or otherwise committed as of the Effective Date of the Agreement. Buyers assign to Seller, and Seller accepts without resource, all rights and obligations for any portion of Buyers' Contractual Capacity in respect of the Delivery Period that has been offered or otherwise committed to PJM or another third party for time periods at or after termination of the Agreement.</p> <p>All Energy and Ancillary Services associated with Buyers' Contractual Capacity and made available at a given Delivery Point will be allocated to Buyers in accordance with their respective Shares and will be recorded by the Parties in PJM's scheduling and settlement systems. All credits and charges (including Imbalance Charges) associated with the Capacity, and Energy and Ancillary Services associated therewith and made available at a given Delivery Point will be settled in the</p>
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	respective PJM accounts of Buyers by means of the PJM settlement process.
<i>16. Force Majeure:</i>	<p>To the extent any Party is prevented by Force Majeure from carrying out, in whole or in part, its obligations under the Agreement (other than an obligation to pay money), and such Party (the "Affected Party") gives notice and details of the Force Majeure to the other Parties as soon as practicable (but not later than thirty (30) days thereafter to the extent such details are then available) then the Affected Party shall be excused from the performance of its obligations under the Agreement (other than the obligation to make payments and, in the case of Seller, Seller's obligation to supply Capacity) so long as the Affected Party shall be using all reasonable efforts to overcome the Force Majeure and resume performance as soon as possible; provided that such term "Force Majeure" will not include any event, circumstance or occurrence which could have been avoided through the exercise of Good Utility Practice; and provided further that such term "Force Majeure" will not apply to Seller's obligation to cover the capacity supply obligation associated with each facility as such obligation is reflected in PJM's eRPM system. The non-Affected Parties shall not be required to perform or resume performance of its obligations (excluding payment obligations) to the Affected Party corresponding to the obligations of the Affected Party excused by Force Majeure, until such time and to the extent the Affected Party resumes its performance.</p>
<i>17. Payments and Netting:</i>	<p>As soon as practicable after the end of each month, but no later than fifteen (15) days before payment is due, Seller will render to Buyers an invoice for the payment obligations incurred during the preceding month. All invoices shall be due and payable on or before the twentieth (20th) day of each month.</p>

	<p>The Parties shall discharge mutual debts and payment obligations due and owing to each other under the Agreement through netting, in which case all amounts owed by each Party to the other Party, including any related damages, interest, and payments or credits, shall be netted so that only the excess amount remaining due shall be paid by the Party who owes it.</p>
<p><i>18. Books and Records; Audit:</i></p>	<p>Seller shall keep all necessary books of record, books of account, and memoranda of all transactions involving each Facility, in conformance, where required, with GAAP and the FERC's Uniform System of Accounts. Seller shall make all computations relating to the Facility and all allocations of the costs and expenses of each Facility.</p> <p>Buyers have the right to examine the Seller's records to the extent reasonably necessary to verify the accuracy of any statement, charge or computation. If requested, Seller shall provide to Buyers statements evidencing the quantities delivered to the Buyers at the Delivery Points. If any such examination reveals any inaccuracy in any statement, the necessary adjustments in such statements and the payments thereof will be made promptly, provided, however, that any claim by a Party for overpayment or underpayment with respect to an invoice is waived unless the other Party is notified of the claim within ninety (90) days after the invoice is rendered or any specific adjustment to the invoice is made.</p> <p>Seller shall reasonably and timely provide all data and information requested by Buyers: (i) to respond to a Governmental Authority request for information; (ii) to prepare for and make other regulatory filings; and (iii) as required by law with respect to Buyers.</p>

<p><i>19. Limitations of Liability:</i></p>	<p>For breach of any provision of the Agreement, obligor's liability shall be limited to direct damages only, such direct damages shall be the sole and exclusive remedy and all other remedies or damages are waived.</p> <p>No Party shall be liable for consequential, incidental, punitive, exemplary, or indirect damages, lost profits or other business interruption damages, by statute, in tort or contract, under any indemnity provision or otherwise.</p>
<p><i>20. Conditions:</i></p>	<p>Seller's obligation to consummate the transaction is subject to the Seller having obtained any and all Approvals required with respect to its obligations under the Agreement and such Approvals shall be in form and substance satisfactory to Seller in its sole and absolute discretion; provided that, in the event that Seller learns that a required Governmental Approval is lacking and after reasonable effort is not and will not be forthcoming (such reasonable effort to be determined by Seller), then Seller may upon ten (10) days written notice to Buyers terminate the Agreement.</p>
<p><i>21. Representations and Warranties:</i></p>	<p>Each Party represents and warrants that:</p> <ul style="list-style-type: none"> (i) It is duly organized, validly existing, and in good standing (ii) The execution, delivery and performance of the Agreement are within its powers, have been duly authorized by all necessary action and do not violate any of the terms and conditions in its governing documents, and any contracts to which it is a party (iii) The Agreement is a legally valid and binding obligation enforceable against it (iv) It is not bankrupt

	<p>(v) There is not pending against it legal proceedings that could materially adversely affect its ability to perform its obligations under this Agreement</p> <p>(vi) No material breach of the Agreement has occurred and would not occur as a result of its entering into or performing its obligations under the Agreement</p> <p>(vii) It has entered into the Agreement in connection with the conduct of its business and it has the capacity or ability to make or take delivery of the Buyers' Contractual Capacity and associated Energy and Ancillary Services</p>
<i>22. Risk of Loss:</i>	Title to and risk of loss related to the Capacity and associated Energy and Ancillary Services shall transfer from Seller to Buyers at the Delivery Points.
<i>23. Indemnification:</i>	Each Party shall indemnify, defend and hold harmless the other Parties and such Parties' partners, directors, officers, employees, agents and representatives from and against any Claims arising from or out of any event, circumstance, act or incident first occurring or existing during the period when control of, risk of loss related to, and title to the Capacity and associated Energy and Ancillary Services is vested in such Party.
<i>24. Assignment:</i>	No Party shall assign the Agreement without the prior written consent of the other Parties, which consent may be withheld in a Party's sole discretion; provided, however, that any Party may, without the consent of the other Parties (and without relieving itself from liability), (i) transfer, sell, pledge, encumber or assign the Agreements or the accounts, revenues or proceeds thereof in connection with any financing or other financial arrangements, (ii) transfer or assign the Agreement to an

	Affiliate which shall agree in writing to be bound to the terms and conditions of the Agreement.
<i>25. Governing Law:</i>	Ohio
<i>26. Standard of Review:</i>	Absent the agreement of all Parties to the proposed change, the standard of review for changes to any rate, charge, classification, term or condition of the Agreement shall be the <i>Mobile-Sierra</i> Doctrine ("public interest" standard).

Definitions

“Ancillary Services” means regulation and frequency response services; energy imbalance services; automatic generating control services; spinning, non-spinning, supplemental and replacement reserve services; reactive power and voltage support services; black start services; and all other services or products ancillary to the operation of the Facilities that are defined as ancillary services in PJM’s tariff or are commonly sold or saleable, to the extent that the assets comprising a given Facility are technically capable of providing those services or products.

“Approvals” means all approvals, permits, licenses, consents, waivers or other authorizations from, notifications to, or filings or registrations with, third parties, including Governmental Approvals.

“Capacity” means the output level, expressed in MW, that each Facility, or the components of equipment thereof, is capable of continuously producing and making available at the Delivery Point associated with such Facility, taking into account the operating condition of the equipment at that time, the auxiliary loads and other relevant factors; provided that the term Capacity shall mean the capacity supply obligation that is associated with each of the Facilities in PJM’s eRPM system for any PJM Delivery Year for which a capacity supply obligation has been established under PJM’s tariffs.

“Capacity Payment”

$$\text{“Capacity Payment”} = \frac{\text{SIC} \times \text{WACOC}}{12}$$

“Seller’s Invested Capital (“SIC”) means the total net book value of the in-service Facilities, including nuclear fuel (but only to the extent that applicable accounting rules permit nuclear fuel costs to be capitalized), any Accumulated Deferred Income Taxes associated with the invested capital, allocations of capital used to support the Facilities, Materials and Supplies Inventory (including to the extent that applicable accounting rules permit fossil fuel), and Capital Expenditures Work that is performed at any Facility and that is placed into service after the Effective Date. To the extent that there is a difference between SIC costs for a given month and SIC collections for that month, the SIC calculation for future months will include a reconciliation to “true up” such difference. The total SIC will be calculated as the average of the total net book value at beginning of the month and the end of the month, respectively.

“Weighted Average Cost of Capital (“WACOC”) means the sum of the equity component and the debt component of the WACOC. WACOC is calculated using a 50% equity and 50% debt capital structure. The equity component of the WACOC will be the product of the equity share of the capital structure and the ROE (*i.e.*, 0.5×0.1115). The debt component will be the product of the debt share of the capital structure and the Seller’s embedded cost of debt which changes annually (*i.e.*, $0.5 \times$ long-term embedded cost of debt). An example formula for calculating the WACOC is:

$$\text{WACOC} = (0.5 \times 0.1115) + (0.5 \times \text{long-term embedded cost of debt})$$

“Seller’s Return on Equity (“ROE”) means Seller’s ROE, which is defined as 11.15% and shall be fixed over the term of the agreement.

“Capital Expenditures Work” shall mean the modeling, studying, engineering, design, procurement, purchasing, construction, inspection, start-up and testing of capital expenditures, replacements, spares,

repairs or additions to a given Facility, procurement of auxiliary power necessary to support other Capital Expenditures Work, procurement or retention of licenses (but only where applicable accounting rules permit such costs to be capitalized); including any and all such actions as may be required to comply with a permit, rule, regulation, order, standard or other requirements of a Governmental Authority.

"Claims" means all claims or actions, threatened or filed and, whether groundless, false, fraudulent or otherwise, that directly or indirectly relate to the subject matter of an indemnity, and the resulting losses, damages, expenses (including reasonable attorneys' fees and disbursements) and court costs, whether incurred by settlement or otherwise, and whether such claims or actions are threatened or filed prior to or after the termination of the Agreement.

"Effective Date" means the date on which all of the conditions precedent set forth in Section 20 have been satisfied or waived.

"Energy" means three-phase, 60-cycle alternating current electric energy, expressed in MWh.

"Environmental Attributes" means, to the extent associated with one or more the Facilities and/or the generation of Energy at a given Facility, as applicable, any and all of the following: renewable energy credits, renewable energy certificates, alternative energy credits, and any other credits, including environmental air quality credits, emissions reduction credits, energy credits, and any allowances, reductions, offsets, certificates, property, and benefits, that are granted or awarded or transferred or conferred or acquired over the Delivery Period through existing or new governmental programs on the basis of environmental, or power source, or emissions characteristics that are or may be related to Facility operations, and actual or potential emissions or avoided emissions or reductions of waste of any kind, to the air, soil or water of substances (in whatsoever form) that is or are now or may be in the future regulated under federal, state or local laws. The term "Environmental Attributes" does not include Energy, Capacity, or Ancillary Services or the power or energy attributes of a Facility or Facilities.

"Fuel Expenses" means all fixed or variable costs, expenses, losses, liabilities, claims and charges related to the acquisition, storage, inventory, balancing and transportation and delivery of fuel for the Facilities, including reagents, emissions allowances, and related costs of credit at weighted average cost; provided that the term "Fuel Expenses" excludes the costs of any fuel that is capitalized under applicable accounting rules and guidance; and provided further that all costs and expenses will be calculated on a consumed basis.

"GAAP" means accounting principles generally accepted in the United States of America.

"Good Utility Practice" means any of the practices, methods and acts engaged in or approved by a significant portion of the electric utility industry during the relevant time period, or any of the practices, methods and acts which, in the exercise of reasonable judgment in light of the facts known at the time the decision was made, could have been expected to accomplish the desired result at a reasonable cost consistent with good business practices, reliability, safety and expedition. Good Utility Practice is not intended to be limited to the optimum practice, method, or act to the exclusion of all others, but rather to be acceptable practices, methods, or acts generally accepted in the region.

"Governmental Approvals" means any permit, authorization, registration, consent, action, waiver, exception, variance, order, judgment, decree, license, exemption, publication, filing, notice to, or declaration of or with, or required by any Governmental Authority or applicable law; provided that the

term Governmental Approval as used in this definition does not include the Public Utilities Commission of Ohio or its successor agency.

“Governmental Authority” means any federal, state, local, or municipal government body; and any governmental, regulatory, or administrative agency, commission, body, agency, instrumentality, or other authority lawfully exercising or entitled by law to exercise any executive, judicial, legislative, administrative, regulatory, or taxing authority or power, including any court or other tribunal.

“Imbalance Charges” means any penalties, fees or charges assessed by PJM for failure to satisfy requirements for balancing of electric energy receipts and deliveries or loads and generation, or payable to any other Person in connection with the delivery of energy in an amount(s) different from the amount(s) scheduled.

“Materials and Supplies Inventory” is as defined in Part 101, Uniform System of Accounts for Public Utilities, of FERC’s regulations, as such may be amended from time to time.

“Operation and Maintenance Expenses” means all fixed or variable costs, expenses, losses, liabilities, claims, charges and associated credits incurred directly or indirectly in the performance of operation, maintenance, use, repair of the Facility, including the procurement of auxiliary power, but not including Fuel Expenses.

“Operating Work” means the operation, maintenance, use, repair or retirement of the Facility on or after the Effective Date, including but not limited to labor; parts; supplies; insurance; permits; licensing; taxes other than income; procurement of ancillary services, fuel and other consumables; fuel acquisition, transportation balancing and storage; waste handling and disposal (including coal ash or spent nuclear fuel); filing, defense and settlement of claims, suits and causes of action; procurement (or sale) of Allowances and settlement of all other environmental charges (or credits) pertaining to the operation of the Facility; including any and all such actions as may be required to comply with a permit, rule, regulation, order, standard or other requirements of a Governmental Authority; but excluding any Capital Expenditures Work.

“Share” means, with respect to each Buyer, each Buyer’s several (and not joint) obligation, as such obligation is calculated as of June 1, 2016 based on each Buyer’s average of the coincident MW peaks, including distribution losses, on the ATSI system from the months of June through September of 2015; and provided further that the Buyer’s several *pro rata* obligations will be updated on June 1st of each subsequent updated on June 1st of each year during the term hereof based on each Buyer’s average of the coincident MW peaks, including distribution losses, on the ATSI system from the months of June through September of the prior year year during the term hereof based on each Buyer’s average of the coincident MW peaks, including distribution losses, on the ATSI system from the months of June through September of the prior year .

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**Ohio Environmental Council &
Environmental Defense Fund Set 1
Witness: Legal
As to Objections: Carrie M. Dunn**

Case No. 14-1297-EL-SSO
Ohio Edison Company, The Cleveland Electric Illuminating Company and
The Toledo Edison Company for Authority to Provide for a Standard Service Offer
Pursuant to R.C. § 4928.143 in the Form of an Electric Security Plan

RESPONSES TO REQUEST

**OEC/EDF
Set 1 – INT-5**

Has the Company created a plan to comply with the anticipated carbon reduction goals to be required by the proposed U.S. EPA's Clean Power Plan? And if the answer is in the affirmative, please identify and describe the Company's plan, as well as any and all documentation relating to the creation of this plan.

Response:

Objection. This request is overbroad, unduly burdensome and calls for speculation. Moreover, this request is neither relevant nor reasonably calculated to lead to the discovery of admissible evidence. This request is also vague and ambiguous in its references to "Company" and "plan" and it is unclear which plants the question may be referring to. Subject to and without waiving the foregoing objection, no, Ohio Edison Company, The Cleveland Electric Illuminating Company and The Toledo Edison Company have not created a plan to comply with the anticipated carbon reduction goals to be required by the proposed U.S. EPA's Clean Power Plan.

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Witness: Judah L. Rose
As to Objections: Carrie M. Dunn

Case No. 14-1297-EL-SSO
Ohio Edison Company, The Cleveland Electric Illuminating Company and
The Toledo Edison Company for Authority to Provide for a Standard Service Offer
Pursuant to R.C. § 4928.143 in the Form of an Electric Security Plan

RESPONSES TO REQUEST

**SC Set 2 –
INT-65**

Refer to page 56, Table 12 of the Rose Testimony.

- i. Please identify the annual carbon price projections before applying any weights of probability.
 - a. Please confirm or deny that the carbon price projections are the same as those resulting from ICF's modeling of the EPA's proposed 111(d) rule as described here: <http://www2.epa.gov/sites/production/files/2014-06/documents/20140602ria-clean-power-plan.pdf>
 - i. If denied, please explain why they are different and provide the shadow prices modeled by ICF for the 111(d) rule.
 - b. Please explain how these carbon prices were applied to the projected operating costs of each unit at Sammis, Kyger Creek and Clifty Creek.
 - i. If no carbon costs were incorporated into operating costs for the coal units, please explain why not.

Response:

i.

<u>CO2 Prices 2013\$/Ton</u>	2016	2018	2020	2023	2030
No CO2 policy	0.0	0.0	0.0	0.0	0.0
Mass cap - 1500lb/MWh to 1000 lb/MWh	0.0	0.0	2.9	10.4	18.5
Waxman-Markey	0.0	0.0	25.5	30.5	39.0

a. Denied.

- i. Objection. This request is vague and ambiguous. Subject to and without waiving the foregoing objections, the ICF carbon price projections used in this proceeding are provided in subpart (i). These projections are not the same as those resulting from ICF's modeling of the EPA's proposed 111(d) rules. The projections differ because the carbon price projections in EPA's proposed 111(d) are derived from the IPM model with underlying input assumptions developed by EPA. The carbon prices in Mr. Rose's testimony were developed in the same IPM model but under ICF's input assumptions. Thus resulting carbon price projections are different. Presuming the "shadow prices modeled by ICF for the 111(d) rule" are a reference to the projections ICF did for EPA using EPA's input assumptions, the results of the EPA modeling are available at: <http://www.epa.gov/airmarkets/powersectormodeling/docs/Option%201%20State.zip>. To access the forecasts, please download the file above. Once it is downloaded, please go to the following file, in the following subfolder: Proposed Clean Power Plan_Option 1 State\Proposed Clean Power Plan_Option 1 State_rpt files.zip\Option 1 State - April 2014 Draft

EnvironmentalMeasures.xlsx. In the environmental measures report, please filter the constraint name field (column C) of the "ShadowPriceSummary" tab for "NSPS". This will return a full list of CO2 credit prices for the various 111(d) constraints.

- b. In the modeling for Sammis, carbon costs were included in both the dispatch modeling assumptions and in the fuel expense assumptions for the Sammis plant. In the modeling for OVEC, carbon costs were included in the dispatch modeling assumptions but were mistakenly omitted from the projections of the operating costs for the OVEC units. Including carbon costs in projections of the operating costs for OVEC would have the effect of increasing the fuel costs and expenses of the OVEC units.

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Ohio Edison Company, The Cleveland Electric Illuminating Company and
The Toledo Edison Company for Authority to Provide for a Standard Service Offer
Pursuant to R.C. § 4928.143 in the Form of an Electric Security Plan

RESPONSES TO REQUEST

OCC Set 1 –
INT-19

Referring to page 4 of the Direct Test of Companies' witness Ruberto, for "individuals from regulated generation, transmission, legal, rates and accounting" that served on the EDU Team:

- a. What is each person's name, job title and the entity that employs him/her?
- b. Who (name and job title) selected and/or approved persons to serve on the EDU Team?
- c. When was the EDU Team formed?
- d. Who from the EDU Team actually negotiated the proposed transaction with FES?
- e. Who from FES (name and job title) negotiated the proposed transaction?
- f. Who (name and job title) from the Companies, from FES and from any other FirstEnergy affiliate had to approve the proposed transaction?

Ohio Edison Company, The Cleveland Electric Illuminating Company and
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Pursuant to R.C. § 4928.143 in the Form of an Electric Security Plan

RESPONSES TO REQUEST

Response:

- a. Team Lead: Jay Ruberto, Director, Regulated Generation and Dispatch, FirstEnergy Service Company

Marlene Barwood, Assistant Controller, FEU, FirstEnergy Service Company

Tracy Ashton, Manager, Financial Reporting & Technical Accounting, FirstEnergy Service Company (subsequently transitioned to Manager, Reporting Strategy & Process Management, FirstEnergy Service Company)

James Burk, Managing Counsel, FirstEnergy Service Company

Anne Rericha, Attorney, FirstEnergy Service Company

Richard Ziegler, Director, FERC & RTO Technical Support, FirstEnergy Service Company

Joanne Savage, Analyst, FirstEnergy Service Company

Michael Thorn, Manager, Agreements Support, FirstEnergy Service Company

Amy Morrow, Analyst, Financial Reporting & Technical Accounting, FirstEnergy Service Company
- b. Mark Julian, Vice President, Utility Operations, FirstEnergy Service Company
- c. May 20, 2014
- d. The EDU team listed in (a) negotiated the proposed transaction.
- e. Team Lead: Sharon Noewer, Director, Competitive Market Policies, FES (subsequently transitioned to Director, Market Policy Planning & Performance, FirstEnergy Service Company)

Nicholas Fernandez, Director, FES Finance, FirstEnergy Service Company (subsequently transitioned to Director, Business Planning & Performance, FirstEnergy Service Company)

Jason Lisowski, Assistant Controller, FES/FEG, FirstEnergy Service Company

Ohio Edison Company, The Cleveland Electric Illuminating Company and
The Toledo Edison Company for Authority to Provide for a Standard Service Offer
Pursuant to R.C. § 4928.143 in the Form of an Electric Security Plan

RESPONSES TO REQUEST

David Pinter, Executive Director, Business Development, FirstEnergy Service
Company

Paul Harden, Senior Vice President, Fleet Engineering, FirstEnergy Nuclear
Operating Company

Celia Hashlamoun, Analyst, FirstEnergy Service Company

Karen Sealy, Attorney, FirstEnergy Service Company

Brian Knipe, Attorney, FirstEnergy Service Company

Frederick von Ahn, Vice President, Central Fleet Operations, FirstEnergy Generation,
LLC

Jacob McDermott, Attorney, FirstEnergy Service Company

Scott Casto, Attorney, FirstEnergy Service Company

- f. Charles E. Jones, Executive Vice President & President, FirstEnergy Utilities,
FirstEnergy Service Company

Donald Schneider, President FirstEnergy Solutions, FirstEnergy Solutions, Corp.

Sierra Club Set 1
Witness: Jay A. Ruberto
As to objections: Carrie M. Dunn

Case No. 14-1297-EL-SSO
Ohio Edison Company, The Cleveland Electric Illuminating Company and
The Toledo Edison Company for Authority to Provide for a Standard Service Offer
Pursuant to R.C. § 4928.143 in the Form of an Electric Security Plan

RESPONSES TO REQUEST

**SC Set 1 –
INT-53**

- Refer to page 4, lines 3-12 of the testimony of Jay A. Ruberto (“Ruberto Testimony”).
- a. Identify, by name, company, and title, each member of the EDU Team.
 - b. Identify, by name and title, each person who appeared on behalf of FES in the EDU Team’s negotiations with FES over the proposed transaction and its terms.
 - c. State whether any independent third party was involved in the review or negotiation of the proposed transaction.
 - i. If so, identify by name, company, and title, each such third party, and explain their role in the negotiations.
 - ii. If not, explain why not.
 - d. Describe in detail the specific steps taken in the “lengthy process of fact gathering, analysis and negotiation” engaged in by the EDU Team.

Response:

- a. See Response to OCC Set 1-INT-19(a).
- b. See Response to OCC Set 1-INT-19(e).
- c. No.
 - i. N/A
 - ii. The EDU Team was staffed with the expertise to review the proposed transaction and evaluate whether it would benefit, among other things, the Companies’ customers, the local and regional economies and the Companies themselves. Also, it would be unusual for parties to confidential arm’s-length negotiations of a commercial transaction to engage a third party to participate in their negotiations.
- d. Objection. This interrogatory calls for a narrative response. *See Penn Cent. Transp. Co. v. Armco Steel Corp.*, 271 N.E.2d 877 (Montgomery Co., 1971) (improper use of discovery device or interrogatory to require detailed narrative response. Subject to and without waiving the foregoing objection, in May 2014, the EDU team began meeting to evaluate the proposed transaction, the plants being offered as well as how the proposed transaction would impact the Companies and their customers. Data was requested and received regarding the plants being offered. This information was reviewed and additional data was requested as needed. Energy/capacity prices and plant costs were analyzed to determine the value of this transaction. Throughout this process, the EDU team continued to meet to discuss the EDUs’ positions regarding a potential transaction in anticipation of negotiations. The EDU team and the FES team then met in June and July for several days of face to face negotiations on a term sheet.

Sierra Club Set 2
Witness: Jay A. Ruberto

Case No. 14-1297-EL-SSO
Ohio Edison Company, The Cleveland Electric Illuminating Company and
The Toledo Edison Company for Authority to Provide for a Standard Service Offer
Pursuant to R.C. § 4928.143 in the Form of an Electric Security Plan

RESPONSES TO REQUEST

**SC Set 2 –
INT-79**

State whether the Companies or FirstEnergy issued a RFP or otherwise assessed the availability or cost of other resource options for achieving the purported retail rate stability goals of the Economic Stability Program.

- a. If so:
 - i. identify each such RFP or other assessment, and explain the results.
- b. If not, explain why not.

Response:

Objection. This request seeks information not in the possession, custody, or control of the Companies. Subject to and without waiving the foregoing objection, no.

- a. n/a
- b. The Companies were approached by FES with a proposal and it was that proposal that was evaluated. An RFP was not deemed necessary to evaluate the merits of that proposal. Moreover, as the benefits of the proposal and subsequent Economic Stability Program were evaluated, it became apparent there are many benefits unique to this transaction that would not easily or expeditiously be duplicated through an RFP solicitation. As described by several Company witnesses including Strah, Moul, and Ruberto, the continued operation of these specific plants provides significant economic benefits to the region, and promotes fuel diversity and grid reliability, all while providing rate stability for all of the Companies' customers by conveying over \$2 billion in potential credits over the term of the Program.

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Net CONE (UCAP) (\$/MW-day) by LDA

	2010/2011	2011/2012	2012/2013	2013/2014	2014/2015	2015/2016	2016/2017	2017/2018
RTO	\$163.46	\$160.76	\$276.09	\$317.95	\$342.23	\$320.63	\$330.53	\$351.39
MAAC	\$163.46	\$160.76	\$176.44	\$227.20	\$241.91	\$267.61	\$276.90	\$313.00
EMAAC	\$163.46	\$160.76	\$212.50	\$261.06	\$275.02	\$313.84	\$329.94	\$365.87
SWMAAC	\$163.46	\$160.76	\$176.44	\$227.20	\$241.91	\$267.61	\$276.90	\$313.00
PS	\$163.46	\$160.76	\$212.50	\$261.06	\$275.02	\$313.84	\$329.94	\$365.87
PSNORTH	\$163.46	\$160.76	\$212.50	\$261.06	\$275.02	\$313.84	\$329.94	\$365.87
DPLSOUTH	\$163.46	\$160.76	\$212.50	\$261.06	\$275.02	\$313.84	\$329.94	\$365.87
PEPCO	\$163.46	\$160.76	\$176.44	\$227.20	\$241.91	\$267.61	\$276.90	\$313.00
ATSI						\$358.22	\$362.64	\$373.75
ATSI-CLVD							\$362.64	\$373.75
COMED								\$373.75
BGE								\$313.00
PL								\$354.46

Sources:

<http://www.pjm.com/markets-and-operations/rpm/rpm-auction-user-info.aspx>

"Planning Period Parameters", sheet "20XX-20YY Parameters", row 20

Resource Clearing Price (\$/MW-day) by LDA									
	2009/2010	2010/2011	2011/2012	2012/2013	2013/2014	2014/2015	2015/2016	2016/2017	2017/2018
RTO	\$102.04	\$174.29	\$110.00	\$16.46	\$27.73	\$125.99	\$136.00	\$59.37	\$120.00
MAAC	\$102.04	\$174.29	\$110.00	\$133.37	\$226.15	\$136.50	\$167.46	\$119.13	\$120.00
EMAAC	\$102.04	\$174.29	\$110.00	\$139.73	\$245.00	\$136.50	\$167.46	\$119.13	\$120.00
SWMAAC	\$102.04	\$174.29	\$110.00	\$133.37	\$226.15	\$136.50	\$167.46	\$119.13	\$120.00
PS	\$102.04	\$174.29	\$110.00	\$139.73	\$245.00	\$136.50	\$167.46	\$219.00	\$215.00
PSNORTH	\$102.04	\$174.29	\$110.00	\$185.00	\$245.00	\$225.00	\$167.46	\$219.00	\$215.00
DPLSOUTH	\$102.04	\$174.29	\$110.00	\$222.30	\$245.00	\$136.50	\$167.46	\$119.13	\$120.00
PEPCO	\$102.04	\$174.29	\$110.00	\$133.37	\$247.14	\$136.50	\$167.46	\$119.13	\$120.00
ATSI							\$357.00	\$114.23	\$120.00
ATSI-CLEVELAND								\$114.23	\$120.00
COMED									120.00
BGE									120.00
PL									120.00

Sources:

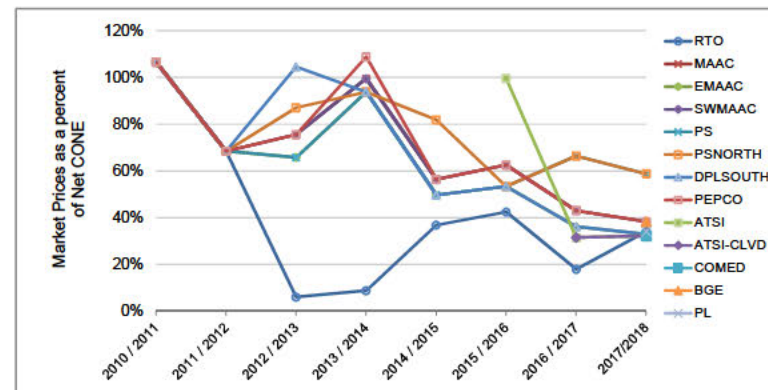
<http://www.pjm.com/markets-and-operations/rpm/rpm-auction-user-info.aspx>

"Base Residual Auction Results" sheet "BRA Resource Clearing Results", range "Annual Resource Clearing Price"

BRA Resource Clearing Results

Market Prices as a % of Net CONE by LDA								
	2010/2011	2011/2012	2012/2013	2013/2014	2014/2015	2015/2016	2016/2017	2017/2018
RTO	107%	68%	6%	9%	37%	42%	18%	34%
MAAC	107%	68%	76%	100%	56%	63%	43%	38%
EMAAC	107%	68%	66%	94%	50%	53%	36%	33%
SWMAAC	107%	68%	76%	100%	56%	63%	43%	38%
PS	107%	68%	66%	94%	50%	53%	66%	59%
PSNORTH	107%	68%	87%	94%	82%	53%	66%	59%
DPLSOUTH	107%	68%	105%	94%	50%	53%	36%	33%
PEPCO	107%	68%	76%	109%	56%	63%	43%	38%
ATSI						100%	31%	32%
ATSI-CLVD							31%	32%
COMED								32%
BGE								38%
PL								34%

	2010 / 2011	2011 / 2012	2012 / 2013	2013 / 2014	2014 / 2015	2015 / 2016	2016 / 2017	2017/2018
RTO	107%	68%	6%	9%	37%	42%	18%	34%
MAAC	107%	68%	76%	100%	56%	63%	43%	38%
EMAAC	107%	68%	66%	94%	50%	53%	36%	33%
SWMAAC	107%	68%	76%	100%	56%	63%	43%	38%
PS	107%	68%	66%	94%	50%	53%	66%	59%
PSNORTH	107%	68%	87%	94%	82%	53%	66%	59%
DPLSOUTH	107%	68%	105%	94%	50%	53%	36%	33%
PEPCO	107%	68%	76%	109%	56%	63%	43%	38%
ATSI						100%	31%	32%
ATSI-CLVD							31%	32%
COMED								32%
BGE								38%
PL								34%
	1	1	1	1	1	1	1	1



Cleared UCAP MW								
	2010 / 2011	2011 / 2012	2012 / 2013	2013 / 2014	2014 / 2015	2015 / 2016	2016 / 2017	2017/2018
RTO	132,191	132,222	70,691	85,103	82,799	88,103	96,791	92,259
MAAC	0	0	22,778	23,562	23,498	21,743	22,975	24,460
EMAAC	0	0	22,645	23,204	21,154	24,596	23,477	24,354
SWMAAC	0	0	11,595	6,450	5,510	4,864	5,956	5,600
PS	0	0	3,672	3,860	6,144	3,089	2,597	2,409
PSNORTH	0	0	3,522	4,159	1,439	3,641	3,702	3,702
DPLSOUTH	0	0	1,242	1,612	3,818	1,722	1,746	1,746
PEPCO	0	0	0	4,792	5,615	6,136	6,094	6,094
ATSI	0	0	0	0	0	10,668	5,822	6,127
ATSI-CLVD	0	0	0	0	0		2,850	2,850
RTO Total	132,191	132,222	136,144	152,743	149,975	164,561	169,160	166,750
MAAC Total			65,452	67,640	67,176	65,790	66,546	68,364
EMAAC Total			31,080	32,835	32,554	33,048	31,522	32,211
SWMAAC Total			11,595	11,242	11,124	11,000	12,050	11,693
PS Total			7,194	8,019	7,583	6,730	6,299	6,111
ATSI Total							8,672	8,977
Net CONE W/	163	161	236	285	304	311	321	347
Clearing Price	174	110	76	120	132	163	89	123

	8 Year Average	8 Year Resource	8 Year Average Ratio of Resource Clearing Price to Net CONE (UCAP)
RTO	\$282.88	\$96.23	34%
MAAC	\$228.41	\$148.36	65%
EMAAC	\$260.31	\$151.51	58%
SWMAAC	\$228.41	\$148.36	65%
PS	\$260.31	\$175.87	68%
PSNORTH	\$260.31	\$192.59	74%
DPLSOUTH	\$260.31	\$161.84	62%
PEPCO	\$228.41	\$150.99	66%
Weighted by	\$266.20	\$123.43	46%
Weighted by	\$268.02	\$131.85	49%

Does not include data for ATSI, COMED, BGE, or PL as these regions have not been around for 8 years.

Average
Synapse PJM Net CONE

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The remainder of Tyler Comings' workpapers contains information designated as
Competitively Sensitive Confidential.

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Case No(s). 14-1297-EL-SSO

Summary: Testimony Exhibits and Workpapers of Tyler Comings -Public (REDACTED) Version
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