
**COMMONWEALTH OF KENTUCKY
BEFORE THE PUBLIC SERVICE COMMISSION**

In the Matters of:

**ELECTRONIC APPLICATION OF KENTUCKY
UTILITIES COMPANY FOR AN ADJUSTMENT
OF ITS ELECTRIC RATES**

CASE NO. 2018-00294

**ELECTRONIC APPLICATION OF LOUISVILLE
GAS AND ELECTRIC COMPANY FOR AN
ADJUSTMENT OF ITS ELECTRIC RATES**

CASE NO. 2018-00295

**Direct Testimony of
Jeremy I. Fisher, PhD**

**On Behalf of
Sierra Club**

Public Version; Confidential Information Redacted

January 16, 2019

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 12. JIF-12. Expert declaration of Judah Rose (Doc. 46, filed Apr. 1, 2018), *In re FirstEnergy Solutions Corp.*, No. 18-50757 (AMK) (Bankr. N.D. Ohio)
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1 **1. INTRODUCTION AND PURPOSE OF TESTIMONY.**

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

3 **A** My name is Jeremy I. Fisher. I am a Senior Strategic and Technical Advisor at
4 Sierra Club, at 2101 Webster Street, Oakland, California.

5 **Q Please describe your role at Sierra Club.**

6 **A** My role at Sierra Club is to provide an expert viewpoint on energy systems
7 economics, emerging electric sector issues, and provide technical review of policy
8 matters with which Sierra Club engages, including electricity system resource
9 planning and public utilities regulation.

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

11 **A** Prior to joining Sierra Club at the end of 2017, I was employed as a Principal
12 Associate at Synapse Energy Economics, where I worked in electricity systems
13 issues for a decade. At Synapse, I evaluated and helped to shape resource
14 planning efforts, engaged in electric sector planning on behalf of states and
15 municipalities, helped regulators navigate environmental rules, and assisted states
16 in crafting or revising resource planning rules. In addition, I led the resource
17 planning group at Synapse, which engages in the assessment of planning
18 processes across a wide cohort of states and regions.

19 While at Synapse, I provided services for a wide variety of public sector and
20 public interest clients, including the U.S. Environmental Protection Agency
21 (“EPA”); the National Association of Regulatory Utility Commissioners
22 (“NARUC”); the National Association of State Utility Consumer Advocates
23 (“NASUCA”); the National Rural Electric Cooperative Association (“NRECA”);
24 the respective energy offices and public utility commissions of Alaska, Arkansas,
25 Michigan, and Utah, the Commonwealth of Puerto Rico; the Tennessee Valley
26 Authority Office of Inspector General (“TVA OIG”); the California Division of
27 Ratepayer Advocates (“CADRA”); the California Energy Commission (“CEC”);

1 the Regulatory Assistance Project (“RAP”); and various environmental public
2 interest groups, including Sierra Club.

3 As a consultant, I provided training to federal regulators on resource planning
4 practice and issues. I also led an intensive statewide planning process on behalf of
5 the Michigan Public Service Commission (“MPSC”). Further, I worked on behalf
6 of the Puerto Rico Energy Commission (“CEPR”) to develop state-of-the-art
7 integrated resource plan (“IRP”) rules, lead the evaluation of the island’s first
8 IRP, and audit the public utility in a first-ever rate case.

9 I have provided testimony in electricity planning and general rate case dockets in
10 California, Georgia, Idaho, Indiana, Kansas, Kentucky, Louisiana, Nevada, New
11 Mexico, Ohio, Oklahoma, Oregon, Puerto Rico, Utah, Washington, Wisconsin,
12 and Wyoming.

13 I hold a doctorate in Geological Sciences from Brown University, and I received
14 my bachelor’s degrees from University of Maryland in Geology and Geography.

15 My *curriculum vitae* is attached as Exhibit JIF-01.

16 **Q Have you previously provided comments to or testified before the Kentucky
17 Public Service Commission (“Commission”) previously?**

18 **A** Yes, I have. I testified before the Commission on behalf of Sierra Club in
19 connection with Kentucky Utilities Company’s (“KU”) and Louisville Gas and
20 Electric Company’s (“LG&E”); together with KU, the “Companies”) applications
21 for certificates of public convenience and necessity for their 2011 environmental
22 compliance plan in Case Nos. 2011-00161 & 2011-00162, as well as Kentucky
23 Power Company’s application for approval of its 2011 environmental compliance
24 plan in Case No. 2011-00401.

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

2 **A** My testimony addresses the Companies' proposal to continue their power
3 purchases from the Ohio Valley Electric Corporation ("OVEC"),¹ and the
4 Companies' proposal to adopt a higher purchased power cost from OVEC due to
5 OVEC's debt repayment obligations.² Further, my testimony scrutinizes the value
6 of, need for, and risks of OVEC's power, including whether "it is economic for
7 the Companies to continue purchasing energy from OVEC"³ under the Inter-
8 Company Power Agreement ("ICPA"), and a number of related questions
9 previewed more fully in Section 2, which follows immediately below.

10 My testimony is organized fundamentally as follows: First, I provide an
11 introduction to OVEC, the ICPA contract, and the Companies obligations under
12 that contract. Next, I review the economics of OVEC, including by examining
13 assessments conducted by OVEC, other OVEC member utilities, and ratings
14 analysts. Then, I review known and emerging risks to OVEC, including the recent
15 withdrawal of FirstEnergy Solutions ("FES") and the impact of that withdrawal
16 on the Companies, and also significant prospective environmental compliance
17 obligations, among other issues. Finally, I assess whether the Companies' OVEC
18 commitment reasonably serves the needs of the Companies and their ratepayers.

19 **2. SYNOPSIS: CONCLUSIONS AND RECOMMENDATIONS.**

20 **Q Will you briefly summarize your conclusions?**

21 **A** The Companies last received Commission authorization to enter into a long-term
22 purchase agreement with OVEC in 2011, shortly after that contract was amended
23 by the parties thereto. Since that time, circumstances have fundamentally
24 changed, such that the factual record on which the Commission's 2011 approval

¹ See, e.g., Direct Testimony of Lonnie Bellar (Sept. 28, 2018), at 10:3-4. (LG&E and KU's respective applications (including direct testimony) and discovery responses are materially identical in each case with respect to OVEC except as may be noted otherwise.)

² See, e.g., Direct Testimony of David Sinclair (Sept. 28, 2018), at 31:12-20.

³ E.g., Company Response to AG 1-4(c) (Nov. 29, 2018); see also, e.g., Company Response to SC 1-2 (Dec. 6, 2018) (in responding to Sierra Club, incorporating company's response to AG 1-4(c) by reference).

1 relied is no longer valid. Moreover, the value of OVEC has steadily declined and
2 now poses a substantial liability to the Companies' customers. Yet, despite a host
3 of new and emerging risks, the Companies have not, to the best of my
4 understanding, sought to reassess whether their contractual relationship with
5 OVEC is cost-effective or otherwise reasonable on behalf of their customers. To
6 these ends, I provide the following summary conclusions, each of which I discuss
7 in greater detail later in my testimony:

8 1. The ICPA obligates the Companies to pay a portion of both the existing and the
9 forthcoming costs of two old coal-fired power plants. Major decisions about
10 investments in and maintenance of these these aging, outmoded plants are made
11 through a process at OVEC over which the Companies' have little information
12 and exert relatively little control.

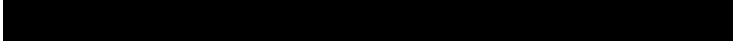
13 2. When the Companies sought approval of the amended ICPA in 2011, they
14 represented that the cost of the contract was relatively low and would remain so
15 for decades. This was based on certain specific factual characterizations and
16 assumptions about the OVEC units' operating levels, about compliance with
17 environmental regulations, and about cost competitiveness. Those assumptions
18 are no longer valid today, however. Instead, the cost and risks of the OVEC
19 contract now is, and will continue foreseeably to be, substantially higher and
20 worse than those of alternatives.

21 3. Since the Commission's 2011 approval, the Companies apparently have not
22 meaningfully informed themselves about the projected costs or performance of
23 the OVEC units, both of which subjects are concerning, nor do they now evince
24 an interest in doing so.

25 4. Since 2011, the Companies have not sought to determine if the OVEC plants or
26 the contract remain in the best interests of their customers, or the range of
27 alternatives for protecting customers against the high cost of the ICPA. Rather,
28 they have been essentially on 'autopilot' with respect to their increasingly risky

1 relationship with OVEC and their increasingly uneconomic power purchases
2 under the ICPA.

3 5. The Companies were or should have been aware of certain troubling analyses
4 conducted by OVEC, other member utilities in OVEC, and ratings analysts.
5 These analyses demonstrated that the OVEC plants and ICPA obligations are
6 high-cost and high-risk, in both the short term and over the long term.

7 6. In that vein, information presented in 2016 to the OVEC Board of Directors,
8 including Company representatives, demonstrated that the value of the ICPA had
9 .

10 7. Moreover, a recent Ohio Public Utilities Commission docket initiated by OVEC
11 Sponsor Duke Energy Ohio demonstrated that the value of the ICPA had declined
12 to a liability of \$68 million (*i.e.*, a value of -\$68M) through 2026, scaled to the
13 Companies' share.

14 8. Further, an ongoing bankruptcy proceeding for fellow OVEC Sponsor
15 FirstEnergy Solutions ("FES") demonstrates that the value of the ICPA has
16 declined to a liability \$277 million (*i.e.*, a value of -\$277M) through 2040, scaled
17 to the Companies' share.

18 9. The Companies face high exposure to the possible defection or loss of other
19 OVEC members, in addition to FES, and are already paying a surcharge to cover
20 certain debt obligations due to FES's bankruptcy.

21 10. OVEC's aging power plants are very likely to require significant environmental
22 compliance capital expenditures in the next five years, requiring substantial
23 additional debt and amortization payments by OVEC's member utilities,
24 including the Companies.

25 11. The OVEC power units have a poor operating performance history. The
26 Companies are unaware of the causes of and mitigations for their high forced
27 outage rate.

1 12. The Companies have not expressly assessed the impact of removing the OVEC
2 plants from their portfolios on either cost or reliability.

3 13. All available evidence suggests that the energy and capacity that the Companies
4 obtain from OVEC are not necessary to the Companies' reliable operations and
5 provision of power to their customers.

6 Below, I elaborate on each of these points, which militate for a fresh, deliberate,
7 fulsome reexamination—by the Companies and the Commission—of whether the
8 Companies' OVEC obligations, costs, and risks amount to a fair, just, and
9 reasonable deal for the Companies' ratepayers.

10 **Q What are your recommendations to the Commission regarding the**
11 **Companies' OVEC obligations and their request in these rate cases to**
12 **continue recovering revenues to pay for power purchases from OVEC?**

13 **A I have the following two fundamental recommendations:**

14 **First**, the Commission should expressly reaffirm the Companies' obligation to
15 obtain Commission approval (as fair, just, and reasonable) of any future OVEC-
16 related changes that the Companies may wish to implement and that may impact
17 the Companies' ratepayers. Such possible changes would include, at a minimum:

18 (a) any forthcoming amendment of the ICPA that the Companies
19 may wish to execute and effectuate; and

20 (b) any additional OVEC debt obligations (whether explicit or
21 implied, such as in the form of reserve pre-payments) or any other form of
22 additional debt obligations that the Companies may be poised to take on.

23 **Second**, in light of significant changes in material circumstances since the
24 Commission last approved of the ICPA in 2011, the Commission should timely
25 initiate a new docket dedicated to investigating whether the Companies' OVEC
26 payments and other obligations under the ICPA are fair, just, and reasonable now

1 and in the foreseeable future. Such investigation should examine whether key
2 determinations in the Commission’s 2011 approval remain valid, including:

3 (a) whether the Companies do not and will not act as guarantors of
4 OVEC’s debts, nor issue securities or other evidence of indebtedness for
5 the purpose of financing their participation in the ICPA;

6 (b) whether the OVEC units are in fact expected to be operational
7 at or near their historic operating levels through 2040;

8 (c) whether the OVEC units are in fact expected to be in
9 compliance with existing and pending environmental requirements; and

10 (d) whether the OVEC units do in fact provide relatively low-cost
11 generation.

12 Such investigation should also examine the extent of the Companies’ risk
13 exposure under the ICPA, in addition to any other questions relevant to whether it
14 is reasonable for the Companies to maintain their OVEC commitment and to
15 continue recovering revenue for their OVEC power purchases.

16 **3. INTRODUCTION TO OVEC, THE ICPA, AND THE COMPANIES’ RELATED**
17 **OBLIGATIONS.**

18 **Q What is OVEC, and what is the ICPA?**

19 **A** In 1952, a number of investor-owned utilities (“IOUs”) established OVEC for the
20 purposes of building and operating two coal-fired power plants—Kyger Creek in
21 Gallia County, Ohio, and Clifty Creek in Madison, Indiana—in order to supply
22 electricity to a uranium enrichment facility to be built by the Atomic Energy
23 Commission (“AEC”) near Piketon, Ohio.⁴ Those individual IOUs (or their
24 subsidiaries or affiliates) became OVEC’s owners/shareholders and were called

⁴ See, e.g., Order (Dec. 30, 2004), at 2, Case No. 2004-00396, *Application Of Louisville Gas and Electric Company for an Order Pursuant to KRS 278.300 and for Approval of Long-Term Purchase Contract*; see also OVEC 2017 Annual Report, at 1, available online at <https://www.ovec.com/FinancialStatements/AnnualReport-2017-Signed.pdf> (attached as Exhibit JIF-02).

1 the Sponsoring Companies (“Sponsors”). OVEC, the Sponsors, and AEC’s
2 successor, the U.S. Department of Energy (“DOE”), entered into a contract in
3 1952 called the DOE Power Agreement, which was a long-term contract under
4 which OVEC would furnish DOE with the power needed for the uranium
5 enrichment facility. In 1953, the Sponsors and OVEC entered into an Inter-
6 Company Power Agreement (“ICPA”), pursuant to which the Sponsors could
7 purchase any surplus power (*i.e.*, any not required by DOE) in proportion to the
8 Sponsors’ respective ownership interests.

9 Decades later, when enrichment activities at the Piketon facility ceased, DOE no
10 longer required the power provided by the OVEC plants. In 2000, DOE gave
11 notice to OVEC that it would cancel the DOE Power Agreement; that contract
12 terminated in 2003. At that point, all of the OVEC units’ generation became
13 surplus power available to the Sponsors. The OVEC units have a collective
14 nameplate capacity of approximately 2,390 MW, between Kyger Creek’s five
15 units totaling 1,086 MW and Clifty Creek’s six units totaling 1,304 MW.⁵

16 In 2004, the Sponsors—including LG&E and KU—amended the ICPA, which
17 was then set to terminate in 2006, to extend to 2026. In August 2011, the
18 Sponsors again extended the ICPA, this time to 2040. As discussed below, LG&E
19 and KU sought Commission approval for each of those two contractual revisions,
20 and the Commission granted approval premised on specific determinations of
21 contemporaneous cost-effectiveness and reasonableness, based on the respective
22 records of those dockets.

23 **Q What is required of Sponsors under the ICPA?**

24 **A** In a nutshell, the ICPA requires that the Sponsors pay an energy charge, a demand
25 charge, and a transmission charge.⁶ The energy charge is largely comprised of

⁵ See OVEC 2017 Annual Report, at 1 (Exhibit JIF-02); see also EIA Form 860, 2017 (providing nameplate capacity).

⁶ ICPA § 5.01 (current ICPA as supplied by the Companies in response to SC 1-1) (attached as Exhibit JIF-03).

1 fuel and reagent costs, while the transmission charge pays for firm transmission.⁷
2 The demand charge is used to collect fixed operations and maintenance (“O&M”),
3 the amortization of debt, taxes, and decommissioning costs.⁸
4 In return, each Sponsor is entitled a share of the energy and capacity of OVEC,
5 proportional to the Sponsor’s ownership fraction.⁹

6 **Q What are the Companies’ fractional responsibilities for OVEC under the**
7 **ICPA?**

8 **A** LG&E’s ownership interest is 5.63 percent, while KU’s ownership interest is 2.5
9 percent, which also represent the proportions of OVEC’s power output to which
10 the Companies’ are entitled.¹⁰ This combined 8.13 percent translates into about
11 194 MW of nameplate capacity,¹¹ or 152 MW of net summer capacity.¹²

12 **Q Have the Companies previously requested authorization of the ICPA?**

13 **A** Yes, twice—first in 2004, then again in 2011, for the purpose of extending the
14 Companies’ commitment period.

15 First, in 2004, the Sponsors agreed among themselves to amend the ICPA, which
16 was then set to expire in 2006, to extend until 2026. The Companies subsequently
17 sought Commission authorization for extending their power purchase obligations
18 under the ICPA until 2026.¹³ The Commission granted approval on December 30,
19 2004, finding that, in the years 1999 through 2003, “the OVEC purchases were

⁷ *Id.* §§ 5.02, 5.04.

⁸ *Id.* § 5.03.

⁹ *Id.* § 4.03.

¹⁰ *See, e.g.*, Company Response to SC 1-18(a)-(b).

¹¹ Author’s calculation based on AEO Form 860 (2017) and ownership fraction.

¹² KU/LG&E 2018 Integrated Resource Plan (“IRP”), Vol. III, Reserve Margin Analysis, at 11, Table 2 (September 2018), filed Oct. 19, 2018 in Case No. 2018-00348, *Electronic 2018 Joint Integrated Resource Plan of Louisville Gas and Electric Company and Kentucky Utilities Company*.

¹³ Application (Oct. 1, 2004), Case No. 2004-00396, *Application Of Kentucky Utilities Company for an Order Pursuant to KRS 278.300 and for Approval of Long-Term Purchase Contract*; Application (Oct. 1, 2004), Case No. 2004-00396, *Application Of Louisville Gas and Electric Company for an Order Pursuant to KRS 278.300 and for Approval of Long-Term Purchase Contract*.

1 made at a lower cost per kWh than [each Company's] own cost of generation,"
2 and determining that "allowing [each Company] to continue to receive its share of
3 OVEC's generation in exchange for payment of OVEC's relatively low costs."¹⁴

4 Later, in 2010, the Sponsors again agreed to amend the ICPA, this time to extend
5 the agreement until 2040. The Companies executed that amended ICPA in
6 October 2010 and filed for Commission approval in March 2011.¹⁵ The
7 Commission again obliged, in August 2011, similarly finding that OVEC's power
8 was low-cost and appeared poised to continue as low-cost, among other
9 determinations.¹⁶ In doing so, the Commission relied on a series of factual
10 assertions in the record in those cases that are not valid today, as explained below.

11 **Q Have there been any material changes among the OVEC Sponsors since the**
12 **Commission authorized the current ICPA in 2011?**

13 **A** Yes. Perhaps most significantly, in March 2018, OVEC Sponsor FirstEnergy
14 Solutions ("FES") filed for bankruptcy.¹⁷ An Ohio-based utility and wholly-
15 owned subsidiary of FirstEnergy Corp., FES has a 4.85 percent share of OVEC
16 under the ICPA.¹⁸ In proceedings in federal bankruptcy court, FES moved the
17 court allow it to exit the ICPA and reject its commitments thereunder. In doing
18 so, FES made special note of the burdensome, uneconomic nature of OVEC and
19 its ICPA obligations, citing them as a key reason why FES was unable to make

¹⁴ See, e.g., Order (Dec. 30, 2004), Case No. 2004-00395, at 2-3.

¹⁵ Verified Application (Mar. 16, 2011), Case No. 2011-00099, *Verified Application Of Louisville Gas and Electric Company for an Order Pursuant to KRS 278.300 and for Approval of Long-Term Purchase Contract*; Verified Application (Mar. 16, 2011), Case No. 2011-00100, *Verified Application Of Kentucky Utilities Company for an Order Pursuant to KRS 278.300 and for Approval of Long-Term Purchase Contract*.

¹⁶ See Order (Aug. 11, 2011), Case Nos. 2011-00099 & 2011-00100 (attached as Exhibit JIF-04).

¹⁷ See *Stipulation* (Doc. 1047, filed July 27, 2018), *In re FirstEnergy Solutions Corp.*, No. 18-50757 (AMK) (Bankr. N.D. Ohio) ("FES Bankruptcy Stipulation") (attached as Exhibit JIF-05), ¶ 10.

¹⁸ *Id.* ¶ 9; see also OVEC 2017 Annual Report (Exhibit JIF-02) at 1. Two other Sponsors that are also FirstEnergy Corp. subsidiaries or affiliates, Allegheny Energy Supply Company LLC and Monongahela Power Company, have 3.01 percent and 0.49 percent shares, respectively, such that the collective share of the three FirstEnergy entities is 8.35 percent—just above the 8.13 percent share of OVEC held by the Companies. OVEC 2017 Annual Report (Exhibit JIF-02) at 1.

1 reasonable margins.¹⁹ Indeed, as FES represented and supported in the bankruptcy
2 proceedings:

3 Rejection of the OVEC ICPA will relieve [FES] of the near term
4 losses of approximately \$12 million on an annual average basis
5 (2018 to 2023) and will eliminate the approximately \$268 million
6 in continuing losses over the remaining life of the contracts [*i.e.*,
7 through 2040].²⁰

8 It is my understanding that FES has, at least as of this time, ceased paying its
9 participation share in OVEC. I also understand that the bankruptcy court's
10 approval of FES's rejection of its OVEC obligations is being appealed. I discuss
11 the FES bankruptcy and its implications in more detail in Section 8 of my
12 testimony, below.

13 **Q Did the Commission's approvals of the ICPA's respective extensions in 2004**
14 **and 2011 contain any caveats?**

15 **A** Yes. For one, the 2011 Order stated:

16 As in the past, LG&E and KU will not act as guarantors of
17 OVEC's debts nor will they issue securities or other evidence of
18 indebtedness for the purposes of financing their participation in the
19 amended ICPA.²¹

¹⁹ See *Motion for Entry of an Order Authorizing FirstEnergy Solutions Corp. and FirstEnergy Generation, LLC to Reject a Certain Multi-Party Intercompany Power Purchase Agreement with the Ohio Valley Electric Corporation as of the Petition Date* (Doc. 44, filed Apr. 1, 2018), *In re FirstEnergy Solutions Corp.*, No. 18-50757 (AMK) (Bankr. N.D. Ohio) ("FES Motion to Reject ICPA") (attached as Exhibit JIF-06), ¶¶ 15, 26, 32.

²⁰ FES Motion to Reject ICPA (Exhibit JIF-06), ¶ 32. OVEC, among other parties, did not dispute that conclusion in the bankruptcy proceedings. See FES Bankruptcy Stipulation (Exhibit JIF-05) ¶ 13 (agreement that "FES also asserts and has offered evidence that the OVEC ICPA is burdensome to the Debtors' estates and that rejection of the OVEC ICPA will relieve it of near-term losses of at least \$10 million on an annual average basis (2018 to 2023)").

²¹ Order (Aug. 11, 2011), Case Nos. 2011-00099 & 2011-00100 (Exhibit JIF-04), at 3.

1 The Commission's 2004 Order contained similar language, among other caveats
2 and record-specific findings underlying the Commission's legal conclusions,
3 discussed in greater depth below.²²

4 Yet, that disclaimer notwithstanding, the ICPA requires that Sponsors pay, as part
5 of the demand charge, the amortization of debt incurred by OVEC, as I explain
6 below.²³ The amount of debt held by OVEC varies over time, and the Sponsors
7 are not free to exit the contract at will.

8 Moreover, Sponsors are also obligated to pay their pro rata share of post-
9 retirement and decommissioning costs (including demolition of the plants and
10 any remediation of the sites) when the OVEC units are ultimately retired—
11 significant future costs creating financial “exposure” whose gravity the
12 Companies assert “is not presently determinable.”²⁴

13 **Q Has OVEC acquired any additional debt since the Commission approved the**
14 **ICPA in 2011?**

15 **A** Yes. According to OVEC's financial statements, OVEC acquired \$100 million of
16 new variable-rate bonds in 2011, and \$200 million of fixed-rate bonds as well as
17 \$100 million of variable-rate bonds in 2012. In 2017, OVEC refinanced \$100
18 million in bonds, pushing back the payment period to the mid-2020s.²⁵

²² See Order (Dec. 30, 2004), Case No. 2004-00395, at 2-3.

²³ ICPA § 5.03(a) (Exhibit JIF-03).

²⁴ Company Response to SC 1-18(b) (Dec. 6, 2018); see also ICPA §§ 5.03(f), 7.04 (Exhibit JIF-03); LG&E Attachment to Filing Requirement 807 KAR 5:001 Section 16(7)(k), pp. 56, 96 (Garrett).

²⁵ Ohio Valley Electric Corporation and Subsidiary Company, Consolidated Financial Statements as of and for the Years Ended December 31, 2017 and 2016, and Independent Auditors' Report, Deloitte & Touche LLP, available at <https://www.ovec.com/FinancialStatements/2017-ConsolidatedFinancials.pdf> (last accessed Jan. 15, 2019) (“OVEC 2017 Financial Auditors Report”) (attached as Exhibit JIF-07), at 15.

1 **Q What is OVEC’s outstanding debt?**

2 **A** As of the close of 2017 (which is the most recently available financial statement),
3 OVEC had nearly \$1.4 billion in outstanding debt, nearly \$700 million of which
4 is due between 2019 and 2022.²⁶

5 To put this in perspective, the Companies will pay, on average, more than \$14
6 million per year—or \$76/kW-yr—over the next four years for OVEC debt
7 repayment alone.

8 **Q Are the Companies guarantors of OVEC’s debt?**

9 **A** While not listed as formal guarantors in an immediate sense, the Companies do
10 act as guarantors of OVEC’s debt in practice, at the least. There are several points
11 to note in this vein.

12 First, Moody’s Investors Service, like other ratings agencies, considers the credit
13 quality of the OVEC Sponsors themselves when allocating an overall credit rating
14 to OVEC, which shows implicitly the assumption that OVEC’s debts must and
15 will be covered by OVEC’s Sponsors.²⁷

16 Second, as noted above, in March 2018, OVEC Sponsor FES petitioned for
17 bankruptcy and ceased paying its 4.85 percent share of OVEC’s costs. OVEC
18 subsequently filed a rejection damages claim of \$540 million against
19 FES, indicating that OVEC considers its Sponsors to be bound through the ICPA
20 to pay for, amongst other costs, the cost of debt.²⁸

21 Third, the Companies themselves explain that “under the ICPA...[,] [each] is
22 responsible for a pro-rata share of certain OVEC obligations, which primarily

²⁶ *Id.*

²⁷ See, e.g., Moody’s Rating Action: *Moody’s affirms OVEC at Ba1, changes outlook to stable from negative* (Dec. 11, 2018), available at https://www.moodys.com/research/Moodys-affirms-OVEC-at-Ba1-changes-outlook-to-stable-from--PR_392565 (last accessed Jan. 15, 2019) (attached as Exhibit JIF-08) at 1 (considering “the credit quality and outlooks of OVEC’s non-defaulting sponsors”); *id.* at 2 (naming as one “[f]actor[] that could lead to a downgrade” of OVEC’s rating “further declines in the credit quality of any sponsors”).

²⁸ *Id.* at 1; *In re FirstEnergy Solutions Corp.*, No. 18-50757 (AMK) (Bankr. N.D. Ohio), Claim #1356 (Oct. 15, 2018) (filed by OVEC against FES on in the amount of \$544,319,498).

1 include OVEC's debt service, post-retirement and decommissioning costs, as well
2 as any shortfall from amounts included within a demand charge."²⁹ Sections
3 5.03(f) and 7.04 of the ICPA undergird, and elaborate on, that affirmation.

4 Fourth, OVEC clearly considers the Sponsors to be the guarantors of OVEC's
5 debt, at least practically speaking. Upon FES's declaration of bankruptcy and
6 request to terminate its share of the ICPA, OVEC filed a complaint before the
7 Federal Energy Regulatory Commission ("FERC"), stating the following:

8 Further, the ICPA similarly requires the Sponsoring Companies to
9 pay all of OVEC's borrowing costs. As result of OVEC's
10 construction of significant emissions' control equipment at both of
11 its plants, as of December 31, 2017, OVEC's outstanding debt
12 obligations were approximately \$1.4 billion. FirstEnergy's 4.85%
13 *pro rata* responsibility for this debt amounts to \$67.9 million.
14 However, if FirstEnergy is allowed to reject its obligations under
15 the ICPA, OVEC and the remaining Sponsoring Companies would
16 need to come up with some way to close the gap in OVEC's
17 recovery of its costs, **which would likely result in further**
18 **increased debt and borrowing costs for OVEC's remaining**
19 **Sponsoring Companies, with a disproportionately adverse**
20 **effect on the costs of OVEC's power and energy to them and**
21 **their customers.**³⁰

22 Finally, as of January 2017, OVEC started charging "advance billing [to] the
23 Sponsoring Companies," amounting to \$30 million by the end of 2017.³¹

²⁹ Company Response to SC 1-18(b).

³⁰ Complaint or, in the Alternative, Request for Declaratory Order (Mar. 26, 2018), *Ohio Valley Elec. Corp. v. FirstEnergy Solutions Corp.*, FERC Docket No. EL18-135, *searchable at* https://elibrary.ferc.gov/idmws/docket_search.asp ("OVEC Complaint against FirstEnergy") (attached as Exhibit JIF-09), at 14 (emphasis added).

³¹ OVEC 2017 Financial Auditors Report (Exhibit JIF-07), at 9.

1 According to Moody's, this pre-payment surcharge was created *specifically* to
2 cover the shortfall created by the FES debt:

3 Fortunately for OVEC, the shortfall created by the FES default is
4 relatively modest and, as there was ample warning of FES'
5 impending default, management was able to take steps to mitigate
6 its impact. These steps include funding a debt reserve at a rate of
7 about \$30 million per year (current balance is about \$60 million),
8 and the retention of the return on equity portion of its rates
9 (approximately \$2.5 million per year) as a cushion. This equity
10 cushion would be sufficient to cover future FES shortfalls in the
11 event the current FES shortfall is covered by short-term
12 borrowing.³²

13 It is thus clear that OVEC and its creditors consider the several Sponsors,
14 including the Companies, to be guarantors of OVEC's debt; and the Companies
15 concede at least that they are ultimately on the hook for a *pro rata* share of
16 OVEC's ultimate debt obligations in the future. That debt is substantial. Later in
17 my testimony I discuss the risks incumbent in that debt, and the potential cost
18 implications on Kentucky customers.

19 **4. THE COMPANIES DO NOT REGULARLY ASSESS OVEC'S PERFORMANCE OR COST-**
20 **COMPETITIVENESS, AND THEY HAVE LITTLE INFORMATION ABOUT HOW OVEC**
21 **DOES.**

22 **Q What is the nature of the relationship between the Companies and OVEC?**

23 **A** As noted above, the Companies are contractual Sponsors of OVEC under the
24 ICPA and are shareholders of OVEC's common stock; and they also have two
25 representatives on OVEC's 15-member Board of Directors, namely Mr. Paul
26 Thompson, the Companies' Chairman, Chief Executive Officer, and President,

³² Moody's Investors Service, Credit Opinion (Dec. 13, 2018): *Ohio Valley Electric Corp: Update following ratings affirmation with stable outlook* ("Moody's Credit Opinion") (attached as Exhibit JIF-10), at 3.

1 and Mr. Lonnie Bellar, the Companies' Chief Operating Officer.³³ According to
2 the Companies, OVEC's Board of Directors is responsible for, among other
3 things, approving all capital investments or projects needed for environmental
4 compliance.³⁴

5 **Q Do the Companies have substantial knowledge of the day-to-day operations**
6 **of OVEC, or of OVEC's incumbent risks?**

7 **A** Surprisingly, the Companies seem to have relatively little information about their
8 obligations or risks vis-à-vis OVEC. There are numerous pieces of core
9 information that the Companies indicated they do not have and are unable to
10 access, or disclaimed as having just been "provided by OVEC," and information
11 provided by the Companies was sometimes internally inconsistent in a way that
12 indicated it had not been reviewed by a knowledgeable party.

13 For example:

- 14 • The Attorney General ("AG") requested that the Companies provide "the most
15 recent data regarding the extent to which the Clifty Creek and Kyger Creek
16 stations have been depreciated [as well as] each station's net book value."³⁵
17 This is basic information that informs key metrics such as the annual
18 depreciation expense. The Companies responded that they "do not have access
19 to OVEC's detailed corporate, accounting, or operating information," and
20 instead referred the AG's office to OVEC's public financial records.³⁶
21 According to OVEC's 2017 Annual Report, OVEC has \$1.3 billion, or about
22 \$612/kW, of undepreciated plant balance remaining at the plants.³⁷
- 23 • Sierra Club asked the Companies about OVEC's anticipated need to install
24 substantial new capital projects to mitigate coal ash and effluent pollution—

³³ See, e.g., Company Responses to SC 1-18(b), 1-3(b).

³⁴ E.g., Company Response to SC 1-3(b).

³⁵ AG 1-5(h) (Nov. 13, 2018).

³⁶ Company Response to AG 1-5(h) (Nov. 29, 2018).

³⁷ OVEC 2017 Annual Report (Exhibit JIF-02) at 5.

1 risks discussed later in my testimony—and about the impact of these projects
2 on outages operations and maintenance costs, heat rates, or unit availability.
3 The Companies’ response was that “the Companies do not have access to this
4 information.”³⁸ When Sierra Club followed up and asked why not, the
5 Companies responded that “OVEC has not provided such documents to the
6 Companies.”³⁹

- 7 • Sierra Club asked about the assessment of the sufficiency of OVEC’s funding
8 to support decommissioning subsequent to OVEC’s closure. In response, the
9 Companies provided a September 2017 OVEC letter to the Board members
10 discussing the fact that an updated decommissioning study was being
11 completed by the end of that month and would be discussed with the Board’s
12 environmental subcommittee the following month, but the Companies said
13 they did not have the letter “or any other responsive documents.”⁴⁰
- 14 • Sierra Club asked the Companies to provide historic forced outage data for the
15 OVEC units. In response, the Company provided unit-specific data for the
16 period 2013-2015 and only-plant average data for 2016-2017.⁴¹ The forced
17 outage rates for 2013-2015 were startling: most years were in excess of 10
18 percent, with some units approaching or exceeding 20 percent. Sierra Club
19 asked for detail with respect to unplanned outages, the causes, and mitigation
20 steps taken. The response was that “the Companies do not have access to this
21 information.”⁴²
- 22 • Sierra Club asked the Companies to provide both projected future charges
23 under the ICPA,⁴³ as well as projected future performance of the OVEC units,

³⁸ Company Response to SC 1-3(c)(iii) and (v)-(viii).

³⁹ Company Response to SC 2-2(a) (Jan. 2, 2019).

⁴⁰ Company Response to SC 1-8 and attachment (Dec. 6, 2018).

⁴¹ Company Response to SC 1-9(d) (Dec. 6, 2018).

⁴² Company Response to SC 1-11 (Dec. 6, 2018).

⁴³ Company Response to SC 1-5 (Dec. 6, 2018).

1 including costs.⁴⁴ The responses and projections provided by the Companies
2 were mutually inconsistent in substance, as demonstrated in the next section.
3 Moreover, they did not indicate that the Companies had performed their own
4 assessment or projection, but rather relied on information provided by OVEC
5 without independently considering it.

6 **Q What conclusions do you draw with respect to the amount of information**
7 **that the Companies have—or don’t have—about the historic operations and**
8 **costs of the OVEC units?**

9 **A** I conclude that the Companies have little such knowledge—and apparently little
10 concern about that either. It appears that the Companies’ stance regarding OVEC
11 is a remarkably hands-off, uninformed approach of essentially just assuming that
12 the OVEC units will simply continue operating and charging their Sponsors
13 through 2040, in light of the ICPA’s 2011 approval. That is, they Companies do
14 not really know, nor is it apparent that they regularly reexamine, whether OVEC’s
15 operations current and future operations are economical and otherwise sensible
16 for ratepayers.

17 The Companies’ response to one AG inquiry is particularly telling. The AG asked
18 the Companies to “explain whether continued operation, and subsequent
19 Company ownership, of OVEC is economic.” The Companies responded:

20 **It is economic** for the Companies to continue purchasing energy
21 from OVEC, **given the Companies’ obligation** to participate
22 through 2040 in the Inter-Company Power Agreement, which was
23 amended in 2010 and approved by the Kentucky Public Service
24 Commission in Case Nos. 2011-00099 and 2011-00100.⁴⁵

25 However, the economics of OVEC’s energy and the benefit (or lack thereof) to
26 ratepayers, on the one hand, is distinct from the Companies’ contractual

⁴⁴ Company Response to SC 2-10 and attachment (Jan. 2, 2019).

⁴⁵ Company Response to AG 1-4(c) (emphases added).

1 commitment to participate in the ICPA. True, the Company may in fact be
2 obligated to participate in the ICPA under the current contract as blessed by the
3 Commission in the past. It does not follow, however, that OVEC is economical or
4 needed to provide the Companies' customers with power. The Companies appear
5 to imply that their execution of the ICPA and the Commission's 2011 approval
6 thereof effectively moot the question of the OVEC units' actual economics.

7 While I am not a lawyer, it is not my understanding that a Commission approval
8 of a long-term contract at one point in time necessarily forever binds the utility
9 through the term of the contract. This seems particularly true, at least, when
10 material circumstances have changed, in intervening years, such that the express
11 factual predicates of the Commission's prior determination no longer exist.

12 In any event, I can say definitively that, as a matter of economics, the mere
13 existence of a long-term wholesale energy contract does not guarantee that the
14 arrangement will remain economical or otherwise in retail ratepayers' interests.

15 **Q Would you agree that it is essentially a moot question whether OVEC is**
16 **economical for the Companies' ratepayers?**

17 **A** Not at all. The Companies have a statutory obligation to continually assess their
18 resource options in the course of reasonably choosing low-cost ways to reliably
19 meet their customers' needs. Renegotiating the ICPA, or revisiting their
20 participation in it at all, could lead to considerably lower costs and lower risk for
21 the Companies' ratepayers. Therefore, the Companies should meaningfully and
22 informedly assess those options, at the least.

23 However, rather than perform such periodic reassessment, the Companies appear
24 to be of the belief that once a wholesale energy contract is executed and
25 authorized, the Companies' obligation to ensure that such contract serves
26 ratepayer interests discontinues and is never refreshed, even years later in light of
27 critical intervening developments.

1 **5. THE COMPANIES HAVE NOT MEANINGFULLY ASSESSED IF OVEC IS**
2 **ECONOMICAL SINCE 2011.**

3 **Q What do the Companies pay for power from OVEC?**

4 **A** In 2017, the Companies paid \$60.41/MWh in the form of an energy and demand
5 charge,⁴⁶ costing \$14,790,155.⁴⁷ According to the Companies, during the Test
6 Period of this case, the OVEC Energy and Demand Charge is \$75.31/MWh.⁴⁸

7 **Q How does the OVEC charge compare to the cost of market economy**
8 **purchases or market prices?**

9 **A** According to the Companies, they were able to acquire “market economy
10 purchases,” at \$16.99/MWh in 2017, or about *one quarter* of the price they pay
11 for OVEC’s power. The Companies disclaim that the appropriate comparison is
12 against “average market prices” (or all hours), which they state were
13 \$27.84/MWh in 2017, or a little less than half the cost of OVEC.⁴⁹ For the Test
14 Period, the Companies identify average market prices at \$27.12, or about one
15 third of the cost of OVEC during the Test Period.⁵⁰

16 **Q How was the ICPA characterized in the Commission’s 2011 approval of it?**

17 **A** The Commission’s 2011 approval relied on a number assessments provided by the
18 Companies.⁵¹ In the period since that authorization, many of the representations
19 have turned out to be substantively incorrect, as I discuss throughout this
20 testimony.

⁴⁶ Company Response to AG 2-26.

⁴⁷ Company Response to SC 1-4, attachment.

⁴⁸ Company Response to AG 2-26.

⁴⁹ *Id.*

⁵⁰ *Id.*

⁵¹ These studies were commissioned by OVEC and performed by URS Corporation, as noted in the Commission’s Order.

1 There are several key representations that were promoted in the Companies’
2 application and responses to Commission discovery requests, including
3 assumptions that:

- 4 (a) the OVEC costs were low cost relative to alternatives,
5 (b) the units would operate in a sustained baseload mode, and produce a
6 continuously high output year-on-year,
7 (c) the units forced outage rate would remain low,
8 (d) the units would not be subject to emerging environmental compliance
9 obligations such as coal ash remediation, and
10 (e) the Companies would not as guarantor for OVEC’s debt or other
11 securities.

12 I describe of each of those representations below, explaining why none is valid
13 today.

14 **Q How did the Companies represent the notion that the OVEC costs were low**
15 **relative to alternatives?**

16 **A In at least three instances, the Companies’ 2011 application stated that OVEC’s**
17 **costs were “low cost” or “relatively low.”⁵²**

18 In 2010, the cost of OVEC’s energy averaged \$45.9/MWh to the Companies.⁵³
19 That put it squarely in the middle of the cost for other non-KU/LG&E
20 transactions. The second-largest seller (by volume) to the Companies in that year
21 was the City of Owensboro, at \$44.5/MWh.⁵⁴

22

⁵² See, e.g., Verified Application (Oct. 1, 2004), Case No. 2011-00099, at Introduction & ¶¶ 4, 9.

⁵³ FERC Form 1 data as downloaded through S&P Global interface (accessed January 14, 2019).

⁵⁴ *Id.*

1
2**Table 1. Wholesale electricity purchases and purchase prices, 2010 and 2017⁵⁵**

	OVEC Purchases (MWh)	OVEC Cost (\$/MWh)	Next Largest Purchase (MWh)	Next Largest Purchase Cost (\$/MWh)
2010	1,213,740	\$45.89	585,148 (Owensboro)	\$44.54
2017	793,729	\$60.59	52,785 (EKPC)	\$61.29

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By 2017, OVEC costs had risen by 32% to over \$60/MWh.⁵⁶ In contrast, the equivalent “average market price” was less than \$28/MWh,⁵⁷ and only one bilateral transaction (purchases from Eastern Kentucky Power Cooperative) was more expensive than OVEC power, at \$61/MWh.

8 **Q**

How did the Companies represent the notion that the OVEC units would remain “baseload”?

9

10 **A**

In response to the Company’s application, the Commission requested a report from URS Corporation (a consultancy) commissioned by OVEC to assess the remaining life and production capabilities of the OVEC units.⁵⁸ The Companies provided the URS report (“2011 URS Report”), which purported to assess the operational health of the OVEC units. Several times in the report, URS notes that the units operate as baseload units:

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The units are all being operated as base load units with limited thermal cycling in the evenings and weekends. Thermal swings are limited by the need to keep the SCR’s on line.⁵⁹

⁵⁵ *Id.*

⁵⁶ *Id.*

⁵⁷ Company Response to AG 2-26.

⁵⁸ *See, e.g.*, Commission Staff supplemental discovery request to Louisville Gas and Electric (June 14, 2011), Case No. 2011-00099, Question 1.

⁵⁹ *See* URS, Independent Technical Review: Kyger Creek & Clifty Creek Plants (draft Rev.0, dated June 27, 2011) (“2011 URS Report”), at 44, filed as LGEs Response to Commission Staffs Supplemental Response Question No 1 (July 11, 2011), Case No. 2011-00099.

1 The 2011 URS Report projected that the system would continue operating at a
2 relatively high output, noting that 2010 generation had produced an equivalent of
3 a 75 percent capacity factor:⁶⁰

4 The overall system produced a low of 15.84 GWhours [*sic*⁶¹] in
5 2010 of electrical output to a maximum of 17.92 GWhours [*sic*] in
6 2006. Twenty (20) year budget projections are based on 15.6 to
7 15.8 GWhours [*sic*] per year.⁶²

8 Aside from confusing gigawatthours (GWh) with terrawatthours (TWh), the 2011
9 URS Report also reported gross generation (*i.e.*, before plant internal uses). In
10 fact, the OVEC units produced net 14.6 TWh, a 70 percent capacity factor.

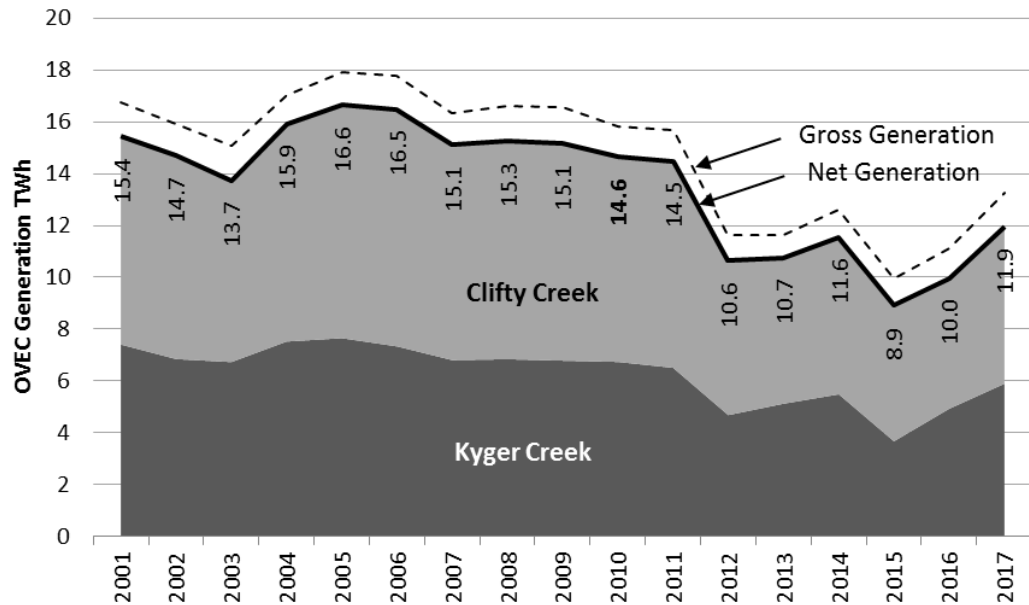
11 Significantly, shortly after the production of the URS report, OVEC's generation
12 dropped by about one third, to about a 50 percent capacity factor, and has not
13 achieved its historical performance since—see Figure 1, below.

⁶⁰ Author's calculation based on a nameplate capacity of 2,390 MW.

⁶¹ Actual system generation in 2010 was 15.84 *terrawatthours (TWh)*.

⁶² 2011 URS Report, *supra* n.59, at 1.

1 **Figure 1. Gross and net generation of OVEC units, 2001-2017. Source data EIA**
 2 **API⁶³ (net) and EPA CAMD⁶⁴ (gross)**



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4 In addition, the 2011 URS Report identified that the OVEC units were not
 5 designed to operate in a load-following manner. The report states:

6 Should the units be changed to load following or more severe
 7 cycling operation, it is expected that life expectancy would be
 8 adversely affected by adding significant thermal cycles to
 9 equipment, and by operating equipment at less than optimum
 10 conditions. **No contingency is included in this evaluation for**
 11 **potential future cycling operation.**⁶⁵

12 **Q Do the OVEC generators cycle today?**

13 **A** Yes. In 2017, the OVEC units had 153 starts between them (*i.e.*, starting from
 14 non-operational), or fourteen per unit, on average. The units also swung from

⁶³ Energy Information Administration (EIA) Application Program Interface (API) data for Kyger Creek, accessed January 14, 2019, *available at* <https://www.eia.gov/opendata/qb.php?category=2583&sdid=ELEC.PLANT.GEN.2876-ALL-ALL.A>.

⁶⁴ US EPA Clean Energy Markets Data (CAMD), queried January 14, 2019, *available at* <https://ampd.epa.gov/ampd/>.

⁶⁵ 2011 URS Report, *supra* n. 59, at 44 (emphasis added).

1 their maximum output (about 200 MW gross) to minimum output (about 120 MW
2 gross), on average about 40 days each. Clifty Creek units 1 through 5 spent about
3 a quarter of their time in 2017 at or near their minimum operational output, and on
4 many of those days the units cycled between their maximum and minimum
5 output.⁶⁶

6 By any reasonable assessment and characterization, the OVEC units cycle today.

7 **Q How did the Companies then represent the notion that the OVEC units were**
8 **performing reliably?**

9 **A The 2011 URS Report stated that the performance of the units had been good, and**
10 **expected to remain low and trend downward:**

11 Each unit has been operating primarily in a base loaded mode with
12 recent forced outage rates of less than 5% to 11% at Kyger and
13 50/0 to 9.2% at Clifty. **Forced outage rates are trending**
14 **downward and it is reasonable to expect the downward trend**
15 **to continue** as there are major boiler tube replacements being
16 performed.⁶⁷

17 In a later section of the report, it again emphasized the reliability of the plants:

18 The average forced outage rate for the overall plant was less than
19 5.5% each year through 2005. In 2006 through 2008 it increased to
20 a maximum of 11.170/0, and then has been decreasing since.⁶⁸

21 However, the forced outage rate at the OVEC plants increased substantially after
22 this report was issued, and has maintained a relatively high level, as I show later
23 in my testimony.

⁶⁶ Author's calculation, based on US EPA CAMD Data, 2017.

⁶⁷ 2011 URS Report, *supra* n. 59, at 1 (emphasis added).

⁶⁸ *Id.* at 17.

1 **Q How did the Companies' 2011 application represent the construct that the**
2 **OVEC units would not have new, substantially costly environmental**
3 **compliance obligations?**

4 **A** The 2011 URS Report—which, again, was provided as the most substantial
5 source of information about the OVEC units in the 2011 application docket—
6 stated that:

7 OVEC believes there will be no significant changes to comply with
8 the CCR rule with the exception of possibly installing a mercury
9 treatment system at Clifty Creek. OVEC believes EPA has no basis
10 to classify ash as a special waste subject to hazardous waste rules
11 under Subtitle C. Therefore, **no upgrade studies have been**
12 **initiated to consider this option**, given the low risk that this waste
13 would be subject to Subtitle C.⁶⁹

14 As a consequence of this assertion, URS assigned no risk or assessment of the
15 costs for compliance with coal waste, or with wastewater effluent streams. By
16 contrast, OVEC currently believes that there are impending requirements to
17 mitigate both coal ash and effluent at both OVEC plants, as discussed below.

18 **Q How did the Companies' 2011 application represent their obligation with**
19 **respect to OVEC's debt?**

20 **A** The Companies' 2011 application set a clear expectation that the Companies'
21 obligations under the ICPA do not include bailing out OVEC's debts, but are
22 limited to the liability for basic capital projects and post-retirement costs:

23 The Company has not and will not act as a guarantor for OVEC's
24 debt or other securities; however, the Amended ICPA requires the
25 Sponsors to pay for replacement costs, additional facility costs,

⁶⁹ *Id.* at 41 (emphasis added).

1 post-retirement benefits costs, and the costs associated with
2 decommissioning the OVEC units.⁷⁰

3 **Q In your opinion, are the Companies currently acting as guarantors for**
4 **OVEC's debt, at least functionally speaking?**

5 **A** Yes. As I described in Section 3 above (“Introduction to OVEC, the ICPA, and
6 the Companies’ related obligations”) the Company appears to be fulfilling OVEC
7 debt obligations beyond its ratable share through a pre-payment surcharge.

8 **Q You have described elements of the 2011 URS Report that was used to**
9 **support the Companies’ application to approve their 2011 application for**
10 **Commission approval of the amended ICPA. What was the significance of**
11 **this report overall to the Commission’s approval decision?**

12 **A** As far as I am able to discern the 2011 URS Report was the only substantial
13 evidence submitted by the Companies in supporting their 2011 application. As
14 such, the report’s assessment of the viability of the OVEC units appears to have
15 provided the sole (or at least the primary) evidentiary basis underlying the
16 Commission’s decision to approve the Companies’ commitment to extend their
17 agreement to accept power from OVEC beyond 2026, through 2040.

18 **Q Did the 2011 URS Report expressly highlight any risks associated with the**
19 **OVEC plants, apart from the implicit risks disclaimed by the assumptions**
20 **and predictions already discussed whose validity is no longer valid?**

21 **A** Yes. The final paragraph of the report reads as a disclaimer on the outlook
22 provided in the prior pages:

23 A different type of risk could be a combination of a major shift in
24 fuel prices (e.g. coal vs. gas), early wide deployment of new
25 technologies such as IGCC, and onerous new environmental
26 regulations that would cause a shift from coal as a low cost

⁷⁰ Verified Application (Oct. 1, 2004), Case No. 2011-00099, at ¶ 10.

1 producer to other energy sources, and particularly impact on older
2 coal plants perhaps having high heat rates. **Combinations of such**
3 **circumstances could produce a radical change in the Kyger**
4 **and Clifty positions in the power markets and tend to shorten**
5 **economic life.** However, such combinations of circumstances are
6 not currently anticipated over the next twenty to thirty year
7 horizon.⁷¹

8 In fact, those very risks have indeed manifested since then: there have been
9 “major shift[s] in fuel prices”; “early deployment of new technologies” like
10 renewable energy and storage; and significant new regulations that—in concert—
11 have indeed “cause[d] a shift from coal as a low cost producer to other energy
12 sources.” And, notwithstanding URS’s misguided sense that such developments
13 were “not currently anticipated over the next twenty to thirty year horizon,” those
14 changes have dramatically shortened the economic life of existing coal plants—
15 particularly the OVEC units. As I show in the next two sections, there is
16 substantial evidence that the OVEC units’ economic life is already over, by any
17 reasonable measure based on current information. Today, the plants lose money
18 for OVEC’s Sponsors, and are expected to be a substantial net liability into the
19 future.

20 **Q Since the 2011, have the Companies sought to reassess if OVEC provides a**
21 **net benefit for their customers?**

22 **A** No, not as they have indicated or as I can tell otherwise. I have found no evidence
23 that the Companies have ever reviewed, since the 2011 proceedings, whether
24 OVEC’s power is cost-competitive for them or the ICPA is otherwise in the best
25 interests of their retail customers.

26 In fact, Sierra Club directly asked the Companies to provide any studies or
27 analyses “performed or obtained” subsequent to the 2011 Authorization that

⁷¹ 2011 URS Report, *supra* n. 59, at 51 (emphasis added).

1 assess the cost-competitiveness of the contractual relationship with OVEC or
2 power and capacity from OVEC. The best that the Company could do was (a) to
3 incorporate by reference their response to the AG, which stated that “it is
4 economic for the Companies to continue purchasing energy from OVEC, given
5 the Companies’ obligation to participate through 2040 in the Inter-Company
6 Power Agreement”—a conclusory non-sequitur whose illogic I discussed above⁷²;
7 and (b) to add tersely that “[its] share of OVEC was evaluated in the 2018 IRP
8 Reserve Margin Analysis.”⁷³ The latter assertion implies that the Companies
9 evaluated, in the context of their reserve margin assessment, whether the OVEC
10 units were economically reasonable for customers. The referenced study did not
11 even purport to do that, however, let alone actually support the conclusion that
12 OVEC is economical.

13 **Q How did the Companies’ 2018 IRP Reserve Margin Analysis review the**
14 **OVEC units, or not?**

15 **A** The 2018 IRP Reserve Margin Analysis was designed to look at the potential loss
16 of load expectation (“LOLE”) and generation cost of adding or removing blocks
17 of generation capacity.⁷⁴ To do so, the model characterized all of the generating
18 resources in the Companies’ system, and then selectively added or removed units.

19 The OVEC units were merely included in the Companies’ portfolio; they were
20 neither removed nor modified. Therefore, the 2018 IRP Reserve Margin Analysis
21 provides no valuation of the cost or benefit to ratepayers of the OVEC units, and
22 is irrelevant to the question of the OVEC units’ relative cost-competitiveness.

23 To be sure, in one ancillary table in the study, the Companies characterized the
24 marginal resource costs of various units, noting that the OVEC units are the most
25 expensive unit in their system on a marginal cost basis at \$92/kW-yr (2021\$).

26 This table is replicated below.

⁷² See *supra* n.45 and text that follows.

⁷³ Company Response to SC 1-2.

⁷⁴ See *supra* n.12 (introducing the Companies’ 2018 IRP Reserve Margin Analysis).

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3**Figure 2. Table 9 from Companies' 2018 IRP Reserve Margin Analysis, showing marginal resource costs of Companies' various generating resources.****Table 9: Marginal Resource Costs (2021 Dollars)**

	Resource	Stay-Open Cost (\$/kW-year)	Average Energy Cost (\$/MWh)	Stay-Open Costs + Average Energy Costs (\$/MWh)
Baseload	Brown 3	87.3	34	84
	Ghent 1	84.1	24	41
	Ghent 2	65.1	22	32
	Mill Creek 1	71.3	23	35
	Mill Creek 2	81.0	23	37
	Mill Creek 3	78.0	24	37
	OVEC	92.3	25	47
Peaking	Brown 5, 8, 9, 10, & 11	11.5	41	79
	Brown 6 & 7	20.5	31	66
	Paddy's Run 13	16.3	30	52
	Trimble County 5 & 6	29.7	30	64
	Small-Frame SCCTs	3.4	80	406
DSM	Demand Conservation Programs ("DCP")	25.6	145	460

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However, the extent to which the 2018 IRP Reserve Margin Analysis “assessed” the value of the OVEC units stopped there, which would not support finding OVEC economical. In the actual reserve margin assessment, OVEC was assumed to operate in each and every scenario, providing no information on the incremental costs or benefits of the OVEC units—key to the question at hand in the instant discussion.

11 **Q**

Is there other evidence that Companies have failed since 2011 to assess if OVEC provides a net benefit for customers?

12

13 **A**

Yes. Sierra Club also asked if “the Companies’ representatives and/or other OVEC board members regularly consider, as a consideration in discussions regarding whether to continue operations [at OVEC], the question of the relative net impact on OVEC members’ customers’ retail rates”; and the Companies (which have two of their own executives on the OVEC Board) responded simply that they “were not aware of such discussions.”⁷⁵ That is fairly shocking—and

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⁷⁵ Company Response to SC 2-1(f) (Jan. 2, 2019).

1 telling. It suggests that the Companies have simply assumed that this contract and
2 obligation will continue unabated.

3 **Q Does OVEC’s Board of Directors have the responsibility to determine if the**
4 **OVEC units should continue operations?**

5 **A Yes. According to the Companies, “OVEC’s continued operation is determined**
6 **by its board.”⁷⁶**

7 **Q What conclusions do you draw with respect to Company representatives’**
8 **participation on the OVEC Board, and the OVEC Board’s obligation to**
9 **assess the economics of the OVEC units and the ICPA?**

10 **A The evidence suggests that the Companies do not and have not considered**
11 **themselves to be obligated periodically to assess the relative value of the OVEC**
12 **units’ power, or the ratepayer impacts effectively imposed by the ICPA, including**
13 **whether their customers would be better served through a modification or**
14 **termination of the ICPA.**

15 Overall, the Companies appear to have taken the Commission’s record-specific
16 authorization for the ICPA in 2011 to be, effectively, a blanket protection of the
17 contract through 2040—regardless of OVEC’s costs or ratepayer impacts, and
18 regardless of whether intervening developments otherwise run counter to the
19 assumptions predicated the Commission’s 2011 authorization.

20 As I show in the next section, the impact on customers is in fact quite substantial.
21 There is ample evidence to suggest that the overall contract imposes costs that are
22 well above what could be considered reasonable energy or capacity costs.

⁷⁶ Company Response to AG 1-4(c).

1 **Q You have explained that the Companies have not produced their own recent**
2 **assessments of the costs or benefits, or ratepayer impact, of OVEC and their**
3 **commitment under the ICPA. Are you aware of such assessments conducted**
4 **by other entities, whether OVEC, other Sponsors, or third parties?**

5 **A** Yes, I am. First, the Companies eventually provided to Sierra Club two
6 “Merchant Analyses” presented by OVEC staff to the OVEC Board. Second, two
7 assessments were recently conducted on behalf of OVEC Sponsors Duke Ohio
8 and FES. Finally, Moody’s recently assessed the creditworthiness of OVEC, and
9 produced a brief assessment of the net market liability of the OVEC units.

10 I discuss each of these analyses in turn below.

11 **6. THE COMPANIES HAVE FAILED TO TAKE INTO ACCOUNT THE MERCHANT**
12 **ANALYSES PROVIDED BY OVEC.**

13 **Q What are the OVEC “Merchant Analyses”?**

14 **A** The OVEC Merchant Analyses are two studies conducted by OVEC staff “to
15 compare OVEC’s projected cost components to a projection of market energy and
16 capacity prices.”⁷⁷ In essence, these studies [REDACTED]

17 [REDACTED]
18 [REDACTED]

19 [REDACTED]⁷⁸ The Companies provided two such analyses, one conducted in
20 2015 and the other conducted in 2016.

21 While a number of assumptions are not made explicit, we can assess quite a lot
22 from OVEC’s assessment of the study and simple graphics, produced below.

23 OVEC’s Board meeting minutes from December 1, 2015 state the following:

24 At the request of Mr. McCullough [of American Electric Power, or
25 “AEP”], Mr. Ken Tamms of the AEP Service Corporation

⁷⁷ Company Response to SC 2-4(a).

⁷⁸ See Company Response to SC 2-4(a), attachment (contains Confidential Information).

1

reviewed the merchant plant analysis. A handout was provided to
the Board, which indicated that [REDACTED]

4

[REDACTED]
[REDACTED]⁷⁹

5

The basis of this statement can be seen in the reproduction of the slide's graphic,
provided as Confidential Figure 3 below. It shows [REDACTED]

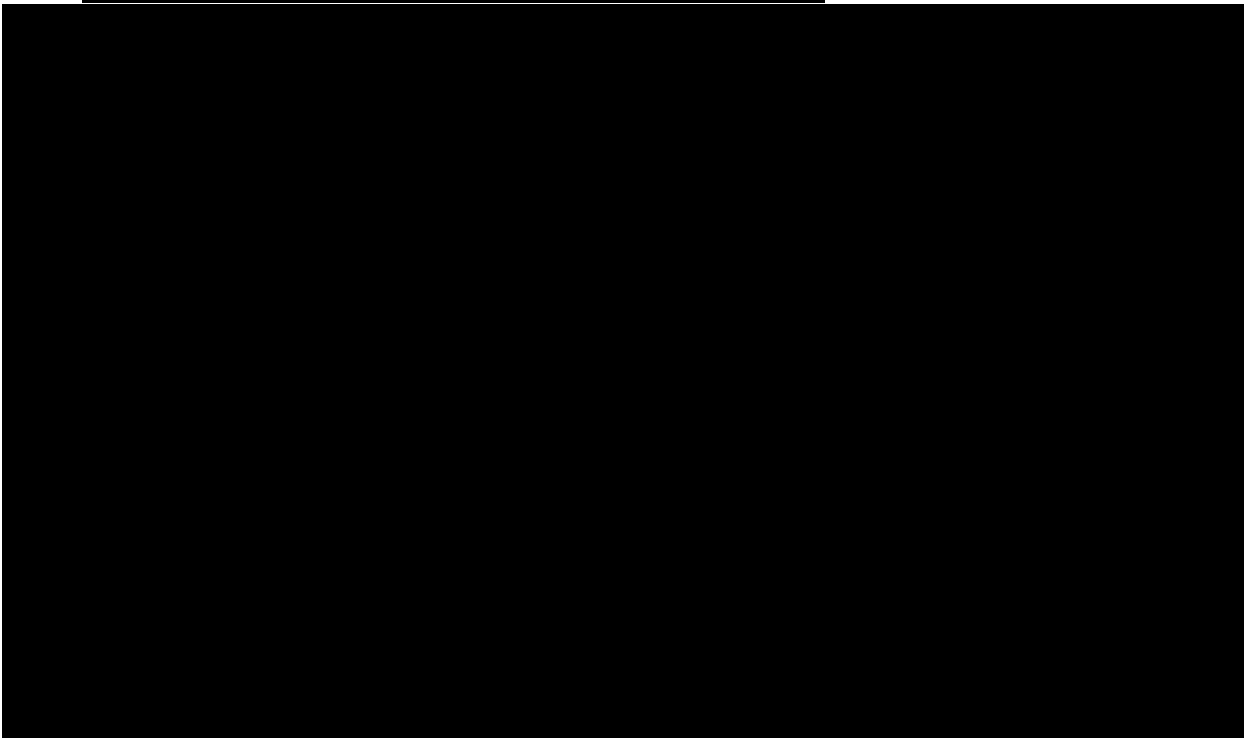
9

[REDACTED]
[REDACTED]
[REDACTED]

10

[REDACTED]⁸¹

11



12

It is notable that the analysis appears to [REDACTED]

15

[REDACTED]
[REDACTED]

⁷⁹ Company Response to SC 1-13, attachment (contains Confidential Information), at 3.

⁸¹ Confidential Company Response to SC 2-4 at 2.

█ [REDACTED]

█ [REDACTED]

█ [REDACTED]

█ [REDACTED]

5 [REDACTED]

█ Even as of this 2015 analysis, it was clear that OVEC [REDACTED]

7 [REDACTED] As I show below, a slightly more

8 robust assessment would have demonstrated—based on the 2015 assessment—

9 that [REDACTED]

10 **Q Were any of the Companies’ representatives present at the 2015 OVEC**

11 **Board Meeting?**

12 **A** Yes. Mr. Paul Thompson was present at the meeting, at AEP’s corporate

13 headquarters in Columbus, Ohio.⁸³

14 **Q How did the OVEC Merchant Analysis presented to the OVEC Board**

15 **change in 2016?**

16 **A** On December 1, 2016, OVEC staff again presented a Merchant Analysis to the

17 OVEC Board. Again, Mr. Thompson was present at the meeting.⁸⁴ The meeting

18 minutes state that AEP’s CEO (now Mr. Akins) again directed the presentation of

█ the Merchant Analysis. He indicated [REDACTED]

20 [REDACTED]⁸⁵

21 However, the presentation provided shows something altogether different. In

22 2016, OVEC [REDACTED]

█ [REDACTED]

█ [REDACTED]

█ [REDACTED]

⁸³ Attachment to Company response to SC 1-13, attachment, at 1.

⁸⁴ *Id.* at 7 (contains Confidential Information).

⁸⁵ *Id.* at 9 (contains Confidential Information).

1 [REDACTED]
2 [REDACTED]
3 [REDACTED]
4 [REDACTED] is reproduced below in Confidential Figure 4.

5 [REDACTED]
6 [REDACTED]
7 [REDACTED]
8 [REDACTED]

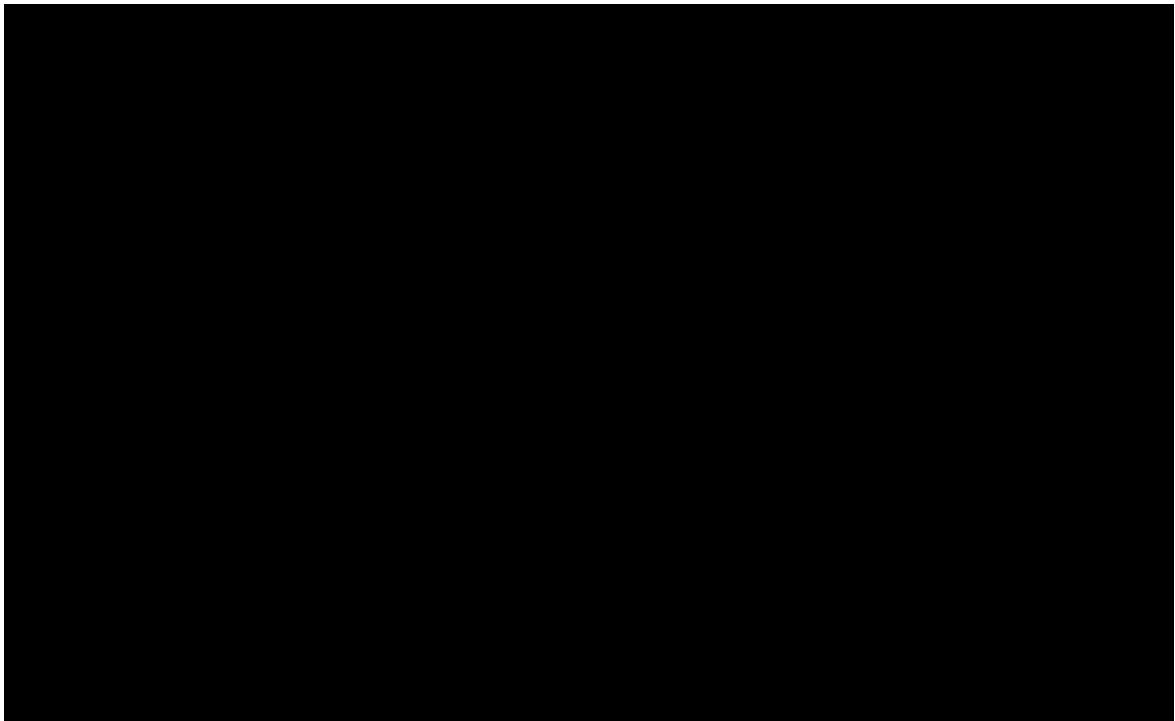
9 **Q What is the purpose of these assessments?**

10 **A** A “Merchant Analysis” is a fairly standard valuation technique used by vertically-
11 integrated utilities to assess if an asset has system value. Ultimately these analyses
12 are designed to assess if, and how much, a merchant generation company would
13 be willing to pay for a generation asset. If an asset is consistently cheaper than
14 market prices, a merchant generation company might be willing to purchase the
15 asset at a positive value. If an asset is consistently more expensive than market
16 prices, a merchant would probably not chose to acquire the asset (or at least at a
17 positive value).

⁸⁶ Confidential Company Response to SC 2-4 at 4-5.

1 These assessments are missing the critical element of the net present value
2 (“NPV”) of the asset, relative to the NPV of the market alternative, which roughly
3 represents the value a merchant would be willing to pay to acquire the asset. The
4 cumulative present worth (“CPW”) illustrates the risk incumbent in the asset over
5 time. Using an assumed 65% capacity factor for the OVEC units and the
6 Companies’ fractional ownership share, we can scale the Merchant Analyses to
7 the Companies’ incumbent risk in 2015 and 2016 (shown in 2015\$ for
8 consistency). The sequence of cumulative present worth values from OVEC’s
9 Merchant Analysis, scaled to the Companies’ OVEC share, are shown below in
10 Confidential Figure 5.⁸⁷

11
12
13



14

15 The December 2015 OVEC Merchant Analysis assessed [REDACTED]
16 [REDACTED]. However, the analysis
17 indicated that [REDACTED]

[REDACTED]

1 [REDACTED]
2 [REDACTED]
3 The December 2016 Merchant Analysis assessed [REDACTED]. Just a
4 year later, OVEC was projecting that the OVEC units [REDACTED]
5 [REDACTED].

6 **Q In your assessment, based on the 2016 analysis conducted by OVEC and**
7 **presented to Mr. Thompson and other Board members, would reasonable a**
8 **merchant operator acquire a share in OVEC, if presented with the choice?**

9 **A** No, it would not.

10 **7. THE COMPANIES HAVE FAILED TO TAKE INTO ACCOUNT OTHER ASSESSMENTS**
11 **OF OVEC AS A SUBSTANTIAL NET LOSS, BY FELLOW OVEC SPONSORS AS WELL**
12 **AS INDEPENDENT RATINGS ANALYSTS.**

13 **Q Have other OVEC Sponsors recently sought to assess their costs and**
14 **obligations under the ICPA?**

15 **A** Yes. Below I discuss two analyses of the ICPA, conducted by respectively on
16 behalf of two different OVEC Sponsors: one for Duke Energy Ohio (the “Duke
17 OVEC Analysis”), the other for FES (the “FirstEnergy OVEC Analysis”). Both of
18 these analyses were conducted in the 2017-2018 timeframe, and both reflect
19 current conditions at OVEC.

20 In addition, I discuss an assessment provided by Moody’s in late 2018, having
21 considered downgrading OVEC’s credit rating.

22 **Q What is the Duke OVEC Analysis?**

23 **A** In March 2017, Duke Energy Ohio (“Duke”) proposed to implement a rate rider,
24 incorporating the net costs of the ICPA into customer rates. Duke offered that

1 customers would pay for the full costs of the ICPA, and receive as a credit any
2 revenues accrued through wholesale market sales of its OVEC share PJM.⁸⁸

3 As part of Duke's application, the utility retained the consulting firm ICF to
4 conduct an analysis, not dissimilar to the OVEC Merchant Analysis described
5 above. The case was procedurally delayed, and in June 2018, Duke submitted
6 supplemental testimony on economic value of OVEC, including an update to
7 ICF's analysis, assessing the value of maintaining the ICPA in rates through May
8 31, 2025.

9 **Q What was the result of the Duke OVEC Analysis?**

10 **A** ICF's analysis revealed that in the base case, Duke's customers would lose
11 approximately \$77 million from 2018 through 2025 by incorporating the ICPA
12 into rates, as shown below in Figure 6.⁸⁹

13 **Figure 6. Table from Duke OVEC Analysis, Supplemental Testimony of Mr. Judah**
14 **Rose in Ohio PUC Docket 17-0872-EL-RDR**
15

Exhibit 2
Duke Energy Ohio's Share of the OVEC Portfolio Net Margins
(Present Value millions \$)

Case	Sunk Costs Included	2018-May 2025
Base Case	Yes	(77)
AEO 2018 Reference Case	Yes	(62)

Source: ICF projections with supplementary data from AEO 2018, FERC Form 1, and

16 OVEC

⁸⁸ See Application (Mar. 31, 2017), *In the matter of the Application of Duke Energy Ohio, Inc. for Approval to Modify Rider*, PSR Ohio PUC Docket 17-0872-EL-RDR, accessible at <http://dis.puc.state.oh.us/CasesByYearIndustry.aspx>.

⁸⁹ Revised Public Version of Supplemental Testimony of Mr. Judah L. Rose on behalf of Duke Energy Ohio, Inc. (July 10, 2018) (excerpted and attached as Exhibit JIF-11), at 20, Exhibit 2, Ohio PUC Docket 17-0872-EL-RDR, accessible at <http://dis.puc.state.oh.us/CasesByYearIndustry.aspx>.

1 **Q Is Duke's OVEC Analysis relevant to the Companies with respect to the**
2 **instant discussion in these Kentucky proceedings?**

3 **A** Yes. This analysis was conducted by an independent third party on behalf of
4 Duke. Originally, Duke's assessment marginally supported the inclusion of the
5 ICPA in customers' rates. A re-evaluation just a year later, and still sponsored by
6 the utility, changed that finding substantially. This is particularly noteworthy
7 since Duke Ohio and the Companies are neighboring utilities and broadly subject
8 to similar market conditions and commodity prices.

9 I understand that beginning in 2016, OVEC bid 90 percent of its energy into the
10 PJM interconnection on behalf of the Sponsors. Sponsors pay their share of fuel
11 costs and receive a pro-rata share of energy market revenues. Duke holds 9
12 percent of the obligations under the ICPA, the Companies hold just over 8 percent
13 of the obligations.

14 Scaled to the Companies share, Duke's assessment would indicate that the
15 Companies ratepayers could be expected to **lose over \$68 million** relative to
16 market alternatives by 2025.

17 **Q Is Duke's OVEC Analysis generally consistent with the findings by OVEC in**
18 **2016?**

19 **A** [REDACTED]

20 **Q What is the FirstEnergy OVEC Analysis?**

21 **A** As noted above, in April 2018, FES declared bankruptcy. As part of FES's
22 request for relief, the generating company asked the bankruptcy court to void ten
23 power purchase agreements, including the OVEC ICPA.⁹⁰

24 FES's request for relief is unequivocal regarding the harm caused through the
25 OVEC contract:

⁹⁰ FES Motion to Reject ICPA (Exhibit JIF-06).

1 By this Motion, the Movants seek to reject an extraordinarily
2 burdensome executory power purchase agreement, effective as of
3 the Petition Date (defined below). During 2017 this contract—
4 combined with nine other power purchase agreements the Movants
5 separately seek to reject—accounted for just approximately 3% of
6 the power FES bought and sold into the wholesale market. Yet
7 **movants are losing approximately \$12 million per year, and**
8 **are expected to lose \$268 million over the remaining 22 years**
9 **left on the OVEC ICPA** (defined below).⁹¹

10 **Q What is FES’s exposure to the ICPA relative to the Companies’ exposure?**

11 **A**FirstEnergy Corp.’s competitive energy services are comprised of FES and
12 Allegheny Energy Supply Company,⁹² which together hold 7.86 percent,⁹³ just a
13 few basis points shy of LG&E and KU’s joint exposure. It is not clear if FES’s
14 request for relief represents just FES alone (at 5 percent) or both competitive
15 companies. However, conservatively assuming both and scaled to LG&E and
16 KU’s joint share, FES’s assessment would indicate that the Kentucky Companies’
17 ratepayers could be expected to lose about **\$277 million** relative to market
18 alternatives by 2040 (*i.e.*, the remaining 22 years of the contract cited by FES).

19 **Q Do you have any additional information about how the FirstEnergy OVEC**
20 **Analysis was conducted?**

21 **A**Only in broad strokes. Similarly to Duke, FES retained ICF in April 2017 to
22 calculate the losses of FES associated with power purchase agreements and the
23 ICPA.⁹⁴ ICF’s consultant, Mr. Judah Rose provides this description:

⁹¹ *Id.* ¶ 4 (emphasis added).

⁹² *Id.* ¶ 13.

⁹³ ICPA §1.0117.

⁹⁴ Expert declaration of Judah Rose (Doc. 46, filed Apr. 1, 2018), *In re FirstEnergy Solutions Corp.*, No. 18-50757 (AMK) (Bankr. N.D. Ohio) (attached as Exhibit JIF-12).

1 ICF was retained to determine the short and long-term costs of
2 continued performance. ICF performed an initial analysis of the
3 Executory PPAs in mid-2017, and then updated its work
4 commencing in January 2018.⁹⁵

5 Mr. Rose further describes his process as an in-depth modeling assessment,
6 similar to that executed on behalf of Duke:

7 These calculations took into account the length of the contracts, the
8 contract price, the expected volume using historical data, and the
9 expected revenue streams. With respect to the OVEC ICPA, ICF
10 took into account both fixed and variable costs such as fuel, coal,
11 variable and fixed operations and management costs, capital
12 expenditures, financing costs and emissions costs associated with
13 that agreement. ICF's calculations used an internal production cost
14 model which simulated the specific power markets in which the
15 Ohio Valley Electric Corporation ("OVEC") and the other contract
16 counterparties operate.⁹⁶

17 **Q Were you provided the opportunity to review workpapers in either the Duke**
18 **OVEC Analysis or the FirstEnergy OVEC Analysis?**

19 **A** I reviewed the assessment and workpapers conducted on behalf of Duke Ohio in a
20 fair degree of detail. In my opinion, the assessment was generally credible and
21 reasonably executed. As noted in my testimony in that case, I noted many of the
22 additional risks (detail below) that were not included in Duke's assessment, and
23 took issue with some of the characterizations of the results by Duke's witnesses.
24 However, the core analytical technique appeared sound.

25 It is my understanding that the FirstEnergy OVEC Analysis was conducted using
26 a method similar to the Duke OVEC Analysis.

⁹⁵ *Id.* ¶ 6.

⁹⁶ *Id.* ¶ 9.

1 **Q Are you aware of any other assessments of the value of OVEC?**

2 **A** Yes. In December 2018, in response to FirstEnergy’s bankruptcy declaration and
3 subsequent move to withdraw from the ICPA, Moody’s issued a credit opinion
4 and rating action on OVEC, holding the long-term rating at Ba1, a non-investment
5 grade rating.⁹⁷

6 I discuss the risks imposed by the withdrawal of FES from the ICPA in the next
7 section, below. However, it is notable that Moody’s determined that, without any
8 other entity taking on FES’s obligations, those obligations are being served by
9 OVEC itself from a debt reserve.

10 Moody’s states that they ran their own assessment of the market value of OVEC
11 under the ICPA:

12 No one has “stepped-up” for FES’ share of OVEC’s fixed cost
13 obligations. We estimate FES’ share of OVEC’s fixed costs to be
14 approximately \$17 million per year. In sensitivity testing, **taking**
15 **into account FES’ share of energy and capacity revenues that**
16 **are being paid, we estimate the shortfall could be reduced to**
17 **about \$10-\$13 million per year;** however these revenues are
18 currently being allocated to the non-defaulting sponsors. As such,
19 OVEC is currently bearing the entire cost of the shortfall,
20 illustrating the exposure created by the lack of step-up provision in
21 the current ICPA.⁹⁸

22 In other words, if OVEC were compelled to take on the burden of FES’s share,
23 compensating itself only from the market—as would be the case with a merchant
24 generator—it would realize an annual shortfall of \$10-\$13 million per year.

⁹⁷ Moody’s Credit Opinion (Exhibit JIF-10).

⁹⁸ *Id.* at 3 (emphasis added).

1 Moody's characterizes OVEC's financial profile as "weak," and makes a critical
2 note:

3 As a strictly merchant plant, in today's market, the **plant would**
4 **not be able to generate sufficient cash flow cover its fixed costs**
5 **and service its \$1.4 billion of debt.**⁹⁹

6 Moody's assessment only looked at the share of OVEC held by FES (4.85
7 percent), and not the smaller fractional also held by Allegheny Energy (3.01
8 percent). Scaled to the Companies' joint share, Moody's assessment would
9 indicate that the Companies' ratepayers could be expected to lose about **\$16-21**
10 **million per year** relative to market alternatives—a value even more substantial
11 than the considerable losses estimated by FES in January 2018.

12 **Q In sum, what conclusions do you draw with respect to the economic value of**
13 **OVEC?**

14 **A** There is substantial evidence from other OVEC Sponsors, and bolstered by
15 Moody's analysis, that both the short-term and long-run liability of OVEC
16 imposes substantial risk on retail customers, and that the ICPA is not in their
17 interests.

18 It bears repeating that, at the outset of discovery in this case, Sierra Club asked
19 specifically whether the Companies had performed or obtained any studies or
20 analyses regarding the cost-competitiveness of the ICPA; and the Companies
21 suggested that they had no pertinent information.¹⁰⁰ Only when prodded again in
22 the second round of discovery did they provide the Merchant Analyses.¹⁰¹

⁹⁹ *Id.* at 5 (emphasis added).

¹⁰⁰ *See* Company Response to SC 1-2 (failing to provide any "study or analysis that the Company has performed or obtained, subsequent to that relied on in Case Nos. 2011-00099 and 2011-00100 before the Commission, regarding the cost-competitiveness of, or need for, its contractual relationship with OVEC or the power and capacity the Company obtains from the OVEC Units," other than their inapposite 2018 IRP Reserve Margin Analysis addressed by my testimony above).

¹⁰¹ *See* Company Response to SC 2-4(a).

1 I find it concerning that the Companies apparently did not understand the
2 Merchant Analyses to be clear examples of cost-competitiveness studies. Again,
3 these analyses (discussed in the previous section above) were provided by OVEC
4 to the Companies' Board representatives.

5 It is further troubling that the Companies apparently did not review either of the
6 public studies, discussed above, conducted by their fellow Sponsors to evaluate
7 the OVEC contracts.

8 The Companies appear to have taken the Commission's 2011 authorization of the
9 amended ICPA as license to effectively disengage with further consideration of
10 whether OVEC makes sense for the Companies' ratepayers.

11 **8. THE COMPANIES' OVEC COMMITMENT POSES SUBSTANTIAL RISKS TO THE**
12 **COMPANIES AND THEIR RATEPAYERS.**

13 **Q Are there other impending risks associated with the ICPA beyond what you**
14 **have just discussed?**

15 **A** Yes. The true liability of the Companies' OVEC obligations under the ICPA goes
16 beyond a fixed price, or even an index-priced power purchase agreement. Rather,
17 in addition to the burden of the contractual power purchases, the Companies'
18 OVEC commitment must be understood as encompassing the nearly unrestricted
19 cost and risk of owning and operating power plants with very little opportunity for
20 recourse, as well as extraordinary near-term cost risk, above its currently non-
21 economic status.

22 There are at least three categories of such risk, which I discuss below:

23 (1) financial risk posed by possible defection OVEC Sponsors (which has already
24 begun), (2) environmental costs and obligations, and (3) OVEC's historical
25 performance.

1 **Q Will you first explain the financial risk from defecting OVEC Sponsors?**

2 **A** In brief, if a Sponsor leaves the ICPA without a renegotiation, the costs of the
3 exiting Sponsor could be reallocated to the remaining Sponsors, as noted above.
4 This could radically increase the cost and obligations of the ICPA on remaining
5 Sponsors, including the Companies.

6 The ICPA is several, and not joint, meaning that each individual Sponsor is only
7 responsible for its own share of OVEC's obligations, and not the obligations of
8 the other Sponsors.¹⁰² At first blush, this would appear to insulate the remaining
9 Sponsors, irrespective of the financial wherewithal of a single Sponsor. In
10 practice, however, it means that OVEC can be left with real gaps—and no
11 responsible party—if a single Sponsor leaves and no other entity steps in to take
12 that ownership share. And this is not merely theoretical; it is in fact occurring
13 today: the bankrupt FES has departed the ICPA unilaterally, and OVEC's costs to
14 other partners have increased as a result, as noted above.

15 **Q Will you provide more detail on what's occurred since FES's bankruptcy**
16 **filing?**

17 **A** In April 2018, FES declared bankruptcy and asked a federal bankruptcy court in
18 Ohio to allow it to reject the ICPA. According to Moody's, FES "stopped paying
19 its approximately 5% share of OVEC's costs."¹⁰³ As Moody's further explains:

20 Following rejection of the ICPA, the FES share of energy and
21 capacity has been allocated to the other sponsors, who have been
22 paying their share of OVEC's variable costs; however, no one has
23 "stepped-up" for FES' share of OVEC's fixed cost obligations....
24 As such, OVEC is currently bearing the entire cost of the shortfall,

¹⁰² See ICPA § 9.11; see also Company response to SC 1-17(a).

¹⁰³ Moody's Credit Opinion at 3 (Exhibit JIF-10).

1 illustrating the exposure created by the lack of step-up provision in
2 the current ICPA.¹⁰⁴

3 At the moment, OVEC's outstanding debt is being paid for through a reserve,
4 funded by the remaining Sponsors. According to Moody's, prior to FES's formal
5 declaration of bankruptcy, the OVEC Board authorized a \$44 million debt service
6 reserve, and plans on continuing funding that reserve. OVEC's annual report
7 describes that in January 2017, OVEC started "advanced billing" to the Sponsors
8 for debt service to fund a reserve.¹⁰⁵

9 This higher billing rate, incurred in the OVEC demand charge is also noted by
10 Company witness Mr. Sinclair, who notes that the Companies pay "higher
11 demand charges ... due to expectations for OVEC to collect in advance for
12 repayments of a portion of its debt due in 2019."¹⁰⁶

13 The Company's 2017 filing of FERC Form 1 goes one step further, stating:

14 OVEC [Sponsors] ... including LG&E, have allowed
15 implementation of a limited, partial OVEC reserve fund for debt
16 costs and are analyzing certain potential additional credit support
17 actions to preserve OVEC's access to credit markets or mitigate
18 risks or adverse impacts relating thereto, including increased
19 interest costs and accelerated maturities of OVEC's existing short
20 and long-term debt.¹⁰⁷

21 So, although one might have expected the several liability of the OVEC contract
22 to have protected the remaining Sponsors, in fact those Sponsors (including the
23 Companies) have increased payments to OVEC as a result of FES's departure.

¹⁰⁴ *Id.*

¹⁰⁵ OVEC 2017 Annual Report (Exhibit JIF-02), at 11.

¹⁰⁶ Direct Testimony of Mr. David Sinclair at 31:12-15.

¹⁰⁷ Attachment to Filing Requirement. 807 KAR 5:001 Section 16(7)9k), at 103, FERC Form 1, at 123.57.

1 **Q Are there other increased cost risks due to the defection of Sponsors, in**
2 **addition to what you just explained?**

3 **A** Yes. OVEC’s borrowing costs could increase substantially as its credit ratings
4 fall. OVEC operates as an independent generation company and incurs debt and
5 associated borrowing costs. The ICPA requires that the Sponsors pay all of
6 OVEC’s borrowing costs, but the credit ratings governing those borrowing costs
7 are OVEC’s. As OVEC’s credit ratings fall, borrowing costs increase, increasing
8 the cost of existing and new debt held by OVEC—and paid for by the Companies
9 under the ICPA.

10 OVEC described this borrowing cost risk in a pre-emptive filing before FERC,
11 anticipating FES’s bankruptcy:

12 As an initial matter, because the Sponsoring Companies’
13 obligations are several and not joint, if FirstEnergy is able to reject
14 its obligations under the ICPA, the resulting cost shortfalls are not
15 payable by the other Sponsoring Companies and will go
16 unreimbursed every month over the life of the contract (i.e., until at
17 least 2040), absent the types of ameliorative changes to the filed
18 rate discussed in Section IV.B, *infra*. **This will further impact**
19 **OVEC’s credit rating (which already has been impacted by the**
20 **prospect of contract rejection), further raising OVEC’s**
21 **borrowing costs. Those higher borrowing costs will directly**
22 **result in higher costs to the remaining Sponsoring Companies**
23 **and their customers.** In the case of OVEC’s rural electric
24 cooperative Sponsoring Companies, for example, whose customers
25 are their owners, all of these increased costs will be borne by the
26 ultimate ratepayers.¹⁰⁸

¹⁰⁸ Complaint or, in the Alternative, Request for Declaratory Order, *Ohio Valley Elec. Corp. v. FirstEnergy Solutions Corp.*, FERC Docket No. EL18-135 (Exhibit JIF-09), at 14 (emphasis added).

1 And in fact, in recent years, OVEC’s credit rating has been downgraded, and is on
2 a “negative” outlook watch from Standard and Poor’s (“S&P”). In December
3 2016, Moody’s downgraded OVEC’s rating from “Baa3,” the lowest investment
4 grade, to “Ba1,” a non-investment grade. Moody’s Investors Service indicates that
5 a further downgrade could result if FES’s payments cannot be covered by existing
6 reserves or the “swift replacement of the defaulting party.”¹⁰⁹

7 **Q How much of OVEC’s debt is outstanding?**

8 **A** As of October 31, 2017, OVEC had \$1,356 million in long-term debt.¹¹⁰ As far as
9 I can discern, half of this long-term debt, \$774 million, is due on or before
10 2026.¹¹¹ To put that number in context, the 63-year-old OVEC units have
11 \$640/kW outstanding—close to the overnight cost of a new generator.¹¹²

12 The risks that this debt will increasingly be incurred on the Companies through
13 increases to the demand charge is very real.

14 **Q Next, will you discuss the environmental compliance costs and risk posed to**
15 **the OVEC units?**

16 **A** The OVEC units have yet-unsatisfied compliance obligations under the respective
17 federal environmental regulations promulgated for Coal Combustion Residuals
18 (“CCR”), Effluent Limitation Guidelines (“ELG”), and thermal effluent
19 (“316(b)").¹¹³ As revealed in discovery responses supplied to Sierra Club and
20 designated as confidential by the Companies, OVEC’s understanding of its
21 obligations under the rules has continuously shifted, but OVEC currently

¹⁰⁹ Moody’s Credit Opinion at 2 (Exhibit JIF-10).

¹¹⁰ OVEC 2017 Financial Auditors Report (Exhibit JIF-07) at 15.

¹¹¹ *Id.*

¹¹² Lazard Levelized Cost of Energy v11 (Nov. 2017) available at <https://www.lazard.com/media/450337/lazard-levelized-cost-of-energy-version-110.pdf> (last accessed Jan. 15, 2019), at 20 (showing assumptions of total capital costs for reciprocating engines at \$500-\$800/kW, gas peakers at \$750-\$1,000/kW, and gas combined cycle at \$700-\$1,300/kW).

¹¹³ *See, e.g.*, Company Response to SC 1-13, Attachment at 14-15 (contains Confidential Information) (non-confidential portions of 2017 OVEC Board minutes referencing future compliance obligations, and certain corresponding costs, for each rule); Company Response to SC 1-14, at Attachment at 3, 36-40 (contains Confidential Information) (similar topics addressed in non-confidential portions of presentation slides).

1 anticipates anywhere from a “best case” scenario to a “worst case” scenario. As of
2 August 1, 2018, OVEC had developed a “best case” and a “worst case.”
3 Compliance scenario.

4 Even in the “best case,” OVEC still anticipates [REDACTED] in new environmental
5 capital costs, starting in 2021. In the “worst case,” OVEC anticipates [REDACTED]
6 [REDACTED] in new environmental capital costs, with a decision date as early as mid-
7 2019.¹¹⁴

8 The “best case” makes a series of bold assumptions: that the current
9 administration will successfully overturn existing regulations on the books; that
10 such action rules will be upheld in court; and that rules will not later be re-
11 promulgated to substantially the same effect. In other words, this scenario
12 assumes that current, duly promulgated legal obligations will not exist in the near
13 future. In my opinion, such reliance is risky and not well-founded.

14 It bears recognizing explicitly here that both of these compliance obligation cases
15 are inconsistent with express predictions and representations in the 2011 URS
16 Report—discussed above—on which the Commission relied in 2011 in approving
17 the extension of the ICPA through 2040.¹¹⁵

18 **Q What would be the impact of the “worst case” scenario on the demand**
19 **charges to OVEC’s Sponsors?**

20 **A** Assuming that OVEC acquires a twenty-year bond with a 6 percent yield (judging
21 from prior bond rates received by OVEC in the annual report), the Sponsors
22 [REDACTED] would see an increase to the demand charge of approximately [REDACTED]
23 [REDACTED], all else held equal, with current laws remaining on the books.

24 However, it is not clear that OVEC is able to secure long-run debt at any
25 reasonable rate. Almost all of OVEC’s recent borrowing has been for extremely
26 short periods (4-5 years). If OVEC were compelled to shrink that borrowing

¹¹⁴ See Company Response to SC 1-14, at 36-44 (contains Confidential Information).

¹¹⁵ See *supra* nn. 51-71 and accompanying text.

1 period to five years, Sponsors would see an increase to the annual demand charge
2 of approximately [REDACTED] for these environmental obligations
3 alone, all else held equal. The Companies' share of this incremental demand
4 charge would be [REDACTED].

5 **9. THE COMPANIES' OVEC COMMITMENT IS NOT REQUIRED TO SERVE THE**
6 **COMPANIES' NEEDS, INCLUDING FOR ADEQUATE CAPACITY.**

7 **Q Do the Companies require the capacity provided by OVEC to serve customer**
8 **needs?**

9 **A** No, they do not. The Companies' reserve margin—*i.e.*, the amount of excess
10 capacity they hold in reserve for contingency above their peak requirements—is
11 currently *well* above what they require, and would remain so if they subtracted
12 OVEC's relatively small fraction thereof from their portfolio.

13 Sierra Club asked the Companies to identify and explain any need for taking
14 power from OVEC other than its contractual obligation under the ICPA. In
15 response, the Companies stated simply that their 2018 IRP had shown that “with
16 the Companies' share of OVEC capacity, the Companies' reserve margin falls
17 within the target reserve margin range.”¹¹⁶

18 **Q What is the Companies' current reserve margin?**

19 **A** According to the 2018 IRP, the Companies' 2018 reserve margin was 24.7
20 percent. Notably, they anticipate that margin to remain above 23 percent in every
21 year through 2033, as presented in Figure 7 below.¹¹⁷

¹¹⁶ Company Response to SC 2-1(d).

¹¹⁷ 2018 IRP Reserve Margin Analysis, *supra* n.12, at Table 1.

1 **Figure 7. Companies' Peak Demand and Resource Summary from Companies'**
 2 **2018 IRP Reserve Margin Analysis.**

Table 1: Peak Demand and Resource Summary (Base Energy Requirements Forecast)

	2018	2019	2020	2021	2022	2023	2024	2027	2030	2033
Summer Peak Demand	7,028	6,703	6,688	6,674	6,657	6,653	6,638	6,655	6,650	6,627
DCP	-127	-96	-91	-87	-84	-80	-77	-67	-59	-52
DSM	-247	-247	-236	-236	-236	-236	-236	-236	-236	-236
Net Peak Demand	6,655	6,360	6,361	6,350	6,338	6,338	6,325	6,352	6,355	6,339
Existing Capability. ⁴	7,754	7,476	7,476	7,476	7,477	7,477	7,478	7,478	7,478	7,478
Small-Frame SCCTs	87	87	87	73	73	73	73	73	73	73
CSR	141	141	141	141	141	141	141	141	141	141
Bluegrass	165	0	0	0	0	0	0	0	0	0
OVEC. ⁵	152	152	152	152	152	152	152	152	152	152
Total Supply	8,299	7,856	7,856	7,842	7,843	7,843	7,844	7,844	7,844	7,844
Reserve Margin	1,644	1,495	1,495	1,491	1,505	1,505	1,518	1,492	1,489	1,505
Reserve Margin %	24.7%	23.5%	23.5%	23.5%	23.7%	23.7%	24.0%	23.5%	23.4%	23.7%

3

4 **Q What is the Companies' "target reserve margin range"?**

5 **A** The Companies identify a reserve margin "range" of 17 to 25 percent.¹¹⁸ The high
 6 end of the Companies' range is defined by a reliability criterion of (statistically)
 7 no more than one day's loss of load event ("LOLE") in a 10-year period ("1-in-
 8 10"). The low end was defined as the change in load that would be required to
 9 economically trigger a new capacity addition.¹¹⁹ The Companies' acknowledge
 10 that the reserve margin which meets the more rigorous criterion, the 1-in-10
 11 LOLE "does not necessarily coincide with the economically optimal reserve
 12 margin."¹²⁰

13 **Q What is OVEC's contribution to the Companies' reserve margin?**

14 **A** The OVEC units, at a 152 MW of peak summer rating contribute 2.3 percent to
 15 the Companies' 2018 reserve margin. Without those units in 2018, the
 16 Companies' reserve margin would have been 22.4 percent. In 2019, the
 17 Companies' project their reserve margin will be 22.5 percent. Without OVEC's

¹¹⁸ *Id.* at 26 (Section 5.4).

¹¹⁹ *Id.* at 24 (Section 5.2).

¹²⁰ *Id.* at 9 (Section 3).

1 power, the Companies' reserve margin would be a very comfortable 21.1
2 percent.¹²¹

3 **Q How does a reserve margin of 21 percent to 22.5 percent compare to the**
4 **reserve margin of other regional entities?**

5 **A** The Companies point out that the target reserve margins of MISO, PJM, and TVA
6 are 17.1, 15.8, and 15 percent, respectively—*i.e.*, at or below even the low end of
7 the Companies' chosen target reserve margin range, and *far* lower than the
8 Companies' current reserve margin, or even their projected reserve margin
9 without OVEC.

10 **Q What does the Companies' reserve margin study imply about a reasonable**
11 **target reserve margin?**

12 **A** I believe the Companies ended up identifying a range of target reserve margins
13 because in their calculations, a range of reserve margins all achieve approximately
14 the same total costs (comprised of the cost of capacity, generation production
15 costs, and the value of lost load or unserved energy). Even under the most
16 extreme scenarios (a 90th percentile load projection), costs for between a
17 16.9-24.6 percent reserve margin varied by only \$10-\$11 million.¹²² According to
18 the Companies' analysis, it would be difficult to identify any reliability cost with
19 losing capacity equivalent to OVEC.

20 Based on that study, the Companies' current and projected reserve margin is very
21 comfortable even in the absence of the OVEC units, even under the Companies'
22 abnormally and unnecessarily high chosen target range.

23 **Q Did the Company test the reliability implications of shedding OVEC?**

24 **A** No.

¹²¹ Author's calculation based on data in Figure 7, above.

¹²² Author's calculation based on Tables 13 and 14 in the Companies' 2018 IRP Reserve Margin Analysis.

1 **Q Have the OVEC units performed well during critical reliability events in the**
2 **recent past?**

3 **A** No. The Companies' reserve margin analysis notes that "since [2010], the
4 Companies have experienced two annual peak demands in excess of 7,000 MW
5 and both occurred during winter months (7,114 MW in January 2014 and 7,079
6 MW in February 2015)."¹²³ Those two periods represent unusual cold snaps, the
7 first of which is colloquially referred to as "the 2014 polar vortex" and provided
8 the basis of a special reliability report from the North American Reliability
9 Corporation ("NERC").¹²⁴

10 During the January 2014 cold event, the maximum temperature in Louisville,
11 Kentucky, barely broke above freezing for three days (January 6-8).¹²⁵ During
12 that time, while ten of the eleven OVEC units were operating near maximum
13 output, Clifty Creek unit 3, which comprises 9 percent of OVEC's capacity, was
14 offline.¹²⁶

15 During the February 2015 cold events, temperatures in Louisville stayed below
16 freezing for six days (February 15-20). Temperatures stayed extremely cold
17 through the remainder of the month, only breaking freezing on four other days.¹²⁷
18 During that time, **nine out of eleven units experienced an outage** (excepting
19 Clifty Creek 1 and Kyger Creek 1).¹²⁸ At no time were more than nine of eleven
20 units online. On the peak demand date of February 20, the OVEC units produced

¹²³ 2018 IRP Reserve Margin Analysis at 4 (Section 2).

¹²⁴ NERC, Polar Vortex Review (Sept. 2014), *available at* https://www.nerc.com/pa/rrm/January%202014%20Polar%20Vortex%20Review/Polar_Vortex_Review_29_Sept_2014_Final.pdf (last accessed Jan. 15, 2019).

¹²⁵ Weather Underground, Bowman Airport Historic Records for Jan 2014, *available at* <https://www.wunderground.com/history/monthly/us/ky/louisville-bowman/KLOU/date/2014-1> (last accessed Jan. 15, 2019).

¹²⁶ Review of data from US EPA Clean Air Markets Data ("CAMD") Air Markets Program Data ("AMPD"). Accessed January 10, 2019.

¹²⁷ Weather Underground, Bowman Airport Historic Records for Feb 2016, *available at* <https://www.wunderground.com/history/monthly/us/ky/louisville-bowman/KLOU/date/2015-2> (last accessed Jan. 15, 2019).

¹²⁸ Review of data from US EPA Clean Air Markets Data ("CAMD") Air Markets Program Data ("AMPD"), *available at* <https://ampd.epa.gov/ampd/> (reviewed Jan. 10, 2019).

1 a gross generation of 38,000 MWh, only 65 percent of their maximum output
2 from 2014-2015.¹²⁹

3 **Q Do the OVEC units otherwise have a recent history of being highly reliable?**

4 Not really. The units appeared to have been fairly reliable through the early 2000s
5 but rose towards the late 2000s.¹³⁰ However, by 2013, the forced outage rate of
6 the OVEC units was regularly in excess of 10 percent, and often well above 20
7 percent.¹³¹ As displayed below, the entirety of the six-unit Clifty Creek station
8 had a forced outage rate of 26.1 percent in 2015. Four of five units at Kyger Creek
9 spent twenty percent or more of their time in forced outage in 2015.

10 Table 2 below is a reproduction of a table provided to Sierra Club by the
11 Companies.¹³² Apparently either OVEC or the Companies ceased tracking the
12 performance of individual OVEC units after the disastrous 2015 year.
13 Mysteriously, the forced outage rate supposedly shrinks immediately thereafter.

¹²⁹ Maximum daily gross generation of all OVEC units 2014-2015 was 56,399 MWh, achieved January 28, 2014.

¹³⁰ 2011 URS Report, *see supra* n.59, at 65, 71.

¹³¹ *See* Company Response to SC 1-9(d).

¹³² *See id.*

1

Table 2. Equivalent forced outage rates for OVEC units, 2013-2018.

EFOR	2013	2014	2015	2016	2017	2018 Jan-Oct
Clifty Creek 1	10.1%	14.5%	7.3%	NA	NA	NA
Clifty Creek 2	7.2%	8.4%	9.5%	NA	NA	NA
Clifty Creek 3	19.1%	25.9%	16.0%	NA	NA	NA
Clifty Creek 4	19.2%	12.4%	12.6%	NA	NA	NA
Clifty Creek 5	6.8%	11.7%	10.3%	NA	NA	NA
Clifty Creek 6	15.5%	16.2%	24.8%	NA	NA	NA
Clifty Creek Station	9.3%	14.1%	26.1%	7.5%	7.1%	7.5%
Kyger Creek 1	12.6%	9.4%	16.4%	NA	NA	NA
Kyger Creek 2	8.7%	17.8%	25.5%	NA	NA	NA
Kyger Creek 3	13.2%	20.2%	19.7%	NA	NA	NA
Kyger Creek 4	4.2%	12.1%	45.5%	NA	NA	NA
Kyger Creek 5	8.9%	11.5%	22.5%	NA	NA	NA
Kyger Creek Station	12.7%	14.2%	13.5%	9.3%	5.7%	5.3%

2

3 **Q What is your assessment of that table provided by the Companies?**

4 **A** I find the statistics reported for 2016 to 2018 to be non-credible. From January 5
to January 8, 2017, the East Coast again experienced a sharp cold snap throughout
6 which temperatures in Louisville stayed below freezing. Yet, while every other
7 OVEC unit turned up to near-maximum output, Kyger Creek units 3, 4, and 5
8 were out of commission. In addition, Clifty Creek unit 3 and Kyger Creek units 2
9 and 3 did not operate for about one-third of 2017, while Clifty Creek unit 6 did
10 not generate for almost half of 2017. It seems almost impossible to align these
11 statistics with the reported “station” 7.1 or 5.7 percent forced outage rates in 2017
12 shown in Table 2 above.

1 **Q** **Were the Companies able to identify the reasons behind the poor reliability**
2 **of the OVEC units or what actions were taken, if any, to mitigate the**
3 **reliability problems of the OVEC units?**

4 **A** No.¹³³

5 **Q** **What conclusions do you draw regarding the Companies' need for, and the**
6 **reliability of, the OVEC units?**

7 **A** OVEC's power does not serve a significant, let alone critical, role in satisfying the
8 Companies' capacity needs. Further, the OVEC Units cannot be relied upon to
9 consistently serve during critical events.

10 * * * * *

11 **Q** **Do you have anything to add to your direct testimony?**

12 **A** Please again see Section 2, above, for key conclusions and recommendations. I
13 have nothing further to add at this time.

¹³³ Company Response to SC 1-11.

CERTIFICATE OF SERVICE

This is to certify that the foregoing copy of the DIRECT TESTIMONY OF JEREMY I. FISHER, PHD, ON BEHALF OF SIERRA CLUB in Case Nos. 2018-00294 & 2018-00295, and the Exhibits being attached thereto, are true and accurate copies of the documents being filed in paper medium; that the electronic filing was transmitted to the Commission on January 16, 2017; that there are currently no parties that the Commission has excused from participation by electronic means in this proceeding; and that a copy of the filing in paper medium is being hand delivered to the Commission.

A handwritten signature in blue ink, appearing to read "Joe F. Childers", is written above a solid horizontal line.

JOE F. CHILDERS