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November 16, 2020

BY HAND DELIVERY

The Honorable Connie Graley, Executive Secretary
WEST VIRGINIA PUBLIC SERVICE COMMISSION
201 Brooks Street
Charleston, West Virginia 25323

**RE: Monongahela Power Company and the Potomac Edison Company
Petition to Initiate a General Investigation to Determine Reasonable Rates and
Charges on and after January 1, 2021
Case No. 20-0665-E-ENEC**

Dear Ms. Graley,

Please find enclosed for filing in the above-captioned case an original and twelve copies of the Public Version of the Direct Testimony of Rachel Wilson on Behalf of the Sierra Club. A confidential version of this testimony will also be filed under seal in accordance with Rule 4.1.6 of the Commission's Rules of Practice and Procedure.

Thank you,

Evan Dimond Johns

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Enclosure

Copied: Service List

**PUBLIC SERVICE COMMISSION
OF WEST VIRGINIA
CHARLESTON**

Case No. 20-0065-E-ENEC

**MONONGAHELA POWER COMPANY and
THE POTOMAC EDISON COMPANY**

**General Investigation to Determine Reasonable
Rates and Charges for Monongahela Power
company and the Potomac Edison Company on
and after January 1, 2021**

**DIRECT TESTIMONY OF
RACHEL WILSON**

**ON BEHALF OF
THE SIERRA CLUB**

PUBLIC VERSION

November 16, 2020

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1. INTRODUCTION AND QUALIFICATIONS

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

2 A. My name is Rachel Wilson and I am a Principal Associate with Synapse Energy
3 Economics, Incorporated (Synapse). My business address is 485 Massachusetts
4 Avenue, Suite 3, Cambridge, Massachusetts 02139.

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

6 A. Synapse is a research and consulting firm specializing in energy and environmental
7 issues, including electric generation, transmission and distribution system reliability,
8 ratemaking and rate design, electric industry restructuring and market power,
9 electricity market prices, stranded costs, efficiency, renewable energy, environmental
10 quality, and nuclear power. Synapse's clients include state consumer advocates,
11 public utilities commission staff, attorneys general, environmental organizations,
12 federal government agencies, and utilities.

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

14 A. At Synapse, I conduct analysis and write testimony and publications that focus on a
15 variety of issues relating to electric utilities, including: integrated resource planning;
16 federal and state clean air policies; emissions from electricity generation;
17 environmental compliance technologies, strategies, and costs; electrical system
18 dispatch; and valuation of environmental externalities from power plants.

19 I also perform modeling analyses of electric power systems. I am proficient in the use
20 of spreadsheet analysis tools, as well as optimization and electricity dispatch models

1 to conduct analyses of utility service territories and regional energy markets. I have
2 direct experience running the Strategist, PROMOD IV, PROSYM/Market Analytics,
3 PLEXOS, EnCompass, and PCI Gentrader models, and have reviewed input and
4 output data for several other industry models.

5 Prior to joining Synapse in 2008, I worked for the Analysis Group, Inc., an economic
6 and business consulting firm, where I provided litigation support in the form of
7 research and quantitative analyses on a variety of issues relating to the electric
8 industry.

9 I hold a Master of Environmental Management from Yale University and a Bachelor
10 of Arts in Environment, Economics, and Politics from Claremont McKenna College
11 in Claremont, California. A copy of my current resume is attached as Exhibit RW-1.

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

13 A. I am testifying on behalf of Sierra Club.

14 **Q. Have you previously testified as an expert witness in any formal hearings before**
15 **regulatory bodies?**

16 A. Yes. I have submitted expert testimony in electric utility dockets in Minnesota,
17 Kentucky, Indiana, Oklahoma, Missouri, Texas, Virginia, Washington, Georgia,
18 Mississippi, Alabama, and North Carolina.

1 **Q. Have you testified previously before the West Virginia Public Service**
2 **Commission?**

3 A. No.

4 **Q. What is the purpose of your testimony in this proceeding?**

5 A. The purpose of my testimony is to evaluate how coal unit commitment decisions by
6 the Monongahela Power Company (Mon Power or the Company) have impacted
7 ratepayer costs over the two-year period beginning July 1, 2018 and ending June 30,
8 2020.

9 **Q. Please identify the documents and filings on which you base your opinions.**

10 A. My findings rely primarily upon the testimony, exhibits, and discovery responses of
11 Mon Power and its witnesses in Case No. 20-0065-E-ENEC and Case No. 20-0666-
12 E-4435T. I also rely to a limited extent on certain industry publications.

1 **Q. Are you sponsoring any exhibits?**

2 A. Yes. I am sponsoring the following exhibits:

Exhibit No.	Description of Exhibit	Confidential or Non-Confidential
Exhibit RW-1	Resume of Rachel S. Wilson	Non-Confidential
Exhibit RW-2	Response to Sierra Club Request No. 1-7	Non-Confidential
Exhibit RW-3	Response to Sierra Club Request No. 1-7 CONFIDENTIAL Attachment A	Confidential
Exhibit RW-4	Response to CAG Request No. 1.14 CONFIDENTIAL Attachment C	Confidential
Exhibit RW-5	Response to CAG Request No. 1.14 CONFIDENTIAL Attachment A	Confidential
Exhibit RW-6	Response to CAG Request No. 1.14 CONFIDENTIAL Attachment D	Confidential
Exhibit RW-7	Response to WVEUG Request No. 1-4	Non-Confidential
Exhibit RW-8	Response to Sierra Club Request No. 1-9	Non-Confidential
Exhibit RW-9	Response to CAG Request No. 2-10 in Case No. 20-0666-E-4435T	Non-Confidential

2. OVERVIEW OF TESTIMONY AND CONCLUSIONS

3 **Q. Please summarize your primary conclusions.**

4 A. My primary findings include the following:

- 5 1. *Mon Power regularly, and imprudently, self-commits the Fort Martin and*
- 6 *Harrison units into the PJM market.* Over the period from July 2018 to June
- 7 2020, Mon Power “self-committed” each of the Fort Martin and Harrison
- 8 units in the PJM energy market [REDACTED]

1 [REDACTED]. I estimate that
2 between July 1, 2018, and June 30, 2020, Mon Power inappropriately self-
3 committed its coal units in a way that led the Company to incur net
4 operational losses. Mon Power's explanations for its self-commitment
5 practices do not justify these losses.

6 2. *Mon Power's coal unit commitment practices have caused the Company's*
7 *ratepayers to pay for unnecessary operational losses.* Mon Power consistently
8 offers its coal units into the PJM energy market at prices that are below their
9 variable costs of production. As a result, the Company incurred net
10 operational losses at each of its five units [REDACTED]

11 [REDACTED]
12 [REDACTED]
13 [REDACTED]

14 **Q. Please summarize your primary recommendations.**

15 A. The Commission has several options that would protect ratepayers from subsidizing
16 uneconomic coal operation by Mon Power. Based on my findings, I offer the
17 following recommendations:

18 1. The Commission should disallow the recovery of the [REDACTED]
19 [REDACTED] incurred over the ENEC period from the uneconomic
20 commitment of Mon Power's coal units.

1 2. In the alternative, the Commission should take action to protect ratepayers
2 from future uneconomic unit commitment decisions made by Mon Power. It
3 can do so in one of two ways:

4 a. The Commission could elect to cap recovery of variable production
5 costs—which include fuel costs and variable operations and
6 maintenance (O&M) costs—up to the equivalent of market energy
7 revenue received from PJM; or

8 b. The Commission could mandate that Mon Power use the PJM energy
9 market as its cost recovery mechanism, with ratepayers neither paying
10 for excess costs above market energy costs, nor earning any benefit if
11 production costs are below prevailing market energy prices.

12 Either of these actions would insulate ratepayers from imprudent unit-
13 commitment decisions.

14 3. If the Commission elects either of these two ratepayer protection options
15 described above, no further action is required. If the Commission declines to
16 mandate either of the two options, I recommend that the Commission conduct
17 a prudence review of Mon Power’s unit commitment practices and of its coal
18 contracts.

19 a. To facilitate the Commission’s review of unit commitment decisions,
20 Mon Power must provide comprehensive documentation of its unit
21 commitment decisions, demonstrating the forward-looking analysis

1 that was conducted, the results of that analysis, and how Mon Power's
2 actual decisions did or did not conform to the results of its analysis.

3 b. As explained further below, the Company contends that its fuel
4 contracts are partially responsible for its decision to self-commit its
5 units. To the extent that the Company is obligating ratepayers to fuel
6 contracts that result in uneconomic operations, I recommend the
7 Commission review these contracting processes and outcomes with the
8 same level of rigor given to capital investments.

9 4. Finally, the Commission should require Mon Power to conduct and present
10 rigorous economic assessments of the Fort Martin and Harrison units prior to
11 making any sizable, non-routine capital investments that the Company plans
12 to recover from ratepayers. In instances where Mon Power is seeking
13 preapproval for capital investments, the Company should provide an
14 economic analysis of the relevant coal units in support of its application. In
15 instances where Mon Power is seeking approval for already-incurred capital
16 investments, the Company should provide a contemporaneous economic
17 assessment demonstrating the prudence of the capital investment.

3. MON POWER'S COAL UNITS

18 **Q. Which Mon Power generating units do you focus on in this testimony?**

19 A. This testimony focuses on the economics of Mon Power's five coal units for which it
20 is seeking cost recovery in this case: Fort Martin Units 1 and 2 and Harrison Units 1–

1 3. The Fort Martin plant is in Maidsville, West Virginia, and has a total generating
2 capacity of 1,098 megawatts (MW). Fort Martin Units 1 and 2 came online in 1967
3 and 1968, respectively. The Harrison plant has a total generating capacity of 1,984
4 MW and is located in Haywood, West Virginia. Harrison Units 1, 2, and 3 came
5 online in 1972, 1973, and 1974, respectively.¹

6 **Q. What types of coal unit expenses is Mon Power seeking to recover at this time?**

7 A. In Case No. 20-0666-E-4435T, Mon Power is seeking to recover costs associated
8 with air emission reduction projects for Mercury and Air Toxics Standards (MATS)
9 and for Cross-State Air Pollution Rule II (CSAPR) requirements under the
10 modernization, upgrade, and improvement plan (MIP) at the Fort Martin and Harrison
11 plants. The Company is proposing to recover costs associated with MIP investments
12 through a MIP Surcharge, which includes the incremental rate of return, related
13 income taxes, O&M expense, property tax expense, and depreciation expense. The
14 MIP Surcharge revenue requirement is \$4,967,299 during 2021 and would be
15 implemented on January 1, 2021.²

1 *See* Murphy Direct Exhibit ELM-1.

2 *See Monongahela Power Company & Potomac Edison Company, Application for modernization and improvements program for coal-fired boilers under the provisions of Enrolled Committee Substitute for House Bill 4435, Case No. 20-0666-E-4435T, Application for Approval of a Modernization, Upgrade, and Improvement Plan for Coal-fired Boilers at Electric Power Plants at ¶ 14 (August 28, 2020).*

1 Simultaneously, in the Expanded Net Energy Cost (ENEC) docket, Case No.
2 20-0665-E-ENEC, Mon Power is proposing a decrease in ENEC rates of
3 \$54,986,750. This includes an over-recovery of the deferred ENEC balance as of June
4 30, 2020, and a projected over-recovery for the 2021 rate effective period due to
5 lower fuel costs and the termination of the Morgantown PURPA contract. Mon Power
6 also requests continued recovery of MIP costs for 2016 and 2017 and proposes a
7 COVID-19 regulatory asset recovery.

8 **Q. What is the review period on which Mon Power’s ENEC application is based?**

9 A. The review period is July 1, 2018 through June 30, 2020.

4. MON POWER SELF-COMMITS ITS COAL UNITS IN A MAJORITY OF HOURS

10 **Q. What is “unit commitment?”**

11 A. Commitment is the process by which generation owners determine if their units will
12 operate the next day, or in the days following. It is distinct from unit dispatch in that
13 dispatch determines how much a unit provides to an energy system on a moment-to-
14 moment basis, while commitment determines if a unit will operate at all. For highly
15 flexible generating units such as storage or gas combustion turbines, an advanced
16 commitment decision is not necessary—those units can be brought into operation
17 quickly. For steam boilers, however, the process of coming online may be a multi-
18 hour process, and a similar process may occur during shutdown. Moreover, because
19 of the inflexibility of steam boilers, a decision to come online often requires the units
20 to remain online for multiple days. When a steam generation owner commits a unit, it

1 is making a decision whether to operate a unit at its minimum operating level (often a
2 substantial fraction of its capacity) and make it available to the grid operator for
3 dispatch.

4 **Q. Why is unit commitment relevant to the operations of the Company's generating**
5 **units, or its request for recovery in this docket?**

6 Once a unit is committed, it will operate at least at its minimum operating level,
7 meaning that it will earn revenues at the resulting market price, irrespective of if
8 doing so will result in net losses or gains. Steam generator owners will often seek to
9 commit a unit if they perceive that the opportunity to gain peak revenues exceeds the
10 losses that would be incurred through off-peak hours. Because a commitment
11 decision is a multi-day decision, commitment decisions need to consider likely
12 movements in the energy market for a multi-day period.

13 An economic or efficient commitment process will result in net energy market
14 revenues, while an uneconomic or inefficient commitment process will result in net
15 energy market losses. In the case of Mon Power, I believe that the Company's
16 commitment processes have been inefficient and have resulted in substantial net
17 energy market losses.

18 **Q. Doesn't PJM dispatch Mon Power's units?**

19 A. Yes. Unit commitment refers to specifically to whether and how the unit is chosen to
20 be online at its minimum operating levels. Mon Power is making its unit commitment
21 decisions outside the energy market process. PJM makes the decision whether to

1 dispatch the generators that have been committed above their minimum operating
2 levels.

3 **Q. What is a unit commitment status?**

4 A. A unit commitment status refers to the basis for determining whether a unit will
5 operate at least up to its economic minimum (a MW level) in a given hour. Mon
6 Power specifies the commitment status for its five coal units in regular submissions to
7 PJM.

8 **Q. What commitment status options are available to PJM market participants?**

9 A. PJM specifies the commitment status options available to market participants like
10 Mon Power. Those commitment status options include:

11 1. *Economic*. The unit is available for economic commitment and dispatch by
12 PJM.

13 2. *Must-Run (Self-Commit)*. The unit operator commits the unit regardless of
14 PJM's determination of an economic or reliability basis for having the unit
15 online. The unit is committed at its economic minimum and allowed to move
16 up to its economic maximum.

1 3. *Emergency*. The unit will not be scheduled by PJM unless the market operator
2 calls for maximum emergency generation.

3 4. *Unavailable*. The unit is out of service and will not be scheduled.³

4 **Q. What does it mean when a unit is committed “economically?”**

5 A. When a unit is committed economically, PJM algorithms compare the costs to both
6 the startup and operating costs of a particular unit with the costs of all other units
7 available to the market to determine whether that unit will be online the next day. A
8 plant committed as “economic” will operate if it has lower costs than the marginal
9 resource.

10 **Q. Why might a generation owner elect to designate its units as “must-run” or**
11 **“self-committed?”**

12 A. Owners of steam boilers, such as coal-fired plants, with long startup and shutdown
13 times may choose to “self-commit” in order to maintain control of some operational
14 decisions. In particular, generation owners may self-commit to avoid frequent stops
15 and starts, which might occur if a unit’s production cost is at or near the market cost
16 of energy.

3 PJM State & Member Training Department, *PJM Real-Time Energy Market* at 7 (June 12, 2017), available at <https://www.pjm.com/-/media/training/nerc-certifications/markets-exam-materials/generation-itp/real-time-energy-market.ashx?la=en>.

1 **Q. What happens to a unit that is self-committed?**

2 A. A self-committed generating unit will operate with a power output at or above its
3 minimum operating level. The unit thus incurs costs associated with fuel and variable
4 O&M and receives energy market revenue. The generation associated with its
5 minimum operating level does not, however, set the market price for energy in a
6 given hour (i.e. the market perceives it as free, despite the fact that it has a very real
7 cost). When a unit is economically committed, the RTO calculates if market prices
8 will be sufficient to maintain a unit in operation, given the operational constraints of
9 the unit (i.e. minimum uptime and downtime) and its startup cost.

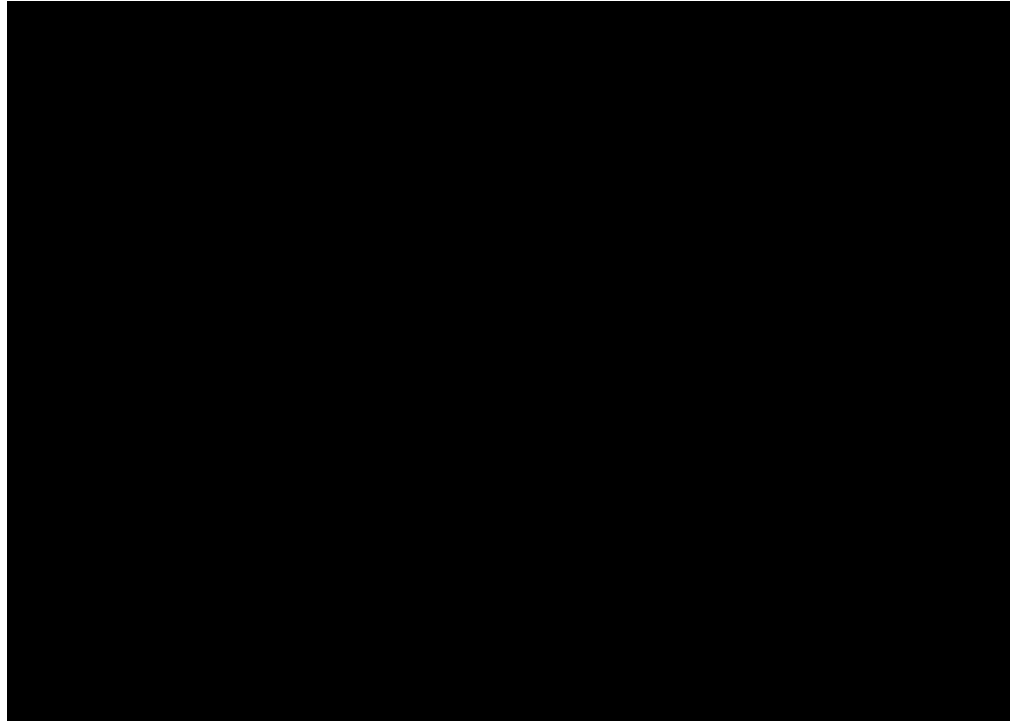
10 When a self-committed unit remains online through substantial low-market energy
11 price periods (i.e. lower than the cost of production), the unit incurs operational
12 losses. While merchant generators have no recourse for inefficient commitment
13 decisions, rate-regulated generation owners seek recovery for these losses from
14 ratepayers, much as Mon Power is doing in this case.

15 **Q. How are Mon Power’s coal units typically committed?**

16 A. Mon Power generally utilizes a “must-run” or “self-commit” commitment status for
17 its Fort Martin and Harrison units. **Confidential Figure 1** shows that Mon Power
18 self-committed each of these units in more than [REDACTED]

19 [REDACTED]
20 [REDACTED]

**Confidential Figure 1. Percentage of hours by
day-ahead commitment status**

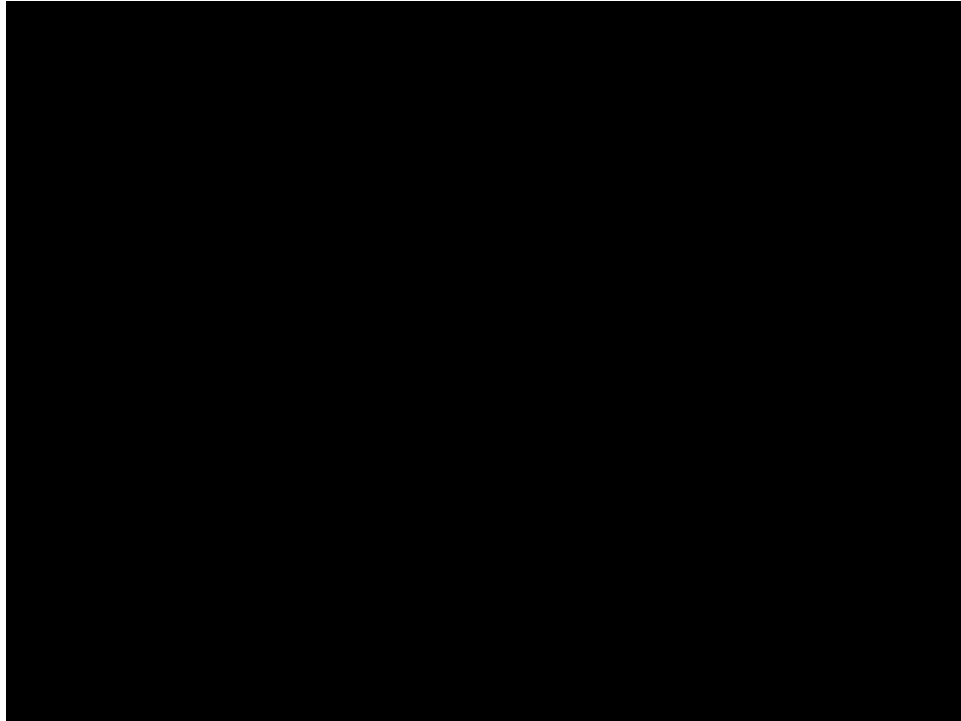


Source: Sierra Club 1.3 Confidential Attachment A ⁴

1 When Mon Power's units were not self-committed, it was generally because those
2 units were unavailable. Confidential Figure 2 below shows that each of Mon Power's
3 units were self-committed [REDACTED]
4 [REDACTED]
5 [REDACTED].

4 The Company's response to Sierra Club 1-3, Confidential Attachment A contains 5,000 pages of data and can be made available to the Commission and other appropriate parties upon request.

**Confidential Figure 2. Percentage of non-outage
hours by day-ahead commitment status**



Source: Sierra Club 1.3 Confidential Attachment A

1 **Q.** You stated earlier that generation owners may self-commit to avoid frequent
2 stops and starts if their units' production costs are near to, or above, the market
3 cost of energy. Isn't it reasonable to avoid the costs associated with frequent
4 starts?

5 **A.** The costs associated with frequent starts must be balanced against the costs associated
6 with over-committing a generating unit during low market price periods. If the costs
7 of uneconomic commitment are greater than the costs of incurring more frequent
8 starts, than clearly ratepayers would realize a benefit from more frequent cycling.

1 **Q. How does Mon Power make its unit commitment decisions?**

2 A. Mon Power provided very little information about how it makes unit commitment
3 decisions. When asked to describe the process for determining whether to self-
4 commit a generator in the day-ahead market, the Company responded that the
5 decision to self-schedule a unit is based on the following:

6 1) Meeting contractual obligations under the coal contracts;

7 2) If Mon Power needs to ensure that a unit will be running in order to perform
8 testing on that unit; and

9 3) If the unit needs to be self-scheduled to maintain plant operations.⁵

10 The Company gave a similar answer when asked to describe its process for
11 determining whether to commit a generator economically, and again when asked to
12 describe all factors, both quantitative and qualitative, used in its unit-commitment
13 decision-making process.⁶ The Company's responses with respect to its self-
14 scheduling are deeply problematic, as I describe in Section 6, below.

15 **Q. How does Mon Power document its unit commitment decisions?**

16 A. When asked whether the Company does economic analysis to inform its unit
17 commitment decisions for Fort Martin and Harrison, Mon Power described three
18 instances: 1) analysis done for the Fort Martin units in March 2020; 2) an analysis for

5 *See* Exhibit RW-2 (Response to Sierra Club Request No. 1-7).

6 *Id.*

1 the Fort Martin units for April through December 2020; and 3) an analysis done for
2 the Harrison units in May 2020.⁷ Mon Power provided one attachment with the
3 results of these analyses, which consists of two worksheets of hardcoded numerical
4 values and some descriptive text.⁸

5 **Q. Are Mon Power’s unit commitment decision-making practices and**
6 **documentation consistent with other utilities?**

7 A. No. As an example, Duke Energy Indiana uses a price-based, forward-looking
8 analysis that it describes as a “Profit and Loss Analysis.” Duke does this analysis
9 most weekdays to determine whether to commit its units during the next day—or, on
10 Fridays, the next three days—recording all revenue projects and commitment
11 decisions on a sheet that it calls the “Daily Generating Unit P&L Analysis.” Duke
12 prepared 57 of these sheets during the three-month period in the Company’s Fuel
13 Adjustment Charge (FAC) docket in Indiana.⁹

7 *Id.*

8 *See* Confidential Exhibit RW-3 (Response to Sierra Club Request No. 1-7
CONFIDENTIAL Attachment A).

9 *See Application of Duke Energy Indiana for Approval of a Change in its Fuel Cost
Adjustment for Electric Service*, Indiana Utility Regulatory Commission Case No.
38707-FAC123-S1, Direct Testimony of Devi Glick on Behalf of the Sierra Club
(Public Version) at 18:10–18:11 (March 6, 2020), available at [https://iurc.portal.in.gov/
entity/sharepointdocumentlocation/0b2ab80f-8cd5-ea11-a813-001dd8018831/bb9c6b
ba-fd52-45ad-8e64-a444aef13c39?file=38707-FAC123%20S1%20-%20Public%20
Redacted%20Direct%20Testimony%20of%20Devi%20Glick.pdf](https://iurc.portal.in.gov/entity/sharepointdocumentlocation/0b2ab80f-8cd5-ea11-a813-001dd8018831/bb9c6bba-fd52-45ad-8e64-a444aef13c39?file=38707-FAC123%20S1%20-%20Public%20Redacted%20Direct%20Testimony%20of%20Devi%20Glick.pdf).

1 In these assessments, Duke reviews forecasted energy market prices and projected
2 variable startup, shutdown, and operational costs for the next three weeks to project
3 net operational revenues for each unit for each day and week. Staff members also
4 hold daily meetings at 6:30 am and 9:30 am to discuss the commitment status for
5 each unit.

6 **Q. How should Mon Power reform its unit commitment decision-making process?**

7 A. At a high level, Mon Power needs to provide continuous documentation of its unit
8 commitment decisions, demonstrating the forward-looking analysis that was done, the
9 results of that analysis, and how Mon Power's actual decisions did or did not conform
10 to the results of its analysis.

11 **Q. What implications do Mon Power's coal unit commitment practices have for**
12 **Commission oversight of the Company's operational decision-making?**

13 A. The practice of self-committing generating units means that Mon Power, and not
14 market forces, determines the extent to which those units operate. That means that as
15 long as Mon Power is self-committing its units in a majority of hours, the
16 Commission cannot rely on the PJM market to ensure that Fort Martin and Harrison
17 only operate if justified by either economics or reliability requirements. Instead,
18 Commission oversight is required to ensure prudent unit commitment and operational
19 practices.

5. MON POWER'S UNIT COMMITMENT PRACTICES LED TO UNNECESSARY OPERATIONAL LOSSES FOR RATEPAYERS

1 Q. **Could a generator incur negative energy revenues in a given hour?**

2 A. Yes. If a generator were committed in a given hour, and the price per MWh that it
3 received for its energy output was lower than its total production cost, it would incur
4 net operational losses. This would occur if a generator bid its generation into the
5 market at a value lower than its cost of production.

6 Q. **Has this practice been documented in other jurisdictions?**

7 A. Yes. Dockets have been opened in Indiana, Minnesota, and Missouri to investigate
8 “uneconomic dispatch” practices of the coal units in those states.¹⁰

9 Q. **Why would a generation owner bid its generation into the market at a value less
10 than its production cost?**

11 A. Bidding a unit into the market at less than its production costs would increase the
12 likelihood that it would dispatch its generation. Generation owners have justified this
13 practice by saying that it allows the generator to avoid start-up, shutdown, and
14 cycling costs. Previous research has found that vertically-integrated utilities are more
15 likely to engage in this behavior because they can absorb any market losses through
16 their rate base, meaning that ratepayers ultimately pay for the uneconomic operation

10 Catherine Morehouse, *Ex-FERC commissioners debate solutions to coal self-commitments said to cost millions*, UTILITY DIVE (June 1, 2020), available at <https://www.utilitydive.com/news/ex-ferc-commissioners-debate-solutions-to-coal-self-committment-said-to-cos/578935/>.

1 of coal units,¹¹ and a recent study by the independent market monitor (IMM) for the
2 Midcontinent Independent System Operator (MISO) confirms that energy market
3 losses are disproportionately an issue at utility-owned generation units, as compared
4 to merchant plants.¹²

5 **Q. Did Mon Power's self-commitment practices result in net operational losses?**

6 A. Yes. An analysis of annual net operational revenues during the ENEC period is
7 shown below in Confidential Table 1.¹³ Net operational revenues [REDACTED]
8 [REDACTED]

Confidential Table 1. Annual Net Operational Revenues

	Net Revenue (\$)				
	Ft Martin 1	Ft Martin 2	Harrison 1	Harrison 2	Harrison 3
2018	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
2019	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
2020	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
Total	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]

9 **Q. How did you calculate net operational losses?**

10 A. Mon Power provided monthly day-ahead and real-time energy revenues as well as
11 ancillary services revenues.¹⁴ These were summed to yield total monthly revenues.

11 *Id.*

12 Potomac Economics, *A Review of the Commitment and Dispatch of Coal Generators in MISO* (September 2020), available at <https://cdn.misoenergy.org/20201008%20MSC%20Item%2004%20IMM%20Coal%20Dispatch%20Study481336.pdf>.

13 Note that 2018 and 2020 are partial years.

1 Mon Power also provided monthly fuel costs¹⁵ and non-fuel variable O&M,¹⁶ which
2 were summed to arrive at total monthly variable costs for the Company's five coal-
3 fired units. Monthly variable costs were subtracted from monthly energy revenues to
4 estimate net operational revenues. Monthly results were summed to provide annual
5 results.

6 **Q. Could Mon Power have avoided any of these operational losses?**

7 A. Yes. An examination of monthly results demonstrates that *avoidable* operational
8 losses were incurred on multiple occasions at each of the Company's five coal units

9 [REDACTED]
10 [REDACTED]
11 [REDACTED]
12 [REDACTED]
13 [REDACTED]
14 [REDACTED]
15 [REDACTED]

14 See Confidential Exhibit RW-4 (Response to CAG 1.14 CONFIDENTIAL Attachment C).

15 See Confidential Exhibit RW-5 (Response to CAG 1.14 CONFIDENTIAL Attachment A).

16 See Confidential Exhibit RW-6 (Response to CAG 1.14 CONFIDENTIAL Attachment D).

17 Total net operational losses for each unit were calculated by summing the losses in the months in which they occurred.

1 [REDACTED]

2 [REDACTED]

3 [REDACTED]

4 [REDACTED]

5 Net losses at all of Mon Power's coal-fired units over the analysis period totaled
6 [REDACTED], summing only the months in which total net revenues were negative.

7 A summary of net operational revenues, by month and unit, is shown in Confidential
8 Table 2 below.

Confidential Table 2. Monthly Net Operational Revenues by Unit

Date	Net Revenue (\$M)				
	Ft Martin 1	Ft Martin 2	Harrison 1	Harrison 2	Harrison 3
Jul-18					
Aug-18					
Sep-18					
Oct-18					
Nov-18					
Dec-18					
Jan-19					
Feb-19					
Mar-19					
Apr-19					
May-19					
Jun-19					
Jul-19					
Aug-19					
Sep-19					
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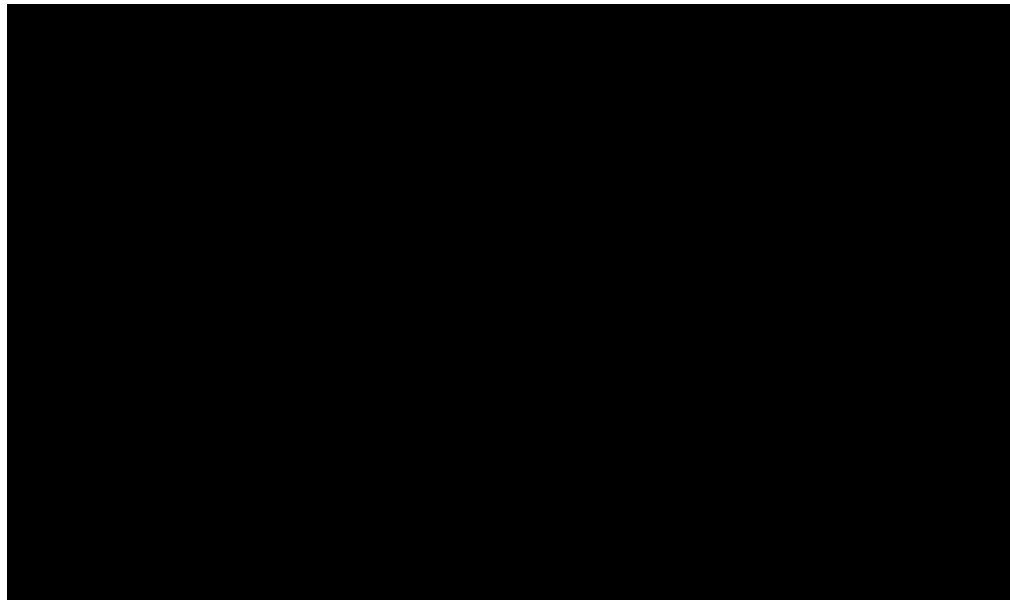
1 **Q. Why did you focus on these types of events?**

2 A. I focused on periods of net operational losses over a full calendar month because they
3 provide clear markers of uneconomic dispatch practices. Units may incur operational
4 losses over shorter time periods, such as days or weeks, in order to remain online for
5 high-value hours and avoid start-up, shutdown, and cycling costs, but a loss over a
6 full month is unlikely to be justifiable.

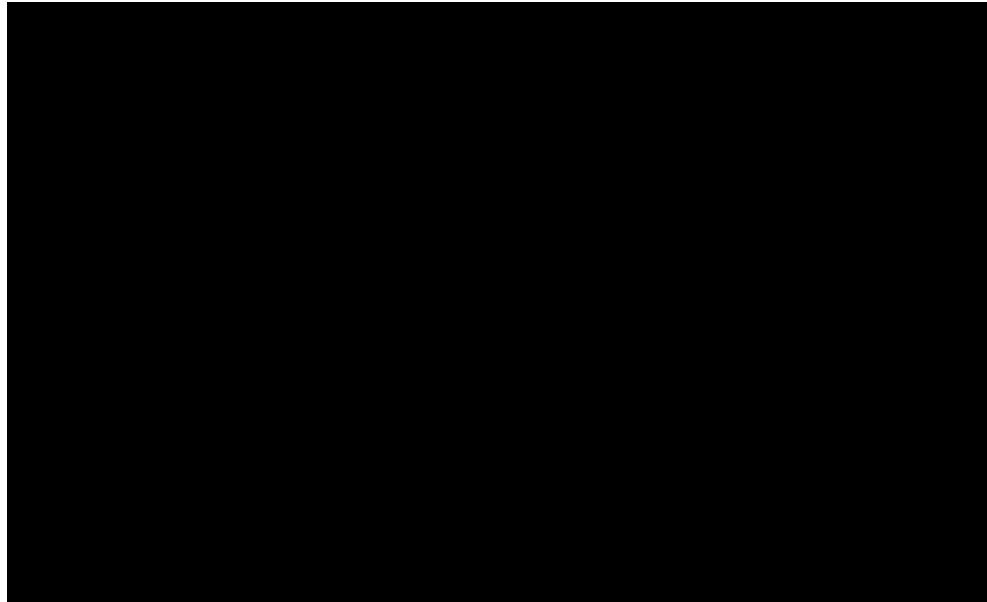
7 **Q. Do the data show any patterns relating to the net operational revenues?**

8 A. Yes. Similar to Confidential Table 1, we see that net operational revenues at each of
9 the units are declining over time. Monthly results for Fort Martin Units 1 and 2 are
10 presented in Confidential Figure 3 and results for Harrison Units 1–3 in Confidential
11 Figure 4.

Confidential Figure 3. Fort Martin Monthly Net Operational Revenue



Confidential Figure 4. Harrison Monthly Net Operational Revenues



1 **Q. Why were the operational net revenues so much lower in 2020 than in 2018?**

2 A. Net operational revenues subtract fuel and variable costs from energy market
3 revenues in the day-ahead and real-time markets. For net revenues to decline, costs
4 would have to increase or revenues (the product of LMP and unit generation) would
5 have to decrease. Mon Power states that coal prices in all of the producing basins
6 increased during the second half of 2018 and decreased steadily through 2019 and
7 into 2020.¹⁸

8 Day-ahead and real-time energy market prices have declined from 2018 to 2020, as
9 Company Witness Cecilia Liang-Nicol notes in her direct testimony. The average
10 day-ahead locational marginal price (LMP) in the APS Zone declined from

18 Valach Direct at 4:2–4:3.

1 \$36.73/MWh in 2018 to \$26.80/MWh in 2019.¹⁹ Day-ahead market prices in the first
2 quarter of 2020 were at historic lows, and the average day-ahead LMP in the APS
3 Zone was \$19.13/MWh from January to June of 2020—down from \$27.51/MWh for
4 the same six-month period in 2019.²⁰ The drop in LMPs is therefore the primary
5 driver of lower operational revenues.

6 **Q. Do you expect these lower LMPs to persist?**

7 A. Yes. Company Witness Mark Valach notes in his testimony that “coal is increasingly
8 challenged by natural gas and renewable energy in the domestic generation market,”²¹
9 and I anticipate that generation from gas-fired resources and renewables will continue
10 to put downward pressure on LMPs.

6. MON POWER COAL CONTRACTS AND UNIT COMMITMENT

11 **Q. Did Mon Power explain why it would self-commit its units specifically in periods**
12 **when the LMP in its PJM zone is lower than unit operating costs?**

13 A. Yes. Mon Power described several conditions under which it would self-commit its
14 units specifically in hours when the LMP is lower than the incremental cost of
15 operation at its coal-fired units:

16 1. Units are self-committed to ensure that Mon Power meets minimum coal take
17 requirements included in the Company’s coal contracts.

19 Liang-Nicol Direct at 3:15–3:18.

20 *Id.* at 4:1–4:2.

21 Valach Direct at 4:19–4:20.

- 1 2. Units offered to PJM as “economic” are changed to “must-run” once they are
2 brought online and are maintained at this designation for the next several
3 days, to ensure the units stay online.
- 4 3. For the purposes of SO₃ Breem Probe Testing required by the Department of
5 Environmental Protection.
- 6 4. One unit is designated as must-run to provide freeze protection for the plant,
7 or to ensure that solid waste processing can occur, which requires burning the
8 liquid in one of the absorbers.²²

9 Of these, the minimum coal take requirements in Mon Power’s coal contracts is likely
10 the primary driver behind the overwhelming number of hours that the Company’s
11 coal units are committed to PJM using the “self-commit” designation.

12 **Q. Did Mon Power reduce operations at the Fort Martin and Harrison units in**
13 **response to lower energy market prices?**

14 A. No. Mon Power again justifies sustained uneconomic operation at Fort Martin and
15 Harrison on the basis that its coal contracts require it to burn a specified amount of
16 coal each year, and thus, output in 2019 was only 2 percent lower than in 2018.²³

22 *See* Exhibit RW-7 (Response to EUG Request No. 1-4).

23 Liang-Nicol Direct at 4:12–4:14.

1 **Q. Do you have any details on the minimum take provisions in Mon Power’s coal**
2 **contracts?**

3 A. No. Information on the minimum-take provisions in the coal contracts would have
4 allowed me to determine the extent to which those provisions are driving the
5 uneconomic commitment and dispatch of the five coal-fired units. The Sierra Club
6 requested information on these provisions through discovery; however, Mon Power
7 insisted that the coal contracts could only be viewed in-person at the Company’s
8 West Virginia office.²⁴ Because recent spikes in the COVID-19 pandemic have made
9 planning for in-person travel difficult, the Club reached out to Mon Power to arrange
10 an opportunity to remotely review the coal contracts on a secure platform. Mon
11 Power did not respond to the Club’s multiple requests.

12 **Q. How are these minimum take provisions affecting Mon Power’s coal unit**
13 **commitment decisions?**

14 A. Mon Power stated that its decision to commit its coal units is based largely on
15 meeting contractual obligations under the coal contracts.²⁵ Mon Power signs coal
16 contracts with minimum-take provisions based on the historical operation of its units.
17 The result of this decision is that the Company then has to burn the contractually
18 obligated amount of coal with little to no regard for the forecasted LMPs in PJM. This
19 results in periods of uneconomic operation at each of the Mon Power coal units,

24 *See* Exhibit RW-8 (Response to Sierra Club Request No. 1-9).

25 *See* Exhibit RW-2 (Response to Sierra Club Request No. 1-7).

1 particularly as market forces exert downward pressure on energy prices. Mon Power
2 continues to use the same circular decision-making process, basing coal contracts on
3 historical operations and then committing coal units based on obligations in these
4 contracts, despite the evidence that the market no longer supports baseload operation
5 of its coal units. Mon Power stated that “[t]he terms in the previous Harrison coal
6 contracts did not warrant putting Harrison units on economic status” despite the fact
7 that in the first quarter of 2020, “PJM market prices were at their all-time low.”²⁶

8 **Q. Did Mon Power sign any new coal contracts in 2018 and 2019?**

9 A. Yes. As shown in Table 3 below, the Company signed five new contracts in 2018
10 totaling 25.2 million tons of coal, and two new contracts in 2019 and 2020 totaling
11 29.5 million tons of coal.²⁷ The longest of those contracts runs until April 30, 2025.

26 *Id.*

27 Calculated from Valach Direct Exhibit MJV-3.

Table 3. New Coal Contracts by Year

Plant	Supplier	PO Number	Contract Signed	Contract Duration	Contract Tonnage	Cost (\$/ton)	Total Cost (\$M)
Ft.Martin	Consolidation Coal	644	7/13/2018	7/11/18 - 12/31/18	100,000	\$59.71	\$5.97
Ft.Martin	Vortech, LLC	646	7/17/2018	7/15/18 - 8/31/18	2,000	\$52.48	\$0.10
Ft.Martin	Contura Coal Sales	652	10/22/2018	12/1/18 - 12/31/18	20,000	\$44.38	\$0.89
Ft.Martin	Robindale Coal Sales	655	11/26/2018	1/1/19 - 3/31/19	45,000	\$54.81	\$2.47
Ft.Martin	Contura Coal Sales	669	7/23/2019	1/1/20 - 12/31/24	4,500,000	\$48.49	\$218.19
Ft. Martin Total							\$227.62
Harrison	CONSOL Energy	653	11/12/2018	1/1/19 - 12/31/23	25,000,000	\$52.88	\$1,322.01
Harrison	CONSOL Energy	685	5/12/2020	5/1/20 - 4/30/25	25,000,000	\$53.20	\$1,330.12
Harrison Total							\$3,107.37
Combined Total							\$3,334.98

Sources: Valach Direct Exhibit MJV-3; EIA Form 923

1 I used public fuel receipt data from U.S. Energy Information Administration (EIA)
2 Form 923 to calculate the estimated cost per ton for coal under each of the new
3 contracts. Cost per ton was then multiplied by the contract tonnage to arrive at the
4 total cost of each coal contract. As shown above, the estimated total cost of the coal
5 contracts signed by Mon Power during the ENEC period is just over \$3.3 billion.

6 I was not allowed to review Mon Power's coal contracts and do not know the
7 specifics relating to the Company's minimum-take provisions. If we assume, for
8 example, that the new coal contracts shown in Table 3 include a minimum-take
9 provision of 60 percent, that would mean that the Company has signed a commitment
10 worth \$2 billion through 2025. In other words, under that hypothetical, Mon Power
11 has committed ratepayers to \$2 billion in fuel costs over the next five years, with no
12 consideration of coal unit economics relative to the market.

1 The most recent of these contracts was signed in May 2020, with the market price of
2 energy at a precipitous decline. As evidenced by Company witness testimony, Mon
3 Power was aware of these low LMPs at the time it signed this contract.²⁸

4 **Q. Should the Commission be concerned about these new contracts?**

5 A. Absolutely. Mon Power is using a process of circular decision-making that has forced
6 ratepayers to subsidize uneconomic operation of the Company's five coal units. It
7 will continue to do so unless Mon Power changes its behavior. But there is currently
8 little incentive for the Company to make that change so long as it succeeds in
9 recovering those losses from ratepayers.

7. FUTURE OPERATION OF FORT MARTIN AND HARRISON

10 **Q. What are Mon Power's plans regarding the future operation of the Fort Martin**
11 **and Harrison units?**

12 A. Given that Mon Power has never done a retirement analysis of any of its coal fired
13 units,²⁹ it seems as though the Company plans to continue operating—and investing
14 in—the Fort Martin and Harrison units indefinitely. Without a rigorous economic
15 analysis, it is impossible to determine the end of the plants' depreciable lives. New
16 capital investments made to maintain the units or to comply with environmental
17 regulations are likely to add to undepreciated plant balances, and thus to their annual

28 See Exhibit RW-2 (Response to Sierra Club Request No. 1-7).

29 See Exhibit RW-9 (Response to CAG Request No. 2-10 in Case No. 20-0666-E-4435T).

1 depreciation expenses. This increases the total expense included in rates, and it could
2 also prolong the depreciable life of the plants. Put simply, if Mon Power continues to
3 make capital investments in its coal units, the undepreciated plant balance will not
4 decline but continue to grow instead, leading to additional costs that will have to be
5 made up by ratepayers.

6 **Q. What are the implications of the lack of unit economic assessments for the MIP**
7 **and ENEC dockets?**

8 A. Mon Power has simply assumed that continued operation of all five of its coal units is
9 in the best interest of ratepayers without any evidence to support that claim. Mon
10 Power has also assumed that it is economically beneficial to enter into long-term coal
11 contracts without actually performing any type of unit assessment. An analysis of the
12 Company's unit commitment decisions over the ENEC period, however, shows that
13 Mon Power has in fact operated its units uneconomically during many months over
14 the 2-year ENEC period, and it has done so at its ratepayers' expense. This
15 information should certainly prompt Mon Power to do an economic assessment of
16 each of its units.

17 **Q. Have recent electricity market trends affected the economics of coal units in the**
18 **United States?**

19 A. Most definitely. Recent market trends have had a negative impact on the general
20 economics of coal units across the country and led to a sizable number of retirements.
21 According to the EIA, coal retirements totaling 102 gigawatts (GW) were announced

1 by generation owners between 2010 and the first quarter of 2019, with future
2 announced retirements totaling another 17 GW by 2025.³⁰ EIA projections show that
3 almost 90 GW of coal capacity will retire between 2019 and 2030.³¹

4 **Q. Have these market changes led to additional risks associated with continued**
5 **operation of coal units?**

6 A. Yes. When constructed, Mon Power's large coal units were intended to operate at
7 high capacity factors as baseload generators. Increased penetration of renewable
8 energy technologies, which operate intermittently, and lower cost gas generation
9 means that coal units are increasingly being called upon to operate at lower loading
10 levels, ramp up and down more frequently, and cycle (start and stop) more often. This
11 leads to increased wear and tear on the component parts, which contributes to
12 increased costs and/or outages at the units.

13 **Q. Are there any other important risks to future coal plant operation?**

14 A. Yes, there are risks to coal units associated with environmental regulations,
15 particularly rules that cap carbon dioxide (CO₂) emissions. Additionally, EPA has

30 U.S. Energy Information Administration, *Today in Energy: More U.S. coal-fired power plants are decommissioned as retirements continue* (July 26, 2019), available at [https://www.eia.gov/todayinenergy/detail.php?id=40212#:~:text=Between%202010%20and%20the%20first,\(GW\)%20of%20generating%20capacity.&text=The%20annual%20number%20of%20retired,retired%20coal%20capacity%20has%20changed](https://www.eia.gov/todayinenergy/detail.php?id=40212#:~:text=Between%202010%20and%20the%20first,(GW)%20of%20generating%20capacity.&text=The%20annual%20number%20of%20retired,retired%20coal%20capacity%20has%20changed).

31 U.S. Energy Information Administration, *Today in Energy: U.S. coal plant retirements linked to plants with higher operating costs* (December 3, 2019), available at <https://www.eia.gov/todayinenergy/detail.php?id=42155>.

1 recently finalized an Effluent Limitation Guidelines (ELG) rule, which will
2 necessitate sizeable capital investments in water treatment control technology.

3 **Q. Have other utilities responded to these changes by conducting economic**
4 **assessments of their coal units?**

5 A. Yes. Economic assessments of existing coal units have become an increasingly
6 common component of utility resource planning, whether undertaken voluntarily by
7 utilities or done as the result of a state utilities' commission order. Dominion Energy
8 Virginia's 2020 integrated resource plan (IRP) compared the forecasts costs and
9 benefits of retiring its coal units versus continuing to operate them in the PJM market,
10 finding that it was economically beneficial to retire its Chesterfield and Clover units
11 under all scenarios analyzed.³²

12 In its 2018 IRP, Northern Indiana Public Service Company (NIPSCO) examined
13 alternative retirement dates for its five existing coal units, concluding that customers
14 would save more than \$4 billion by retiring those units in 2023 rather than 2030.³³
15 PacifiCorp included a unit-by-unit retirement analysis of alternative retirement dates
16 for its 22 coal units in its 2019 IRP, examining retirement dates occurring several

32 Dominion Energy Virginia, *2020 Integrated Resource Plan* at 83–84 (May 1, 2020), available at https://scc.virginia.gov/docketsearch/DOCS/4m_m01!.PDF.

33 Northern Indiana Public Service Company, *2018 Integrated Resource Plan* (October 31, 2018), available at <https://www.nipsco.com/docs/librariesprovider11/rates-and-tariffs/irp/2018-nipsco-irp.pdf?sfvrsn=15>.

1 years before the end of the units' depreciable lives.³⁴ Georgia Power included a
2 retirement analysis for each of its existing coal units in its 2019 IRP.³⁵ The North
3 Carolina Utilities Commission ordered Duke Energy Carolinas and Duke Energy
4 Progress to include such an analysis as part of the 2020 IRP process,³⁶ which is
5 currently underway.

6 **Q. What are the important characteristics of a rigorous coal unit economic**
7 **assessment?**

8 A. A rigorous analysis would include all costs and benefits associated with near-term
9 and mid-term retirement dates, as well as changes to contractual and operational
10 practices that could make the plant economical. The continued operation of each coal
11 unit with optimal economic practices would be compared to an optimized
12 replacement resource portfolio—rather than a single replacement resource—that can
13 provide all the services that would be needed by the system in the absence of the

34 Robert Walton, *PacifiCorp sees 2 GW coal retirements, \$599M savings by 2040 in latest planning scenarios*, UTILITY DIVE (September 11, 2019), available at <https://www.utilitydive.com/news/pacifcorp-sees-2-gw-coal-retirements-599m-savings-by-2040-in-latest-plann/562670/>.

35 Georgia Power, *2019 Integrated Resource Plan Technical Appendix Vol. 2: Unit Retirement Study* (January 1, 2019), available at <https://psc.ga.gov/search/facts-document/?documentId=175473>.

36 *In the Matter of 2019 Integrated Resource Plan Update Reports & Related 2019 REPS Compliance Plans*, North Carolina Utilities Commission Docket No. E-100-SUB-157, Order Accepting Filing of 2019 Update Reports and Accepting 2019 REPS Compliance Plans at 8–9 (April 6, 2020), available at <https://starw1.ncuc.net/NCUC/ViewFile.aspx?Id=86f15be3-7617-4910-aeae-d8568c4d0983>.

1 retired unit. The cost of replacement resources should be informed by recent all-
2 source requests for proposals (RFPs).

8. CONCLUSIONS AND RECOMMENDATIONS

3 **Q. Please summarize your conclusions.**

4 A. My primary findings are:

5 1. *Mon Power regularly self-commits the Fort Martin and Harrison units into*
6 *the PJM market.* Over the ENEC period, Mon Power “self-committed” each
7 of the Fort Martin and Harrison units in the PJM energy market in a way that
8 led the Company to incur net operational losses. Mon Power’s explanations
9 for its self-commitment practices do not justify these losses.

10 2. *Mon Power consistently offers its coal units into the PJM energy market at*
11 *prices that are below their variable costs of production.* Mon Power’s coal
12 unit commitment practices have caused the Company to incur unnecessary
13 [REDACTED] on behalf of ratepayers.

14 **Q. Please summarize your primary recommendations.**

15 A. The Commission has several options that would protect ratepayers from subsidizing
16 uneconomic coal operation by Mon Power. Based on my findings, I offer the
17 following recommendations:

18 1. The Commission should disallow the recovery of the [REDACTED]
19 [REDACTED] incurred over the ENEC period from the uneconomic
20 commitment of Mon Power’s coal units.

1 2. In the alternative, the Commission should take action to protect ratepayers
2 from future uneconomic unit commitment decisions made by Mon Power by
3 capping recovery of variable production costs up to the equivalent of market
4 energy revenue received from PJM, or mandate that Mon Power use the PJM
5 energy market as its cost recovery mechanism. Either of these actions would
6 insulate ratepayers from imprudent unit-commitment decisions.

7 3. If the Commission elects either of these two ratepayer protection options
8 described above, no further action is required. If the Commission declines to
9 mandate either of the two options, I recommend that the Commission conduct
10 a prudence review of Mon Power's unit commitment practices and of its coal
11 contracts.

12 4. Finally, the Commission should require Mon Power to conduct and present
13 rigorous economic assessments of the Fort Martin and Harrison units prior to
14 making any sizable, non-routine capital investments that the Company plans
15 to recover from ratepayers.

16 **Q. Does this conclude your direct testimony?**

17 **A. Yes.**

EXHIBIT RW-1

Resume of Rachel S. Wilson

Rachel Wilson, Principal Associate

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PROFESSIONAL EXPERIENCE

Synapse Energy Economics Inc., Cambridge, MA. *Principal Associate*, April 2019 – present, *Senior Associate*, 2013 – 2019, *Associate*, 2010 – 2013, *Research Associate*, 2008 – 2010.

Provides consulting services and expert analysis on a wide range of issues relating to the electricity and natural gas sectors including: integrated resource planning; federal and state clean air policies; emissions from electricity generation; electric system dispatch; and environmental compliance technologies, strategies, and costs. Uses optimization and electricity dispatch models, including Strategist, PLEXOS, EnCompass, PROMOD, and PROSYM/Market Analytics to conduct analyses of utility service territories and regional energy markets.

Analysis Group, Inc., Boston, MA.

Associate, 2007 – 2008, *Senior Analyst Intern*, 2006 – 2007.

Provided litigation support and performed data analysis on various topics in the electric sector, including tradeable emissions permitting, coal production and contractual royalties, and utility financing and rate structures. Contributed to policy research, reports, and presentations relating to domestic and international cap-and-trade systems and linkage of international tradeable permit systems. Managed analysts' work processes and evaluated work products.

Yale Center for Environmental Law and Policy, New Haven, CT. *Research Assistant*, 2005 – 2007.

Gathered and managed data for the Environmental Performance Index, presented at the 2006 World Economic Forum. Interpreted statistical output, wrote critical analyses of results, and edited report drafts. Member of the team that produced *Green to Gold*, an award-winning book on corporate environmental management and strategy. Managed data, conducted research, and implemented marketing strategy.

Marsh Risk and Insurance Services, Inc., Los Angeles, CA. *Risk Analyst*, Casualty Department, 2003 – 2005.

Evaluated Fortune 500 clients' risk management programs/requirements and formulated strategic plans and recommendations for customized risk solutions. Supported the placement of \$2 million in insurance premiums in the first year and \$3 million in the second year. Utilized quantitative models to create loss forecasts, cash flow analyses and benchmarking reports. Completed a year-long Graduate Training Program in risk management; ranked #1 in the western region of the US and shared #1 national ranking in a class of 200 young professionals.

EDUCATION

Yale School of Forestry & Environmental Studies, New Haven, CT

Master of Environmental Management, concentration in Law, Economics, and Policy with a focus on energy issues and markets, 2007

Claremont McKenna College, Claremont, California

Bachelor of Arts in Environment, Economics, Politics (EEP), 2003. *Cum laude* and EEP departmental honors.

School for International Training, Quito, Ecuador

Semester abroad studying Comparative Ecology. Microfinance Intern – Viviendas del Hogar de Cristo in Guayaquil, Ecuador, Spring 2002.

ADDITIONAL SKILLS AND ACCOMPLISHMENTS

- Microsoft Office Suite, Lexis-Nexis, Platts Energy Database, Strategist, PROMOD, PROSYM/Market Analytics, EnCompass, and PLEXOS, some SAS and STATA.
- Competent in oral and written Spanish.
- Hold the Associate in Risk Management (ARM) professional designation.

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TESTIMONY

Virginia State Corporation Commission (Case No. PUR-2020-00035): Direct testimony of Rachel Wilson evaluating Dominion's 2020 Integrated Resource Plan and providing independent capacity optimization modeling. On behalf of the Sierra Club. September 15, 2020.

Virginia State Corporation Commission (Case No. PUR-2020-00015): Direct testimony of Rachel Wilson examining the economics of the coal units owned by Appalachian Power Company as part of the rate case. On behalf of the Sierra Club. July 30, 2020.

North Carolina Utilities Commission (Docket No. E-2, SUB 1219): Direct testimony of Rachel Wilson examining the economics of the coal units owned by Duke Energy Progress as part of the rate case. On behalf of the Sierra Club. April 13, 2020.

North Carolina Utilities Commission (Docket No. E-2, SUB 1219): Direct testimony of Rachel Wilson examining the economics of the coal units owned by Duke Energy Carolinas as part of the rate case. On behalf of the Sierra Club. February 25, 2020.

Alabama Public Service Commission (Docket No. 32953): Direct testimony of Rachel Wilson regarding Alabama Power Company's petition for a Certificate of Convenience and Necessity. On behalf of the Sierra Club. December 4, 2019.

Georgia Public Service Commission (Docket No. 42516): Direct testimony of Rachel Wilson regarding coal ash spending in Georgia Power's 2019 Rate Case. On behalf of the Sierra Club. October 17, 2019.

Mississippi Public Service Commission (Docket No. 2019-UA-116): Direct testimony of Rachel Wilson regarding Mississippi Power Company's petition to the Mississippi Public Service Commission for a Certification of Public Convenience and Necessity for ratepayer-funded investments required to meet Coal Combustion Residuals regulations at the Victor J. Daniel Electric Generating Facility. On behalf of the Sierra Club. October 16, 2019.

Georgia Public Service Commission (Docket No. 42310 & 42311): Direct testimony of Rachel Wilson regarding various components of Georgia Power's 2019 Integrated Resource Plan. On behalf of the Sierra Club. April 25, 2019.

Washington Utilities and Transportation Commission (Dockets UE-170485 & UG-170486): Response testimony regarding Avista Corporation's production cost modeling. On behalf of Public Counsel Unit of the Washington Attorney General's Office. October 27, 2017.

Texas Public Utilities Commission (SOAH Docket No. 473-17-1764, PUC Docket No. 46449): Cross-rebuttal testimony evaluating Southwestern Electric Power Company's application for authority to change rates to recover the costs of investments in pollution control equipment. On behalf of Sierra Club and Dr. Lawrence Brough. May 19, 2017.

Texas Public Utilities Commission (SOAH Docket No. 473-17-1764, PUC Docket No. 46449): Direct testimony evaluating Southwestern Electric Power Company's application for authority to change rates to recover the costs of investments in pollution control equipment. On behalf of Sierra Club and Dr. Lawrence Brough. April 25, 2017.

Virginia State Corporation Commission (Case No. PUE-2015-00075): Direct testimony evaluating the petition for a Certificate of Public Convenience and Necessity filed by Virginia Electric and Power Company to construct and operate the Greensville County Power Station and to increase electric rates to recover the cost of the project. On behalf of Environmental Respondents. November 5, 2015.

Missouri Public Service Commission (Case No. ER-2014-0370): Direct and surrebuttal testimony evaluating the prudence of environmental retrofits at Kansas City Power & Light Company's La Cygne Generating Station. On behalf of Sierra Club. April 2, 2015 and June 5, 2015.

Oklahoma Corporation Commission (Cause No. PUD 201400229): Direct testimony evaluating the modeling of Oklahoma Gas & Electric supporting its request for approval and cost recovery of a Clean Air Act compliance plan and Mustang modernization, and presenting results of independent Gentrader modeling analysis. On behalf of Sierra Club. December 16, 2014.

Michigan Public Service Commission (Case No. U-17087): Direct testimony before the Commission discussing Strategist modeling relating to the application of Consumers Energy Company for the authority to increase its rates for the generation and distribution of electricity. On behalf of the Michigan Environmental Council and Natural Resources Defense Council. February 21, 2013.

Indiana Utility Regulatory Commission (Cause No. 44217): Direct testimony before the Commission discussing PROSYM/Market Analytics modeling relating to the application of Duke Energy Indiana for Certificates of Public Convenience and Necessity. On behalf of Citizens Action Coalition, Sierra Club, Save the Valley, and Valley Watch. November 29, 2012.

Kentucky Public Service Commission (Case No. 2012-00063): Direct testimony before the Commission discussing upcoming environmental regulations and electric system modeling relating to the application

of Big Rivers Electric Corporation for a Certificate of Public Convenience and Necessity and for approval of its 2012 environmental compliance plan. On behalf of Sierra Club. July 23, 2012.

Kentucky Public Service Commission (Case No. 2011-00401): Direct testimony before the Commission discussing STRATEGIST modeling relating to the application of Kentucky Power Company for a Certificate of Public Convenience and Necessity, and for approval of its 2011 environmental compliance plan and amended environmental cost recovery surcharge. On behalf of Sierra Club. March 12, 2012.

Kentucky Public Service Commission (Case No. 2011-00161 and Case No. 2011-00162): Direct testimony before the Commission discussing STRATEGIST modeling relating to the applications of Kentucky Utilities Company, and Louisville Gas and Electric Company for Certificates of Public Convenience and Necessity, and approval of its 2011 compliance plan for recovery by environmental surcharge. On behalf of Sierra Club and Natural Resources Defense Council (NRDC). September 16, 2011.

Minnesota Public Utilities Commission (OAH Docket No. 8-2500-22094-2 and MPUC Docket No. E-017/M-10-1082): Rebuttal testimony before the Commission describing STRATEGIST modeling performed in the docket considering Otter Tail Power's application for an Advanced Determination of Prudence for BART retrofits at its Big Stone plant. On behalf of Izaak Walton League of America, Fresh Energy, Sierra Club, and Minnesota Center for Environmental Advocacy. September 7, 2011.

Resume updated October 2020

EXHIBIT RW-2

Response to Sierra Club Request No. 1-7

**THE SIERRA CLUB'S
FIRST REQUEST FOR INFORMATION
MONONGAHELA POWER COMPANY AND THE POTOMAC EDISON COMPANY
Case No. 20-0665-E-ENEC**

QUESTION NO. 7

Regarding the Company's unit commitment decision process for the Fort Martin and Harrison units from 2016-2019:

- (a) Please describe the Company's process for determining whether to self-schedule a generator in the day-ahead energy market at the unit's minimum operating level and allow the unit to dispatch economically above the minimum level.
- (b) Please describe the Company's process for determining whether to economically dispatch a generator in the day-ahead energy market.
- (c) Describe all factors, both quantitative and qualitative, that the Company considers in its unit commitment decision-making process.
- (d) Please indicate whether the Company performs economic analyses to inform its unit commitment decisions for the Fort Martin and Harrison units (*i.e.*, decisions regarding whether to self-schedule a generator in the day-ahead energy market or take them offline for economic reasons)?
 - (i) If not, please explain why not.
 - (ii) If so, please provide all such analyses conducted from 2016-2019 in native, machine readable format and (A) identify each category of cost and revenue accounted for in such analyses, (B) identify whether such analyses are conducted differently for periods immediately preceding or following unit outages, and explain any differences, and (C) indicate the timeframe over which the Company evaluates whether a unit's commitment decision maximizes a unit's economic value to customers.
 - (iii) Please provide all internal documents and reports created for, or during, the time period January 1, 2016 through December 31, 2019 that discuss the Company's unit commitment and dispatch practices, strategies, and outcomes

RESPONSE:

- a. Decision to self-schedule a unit is based on the following criteria:
 - Meeting contractual obligations under the coal contracts.
 - Required testing is typically done while units are running; however, if we run into time constraints on completing a test, we may self-schedule to ensure unit will be on for the test.

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FIRST REQUEST FOR INFORMATION
MONONGAHELA POWER COMPANY AND THE POTOMAC EDISON COMPANY
Case No. 20-0665-E-ENEC**

-Unit may be self-scheduled to maintain plant operations

b. Decision to economically dispatch a generator would occur if testing is not required, plant operations can be maintained, and annual coal contractual obligations are not jeopardized

c. See response in a and b above

d. Traditionally, coal contract obligations are part of the decision on unit commitment status.

The first quarter of 2020, the PJM market prices were at their all-time low. Analysis was done on Fort Martin units to determine unit commitment status for March. Balance of the year analysis was performed on Fort Martin for April through December.

The terms in the previous Harrison coal contracts did not warrant putting Harrison units on economic status. Upon the effective date of the latest contract (May 2020), economic analysis was performed to determine the commitment status of these units.

(i) n/a

(ii) See SC-1.7 Attachment A CONFIDENTIAL, tab FTM Study Summary and tab HAR Study Summary.

(A) PJM approved costs (fuel, variable O&M, emission costs and reagents) were used to dispatch the units. See Study Summary sheets.

(B) Forecasted market prices are used to make determinations on starting a unit. When units are offered economically, unit will be picked up by PJM when market prices warrant.

(C) Typically, one week

(iii) See response to (ii) above

EXHIBIT RW-7

Response to WVEUG Request No. 1-4

**THE WEST VIRGINIA ENERGY USERS GROUP'S
FIRST REQUEST FOR INFORMATION
MONONGAHELA POWER COMPANY AND THE POTOMAC EDISON COMPANY
Case No. 20-0665-E-ENEC**

QUESTION NO. 4

For each of the Companies' coal units, please provide a narrative describing any must run constraints that would cause the unit to be dispatched when the day-ahead PJM Interconnection, LLC ("PJM") Locational Marginal Price ("LMP") is less than the incremental cost of the unit. Please include in the narrative the cause of the must run constraint, including any constraints associated with a requirement to burn a minimum amount of coal pursuant to a coal contract.

RESPONSE:

Conditions when units are offered in as "must run":

- Coal contracts have a minimum coal take requirement. Units are offered as must run to ensure we meet these contractual requirements.
- When units are offered in as "economic" and are brought online by PJM, the offers for the next several days are changed to "must run" to ensure unit stays online. This is an operational requirement to ensure unit reliability.
- Must run status was used to perform environmental testing (SO3 Breem Probe Testing) required by the Department of Environmental Protection.
- Must run one unit:
 - To ensure solid waste processing does not become water bound. Solid waste processing requires burning the liquid in one of the absorbers.
 - Freeze protection for the plant

EXHIBIT RW-8

Response to Sierra Club Request No. 1-9

**THE SIERRA CLUB'S
FIRST REQUEST FOR INFORMATION
MONONGAHELA POWER COMPANY AND THE POTOMAC EDISON COMPANY
Case No. 20-0665-E-ENEC**

QUESTION NO. 9

Regarding the Company's fuel supply contracts for the Fort Martin and Harrison units:

- (a) Please provide all fuel contracts between the Company and its coal suppliers.
- (b) Please identify the date when each such contract was executed.
- (c) Please identify the expiration date for each such contract.
- (d) Please identify any liquidated damages associated with exiting each such existing contract.
- (e) Please indicate whether any of the contracts supply coal to the Company under "take or pay" terms.
- (f) Between 2016 and 2019, did the Company begin the process of negotiating any new coal contracts? If yes, please describe the reasons for the negotiations of new contracts.
- (g) Between 2016 and 2019, did the Company invoke any re-opener provisions in its coal supply contracts?
- (h) Between 2016 and 2019, did the Company engage in renegotiation of existing coal contracts?
 - (i) If yes, please identify the existing coal contracts that were part of renegotiation.
 - (ii) If yes, please describe the reasons for those renegotiations.

RESPONSE:

- a. The requested information contains fuel-related information of a highly proprietary, sensitive, and confidential nature that constitute "trade secrets" under West Virginia law (collectively, the "Confidential Data"). The Companies will make the Confidential Data available for inspection only at Mon Power Company Offices, 5001 NASA Boulevard, Fairmont WV, 26554 to parties that have executed a protective agreement with the Companies. Please contact Gary A. Jack to make arrangements. Contact information is provided below.

Gary A. Jack
Senior Corporate Counsel II
Phone (304) 534-7409

**THE SIERRA CLUB'S
FIRST REQUEST FOR INFORMATION
MONONGAHELA POWER COMPANY AND THE POTOMAC EDISON COMPANY
Case No. 20-0665-E-ENEC**

Fax (330) 315-9939

Email: gjack@firstenergycorp.com

The improper disclosure of the Confidential Data has the potential to cause the Companies irreparable harm and increase the Companies' cost of service. Inspection of the Confidential Data as provided above is subject to the existing protective agreements between the Companies and the requesting party.

- b. See SC-1.9 Attachment A.
- c. See SC-1.9 Attachment A.
- d. Any liquidated damages associated with exiting any of the existing contracts would be dependent upon negotiating such an exit with each of the suppliers.
- e. Contracts 376 and 392 include "take or pay" terms.
- f. Yes. New contracts were negotiated to close open positions in coal requirements for Mon Power's Station(s).
- g. No.
- h. Yes.
 - (i) See SC-1.9 Attachment B CONFIDENTIAL.
 - (ii) See SC-1.9 Attachment B CONFIDENTIAL.

EXHIBIT RW-9

**Response to CAG Request No. 2-10
in Case No. 20-0666-E-4435T**

**WEST VIRGINIA CITIZEN ACTION GROUP AND SOLAR UNITED NEIGHBORS'
SECOND REQUEST FOR INFORMATION
MONONGAHELA POWER COMPANY AND THE POTOMAC EDISON COMPANY
Case No. 20-0666-E-4435T**

The following response to Question 10 of the Third Request for Information of the West Virginia Citizen Action Group and Solar United Neighbors has been prepared under the supervision of the person identified below.

Name:	Mark Valach
Title:	Director Fuels and RTO Services
Company:	FirstEnergy Service Company
Date:	November 6, 2020

QUESTION NO. 10

Refer to your response to EUG-1.3, which states that no retirement studies have been performed in the past three years. For each of Mon Power's coal units, please state when a retirement study was most recently performed.

RESPONSE:

No retirement studies have been performed for each on the Mon Power's coal units.

CERTIFICATE OF SERVICE

I certify that on November 16, 2020, I sent an accurate copy of the Direct Testimony of Rachel Wilson on Behalf of Sierra Club by electronic mail—along with an invitation to request a hardcopy by First-Class United States Mail—to:

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