

STATE OF INDIANA

INDIANA UTILITY REGULATORY COMMISSION

**APPLICATION OF INDIANAPOLIS POWER &)
LIGHT COMPANY D/B/A AES INDIANA FOR)
APPROVAL OF A FUEL COST FACTOR FOR)
ELECTRIC SERVICE DURING THE BILLING)
MONTHS OF JUNE 2023 THROUGH AUGUST)
2023, IN ACCORDANCE WITH THE) CAUSE NO. 38703 FAC 139
PROVISIONS OF I.C. 8-1-2-42, AND)
CONTINUED USE OF RATEMAKING)
TREATMENT FOR COSTS OF WIND POWER)
PURCHASES PURSUANT TO CAUSE NOS.)
43485 AND 43740, AND CONTINUED)
RECOVERY OF THE COSTS OF THE FUEL)
HEDGING PLAN PURSUANT TO I.C. 8-1-2-42.)**

**APPLICANT'S SUBMISSION OF DIRECT TESTIMONY OF
DAVID JACKSON**

Indianapolis Power & Light Company d/b/a AES Indiana ("AES Indiana", "IPL",
"Company", or "Applicant"), by counsel, hereby submits the direct testimony and attachments of
David Jackson.

Respectfully submitted,



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CERTIFICATE OF SERVICE

The undersigned hereby certifies that a copy of the foregoing was served this 16th day of March, 2023, by email transmission, hand delivery or United States Mail, first class, postage prepaid to:

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**VERIFIED DIRECT TESTIMONY OF DAVID JACKSON
DIRECTOR, COMMERCIAL OPERATIONS**

1 **Q1. Please state your name, employer, and business address.**

2 A1. My name is David Jackson. I am employed by AES US Services, LLC (“the Service
3 Company”), which is the service company that serves Indianapolis Power & Light
4 Company d/b/a AES Indiana (“AES Indiana”, “IPL”, “Applicant”, or the “Company”).
5 The Service Company is located at One Monument Circle, Indianapolis, Indiana 46204.

6 **Q2. What is your position with the Service Company?**

7 A2. I am the Director, Commercial Operations.

8 **Q3. What are your current responsibilities as the Director, Commercial Operations?**

9 A3. As Director, Commercial Operations, I am responsible for managing AES Indiana’s
10 participation in the Midcontinent Independent System Operator, Inc. (“MISO”) energy
11 market and oversight of AES Indiana’s strategy and execution for demand bids and
12 generation offers. I am also responsible for the management of AES Indiana’s wind power
13 purchase agreements (“PPAs”) and procurement of natural gas and coal.

14 **Q4. Please briefly describe your educational and business experience.**

15 A4. I received a Bachelor of Science Degree in Agricultural Industries from the University of
16 Illinois at Champaign-Urbana. I have been employed by AES since 2015, assuming my
17 current role in May of 2018. Previously, I held the position of Director, Commercial

1 Operations AES Ohio Generation. Prior to AES, I worked at Duke Energy, Cincinnati,
2 Ohio (previously Cinergy Services, Inc.) between 2002 to 2015, as the Director, Coal
3 Trading.

4 **Q5. Have you previously testified before the Indiana Utility Regulatory Commission**
5 **(“Commission”)?**

6 A5. Yes. I have submitted testimony on behalf of AES Indiana in previous FAC proceedings.

7 **Q6. What is the purpose of your testimony in this proceeding?**

8 A6. My testimony supports:

- 9 • AES Indiana’s request to recover through the FAC proceeding certain costs incurred
10 by AES Indiana as a result of taking transmission service under the MISO Open
11 Access Transmission and Energy Markets Tariff (“TEMT”) to serve its retail electric
12 customers, and participating in the MISO Day-Ahead and Real-Time Energy and
13 Financial Transmission Rights (“FTR”) Markets and MISO Energy and Operating
14 Reserves Market (“MISO EOR”).
- 15 • AES Indiana’s unit commitment process and decisions.
- 16 • AES Indiana’s inclusion of its wind and natural gas purchases in this FAC, coal
17 purchases, and the reasonableness of AES Indiana’s fuel costs.
- 18 • Update on AES Indiana’s 2023 projected coal burn and coal purchases.
- 19 • Update on natural gas hedging program volumes and pricing.
- 20 • Settlement evaluation associated with natural gas hedges.

- Updates on the short-term model used to track Petersburg Generation Station (“Petersburg”) economics, which has been in use since the end of May 2020.

Q7. Are you sponsoring any attachments?

A7. Yes. I am sponsoring the following attachments:

- Attachment DJ-1 – Calculation of daily benchmarks.
- Attachment DJ-2 – Summary of purchased power volumes, costs, the total of hourly purchased power costs above the applicable Purchased Power Daily Benchmarks, and the reasons for purchases at-risk after consideration of MISO economic dispatch.
- Confidential Attachment DJ-3 – Commitment summary and weekly model runs used in Petersburg commitment decisions November 2022 through January 2023.
- Confidential Attachment DJ-4 – 2022-2023 Petersburg Coal Position provides a monthly view of 2022 and 2023 purchases, burns, and inventory.
- Attachment DJ-5 – Evaluation of the natural gas hedges’ economic settlement in November 2022, December 2022, and January 2023.
- Confidential Attachment DJ-6 – Completed natural gas hedging transactions and remaining balances to be completed for the hedging policy approved in FAC 133.

Q8. Were these attachments prepared or assembled by you or under your direction and supervision?

A8. Yes.

Q9. Are you submitting any workpapers?

1 A9. Yes. I am submitting Jackson Confidential Workpaper 1, which supports Table DJ-4, and
2 the Excel workbooks which support my attachments. These workpapers were prepared or
3 assembled by me or under my direction and supervision.

4 **MISO**

5 **Q10. Are you generally familiar with the operations of MISO?**

6 A10. Yes, I am.

7 **Q11. Have you reviewed the Commission's June 1, 2005 Order in Cause No. 42685**
8 **("June 1, 2005 Order")?**

9 A11. Yes.

10 **Q12. Have you reviewed the Commission's June 30, 2009 Order in Cause No. 43426**
11 **("Phase II Order")?**

12 A12. Yes.

13 **Q13. Is AES Indiana's calculation of costs for June 2023 through August 2023 consistent**
14 **with your understanding of the Commission's June 1, 2005 Order and Phase II**
15 **Order?**

16 A13. Yes.

17 **Q14. Are you generally familiar with the costs incurred by AES Indiana as a result of**
18 **taking transmission service under MISO's TEMT to serve its Indiana retail electric**
19 **customers?**

1 A14. Yes.

2 **Q15. Can you briefly explain the benefits to AES Indiana’s customers of AES Indiana’s**
3 **participation in the MISO EOR?**

4 A15. The MISO EOR gives all participants open access to the transmission system and all
5 available resources are centrally dispatched using simultaneous co-optimization. MISO
6 provides a transparent and liquid energy market across its entire footprint. Furthermore,
7 on-going coordination between MISO and adjacent ISO systems increases grid reliability
8 and makes it possible to regionally coordinate transmission expansion. While benefiting
9 from improved grid reliability, the greater benefit for AES Indiana and its customers is the
10 transparent and liquid energy market that brings about an even playing field for all utilities.
11 This allows AES Indiana to make more economic purchases from the open market with the
12 benefits flowing directly to its customers. The EOR provides the same level playing field
13 for ancillary services (regulation and contingency reserves) while also more effectively and
14 economically allocating resources to provide those reserves. In addition, the EOR provides
15 an opportunity to reduce the overall amount of reserves being held by market participants
16 thereby further reducing the cost of providing those reserves to customers.

17 **Q16. Briefly describe the MISO costs and revenues that AES Indiana is seeking to**
18 **recover in this FAC proceeding.**

19 A16. AES Indiana is requesting recovery of projected fuel-related MISO costs for the period of
20 June 2023 through August 2023. These projected costs include the estimated level of the
21 net effect of revenues and costs associated with delta Locational Marginal Pricing
22 (“LMP”), Day-Ahead and Reliability Assessment Commitment (“RAC”) unit

1 commitment, FTRs, Real-Time Marginal Loss Surplus, and Ancillary Services. In
2 addition, AES Indiana's calculation of the fuel factor reflects a reconciliation of these fuel-
3 related MISO costs and revenues for the historical period of November 2022 through
4 January 2023. Attachment NHC-1, Schedule 6 contains a summary of the determination
5 of actual MISO Components of Fuel Costs, exclusive of purchased power costs for this
6 period.

7 **Q17. How did AES Indiana forecast costs for the June 2023 through August 2023 period?**

8 A17. The longer-term forecasts presented in this proceeding were generated in a planning model
9 that looks at the economic dispatch of the units on the day the model is run to allow for
10 preparation of the schedules used in this filing. It is reasonable to use this forecast for
11 purposes of this proceeding. As discussed below, commitment decisions in the actual
12 period will be driven by pricing, protecting customers from price risk, operational
13 conditions, and reliability. This will be the first forecast period impacted by the retirement
14 of Petersburg Unit 2.

15 **Q18. Has AES Indiana compared natural gas prices for the forecast period June 2023**
16 **through August 2023 to the forecast period for June 2022 through August 2022?**

17 A18. Yes. As evident in the table below, natural gas prices have decreased significantly,
18 decreasing 28% for the forecast period versus the same forecast period one year ago. This
19 significant decrease in natural gas prices for the forecast period is the primary driver for
20 the decrease in the fuel adjustment factor proposed in this proceeding. The key drivers of
21 the natural gas price decrease begin with a record warm winter in the United States which
22 decreased demand of natural gas for heating and electric generation. Demand from natural

gas exports of liquefied natural gas (“LNG”) was significantly impacted by the Freeport LNG outage, which remained out of service through most of the winter period, seven months in total. Natural gas production has increased in a delayed response to higher prices seen last summer and the start of the winter. As a result of these events, natural gas storage levels in the United States have gone from a deficit to a surplus versus the 5-year average, reducing concern of domestic supply tightness. Coal markets have softened and reduced concern that natural gas will see increased burns from fuel switching due to availability concerns of coal on a national level.

Table DJ-1 Comparison of Natural Gas Prices

Natural Gas \$/MMBtu	June	July	August	3 Month Average
Forecast FAC 135	\$4.44	\$4.50	\$4.51	\$4.48
Forecast FAC 139	\$3.09	\$3.27	\$3.31	\$3.22
Price Variance	(\$1.35)	(\$1.23)	(\$1.20)	(\$1.26)
% Change	-30%	-27%	-27%	-28%

Q19. In its FAC 97 Order, the Commission authorized AES Indiana to include charges for Demand Response Resource Uplift Amounts for purposes of recovery in the FAC proceedings. Has AES Indiana included these charges in this FAC proceeding?

A19. Yes. Consistent with the FAC 97 Order, AES Indiana has included the charges for Demand Response Resource Uplift Amounts in its cost of fuel in this proceeding.

Q20. In its FAC 85 Order, the Commission authorized AES Indiana to include credits or charges for Contingency Reserve Deployment Failure Charge Uplift Amounts for purposes of recovery in the FAC proceedings. Has AES Indiana included these credits or charges in this FAC proceeding?

A20. Yes. Consistent with the FAC 85 Order, AES Indiana has included the credits and charges for Contingency Reserve Deployment Failure Charge Uplift Amounts in its cost of fuel in this proceeding.

Q21. Please discuss AES Indiana’s experience with MISO’s Ancillary Services Market (“ASM”).

A21. MISO launched its ASM on January 6, 2009, and to my knowledge the ASM has generally functioned without major issue. AES Indiana’s generators follow real time signals as directed by MISO. As discussed in FAC 134, MISO implemented a new ancillary services product called Short Term Reserve (“STR”). The new product and settlements treatment were discussed in FAC 134. MISO Day Ahead and Real Time market clearing prices for Regulation, Spinning, Supplemental Reserves and Short Term Reserve appear to be at reasonable levels consistent with market conditions. For the period of November 2022 through January 2023, the average ASM prices per megawatt hour were as follows:

Table DJ-2 Average ASM Prices per Megawatt-Hour

Month	Regulation	Spinning	Supplemental	STR
November 2022	\$0.0524	\$0.0623	\$0.0029	\$0.0153
December 2022	\$0.0089	\$0.0505	(\$0.0028)	\$0.0153
January 2023	\$0.0452	\$0.0322	\$0.0043	\$0.0024

Q22. Is AES Indiana requesting recovery of Revenue Sufficiency Guarantee (“RSG”) Payments in this FAC proceeding?

A22. Yes.

Q23. Have you reviewed the Commission’s June 3, 2009 Order in Cause No. 43664 (the “RSG Order”)?

1 A23. Yes.

2 **Q24. Is AES Indiana's request for recovery of RSG Payments consistent with your**
3 **understanding of the Commission's RSG Order?**

4 A24. Yes.

5 **Q25. Are you familiar with the term "Contestable RT RSG Charges"?**

6 A25. Yes. In its RSG Order, the Commission approved the following calculation method ("RSG
7 Daily Benchmarks") to be used to determine the RSG Benchmark:

8 Each day a "Benchmark" shall be established based upon a generic Gas
9 Turbine ("GT"), using a generic GT heat rate of 12,500 btu/kwh using the
10 day-ahead natural gas prices for the NYMEX Henry Hub, plus a
11 \$.60/mmbtu gas transport charge for a generic gas-fired GT. Any Revenue
12 Sufficiency Guarantee First Pass Distribution amounts in excess of the RSG
13 Daily Benchmarks are termed "Contestable RT RSG Charges" and are
14 currently recovered through the RTO rate adjustment mechanism.

15 **Q26. What are the RSG Daily Benchmarks for the period of November 2022 through**
16 **January 2023?**

17 A26. The applicable RSG Daily Benchmarks per MWh for RSG during the historical period are
18 shown on Attachment DJ-1. The RSG Daily Benchmark calculations have been done in
19 conformity with the RSG Order.

20 **Q27. How does AES Indiana recover the cost of power purchased in the MISO markets?**

21 A27. AES Indiana recovers power costs purchased through the MISO energy market, up to a
22 Daily Benchmark, through the FAC. In Cause No. 43414, the Commission approved a
23 "benchmark" triggering mechanism to assess the reasonableness of purchased power costs

1 (“Purchased Power Order”). Each day, a Benchmark is established based upon a generic
2 Gas Turbine (“GT”), using a generic GT heat rate of 12,500 btu/kWh, using the day ahead
3 natural gas prices for the NYMEX Henry Hub, plus \$0.60/mmbtu gas transport charge for
4 a generic gas-fired GT. The Benchmark methodology was approved in Cause No. 43414
5 on April 23, 2008 (“Purchased Power Daily Benchmark(s)”). AES Indiana continues to
6 follow the guidelines and procedures established in the Purchased Power Order. Purchases
7 made in the course of MISO’s economic dispatch regime to meet jurisdictional retail load
8 are a cost of fuel and are fully recoverable in the utility’s FAC up to the actual cost or the
9 Purchased Power Daily Benchmark, whichever is lower.

10 **Q28. What are the Purchased Power Daily Benchmarks for November 2022 through**
11 **January 2023?**

12 A28. The applicable Purchased Power Daily Benchmarks during this accounting period are
13 shown in Attachment DJ-1. The approved methodology for determining the Purchased
14 Power Daily Benchmarks and the RSG Daily Benchmarks is identical.

15 **Q29. Is AES Indiana seeking to recover any purchased power costs that are in excess of the**
16 **Daily Benchmarks calculated pursuant to the Purchased Power Order?**

17 A29. Yes. For the FAC 139 historical period, AES Indiana incurred a total of \$8,968,611 of
18 purchased power costs over the applicable Purchased Power Daily Benchmarks during
19 November 2022 through January 2023. AES Indiana makes power purchases when
20 economical or due to unit unavailability. Consistent with the Purchased Power Order, AES
21 Indiana has an opportunity to request recovery of and justify the reasonableness of
22 purchased power costs above the applicable Purchased Power Daily Benchmark.

1 Attachment DJ-2 was prepared to aid the Commission in its review of AES Indiana's
2 request. Attachment DJ-2 summarizes the purchased power volumes, costs, the total of
3 hourly purchased power costs above the applicable Purchased Power Daily Benchmarks
4 and the reasons for the purchases at-risk after consideration of MISO economic dispatch
5 for FAC 139. Utilizing the methodology approved in the Purchased Power Order, all of the
6 purchased power is recoverable during this accounting period.

7 **Q30. What were the primary drivers of the purchased power costs above the benchmark**
8 **during the historical FAC period?**

9 A30. The majority of purchase power above benchmark in the historical period occurred on a
10 single day, December 23, 2022, due to impacts of Winter Storm Elliott. The storm covered
11 a large portion of the MISO footprint, moving into the system quicker and significantly
12 colder than originally forecast. The storm impacted Indiana in the early evening of
13 December 22, with temperatures dropping from 40 degrees in the mid afternoon to negative
14 temperatures by the morning of December 23. Indianapolis posted a low of -9 degrees that
15 morning. Exacerbating the cold temperatures were high winds, which pushed wind chills
16 to -40 degrees for the coldest periods. MISO experienced abnormally high load forecasting
17 errors due to a lack of historical data for similar extreme conditions in December. Day
18 ahead prices had cleared at lower values as a result, sending mixed signals for additional
19 gas generation that would potentially have been online. MISO real time prices for
20 December 23 cleared very high reflecting the impact of significantly higher load and
21 unavailable generation. Natural gas pipelines experienced issues with low pressure during
22 the period related to supply and weather issues. AES Indiana generation was also impacted

1 by the extreme cold weather. The morning of December 23, Eagle Valley CCGT and
2 Harding Street Steam Turbine 7 tripped offline.

3 Eagle Valley CCGT experienced frozen drum level transmitters causing an outage on unit
4 GT 2 and the STG. When GT 2 came offline, a steam valve actuator was broken, requiring
5 replacement before the unit could return to service. GT 1 came offline due to the loss of
6 deionized water. When the levels of deionized water were re-established, complications
7 restarting GT 1 occurred due to natural gas pressure issues. The equipment necessary to
8 restart the unit froze because it could not be kept warm during the delay. Unit GT 1 and
9 the STG returned to service December 25.

10 Harding Street Steam Turbine 7 tripped the morning of December 23 due to icing on the
11 forced draft fan inlets. The station operators responded to the issue and had the plant back
12 online the night of December 23.

13 During the period, AES Indiana load realized higher than forecast. The impact of lost
14 generation and higher than forecast load was partially offset by peaking generation which
15 was available in the real time market. These drivers led to purchase power from MISO in
16 the real time market on December 23.

17 **Q31. Do you believe the total purchased power costs incurred in November 2022 through**
18 **January 2023 are reasonable?**

19 A31. Yes.

FUEL PURCHASES

Q32. Are you familiar with AES Indiana's purchases of fuel for use in its generating stations?

A32. Yes, I have reviewed the coal and natural gas contracts. I am copied on communications for daily activity in the natural gas purchases for real time and day ahead needs.

Q33. Are purchases for natural gas included in this FAC?

A33. Yes. Natural gas purchases to supply the generating units at Georgetown, Eagle Valley, and Harding Street are included in this filing. The forecasted natural gas generation is included on Attachment NHC-1, Schedule 1, Line 5, and the forecasted cost of natural gas is included on Attachment NHC-1, Schedule 1, Line 19. The actual natural gas generation is included on Attachment NHC-1, Schedule 5, Line 5, and the actual cost of natural gas is included on Attachment NHC-1, Schedule 5, Line 19. The cost of gas generation contains the delivered cost of natural gas including firm transportation.

Q34. How does AES Indiana make fuel oil purchases?

A34. Harding Street and Petersburg manage their own fuel oil purchases based on inventory set-points and regional market index pricing negotiated in a competitively bid contract.

Q35. How does AES Indiana purchase its coal supply?

A35. AES Indiana normally purchases all of its coal from the Illinois Basin, primarily from Indiana producers. We currently have contracts with two coal producers and receive coal from up to three different mines.

1 **Q36. With what coal companies does AES Indiana presently have contracts?**

2 A36. Peabody Energy Corporation and Gibson County Coal Company.

3 **Q37. Does AES Indiana have any ownership interest in any of these companies?**

4 A37. No.

5 **Q38. Why does AES Indiana engage in spot purchases of coal?**

6 A38. We use spot purchases of coal in three ways: (1) to provide the differential requirement
7 between our long-term contracts and our projected burn for the year; (2) to test the quality
8 and reliability of a producer to see if we may want to utilize the company as a long-term
9 supplier; and (3) when our projected inventory levels allow, to take advantage of occasional
10 low price market opportunities.

11 **Q39. What procedure does AES Indiana follow in negotiating long-term coal contracts?**

12 A39. Fuel Supply has the responsibility of obtaining the necessary coal supplies and uses as a
13 resource the long-range load and energy forecasts provided by our Resource Planning
14 Group. AES Indiana constantly monitors coal producers as to the availability of reserves,
15 capacity to produce, and current mining costs. Based on the above data, we solicit the
16 market through a competitive bidding process and negotiate the price, terms and conditions
17 on any contract extension or new contracts. AES Indiana typically uses long-term contracts
18 of staggered lengths in order to limit our exposure to the market in any given year.

19 **Q40. Why does AES Indiana normally purchase substantially all of its coal from Indiana**
20 **providers?**

1 A40. Although Fuel Supply actively solicits bids from Indiana and non-Indiana coal producers,
2 potential coal contracts are evaluated on the total delivered cost to the plant. In the last few
3 years, some out-of-state bidders have offered very competitive coal prices at the mine, but
4 because of transportation costs, these bids were not our lowest cost option on a delivered
5 basis. In addition, buying from local suppliers increases the reliability of supply by
6 decreasing the risk of disruptions and lengthy delays in the transportation of coal to the
7 plants. AES Indiana's present boilers are all designed for Indiana coal.

8 **Q41. You stress that a reliable supply of fuel is necessary. Will you elaborate on the need**
9 **for a reliable coal supply and the use of long-term contracts to meet that end?**

10 A41. As a public utility, AES Indiana has an obligation to make every reasonable effort to
11 acquire fuel and generate or purchase power, or both, so as to provide electricity to its retail
12 customers at the lowest fuel cost reasonably possible. We continue using long-term coal
13 contracts as our primary means of maintaining a reliable supply. Long-term contracts
14 provide coal producers with certainty and the ability to most economically allocate their
15 resources, thereby reducing their overall production costs and allowing producers to sell at
16 a lower cost. Even though most long-term contracts contain some volumetric flexibility,
17 this flexibility may not be enough to absorb the volatility seen in recent markets. While
18 AES Indiana cannot primarily rely on spot purchases for a reliable supply of coal, the spot
19 market can be a useful tool for managing exposure to volatile markets. However, over-
20 reliance on the spot market presents a number of risks. While spot contracts vary over
21 time, they do not create the market efficiencies that translate into the lowest price over an
22 extended period of time. Some spot market suppliers may not have enough capital to
23 protect themselves in market downturns and they could go out of business, which could

1 leave AES Indiana without coal. In addition, some small producers do not have adequate
2 quality control in their mining operations, and it may be necessary to reject them as
3 suppliers based on their inability to supply uniform coal quality in terms of Btu, moisture,
4 ash, and sulfur content. Finally, even well-financed producers of high-quality coal may
5 have their entire production run committed to established contracts and have no extra coal
6 to offer to the spot market.

7 **Q42. What does AES Indiana do to verify the reasonableness of its coal costs?**

8 A42. AES Indiana uses a formal competitive bidding process to award its coal contracts. For
9 some spot purchases when a formal competitive bid process might not be feasible, an
10 informal survey of local coal providers is performed to assure that the agreed upon price is
11 at or below AES Indiana's next best alternative. In addition, in long-term contracts that
12 contain specific cost elements that can be passed through to AES Indiana (for example,
13 costs associated with meeting new governmental regulations), we reserve the right to have
14 those costs audited by an independent expert to aid in the proper administration of the
15 contracts. This is done to protect our customers from any unnecessary or unreasonable fuel
16 expense. Transportation costs are reviewed and monthly delivery schedules are designed
17 to minimize the total transportation cost.

18 **WIND PURCHASES**

19 **Q43. Are any purchases from the Hoosier Wind Park and/or Lakefield Wind Park**
20 **included in this FAC, either in projected or actual fuel costs?**

21 A43. Yes, wind purchases are included in AES Indiana's projected and actual fuel costs. The
22 wind park operators provide AES Indiana with monthly wind production projections. AES

1 Indiana forecasts wind purchase costs using the monthly production projections, contract
2 rates, and a factor to account for the impact of expected levels of MISO real-time
3 curtailments. AES Indiana forecasts wind purchase volumes by reducing the monthly
4 production projections by the expected level of MISO real-time curtailments, which is
5 largely based on historical curtailments at each park for the forecast period. Pursuant to
6 the approval received in Cause No. 43485, AES Indiana began receiving power from
7 Hoosier Wind Park on November 1, 2009. For the months of November 2022, December
8 2022, and January 2023, AES Indiana received 26,683 MWhs, 28,134 MWhs, and 18,267
9 MWhs, respectively. Pursuant to the approval received in Cause No. 43740, AES Indiana
10 began receiving power from Lakefield Wind Park on October 4, 2011. For the months of
11 November 2022, December 2022, and January 2023, AES Indiana received 46,746 MWhs,
12 53,091 MWhs, and 44,164 MWhs, respectively. Pursuant to Cause No. 43740, AES
13 Indiana is reflecting credits to jurisdictional fuel costs for the off-system sales profits made
14 possible because of the energy received from the Lakefield Wind Park PPA.

15 **Q44. Where are these wind purchases shown in AES Indiana's schedules in this**
16 **proceeding?**

17 A44. Projected wind purchases are included in Purchases through MISO on Attachment NHC-
18 1, Schedule 1, Line 6 and Line 20. Actual purchases are included on Attachment NHC-1,
19 Schedule 5, Line 6 and Line 21.

20 **Q45. Please provide an update regarding the Locational Marginal Prices ("LMPs") at the**
21 **Lakefield Wind Park and the Hoosier Wind Park.**

1 A45. The Lakefield Wind Park and the Hoosier Wind Park are Dispatchable Intermittent
2 Resources (“DIRs”) in the MISO market. A DIR is sent dispatch instructions from MISO
3 by an electronic signal every five minutes, similar to the operation of the other generating
4 units. The Lakefield Wind Park and Hoosier Wind Park can ramp quickly, largely avoiding
5 negative LMPs. Curtailed power at the Lakefield Wind Park is billable when certain
6 criteria are met. Curtailments at Hoosier Wind Park fall into two categories: Transmission
7 Curtailments and Economic Curtailments. AES Indiana must pay for (i) Transmission
8 Curtailments up to an identified annual quantity threshold and (ii) all Economic
9 Curtailments. The level of curtailment at the Lakefield Wind Park, measured as a
10 percentage of full theoretical production at the Lakefield Wind Park, were equal to the level
11 of curtailments experienced during the historical period from the last FAC, and lower than
12 during the historical period from one year ago. There were 2,512 MWhs of billable
13 curtailments at the Hoosier Wind Park for this FAC period. AES Indiana also offers the
14 Lakefield Wind Park and the Hoosier Wind Park into the day-ahead market to mitigate the
15 impact of negative LMPs in real-time.

16 **PETERSBURG UNIT COMMITMENT**

17 **Q46. Please provide an overview of the AES Indiana’s unit commitment process.**

18 A46. AES Indiana’s units can be offered into the MISO market under one of five designations:
19 “outage”, “economic”, “emergency”, “not participating”, or “must run”. The outage
20 designation indicates that the unit is under repair, either scheduled or forced. The economic
21 designation offers the unit to the market at a set price and MISO decides whether that unit
22 runs or not. As stated in the MISO Tariff Module C, an emergency commitment status
23 indicates the unit is only available under an emergency condition for the hour. A not

1 participating status indicates the Market Participant will not operate a unit that is otherwise
2 available. The must run designation indicates that the unit should run through the period
3 regardless of price signals, although the output level will be determined by market price.
4 Generally, AES Indiana looks at the *predicted* economic performance of each generating
5 unit over a period of one week when deciding whether to commit the unit. The startup cost
6 that would be necessary to re-start the unit is also considered. Additionally, AES Indiana
7 considers reliability, price certainty from running generation, and opportunities from
8 participating in both Day Ahead and Real Time energy markets. During seasonal periods
9 (summer and winter) with historical high market price and potential high load, AES Indiana
10 will maintain a generation mix that includes coal, natural gas, and renewables. AES
11 Indiana raises the minimum operating level when required to maintain reliability or for
12 other operational reasons. Under normal conditions, AES Indiana offers the Petersburg
13 units to be dispatched by MISO between their minimum economic operation level and
14 maximum economic operation level. In other words, the decision to offer a unit considers
15 a wide range of factors. Some are economic, such as the predicted prices in the near future
16 market, and the avoidance of start-up costs required to bring the unit back on-line. Some
17 are operational, such as the time and manpower required to bring units back on-line, plant
18 limitations, and wear and tear of cycling units designed for long term base load operations.
19 Finally, some considerations revolve around system reliability. System reliability issues
20 are particularly important during the winter and summer peaks. A system is more reliable
21 when supported by a diverse fuel mix. Units that are taken down do not always come back
22 fully operational, and sudden system disruptions can cause significant price spikes as units
23 struggle to come back on-line to fill the energy demand.

1 **Q47. Please explain what you mean by *predicted* economic performance of the unit and**
2 **“realized day ahead pricing”.**

3 A47. *Predicted* economic performance is based on expectations of the forward pricing. AES
4 Indiana uses the Intercontinental Exchange (“ICE”) financial trading platform and power
5 broker end of day markets for forward pricing. *Realized* day ahead pricing is the price
6 awarded by MISO when the unit is cleared in the day ahead market. Forward pricing is
7 based on market expectations of factors that impact those prices. Forward prices are not
8 always what are realized and, as mentioned previously, there are other critical factors
9 considered in unit commitment including price certainty and reliability. In the summer and
10 winter months, forward power markets typically have price uncertainty due to the potential
11 for abrupt changes in weather. The Company’s unit commitment decisions are based on
12 forward prices, as well as the other factors previously described. While the Company
13 commits its generating units utilizing the best known information at the time, the future
14 can unfold in different ways. The Company monitors the realized pricing to facilitate
15 understanding of the market going forward. However, at the point in time a unit
16 commitment decision is made, the Company does so without the benefit of hindsight. Even
17 where the realized prices come in lower than expectation, the Company cannot know, with
18 confidence, how the market will continue to move. Also, it is difficult to make the decision
19 to de-commit a coal unit in a time period that presents a great deal of price risk for our
20 customers. Operating baseload coal units assures relatively low cost of power during a
21 historically volatile summer and winter time period for AES Indiana’s customers and
22 reduces price risk for the benefit of customers. The commitment of baseload units may
23 result in certain periods where individual units operate below their respective cost.

1 However, as previously discussed, committing baseload units during certain periods
2 provides a reasonable hedge for customers. By creating a ceiling for power prices that will
3 ultimately be flowed through rates, the hedge protects the customer during periods of
4 higher risk and associated higher costs, including costs that stem from scarcity events that
5 can occur during the summer and winter period.

6 **Q48. What is your understanding of how prudence is assessed?**

7 A48. My understanding is that the focus in a prudence inquiry is not whether a given decision
8 or action produced a favorable or unfavorable result, but rather, whether the process leading
9 to the decision or action was a logical one, and whether the utility company used good
10 judgement, applied appropriate standards, and reasonably relied on information and
11 planning techniques known at the time.

12 **Q49. Did the Company act prudently with respect to the commitment and operation of**
13 **Petersburg during November 2022 through January 2023?**

14 A49. Yes. The operation of Petersburg Generation Station during this period followed the
15 prudence practices described above. For commitment decisions during this period, we
16 evaluated the visible power market prices versus the cost of the Petersburg Units.
17 Decisions were based on market pricing that the Company witnessed at the time
18 commitment decisions were made. The Company also considered non-economic factors
19 as discussed earlier in my testimony.

20 **Q50. Is it reasonable to rely solely on pricing to decide whether and how to commit AES**
21 **Indiana's generating units?**

1 A50. No. Simply looking back on energy prices for a given period, and comparing it to the cost
2 of generation, does not capture the value of the non-monetary considerations weighed
3 during the commitment decision. Oftentimes, running at a short-term loss benefits
4 customers in a number of ways. For example, certain start-up costs are avoided, long-term
5 maintenance costs associated with cycling units are minimized and customer prices are
6 stabilized due to the fact that a unit is on-line and ready to respond to market disruptions.
7 It is also important to again consider the value of the Petersburg Generation Station as a
8 hedge against high prices for customers in traditionally volatile-priced periods. Price
9 forecasts are not perfect and can deviate significantly from actual market conditions for
10 many reasons. Factors such as the time involved in bringing base load units back online,
11 the potential to have difficulty bringing units back after long outage periods, and the
12 potential for other MISO resources to have operational issues, can create significant price
13 risk for AES Indiana's customers.

14 **Q51. Was total fuel cost divided by sales (F/S) on Attachment NHC-1, Schedule 5, Page 4**
15 **of 4, Line 32, higher than forecast during November 2022 through January 2023?**

16 A51. No. The actual fuel costs were lower than forecast, resulting in a weighted average
17 deviation of 5.77%. The November 2022, December 2022, and January 2023 deviations
18 of actual to forecast F/S were 0.75%, -11.22%, and 33.72%, respectively. The largest
19 driver of the variance was the decrease in natural gas prices. The forecast fuel cost for the
20 months of November 2022, December 2022, and January 2023 used a Henry Hub price of
21 \$6.39/MMBtu, \$6.78/MMBtu, and \$6.97/MMBtu, respectively. Realized values during
22 the historical period were \$5.32/MMBtu in November 2022, \$5.70/MMBtu in December
23 2022, and \$3.32/MMBtu in January 2023. The decrease in natural gas price in the FAC

1 period reduced the cost of generation in the AES Indiana gas units and the price of
2 purchased power. December 2022 was impacted by the high cost of purchase power
3 associated with Winter Storm Elliott, which I discussed in Q/A 30 above. The November
4 2022, December 2022, and January 2023 Indianapolis temperature variance from normal
5 were +1.1 degrees, +0.1 degrees, and +8.6 degrees, respectively.

6 **Q52. Can you provide more detail regarding the natural gas price during the November**
7 **2022 through January 2023 period?**

8 A52. Yes. Natural gas prices remained historically high during the November and December of
9 the historical FAC period. Prices were trending lower from highs seen earlier in the year
10 and dropped significantly in January 2023. The key drivers of the natural gas price
11 decrease begin with a record warm winter in the United States which decreased demand
12 from heating and electric generation. Demand from natural gas exports of LNG was
13 significantly impacted by the Freeport LNG outage which remained out of service through
14 most of the winter period, 7 months in total. Natural gas production increased, in a delayed
15 response to higher prices seen last summer and the start of the winter. As a result of these
16 events, natural gas storage levels in the United States went from deficit to surplus versus
17 the 5-year average, reducing concern of domestic supply tightness.

18 **Q53. Please summarize the status of the Petersburg Units during the November 2022**
19 **through January 2023 historical time period.**

20 A53. During the historical FAC period, Petersburg Units 2, 3, and 4 were offered as economic
21 for the majority of the period.

Q54. Please summarize the commitment status of each of the Petersburg units during the November 2022 through Janaury 2023 time period.

A54. The table below shows the percentage of time the Petersburg Station units spent in either “must run”, “economic”, “emergency”, and “outage” in the MISO day ahead offers.

Table DJ-3 – Petersburg Commitment Status

Commitment Status During FAC 139 Historical Period			
	Pete 2	Pete 3	Pete 4
Must Run	4%	4%	3%
Economic	86%	66%	80%
Emergency	0%	0%	1%
Outage	11%	29%	15%

Petersburg Units 2, 3, and 4 were typically committed as economic to MISO during the historical FAC period. The majority of the Petersburg Unit 3 outage percent was due to a planned fall outage. Commitment decisions are discussed in more detail in Q/A 58 and Confidential Attachment DJ-3.

Q55. Did you document the forward pricing reflected in the unit commitment decisions for the months of November 2022 through Janaury 2023?

A55. Yes. AES Indiana completed model runs to support the unit commitment decisions which document the prices used at that time. The prices used for the model runs consider observed ICE markets and power broker end of day marks. Confidential Attachment DJ-3 provides a summary and the model runs used for commitment decisions during each week of the November 2022 through Janaury 2023 period.

1 **Q56. In your opinion, was AES Indiana's operation of the Petersburg units during**
2 **November 2022 through January 2023 reasonably aligned with market prices?**

3 A56. Yes. During the historical FAC period all of the weekly 7-day model runs showed positive
4 margin for Petersburg Units 2, 3, and 4. The units were offered as economic when available
5 for dispatch.

6 **Q57. Please provide further detail on the unit commitment decisions in the November 2022**
7 **through December 2023 time period.**

8 A57. AES Indiana ran a short-term model to track the economic value of the Petersburg Units
9 and they were offered to MISO as economic, must run, or outage in the day ahead market.
10 The model runs provided a 30 day forward look; we valued the coming weekend and week
11 for evaluation of unit commitment (7-day period). These model runs are shown in
12 Confidential Attachment DJ-3. Non-economic factors were also considered in unit
13 commitment decisions, including reliability, price certainty, operational needs, and
14 avoidance of startup costs. Below is the list of each unit's commitment decisions with
15 commentary.

16 Petersburg Unit 2

17 Petersburg Unit 2 ("Unit 2") entered the historical FAC period offline for a tube leak repair.
18 Unit 2 returned to service November 2 and was offered as economic to MISO through
19 November 4. Unit 2 was offered as must run November 5-7 due to very low natural gas
20 prices that weekend. On November 8, Unit 2 was on line and offered as economic to MISO
21 and remained in that status through January 22 when the unit came off line due to a

1 transformer electrical issue. Unit 2 remained off line through January 29. Unit 2 was
2 offered as must run January 30 while in start up and was on line and offered as economic
3 through the end of the historical FAC period.

4 Petersburg Unit 3

5 Petersburg Unit 3 ("Unit 3") entered the start of the historical FAC period on line offered
6 as economic to MISO through November 4. Unit 3 was offered as must run November 5-
7 7 due to very low natural gas prices that weekend. On November 8, Unit 3 entered a
8 planned outage for winter preparation and remained in that status through November 25.
9 Unit 3 was on line and offered to as economic to MISO for the period of November 26
10 through January 15. Unit 3 was off line January 16 through January 24 to complete
11 scrubber slurry drain repairs. The unit returned to service January 25 and was offered must
12 run while in start up. Unit 3 was on line and offered as economic to MISO through the end
13 of the historical FAC period.

14 Petersburg Unit 4

15 Petersburg Unit 4 ("Unit 4") entered the historical FAC period online and offered as
16 economic to MISO through November 4. Unit 3 was offered as must run November 5-7
17 due to very low natural gas prices that weekend. The unit remained on line and offered as
18 economic to MISO for the period of November 8 through November 27 when the unit came
19 off line to repair an excitor issue. Unit 4 remained in outage through December 1 and was
20 offered as emergency while in start up December 2. From December 3 through December
21 26, Unit 4 remained on line and offered a economic to MISO. Unit 4 came off line for a
22 tube leak repair and was offered as outage December 27 through January 3. The unit was

1 on line and offered as economic to MISO January 4 through January 12, when the unit
2 came off line due to a scrubber transformer issue. Unit 4 was offered in outage for 3 during
3 the repair and startup. January 16 Unit 4 was on line and offered as economic to MISO
4 through the end of the historical FAC period.

5 **Q58. Has AES Indiana performed a look back analysis to assess the economics of the**
6 **Petersburg Station unit commitments for November 2022 through January 2023?**

7 A58. Yes. As recognized in the Commission's FAC 127 Order, the Company does not have the
8 benefit of hindsight when it makes its unit commitment decisions. Thus, the prudence of
9 the unit commitment decisions should not be based on the hindsight analysis.

10 **Q59. Why did you perform the look back analysis?**

11 A59. We performed the analysis to provide robust information to the Commission. I would add
12 that while the analysis should not be used to judge the prudence of the unit commitment
13 decisions, the Company acknowledges that a look back analysis can inform our decision-
14 making on a going forward basis and support our ongoing effort to improve our modeling
15 and decision process.

16 **Q60. Please discuss the look back analysis for November 2022 through January 2023.**

17 A60. AES Indiana performed an evaluation of Petersburg for November 2022 through January
18 2023 using the value created during the actual unit commitment, as well as other economic
19 benefits, including real time optimization, make whole payments, Auction Revenue Rights,
20 Financial Transmission Rights, and Marginal Loss Credits.

1 Petersburg receives a day ahead award from MISO for a specific number of MWhs at a
2 specific price, during the real time dispatch period MISO will optimize the station by
3 responding to real time prices. To optimize dispatch of the station, MISO may increase or
4 decrease dispatch of the units above and below the day ahead awards. If dispatch is
5 increased above the day ahead awards, additional “in the money” MWh will be sold.
6 Conversely, if dispatch is reduced below day ahead awards, power is purchased at a lower
7 LMP than cleared in the day ahead market and will have a positive margin to the benefit
8 of our customers. MISO also has a mechanism for providing compensation to generators
9 when MISO dispatches the station un-economically, called make whole payments.

10 AES Indiana holds Auction Revenue Rights and Financial Transmission Rights on the path
11 from Petersburg to Indianapolis. These instruments exist for the purpose of paying back
12 congestion that generation from Petersburg Locational Marginal Pricing Nodes experience
13 due to AES Indiana’s historic ownership of the transmission system at the start of the MISO
14 energy market. All benefits from Financial Transmission Rights and Auction Revenue
15 Rights are distributed to AES Indiana customers through the FAC process, effectively
16 mitigating the congestion component of pricing for the Petersburg plants.

17 Similar to Financial Transmission Rights mitigating congestion, AES Indiana customers
18 receive the benefit of Marginal Loss Credits to mitigate losses. All of these factors were
19 included in the calculation of the table shown below.

Table DJ-4¹
Petersburg Margin Look Back Analysis

	Pete 2	Pete 3	Pete 4	All Units
November	\$ 6,173,859	\$ 2,705,706	\$ 7,639,783	\$16,519,348
December	\$11,811,718	\$15,561,489	\$13,147,757	\$40,520,963
January	\$ 2,305,101	\$ 2,839,190	\$ 3,982,870	\$ 9,127,160
Total	\$20,290,677	\$21,106,384	\$24,770,410	\$66,167,472

Additionally, during the November 2022 through January 2023 period OSS margin was \$11,139,807 all of which (100%) goes to the customer.

Q61. The Commission’s June 3, 2020 Order in AES Indiana’s FAC 127 (p. 8) noted “that it may be beneficial for AES Indiana to give some consideration in ‘must run’ decisions to short and longer term vantage points”. Please respond.

A61. AES Indiana considers both the long and short term when making unit commitment decisions. First, in each FAC we present a forecast of fuel costs for the future FAC period (which here is June 2023 through August 2023). As stated above, the longer term forecasts in each FAC are generated in a planning model that looks at the economic dispatch of the units on the day the model is run.

As also discussed above, the Company does not commit the units based on the previous long term forecast (also referred to as the “vintage forecast”). As the “future period” becomes the “actual period” market pricing, protecting customers from price risk, operational issues, and reliability will drive commitment decisions. In other words, the Company does not rely on the vintage forecast during the “actual” period. Rather, unit commitment decisions are based on circumstances as they exist during the actual period

¹ Supporting detail for this table is included in Jackson Confidential Workpaper 1.

1 and energy market decisions are made through a nearer-term forward-looking assessment.
2 Unit commitment decisions are not made a month or more in advance. A one-week
3 forward-looking assessment of unit commitment economics is used as well as
4 consideration of non-economic factors as discussed above. The application of this near
5 term assessment process during the historical period of this FAC (November 2022 through
6 January 2023) is shown in Confidential Attachment DJ-3.

7 AES Indiana is continuing to improve our understanding of market conditions and costs
8 associated with “must run” and other unit commitment decisions. As discussed below, the
9 more refined short term model the Company began using in May 2020 improves the
10 economic view of unit commitment on a rolling 4-week period. Still important are non-
11 economic factors such as predicted strong weather/high loads (hedge value), operational
12 issues, and reliability, which will continued to be considered “must run” decisions.

13 **PROJECTED COAL BURN, COAL PURCHASES**
14 **AND COAL INVENTORY MANAGEMENT**

15 **Q62. Please update the Commission on AES Indiana’s 2023 projected coal burn and coal**
16 **purchases.**

17 A62. Confidential Attachment DJ-4 shows the realized and projected monthly purchases and
18 burns for 2022 and 2023. Due to mild winter weather and falling natural gas prices, coal
19 burns have not realized as high as expected for the start of 2023. Current inventory is
20 above the target range. AES Indiana expects coal inventory to remain above target through
21 2023. AES Indiana will continue to closely monitor projected coal burns and manage
22 inventories to ensure reliable coal supply. AES Indiana plans to discuss this subject in
23 further detail with the OUCC during its FAC 139 audit.

1 **Q63. Is AES Indiana's coal inventory within its target levels?**

2 A63. No. AES Indiana inventory is currently above the 25-50 day supply of coal inventory target
3 range. Coal burns were not as robust as forecast for the winter 2022-2023 period due to an
4 exceptionally mild winter. Inventory is now expected to remain above target through 2023.

5 **Q64. What is AES Indiana doing to manage its inventory level?**

6 A64. Although our inventory is currently above our target range, AES Indiana continues to
7 actively manage its inventory levels. AES Indiana's long-term coal contracts often contain
8 some variability in the quantity of coal that AES Indiana can take under that particular
9 contract. That allows AES Indiana to decrease deliveries when coal burns go down. This
10 contract variability is essential in managing the month-to-month variations in coal burns
11 due to weather, market prices, and unit availability.

12 The coal market conditions have changed since the end of 2022. Mild weather and
13 competition with natural gas has coal inventories building. Coal burn forecast have
14 decreased due to power prices pulling back with the price decline in natural gas and end of
15 winter burns that were not as substantial as previously forecast. Expectations are for
16 inventories to pull down into summer and build into next winter. AES Indiana expects to
17 work with suppliers as necessary to manage deliveries. We will continue to address this
18 issue in future FAC filings as necessary.

19 **Q65. Does decrement pricing impact the forecast or reconciliation in this FAC proceeding?**

20 A65. No. There is no decrement pricing in the forecast period of June 2023 through August
21 2023 or in the historical FAC period of November 2022 through January 2023.

1 **Q66. Has AES Indiana been impacted by any coal supply interruptions?**

2 A66. No.

3 **AES INDIANA LONG-TERM FUEL HEDGING – EAGLE VALLEY CCGT**

4 **Q67. Has AES Indiana completed any natural gas transactions for the Eagle Valley CCGT**
5 **under the fuel hedging policy approved in FAC 133?**

6 A67. Yes. AES Indiana initiated the Long-Term Hedging Program for Eagle Valley on March
7 28, 2022. Once the plant was online and running as expected, the Company moved
8 expeditiously and in accordance with the hedging plan to bring hedged volumes in line
9 with approved guidelines. Attachment DJ-5 provides an evaluation of the hedges'
10 economic settlement in November 2022, December 2022, and January 2023, by comparing
11 the hedge price to the daily index price for the natural gas delivery point associated with
12 the hedges. In the month of November 2022, hedges on natural gas represented a cost of
13 \$2,293,450. In the month of December 2022, hedges on natural gas represented a cost of
14 \$3,881,685. In the month of January 2023, hedges on natural gas represented a cost of
15 \$10,476,275. Confidential Attachment DJ-6 shows completed hedging transactions and
16 remaining balances to be completed for the hedging policy approved in FAC 133. AES
17 Indiana will provide hedging transactions, modeling to support hedge volumes, market
18 pricing at the time of the transactions, and hedge settlement calculations in the confidential
19 audit package provided to the OUCC and review the information in the FAC 139 audit.

20 **Q68. What were the factors that impacted the cost versus market of the Eagle Valley natural**
21 **gas hedges?**

1 A68. Natural gas hedges were transacted during the period leading up to winter in which there
2 was a great deal of concern about the supply and demand balance of the natural gas market.
3 Supportive factors included: natural gas production was slow to respond to higher prices,
4 summer demand from electric generation was high, export demand in the LNG market was
5 expected to remain strong, and the war between Russia and Ukraine continued to support
6 higher natural gas and coal prices due to concern of global supply interruption and trade
7 embargos on Russian commodities. Coal markets were tight, and the assumption was
8 natural gas will see increased burns from fuel switching due to availability concerns of coal
9 on a national level. Changes in the EPA Seasonal NOx program also supported fuel
10 switching from coal to natural gas. The natural gas markets were pricing risk premium
11 associated with these concerns and their potential impact to natural gas storage levels
12 necessary to support winter demand.

13 Going into winter, fundamentals of the natural gas market changed. Mild weather in the
14 latter parts of injection season allowed winter storage levels for natural gas to reach levels
15 which would support normal winter demand. Natural gas production increased in a late
16 response to the high prices seen during the summer. Additionally, export demand for
17 United States had been materially reduced by the outage at the Freeport LNG terminal.
18 The outage occurred in June with the expectation that the facility would return to service
19 early in the fall of 2022. The outage extended through January of 2023 reducing export
20 demand for gas to supply LNG by 15-20% over that time frame.

21 During the historical FAC period, weather remained mild, reducing heating demand for
22 natural gas. United States natural gas inventories moved in line with the 5-year average
23 removing some of the risk associated with winter demand. Other than the brief Winter

1 Storm Elliott, winter temperatures realized much warmer than normal. January ranked as
2 the 6th warmest on record with much of the deviation driven by the temperatures in the
3 Midwest and Eastern United States. This impacted natural gas demand from both the
4 electric generation and heating needs and pushed United States natural gas inventories
5 above the 5-year average. Natural gas prices reflected these changes, winter premium was
6 eliminated, and prices fell in line closer to historical levels.

7 **SHORT TERM MODEL**

8 **Q69. Please discuss the short-term model AES Indiana uses to support and track the**
9 **Petersburg unit commitment decisions.**

10 A69. AES Indiana has created a short-term model on the Allegro risk management platform for
11 Petersburg coal units. The model utilizes a combination of two types of trades to calculate
12 the operating cost and potential margin for the Petersburg coal units. The two trades
13 represent different aspects of the Petersburg units and combined provide a representation
14 of the potential daily margin.

15 The first trade characterizes the minimum generation of each of the units and does so at a
16 set cost. AES Indiana can break this down into different costs for on peak, off peak, and a
17 24-hour weekend run. This determines whether the unit has positive margin at minimum
18 load with the expectation that the unit will not be at minimum over the peak hours of the
19 day, hence the different heat rates for peak and off peak. For the weekend, AES Indiana
20 calculates the cost for this trade assuming 12 hours of the unit at full load and 12 hours at
21 minimum. This blended heat rate provides a reasonable expectation of cost over the course
22 of a weekend day.

1 The second trade embodies the economic portion of the unit that can ramp up or down
2 based on whether the unit is in the money during that timeframe. This is a spread option
3 trade that is financial in nature. The trades work by comparing two “baskets” against each
4 other. The first basket is the power price, adjusted for basis to the unit. The second basket
5 considers the various factors that make up the cost to produce power for each individual
6 unit. This includes coal cost, emissions, variable operation and maintenance costs, and
7 heat rate. For this trade the heat rate used is at full load. The model runs daily Monday
8 through Friday and takes these two baskets and compares them against each other.

9 AES Indiana also incorporates volatilities and correlations into the model. A volatility
10 measures how often and to what degree prices change measured as a percentage. A
11 correlation shows how those prices move together, whether they often move together, or
12 whether they do not have anything to do with one another. For example, coal and power
13 have a very low correlation. Power will move without any corresponding change in coal.
14 However, natural gas and power have a much stronger correlation. As natural gas prices
15 move there are often corresponding changes in power price. These factors are then utilized
16 to add additional nuance to the model. AES Indiana marks the power prices daily based
17 on weather, load, and market information. These prices are loaded daily into the risk
18 management system to feed update prices to the model.

19 AES Indiana makes other updates to the model monthly. Coal cost is adjusted based on its
20 weighted average cost of inventory (“WACI”) price. Also, for a short-term model AES
21 Indiana believes that utilizing a shorter time horizon for power basis measurement is
22 appropriate. Therefore, AES Indiana measures the power basis from Indiana Hub to

1 Petersburg during the previous month and then applies that to the next month. This
2 considers current conditions and potential congestion issues or load demand.

3 The model output is captured on a spreadsheet showing a rolling 30-day period and the
4 total profit and loss from each of the two trades previously discussed. The total value of
5 the two trades indicates if the unit is in or out of the money.

6 AES Indiana began using the model at the end of May 2020 and continues to use the model
7 to support commitment decisions.

8 **Q70. Will the Company make the model available to the OUCC during its FAC audit?**

9 A70. AES Indiana will include model output from November 2022 through the end of January
10 2023 in the OUCC packet for review and will review the model and output with the OUCC
11 during the audit as requested.

12 CONCLUSION

13 **Q71. What is your opinion as to whether AES Indiana acquires a reliable supply of fuel**
14 **and generates and purchases power to achieve the lowest fuel cost reasonably**
15 **possible?**

16 A71. In my opinion, we have made every reasonable effort to acquire fuel and generate or
17 purchase power or both to provide electricity to our retail customers at the lowest fuel cost
18 reasonably possible.

19 **Q72. Does this conclude your prefiled direct testimony?**

20 A72. Yes.

Verification

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

Dated this 15th day of March 2023.



David Jackson

AES Indiana

Calculation of Daily Benchmark

NYMEX Henry Hub Day Ahead Natural Gas Price

Day	Daily Average \$/MMBtu	Transport Charges \$/MMBtu	Proxy Gas Price \$/MMBtu	Heat Rate BTU/KWH	Daily Benchmark \$/MWH	Day	Daily Average \$/MMBtu	Transport Charges \$/MMBtu	Proxy Gas Price \$/MMBtu	Heat Rate BTU/KWH	Daily Benchmark \$/MWH	Day	Daily Average \$/MMBtu	Transport Charges \$/MMBtu	Proxy Gas Price \$/MMBtu	Heat Rate BTU/KWH	Daily Benchmark \$/MWH
1-Nov-22	5.0200	0.600	5.6200	12,500	70.25	1-Dec-22	7.0000	0.600	7.6000	12,500	95.00	1-Jan-23	3.5200	0.600	4.1200	12,500	51.50
2-Nov-22	4.5700	0.600	5.1700	12,500	64.63	2-Dec-22	6.3300	0.600	6.9300	12,500	86.63	2-Jan-23	3.5200	0.600	4.1200	12,500	51.50
3-Nov-22	4.5800	0.600	5.1800	12,500	64.75	3-Dec-22	4.9200	0.600	5.5200	12,500	69.00	3-Jan-23	3.5200	0.600	4.1200	12,500	51.50
4-Nov-22	4.6500	0.600	5.2500	12,500	65.63	4-Dec-22	4.9200	0.600	5.5200	12,500	69.00	4-Jan-23	3.6400	0.600	4.2400	12,500	53.00
5-Nov-22	4.0000	0.600	4.6000	12,500	57.50	5-Dec-22	4.9200	0.600	5.5200	12,500	69.00	5-Jan-23	3.7500	0.600	4.3500	12,500	54.38
6-Nov-22	4.0000	0.600	4.6000	12,500	57.50	6-Dec-22	4.1500	0.600	4.7500	12,500	59.38	6-Jan-23	3.7800	0.600	4.3800	12,500	54.75
7-Nov-22	4.0000	0.600	4.6000	12,500	57.50	7-Dec-22	4.5800	0.600	5.1800	12,500	64.75	7-Jan-23	3.4300	0.600	4.0300	12,500	50.38
8-Nov-22	4.6200	0.600	5.2200	12,500	65.25	8-Dec-22	4.4900	0.600	5.0900	12,500	63.63	8-Jan-23	3.4300	0.600	4.0300	12,500	50.38
9-Nov-22	4.0000	0.600	4.6000	12,500	57.50	9-Dec-22	4.7900	0.600	5.3900	12,500	67.38	9-Jan-23	3.4300	0.600	4.0300	12,500	50.38
10-Nov-22	3.4600	0.600	4.0600	12,500	50.75	10-Dec-22	4.9800	0.600	5.5800	12,500	69.75	10-Jan-23	3.6500	0.600	4.2500	12,500	53.13
11-Nov-22	4.8000	0.600	5.4000	12,500	67.50	11-Dec-22	4.9800	0.600	5.5800	12,500	69.75	11-Jan-23	3.3200	0.600	3.9200	12,500	49.00
12-Nov-22	4.8000	0.600	5.4000	12,500	67.50	12-Dec-22	4.9800	0.600	5.5800	12,500	69.75	12-Jan-23	3.4100	0.600	4.0100	12,500	50.13
13-Nov-22	4.8000	0.600	5.4000	12,500	67.50	13-Dec-22	6.7300	0.600	7.3300	12,500	91.63	13-Jan-23	3.4700	0.600	4.0700	12,500	50.88
14-Nov-22	4.8000	0.600	5.4000	12,500	67.50	14-Dec-22	7.2000	0.600	7.8000	12,500	97.50	14-Jan-23	3.4300	0.600	4.0300	12,500	50.38
15-Nov-22	6.2400	0.600	6.8400	12,500	85.50	15-Dec-22	6.5400	0.600	7.1400	12,500	89.25	15-Jan-23	3.4300	0.600	4.0300	12,500	50.38
16-Nov-22	5.9000	0.600	6.5000	12,500	81.25	16-Dec-22	6.8000	0.600	7.4000	12,500	92.50	16-Jan-23	3.4300	0.600	4.0300	12,500	50.38
17-Nov-22	5.8800	0.600	6.4800	12,500	81.00	17-Dec-22	6.6300	0.600	7.2300	12,500	90.38	17-Jan-23	3.4300	0.600	4.0300	12,500	50.38
18-Nov-22	6.2000	0.600	6.8000	12,500	85.00	18-Dec-22	6.6300	0.600	7.2300	12,500	90.38	18-Jan-23	3.4300	0.600	4.0300	12,500	50.38
19-Nov-22	6.1000	0.600	6.7000	12,500	83.75	19-Dec-22	6.6300	0.600	7.2300	12,500	90.38	19-Jan-23	3.2000	0.600	3.8000	12,500	47.50
20-Nov-22	6.1000	0.600	6.7000	12,500	83.75	20-Dec-22	6.0800	0.600	6.6800	12,500	83.50	20-Jan-23	2.9100	0.600	3.5100	12,500	43.88
21-Nov-22	6.1000	0.600	6.7000	12,500	83.75	21-Dec-22	5.2800	0.600	5.8800	12,500	73.50	21-Jan-23	3.1500	0.600	3.7500	12,500	46.88
22-Nov-22	6.2300	0.600	6.8300	12,500	85.38	22-Dec-22	6.1300	0.600	6.7300	12,500	84.13	22-Jan-23	3.1500	0.600	3.7500	12,500	46.88
23-Nov-22	6.2700	0.600	6.8700	12,500	85.88	23-Dec-22	7.1000	0.600	7.7000	12,500	96.25	23-Jan-23	3.1500	0.600	3.7500	12,500	46.88
24-Nov-22	6.5700	0.600	7.1700	12,500	89.63	24-Dec-22	7.1500	0.600	7.7500	12,500	96.88	24-Jan-23	3.4300	0.600	4.0300	12,500	50.38
25-Nov-22	6.5700	0.600	7.1700	12,500	89.63	25-Dec-22	7.1500	0.600	7.7500	12,500	96.88	25-Jan-23	3.3500	0.600	3.9500	12,500	49.38
26-Nov-22	6.5700	0.600	7.1700	12,500	89.63	26-Dec-22	7.1500	0.600	7.7500	12,500	96.88	26-Jan-23	3.0900	0.600	3.6900	12,500	46.13
27-Nov-22	6.5700	0.600	7.1700	12,500	89.63	27-Dec-22	7.1500	0.600	7.7500	12,500	96.88	27-Jan-23	2.7200	0.600	3.3200	12,500	41.50
28-Nov-22	6.5700	0.600	7.1700	12,500	89.63	28-Dec-22	4.8800	0.600	5.4800	12,500	68.50	28-Jan-23	2.8300	0.600	3.4300	12,500	42.88
29-Nov-22	6.0000	0.600	6.6000	12,500	82.50	29-Dec-22	4.0600	0.600	4.6600	12,500	58.25	29-Jan-23	2.8300	0.600	3.4300	12,500	42.88
30-Nov-22	6.0300	0.600	6.6300	12,500	82.88	30-Dec-22	3.7800	0.600	4.3800	12,500	54.75	30-Jan-23	2.8300	0.600	3.4300	12,500	42.88
						31-Dec-22	3.5200	0.600	4.1200	12,500	51.50	31-Jan-23	2.8200	0.600	3.4200	12,500	42.75

AES Indiana
Purchased Power Above Daily Benchmark

		IURC Order 43414 Methodology										IURC Order 43414 Methodology	
Operating Day		Total Cost of Hourly Purchases ¹	MWH Above the Daily Benchmark	Amount Above Daily Benchmark	Hourly Purchased Power Costs At-Risk After Consideration of MISO Economic Dispatch		Reasons	Non-Recoverable Balance Above Daily Benchmark					
					MW	Amount		MW	Amount				
1	11/17/2022	\$ 14,000	124	\$ 3,956	-	\$ -		-	\$ -				
2	11/19/2022	\$ 1,721	18	\$ 213	-	\$ -		-	\$ -				
3	11/21/2022	\$ 5,169	25	\$ 3,076	-	\$ -		-	\$ -				
Nov Total			167	\$ 7,245	-	\$ -		-	\$ -				
4	12/23/2022	\$ 9,485,262	9,157	\$ 8,603,900	6,746	\$ 6,598,486	Economic Purchases due to Unit Outages and Derates	-	\$ -				
5	12/24/2022	\$ 108,724	786	\$ 32,576	-	\$ -		-	\$ -				
6	12/25/2022	\$ 299,062	1,553	\$ 148,608	39	\$ 1,136	Economic Purchases due to Unit Outages and Derates	-	\$ -				
7	12/26/2022	\$ 208,791	1,487	\$ 64,730	39	\$ 2,462	Economic Purchases due to Unit Outages and Derates	-	\$ -				
8	12/27/2022	\$ 363,971	2,800	\$ 92,707	-	\$ -		-	\$ -				
9	12/28/2022	\$ 34,656	466	\$ 2,735	-	\$ -		-	\$ -				
10	12/30/2022	\$ 23,581	414	\$ 915	-	\$ -		-	\$ -				
Dec Total			16,663	\$ 8,946,171	6,824	\$ 6,602,084		-	\$ -				
11	1/22/2023	\$ 32,498	529	\$ 7,698	-	\$ -		-	\$ -				
12	1/27/2023	\$ 24,886	419	\$ 7,497	-	\$ -		-	\$ -				
Jan Total			948	\$ 15,196	-	\$ -		-	\$ -				
Grand Total				\$ 8,968,611	\$ 6,602,084			\$ -					

CONFIDENTIAL ATTACHMENT DJ-3

[CONFIDENTIAL – NOT REPRODUCED HEREIN]

CONFIDENTIAL ATTACHMENT DJ-4

[CONFIDENTIAL – NOT REPRODUCED HEREIN]

Total Gas Hedge Gains/(Losses) for November: \$ (2,293,450.00)

AES Indiana
Cause No. 38703 FAC 139
Attachmnet DJ-5

Transaction 1						Transaction 2					
Date	Hedge Vol	Hedge Price	Daily Pricing	Difference	Savings or Cost	Date	Hedge Vol	Hedge Price	Daily Pricing	Difference	Savings or Cost
11/1/2022	8,000	\$ 7.265	\$ 4.085	\$ (3.18)	\$ (25,440.00)	11/1/2022	8,000	\$ 8.410	\$ 4.085	\$ (4.33)	\$ (34,600.00)
11/2/2022	8,000	\$ 7.265	\$ 3.270	\$ (4.00)	\$ (31,960.00)	11/2/2022	8,000	\$ 8.410	\$ 3.270	\$ (5.14)	\$ (41,120.00)
11/3/2022	8,000	\$ 7.265	\$ 3.480	\$ (3.79)	\$ (30,280.00)	11/3/2022	8,000	\$ 8.410	\$ 3.480	\$ (4.93)	\$ (39,440.00)
11/4/2022	8,000	\$ 7.265	\$ 3.160	\$ (4.11)	\$ (32,840.00)	11/4/2022	8,000	\$ 8.410	\$ 3.160	\$ (5.25)	\$ (42,000.00)
11/5/2022	8,000	\$ 7.265	\$ 1.535	\$ (5.73)	\$ (45,840.00)	11/5/2022	8,000	\$ 8.410	\$ 1.535	\$ (6.88)	\$ (55,000.00)
11/6/2022	8,000	\$ 7.265	\$ 1.535	\$ (5.73)	\$ (45,840.00)	11/6/2022	8,000	\$ 8.410	\$ 1.535	\$ (6.88)	\$ (55,000.00)
11/7/2022	8,000	\$ 7.265	\$ 1.535	\$ (5.73)	\$ (45,840.00)	11/7/2022	8,000	\$ 8.410	\$ 1.535	\$ (6.88)	\$ (55,000.00)
11/8/2022	8,000	\$ 7.265	\$ 3.205	\$ (4.06)	\$ (32,480.00)	11/8/2022	8,000	\$ 8.410	\$ 3.205	\$ (5.21)	\$ (41,640.00)
11/9/2022	8,000	\$ 7.265	\$ 3.315	\$ (3.95)	\$ (31,600.00)	11/9/2022	8,000	\$ 8.410	\$ 3.315	\$ (5.10)	\$ (40,760.00)
11/10/2022	8,000	\$ 7.265	\$ 3.480	\$ (3.79)	\$ (30,280.00)	11/10/2022	8,000	\$ 8.410	\$ 3.480	\$ (4.93)	\$ (39,440.00)
11/11/2022	8,000	\$ 7.265	\$ 4.935	\$ (2.33)	\$ (18,640.00)	11/11/2022	8,000	\$ 8.410	\$ 4.935	\$ (3.48)	\$ (27,800.00)
11/12/2022	8,000	\$ 7.265	\$ 4.935	\$ (2.33)	\$ (18,640.00)	11/12/2022	8,000	\$ 8.410	\$ 4.935	\$ (3.48)	\$ (27,800.00)
11/13/2022	8,000	\$ 7.265	\$ 4.935	\$ (2.33)	\$ (18,640.00)	11/13/2022	8,000	\$ 8.410	\$ 4.935	\$ (3.48)	\$ (27,800.00)
11/14/2022	8,000	\$ 7.265	\$ 4.935	\$ (2.33)	\$ (18,640.00)	11/14/2022	8,000	\$ 8.410	\$ 4.935	\$ (3.48)	\$ (27,800.00)
11/15/2022	8,000	\$ 7.265	\$ 6.180	\$ (1.09)	\$ (8,680.00)	11/15/2022	8,000	\$ 8.410	\$ 6.180	\$ (2.23)	\$ (17,840.00)
11/16/2022	8,000	\$ 7.265	\$ 5.875	\$ (1.39)	\$ (11,120.00)	11/16/2022	8,000	\$ 8.410	\$ 5.875	\$ (2.54)	\$ (20,280.00)
11/17/2022	8,000	\$ 7.265	\$ 5.620	\$ (1.65)	\$ (13,160.00)	11/17/2022	8,000	\$ 8.410	\$ 5.620	\$ (2.79)	\$ (22,320.00)
11/18/2022	8,000	\$ 7.265	\$ 6.150	\$ (1.12)	\$ (8,920.00)	11/18/2022	8,000	\$ 8.410	\$ 6.150	\$ (2.26)	\$ (18,080.00)
11/19/2022	8,000	\$ 7.265	\$ 5.880	\$ (1.39)	\$ (11,080.00)	11/19/2022	8,000	\$ 8.410	\$ 5.880	\$ (2.53)	\$ (20,240.00)
11/20/2022	8,000	\$ 7.265	\$ 5.880	\$ (1.39)	\$ (11,080.00)	11/20/2022	8,000	\$ 8.410	\$ 5.880	\$ (2.53)	\$ (20,240.00)
11/21/2022	8,000	\$ 7.265	\$ 5.880	\$ (1.39)	\$ (11,080.00)	11/21/2022	8,000	\$ 8.410	\$ 5.880	\$ (2.53)	\$ (20,240.00)
11/22/2022	8,000	\$ 7.265	\$ 6.170	\$ (1.10)	\$ (8,760.00)	11/22/2022	8,000	\$ 8.410	\$ 6.170	\$ (2.24)	\$ (17,920.00)
11/23/2022	8,000	\$ 7.265	\$ 5.765	\$ (1.50)	\$ (12,000.00)	11/23/2022	8,000	\$ 8.410	\$ 5.765	\$ (2.65)	\$ (21,160.00)
11/24/2022	8,000	\$ 7.265	\$ 6.135	\$ (1.13)	\$ (9,040.00)	11/24/2022	8,000	\$ 8.410	\$ 6.135	\$ (2.28)	\$ (18,200.00)
11/25/2022	8,000	\$ 7.265	\$ 6.135	\$ (1.13)	\$ (9,040.00)	11/25/2022	8,000	\$ 8.410	\$ 6.135	\$ (2.28)	\$ (18,200.00)
11/26/2022	8,000	\$ 7.265	\$ 6.135	\$ (1.13)	\$ (9,040.00)	11/26/2022	8,000	\$ 8.410	\$ 6.135	\$ (2.28)	\$ (18,200.00)
11/27/2022	8,000	\$ 7.265	\$ 6.135	\$ (1.13)	\$ (9,040.00)	11/27/2022	8,000	\$ 8.410	\$ 6.135	\$ (2.28)	\$ (18,200.00)
11/28/2022	8,000	\$ 7.265	\$ 6.135	\$ (1.13)	\$ (9,040.00)	11/28/2022	8,000	\$ 8.410	\$ 6.135	\$ (2.28)	\$ (18,200.00)
11/29/2022	8,000	\$ 7.265	\$ 5.385	\$ (1.88)	\$ (15,040.00)	11/29/2022	8,000	\$ 8.410	\$ 5.385	\$ (3.03)	\$ (24,200.00)
11/30/2022	8,000	\$ 7.265	\$ 6.375	\$ (0.89)	\$ (7,120.00)	11/30/2022	8,000	\$ 8.410	\$ 6.375	\$ (2.04)	\$ (16,280.00)
					\$ (590,200.00)						\$ (865,000.00)

Transaction 3

Date	Hedge Vol	Hedge Price	Daily Pricing	Difference	Savings or Cost
11/1/2022	10,000	\$ 7.600	\$ 4.085	\$ (3.52)	\$ (35,150.00)
11/2/2022	10,000	\$ 7.600	\$ 3.270	\$ (4.33)	\$ (43,300.00)
11/3/2022	10,000	\$ 7.600	\$ 3.480	\$ (4.12)	\$ (41,200.00)
11/4/2022	10,000	\$ 7.600	\$ 3.160	\$ (4.44)	\$ (44,400.00)
11/5/2022	10,000	\$ 7.600	\$ 1.535	\$ (6.07)	\$ (60,650.00)
11/6/2022	10,000	\$ 7.600	\$ 1.535	\$ (6.07)	\$ (60,650.00)
11/7/2022	10,000	\$ 7.600	\$ 1.535	\$ (6.07)	\$ (60,650.00)
11/8/2022	10,000	\$ 7.600	\$ 3.205	\$ (4.40)	\$ (43,950.00)
11/9/2022	10,000	\$ 7.600	\$ 3.315	\$ (4.29)	\$ (42,850.00)
11/10/2022	10,000	\$ 7.600	\$ 3.480	\$ (4.12)	\$ (41,200.00)
11/11/2022	10,000	\$ 7.600	\$ 4.935	\$ (2.67)	\$ (26,650.00)
11/12/2022	10,000	\$ 7.600	\$ 4.935	\$ (2.67)	\$ (26,650.00)
11/13/2022	10,000	\$ 7.600	\$ 4.935	\$ (2.67)	\$ (26,650.00)
11/14/2022	10,000	\$ 7.600	\$ 4.935	\$ (2.67)	\$ (26,650.00)
11/15/2022	10,000	\$ 7.600	\$ 6.180	\$ (1.42)	\$ (14,200.00)
11/16/2022	10,000	\$ 7.600	\$ 5.875	\$ (1.73)	\$ (17,250.00)
11/17/2022	10,000	\$ 7.600	\$ 5.620	\$ (1.98)	\$ (19,800.00)
11/18/2022	10,000	\$ 7.600	\$ 6.150	\$ (1.45)	\$ (14,500.00)
11/19/2022	10,000	\$ 7.600	\$ 5.880	\$ (1.72)	\$ (17,200.00)
11/20/2022	10,000	\$ 7.600	\$ 5.880	\$ (1.72)	\$ (17,200.00)
11/21/2022	10,000	\$ 7.600	\$ 5.880	\$ (1.72)	\$ (17,200.00)
11/22/2022	10,000	\$ 7.600	\$ 6.170	\$ (1.43)	\$ (14,300.00)
11/23/2022	10,000	\$ 7.600	\$ 5.765	\$ (1.84)	\$ (18,350.00)
11/24/2022	10,000	\$ 7.600	\$ 6.135	\$ (1.47)	\$ (14,650.00)
11/25/2022	10,000	\$ 7.600	\$ 6.135	\$ (1.47)	\$ (14,650.00)
11/26/2022	10,000	\$ 7.600	\$ 6.135	\$ (1.47)	\$ (14,650.00)
11/27/2022	10,000	\$ 7.600	\$ 6.135	\$ (1.47)	\$ (14,650.00)
11/28/2022	10,000	\$ 7.600	\$ 6.135	\$ (1.47)	\$ (14,650.00)
11/29/2022	10,000	\$ 7.600	\$ 5.385	\$ (2.22)	\$ (22,150.00)
11/30/2022	10,000	\$ 7.600	\$ 6.375	\$ (1.23)	\$ (12,250.00)
					\$ (838,250.00)

Total Gas Hedge Gains/(Losses) for December: \$ (3,881,685.00)

AES Indiana
Cause No. 38703 FAC 139
Attachmnet DJ-5

Transaction 1						Transaction 2					
Date	Hedge Vol	Hedge Price	Daily Pricing	Difference	Savings or Cost	Date	Hedge Vol	Hedge Price	Daily Pricing	Difference	Savings or Cost
12/1/2022	10,000	\$ 6.700	\$ 5.930	\$ (0.77)	\$ (7,700.00)	12/1/2022	10,000	\$ 7.930	\$ 5.930	\$ (2.00)	\$ (20,000.00)
12/2/2022	10,000	\$ 6.700	\$ 5.465	\$ (1.24)	\$ (12,350.00)	12/2/2022	10,000	\$ 7.930	\$ 5.465	\$ (2.47)	\$ (24,650.00)
12/3/2022	10,000	\$ 6.700	\$ 4.695	\$ (2.01)	\$ (20,050.00)	12/3/2022	10,000	\$ 7.930	\$ 4.695	\$ (3.24)	\$ (32,350.00)
12/4/2022	10,000	\$ 6.700	\$ 4.695	\$ (2.01)	\$ (20,050.00)	12/4/2022	10,000	\$ 7.930	\$ 4.695	\$ (3.24)	\$ (32,350.00)
12/5/2022	10,000	\$ 6.700	\$ 4.695	\$ (2.01)	\$ (20,050.00)	12/5/2022	10,000	\$ 7.930	\$ 4.695	\$ (3.24)	\$ (32,350.00)
12/6/2022	10,000	\$ 6.700	\$ 4.240	\$ (2.46)	\$ (24,600.00)	12/6/2022	10,000	\$ 7.930	\$ 4.240	\$ (3.69)	\$ (36,900.00)
12/7/2022	10,000	\$ 6.700	\$ 4.230	\$ (2.47)	\$ (24,700.00)	12/7/2022	10,000	\$ 7.930	\$ 4.230	\$ (3.70)	\$ (37,000.00)
12/8/2022	10,000	\$ 6.700	\$ 4.270	\$ (2.43)	\$ (24,300.00)	12/8/2022	10,000	\$ 7.930	\$ 4.270	\$ (3.66)	\$ (36,600.00)
12/9/2022	10,000	\$ 6.700	\$ 4.635	\$ (2.07)	\$ (20,650.00)	12/9/2022	10,000	\$ 7.930	\$ 4.635	\$ (3.30)	\$ (32,950.00)
12/10/2022	10,000	\$ 6.700	\$ 4.800	\$ (1.90)	\$ (19,000.00)	12/10/2022	10,000	\$ 7.930	\$ 4.800	\$ (3.13)	\$ (31,300.00)
12/11/2022	10,000	\$ 6.700	\$ 4.800	\$ (1.90)	\$ (19,000.00)	12/11/2022	10,000	\$ 7.930	\$ 4.800	\$ (3.13)	\$ (31,300.00)
12/12/2022	10,000	\$ 6.700	\$ 4.800	\$ (1.90)	\$ (19,000.00)	12/12/2022	10,000	\$ 7.930	\$ 4.800	\$ (3.13)	\$ (31,300.00)
12/13/2022	10,000	\$ 6.700	\$ 5.710	\$ (0.99)	\$ (9,900.00)	12/13/2022	10,000	\$ 7.930	\$ 5.710	\$ (2.22)	\$ (22,200.00)
12/14/2022	10,000	\$ 6.700	\$ 6.005	\$ (0.70)	\$ (6,950.00)	12/14/2022	10,000	\$ 7.930	\$ 6.005	\$ (1.93)	\$ (19,250.00)
12/15/2022	10,000	\$ 6.700	\$ 5.685	\$ (1.02)	\$ (10,150.00)	12/15/2022	10,000	\$ 7.930	\$ 5.685	\$ (2.25)	\$ (22,450.00)
12/16/2022	10,000	\$ 6.700	\$ 6.225	\$ (0.48)	\$ (4,750.00)	12/16/2022	10,000	\$ 7.930	\$ 6.225	\$ (1.71)	\$ (17,050.00)
12/17/2022	10,000	\$ 6.700	\$ 6.295	\$ (0.41)	\$ (4,050.00)	12/17/2022	10,000	\$ 7.930	\$ 6.295	\$ (1.64)	\$ (16,350.00)
12/18/2022	10,000	\$ 6.700	\$ 6.295	\$ (0.41)	\$ (4,050.00)	12/18/2022	10,000	\$ 7.930	\$ 6.295	\$ (1.64)	\$ (16,350.00)
12/19/2022	10,000	\$ 6.700	\$ 6.295	\$ (0.41)	\$ (4,050.00)	12/19/2022	10,000	\$ 7.930	\$ 6.295	\$ (1.64)	\$ (16,350.00)
12/20/2022	10,000	\$ 6.700	\$ 6.055	\$ (0.65)	\$ (6,450.00)	12/20/2022	10,000	\$ 7.930	\$ 6.055	\$ (1.88)	\$ (18,750.00)
12/21/2022	10,000	\$ 6.700	\$ 5.395	\$ (1.31)	\$ (13,050.00)	12/21/2022	10,000	\$ 7.930	\$ 5.395	\$ (2.54)	\$ (25,350.00)
12/22/2022	10,000	\$ 6.700	\$ 15.330	\$ 8.63	\$ 86,300.00	12/22/2022	10,000	\$ 7.930	\$ 15.330	\$ 7.40	\$ 74,000.00
12/23/2022	10,000	\$ 6.700	\$ 12.160	\$ 5.46	\$ 54,600.00	12/23/2022	10,000	\$ 7.930	\$ 12.160	\$ 4.23	\$ 42,300.00
12/24/2022	10,000	\$ 6.700	\$ 7.915	\$ 1.22	\$ 12,150.00	12/24/2022	10,000	\$ 7.930	\$ 7.915	\$ (0.01)	\$ (150.00)
12/25/2022	10,000	\$ 6.700	\$ 7.915	\$ 1.22	\$ 12,150.00	12/25/2022	10,000	\$ 7.930	\$ 7.915	\$ (0.01)	\$ (150.00)
12/26/2022	10,000	\$ 6.700	\$ 7.915	\$ 1.22	\$ 12,150.00	12/26/2022	10,000	\$ 7.930	\$ 7.915	\$ (0.01)	\$ (150.00)
12/27/2022	10,000	\$ 6.700	\$ 7.915	\$ 1.22	\$ 12,150.00	12/27/2022	10,000	\$ 7.930	\$ 7.915	\$ (0.01)	\$ (150.00)
12/28/2022	10,000	\$ 6.700	\$ 4.920	\$ (1.78)	\$ (17,800.00)	12/28/2022	10,000	\$ 7.930	\$ 4.920	\$ (3.01)	\$ (30,100.00)
12/29/2022	10,000	\$ 6.700	\$ 3.900	\$ (2.80)	\$ (28,000.00)	12/29/2022	10,000	\$ 7.930	\$ 3.900	\$ (4.03)	\$ (40,300.00)
12/30/2022	10,000	\$ 6.700	\$ 3.365	\$ (3.34)	\$ (33,350.00)	12/30/2022	10,000	\$ 7.930	\$ 3.365	\$ (4.57)	\$ (45,650.00)
12/31/2022	10,000	\$ 6.700	\$ 3.365	\$ (3.34)	\$ (33,350.00)	12/31/2022	10,000	\$ 7.930	\$ 3.365	\$ (4.57)	\$ (45,650.00)
					\$ (217,850.00)						\$ (599,150.00)

Transaction 3						Transaction 4					
Date	Hedge Vol	Hedge Price	Daily Pricing	Difference	Savings or Cost	Date	Hedge Vol	Hedge Price	Daily Pricing	Difference	Savings or Cost
12/1/2022	10,000	\$ 9.110	\$ 5.930	\$ (3.18)	\$ (31,800.00)	12/1/2022	10,000	\$ 5.800	\$ 5.930	\$ 0.13	\$ 1,300.00
12/2/2022	10,000	\$ 9.110	\$ 5.465	\$ (3.65)	\$ (36,450.00)	12/2/2022	10,000	\$ 5.800	\$ 5.465	\$ (0.34)	\$ (3,350.00)
12/3/2022	10,000	\$ 9.110	\$ 4.695	\$ (4.42)	\$ (44,150.00)	12/3/2022	10,000	\$ 5.800	\$ 4.695	\$ (1.11)	\$ (11,050.00)
12/4/2022	10,000	\$ 9.110	\$ 4.695	\$ (4.42)	\$ (44,150.00)	12/4/2022	10,000	\$ 5.800	\$ 4.695	\$ (1.11)	\$ (11,050.00)
12/5/2022	10,000	\$ 9.110	\$ 4.695	\$ (4.42)	\$ (44,150.00)	12/5/2022	10,000	\$ 5.800	\$ 4.695	\$ (1.11)	\$ (11,050.00)
12/6/2022	10,000	\$ 9.110	\$ 4.240	\$ (4.87)	\$ (48,700.00)	12/6/2022	10,000	\$ 5.800	\$ 4.240	\$ (1.56)	\$ (15,600.00)
12/7/2022	10,000	\$ 9.110	\$ 4.230	\$ (4.88)	\$ (48,800.00)	12/7/2022	10,000	\$ 5.800	\$ 4.230	\$ (1.57)	\$ (15,700.00)
12/8/2022	10,000	\$ 9.110	\$ 4.270	\$ (4.84)	\$ (48,400.00)	12/8/2022	10,000	\$ 5.800	\$ 4.270	\$ (1.53)	\$ (15,300.00)
12/9/2022	10,000	\$ 9.110	\$ 4.635	\$ (4.48)	\$ (44,750.00)	12/9/2022	10,000	\$ 5.800	\$ 4.635	\$ (1.17)	\$ (11,650.00)
12/10/2022	10,000	\$ 9.110	\$ 4.800	\$ (4.31)	\$ (43,100.00)	12/10/2022	10,000	\$ 5.800	\$ 4.800	\$ (1.00)	\$ (10,000.00)
12/11/2022	10,000	\$ 9.110	\$ 4.800	\$ (4.31)	\$ (43,100.00)	12/11/2022	10,000	\$ 5.800	\$ 4.800	\$ (1.00)	\$ (10,000.00)
12/12/2022	10,000	\$ 9.110	\$ 4.800	\$ (4.31)	\$ (43,100.00)	12/12/2022	10,000	\$ 5.800	\$ 4.800	\$ (1.00)	\$ (10,000.00)
12/13/2022	10,000	\$ 9.110	\$ 5.710	\$ (3.40)	\$ (34,000.00)	12/13/2022	10,000	\$ 5.800	\$ 5.710	\$ (0.09)	\$ (900.00)
12/14/2022	10,000	\$ 9.110	\$ 6.005	\$ (3.11)	\$ (31,050.00)	12/14/2022	10,000	\$ 5.800	\$ 6.005	\$ 0.21	\$ 2,050.00
12/15/2022	10,000	\$ 9.110	\$ 5.685	\$ (3.43)	\$ (34,250.00)	12/15/2022	10,000	\$ 5.800	\$ 5.685	\$ (0.12)	\$ (1,150.00)
12/16/2022	10,000	\$ 9.110	\$ 6.225	\$ (2.89)	\$ (28,850.00)	12/16/2022	10,000	\$ 5.800	\$ 6.225	\$ 0.43	\$ 4,250.00
12/17/2022	10,000	\$ 9.110	\$ 6.295	\$ (2.82)	\$ (28,150.00)	12/17/2022	10,000	\$ 5.800	\$ 6.295	\$ 0.50	\$ 4,950.00
12/18/2022	10,000	\$ 9.110	\$ 6.295	\$ (2.82)	\$ (28,150.00)	12/18/2022	10,000	\$ 5.800	\$ 6.295	\$ 0.50	\$ 4,950.00
12/19/2022	10,000	\$ 9.110	\$ 6.295	\$ (2.82)	\$ (28,150.00)	12/19/2022	10,000	\$ 5.800	\$ 6.295	\$ 0.50	\$ 4,950.00
12/20/2022	10,000	\$ 9.110	\$ 6.055	\$ (3.06)	\$ (30,550.00)	12/20/2022	10,000	\$ 5.800	\$ 6.055	\$ 0.26	\$ 2,550.00
12/21/2022	10,000	\$ 9.110	\$ 5.395	\$ (3.72)	\$ (37,150.00)	12/21/2022	10,000	\$ 5.800	\$ 5.395	\$ (0.41)	\$ (4,050.00)
12/22/2022	10,000	\$ 9.110	\$ 15.330	\$ 6.22	\$ 62,200.00	12/22/2022	10,000	\$ 5.800	\$ 15.330	\$ 9.53	\$ 95,300.00
12/23/2022	10,000	\$ 9.110	\$ 12.160	\$ 3.05	\$ 30,500.00	12/23/2022	10,000	\$ 5.800	\$ 12.160	\$ 6.36	\$ 63,600.00
12/24/2022	10,000	\$ 9.110	\$ 7.915	\$ (1.20)	\$ (11,950.00)	12/24/2022	10,000	\$ 5.800	\$ 7.915	\$ 2.12	\$ 21,150.00
12/25/2022	10,000	\$ 9.110	\$ 7.915	\$ (1.20)	\$ (11,950.00)	12/25/2022	10,000	\$ 5.800	\$ 7.915	\$ 2.12	\$ 21,150.00
12/26/2022	10,000	\$ 9.110	\$ 7.915	\$ (1.20)	\$ (11,950.00)	12/26/2022	10,000	\$ 5.800	\$ 7.915	\$ 2.12	\$ 21,150.00
12/27/2022	10,000	\$ 9.110	\$ 7.915	\$ (1.20)	\$ (11,950.00)	12/27/2022	10,000	\$ 5.800	\$ 7.915	\$ 2.12	\$ 21,150.00
12/28/2022	10,000	\$ 9.110	\$ 4.920	\$ (4.19)	\$ (41,900.00)	12/28/2022	10,000	\$ 5.800	\$ 4.920	\$ (0.88)	\$ (8,800.00)
12/29/2022	10,000	\$ 9.110	\$ 3.900	\$ (5.21)	\$ (52,100.00)	12/29/2022	10,000	\$ 5.800	\$ 3.900	\$ (1.90)	\$ (19,000.00)
12/30/2022	10,000	\$ 9.110	\$ 3.365	\$ (5.75)	\$ (57,450.00)	12/30/2022	10,000	\$ 5.800	\$ 3.365	\$ (2.44)	\$ (24,350.00)
12/31/2022	10,000	\$ 9.110	\$ 3.365	\$ (5.75)	\$ (57,450.00)	12/31/2022	10,000	\$ 5.800	\$ 3.365	\$ (2.44)	\$ (24,350.00)
					\$ (964,950.00)						\$ 61,150.00

Transaction 5						Transaction 6					
Date	Hedge Vol	Hedge Price	Daily Pricing	Difference	Savings or Cost	Date	Hedge Vol	Hedge Price	Daily Pricing	Difference	Savings or Cost
12/1/2022	10,000	\$ 8.294	\$ 5.930	\$	(2.36) \$ (23,640.00)	12/1/2022	10,000	\$ 8.460	\$ 5.930	\$ (2.53)	\$ (25,300.00)
12/2/2022	10,000	\$ 8.294	\$ 5.465	\$	(2.83) \$ (28,290.00)	12/2/2022	10,000	\$ 8.460	\$ 5.465	\$ (3.00)	\$ (29,950.00)
12/3/2022	10,000	\$ 8.294	\$ 4.695	\$	(3.60) \$ (35,990.00)	12/3/2022	10,000	\$ 8.460	\$ 4.695	\$ (3.77)	\$ (37,650.00)
12/4/2022	10,000	\$ 8.294	\$ 4.695	\$	(3.60) \$ (35,990.00)	12/4/2022	10,000	\$ 8.460	\$ 4.695	\$ (3.77)	\$ (37,650.00)
12/5/2022	10,000	\$ 8.294	\$ 4.695	\$	(3.60) \$ (35,990.00)	12/5/2022	10,000	\$ 8.460	\$ 4.695	\$ (3.77)	\$ (37,650.00)
12/6/2022	10,000	\$ 8.294	\$ 4.240	\$	(4.05) \$ (40,540.00)	12/6/2022	10,000	\$ 8.460	\$ 4.240	\$ (4.22)	\$ (42,200.00)
12/7/2022	10,000	\$ 8.294	\$ 4.230	\$	(4.06) \$ (40,640.00)	12/7/2022	10,000	\$ 8.460	\$ 4.230	\$ (4.23)	\$ (42,300.00)
12/8/2022	10,000	\$ 8.294	\$ 4.270	\$	(4.02) \$ (40,240.00)	12/8/2022	10,000	\$ 8.460	\$ 4.270	\$ (4.19)	\$ (41,900.00)
12/9/2022	10,000	\$ 8.294	\$ 4.635	\$	(3.66) \$ (36,590.00)	12/9/2022	10,000	\$ 8.460	\$ 4.635	\$ (3.83)	\$ (38,250.00)
12/10/2022	10,000	\$ 8.294	\$ 4.800	\$	(3.49) \$ (34,940.00)	12/10/2022	10,000	\$ 8.460	\$ 4.800	\$ (3.66)	\$ (36,600.00)
12/11/2022	10,000	\$ 8.294	\$ 4.800	\$	(3.49) \$ (34,940.00)	12/11/2022	10,000	\$ 8.460	\$ 4.800	\$ (3.66)	\$ (36,600.00)
12/12/2022	10,000	\$ 8.294	\$ 4.800	\$	(3.49) \$ (34,940.00)	12/12/2022	10,000	\$ 8.460	\$ 4.800	\$ (3.66)	\$ (36,600.00)
12/13/2022	10,000	\$ 8.294	\$ 5.710	\$	(2.58) \$ (25,840.00)	12/13/2022	10,000	\$ 8.460	\$ 5.710	\$ (2.75)	\$ (27,500.00)
12/14/2022	10,000	\$ 8.294	\$ 6.005	\$	(2.29) \$ (22,890.00)	12/14/2022	10,000	\$ 8.460	\$ 6.005	\$ (2.46)	\$ (24,550.00)
12/15/2022	10,000	\$ 8.294	\$ 5.685	\$	(2.61) \$ (26,090.00)	12/15/2022	10,000	\$ 8.460	\$ 5.685	\$ (2.78)	\$ (27,750.00)
12/16/2022	10,000	\$ 8.294	\$ 6.225	\$	(2.07) \$ (20,690.00)	12/16/2022	10,000	\$ 8.460	\$ 6.225	\$ (2.24)	\$ (22,350.00)
12/17/2022	10,000	\$ 8.294	\$ 6.295	\$	(2.00) \$ (19,990.00)	12/17/2022	10,000	\$ 8.460	\$ 6.295	\$ (2.17)	\$ (21,650.00)
12/18/2022	10,000	\$ 8.294	\$ 6.295	\$	(2.00) \$ (19,990.00)	12/18/2022	10,000	\$ 8.460	\$ 6.295	\$ (2.17)	\$ (21,650.00)
12/19/2022	10,000	\$ 8.294	\$ 6.295	\$	(2.00) \$ (19,990.00)	12/19/2022	10,000	\$ 8.460	\$ 6.295	\$ (2.17)	\$ (21,650.00)
12/20/2022	10,000	\$ 8.294	\$ 6.055	\$	(2.24) \$ (22,390.00)	12/20/2022	10,000	\$ 8.460	\$ 6.055	\$ (2.41)	\$ (24,050.00)
12/21/2022	10,000	\$ 8.294	\$ 5.395	\$	(2.90) \$ (28,990.00)	12/21/2022	10,000	\$ 8.460	\$ 5.395	\$ (3.07)	\$ (30,650.00)
12/22/2022	10,000	\$ 8.294	\$ 15.330	\$	7.04 \$ 70,360.00	12/22/2022	10,000	\$ 8.460	\$ 15.330	\$ 6.87	\$ 68,700.00
12/23/2022	10,000	\$ 8.294	\$ 12.160	\$	3.87 \$ 38,660.00	12/23/2022	10,000	\$ 8.460	\$ 12.160	\$ 3.70	\$ 37,000.00
12/24/2022	10,000	\$ 8.294	\$ 7.915	\$	(0.38) \$ (3,790.00)	12/24/2022	10,000	\$ 8.460	\$ 7.915	\$ (0.55)	\$ (5,450.00)
12/25/2022	10,000	\$ 8.294	\$ 7.915	\$	(0.38) \$ (3,790.00)	12/25/2022	10,000	\$ 8.460	\$ 7.915	\$ (0.55)	\$ (5,450.00)
12/26/2022	10,000	\$ 8.294	\$ 7.915	\$	(0.38) \$ (3,790.00)	12/26/2022	10,000	\$ 8.460	\$ 7.915	\$ (0.55)	\$ (5,450.00)
12/27/2022	10,000	\$ 8.294	\$ 7.915	\$	(0.38) \$ (3,790.00)	12/27/2022	10,000	\$ 8.460	\$ 7.915	\$ (0.55)	\$ (5,450.00)
12/28/2022	10,000	\$ 8.294	\$ 4.920	\$	(3.37) \$ (33,740.00)	12/28/2022	10,000	\$ 8.460	\$ 4.920	\$ (3.54)	\$ (35,400.00)
12/29/2022	10,000	\$ 8.294	\$ 3.900	\$	(4.39) \$ (43,940.00)	12/29/2022	10,000	\$ 8.460	\$ 3.900	\$ (4.56)	\$ (45,600.00)
12/30/2022	10,000	\$ 8.294	\$ 3.365	\$	(4.93) \$ (49,290.00)	12/30/2022	10,000	\$ 8.460	\$ 3.365	\$ (5.10)	\$ (50,950.00)
12/31/2022	10,000	\$ 8.294	\$ 3.365	\$	(4.93) \$ (49,290.00)	12/31/2022	10,000	\$ 8.460	\$ 3.365	\$ (5.10)	\$ (50,950.00)
					\$ (711,990.00)						\$ (763,450.00)

Transaction 7						Transaction 8					
Date	Hedge Vol	Hedge Price	Daily Pricing	Difference	Savings or Cost	Date	Hedge Vol	Hedge Price	Daily Pricing	Difference	Savings or Cost
12/1/2022	10,500	\$ 7.800	\$ 5.930	\$	(1.87) \$ (19,635.00)	12/1/2022	1,000	\$ 6.980	\$ 5.930	\$ (1.05)	\$ (1,050.00)
12/2/2022	10,500	\$ 7.800	\$ 5.465	\$	(2.34) \$ (24,517.50)	12/2/2022	1,000	\$ 6.980	\$ 5.465	\$ (1.52)	\$ (1,515.00)
12/3/2022	10,500	\$ 7.800	\$ 4.695	\$	(3.11) \$ (32,602.50)	12/3/2022	1,000	\$ 6.980	\$ 4.695	\$ (2.29)	\$ (2,285.00)
12/4/2022	10,500	\$ 7.800	\$ 4.695	\$	(3.11) \$ (32,602.50)	12/4/2022	1,000	\$ 6.980	\$ 4.695	\$ (2.29)	\$ (2,285.00)
12/5/2022	10,500	\$ 7.800	\$ 4.240	\$	(3.56) \$ (37,380.00)	12/5/2022	1,000	\$ 6.980	\$ 4.240	\$ (2.74)	\$ (2,740.00)
12/6/2022	10,500	\$ 7.800	\$ 4.230	\$	(3.57) \$ (37,485.00)	12/6/2022	1,000	\$ 6.980	\$ 4.230	\$ (2.75)	\$ (2,750.00)
12/7/2022	10,500	\$ 7.800	\$ 4.270	\$	(3.53) \$ (37,065.00)	12/7/2022	1,000	\$ 6.980	\$ 4.270	\$ (2.71)	\$ (2,710.00)
12/8/2022	10,500	\$ 7.800	\$ 4.635	\$	(3.17) \$ (33,232.50)	12/8/2022	1,000	\$ 6.980	\$ 4.635	\$ (2.35)	\$ (2,345.00)
12/9/2022	10,500	\$ 7.800	\$ 4.800	\$	(3.00) \$ (31,500.00)	12/9/2022	1,000	\$ 6.980	\$ 4.800	\$ (2.18)	\$ (2,180.00)
12/10/2022	10,500	\$ 7.800	\$ 4.800	\$	(3.00) \$ (31,500.00)	12/10/2022	1,000	\$ 6.980	\$ 4.800	\$ (2.18)	\$ (2,180.00)
12/11/2022	10,500	\$ 7.800	\$ 4.800	\$	(3.00) \$ (31,500.00)	12/11/2022	1,000	\$ 6.980	\$ 4.800	\$ (2.18)	\$ (2,180.00)
12/12/2022	10,500	\$ 7.800	\$ 5.710	\$	(2.09) \$ (21,945.00)	12/12/2022	1,000	\$ 6.980	\$ 5.710	\$ (1.27)	\$ (1,270.00)
12/13/2022	10,500	\$ 7.800	\$ 6.005	\$	(1.80) \$ (18,847.50)	12/13/2022	1,000	\$ 6.980	\$ 6.005	\$ (0.98)	\$ (975.00)
12/14/2022	10,500	\$ 7.800	\$ 5.685	\$	(2.12) \$ (22,207.50)	12/14/2022	1,000	\$ 6.980	\$ 5.685	\$ (1.30)	\$ (1,295.00)
12/15/2022	10,500	\$ 7.800	\$ 6.225	\$	(1.58) \$ (16,537.50)	12/15/2022	1,000	\$ 6.980	\$ 6.225	\$ (0.76)	\$ (755.00)
12/16/2022	10,500	\$ 7.800	\$ 6.295	\$	(1.51) \$ (15,802.50)	12/16/2022	1,000	\$ 6.980	\$ 6.295	\$ (0.69)	\$ (685.00)
12/17/2022	10,500	\$ 7.800	\$ 6.295	\$	(1.51) \$ (15,802.50)	12/17/2022	1,000	\$ 6.980	\$ 6.295	\$ (0.69)	\$ (685.00)
12/18/2022	10,500	\$ 7.800	\$ 6.055	\$	(1.75) \$ (18,322.50)	12/18/2022	1,000	\$ 6.980	\$ 6.055	\$ (0.93)	\$ (925.00)
12/19/2022	10,500	\$ 7.800	\$ 5.395	\$	(2.41) \$ (25,252.50)	12/19/2022	1,000	\$ 6.980	\$ 5.395	\$ (1.59)	\$ (1,585.00)
12/20/2022	10,500	\$ 7.800	\$ 15.330	\$	7.53 \$ 79,065.00	12/20/2022	1,000	\$ 6.980	\$ 15.330	\$ 8.35	\$ 8,350.00
12/21/2022	10,500	\$ 7.800	\$ 12.160	\$	4.36 \$ 45,780.00	12/21/2022	1,000	\$ 6.980	\$ 12.160	\$ 5.18	\$ 5,180.00
12/22/2022	10,500	\$ 7.800	\$ 7.915	\$	0.12 \$ 1,207.50	12/22/2022	1,000	\$ 6.980	\$ 7.915	\$ 0.94	\$ 935.00
12/23/2022	10,500	\$ 7.800	\$ 7.915	\$	0.12 \$ 1,207.50	12/23/2022	1,000	\$ 6.980	\$ 7.915	\$ 0.94	\$ 935.00
12/24/2022	10,500	\$ 7.800	\$ 7.915	\$	0.12 \$ 1,207.50	12/24/2022	1,000	\$ 6.980	\$ 7.915	\$ 0.94	\$ 935.00
12/25/2022	10,500	\$ 7.800	\$ 4.920	\$	(2.88) \$ (30,240.00)	12/25/2022	1,000	\$ 6.980	\$ 4.920	\$ (2.06)	\$ (2,060.00)
12/26/2022	10,500	\$ 7.800	\$ 3.900	\$	(3.90) \$ (40,950.00)	12/26/2022	1,000	\$ 6.980	\$ 3.900	\$ (3.08)	\$ (3,080.00)
12/27/2022	10,500	\$ 7.800	\$ 3.365	\$	(4.44) \$ (46,567.50)	12/27/2022	1,000	\$ 6.980	\$ 3.365	\$ (3.62)	\$ (3,615.00)
12/28/2022	10,500	\$ 7.800	\$ 3.365	\$	(4.44) \$ (46,567.50)	12/28/2022	1,000	\$ 6.980	\$ 3.365	\$ (3.62)	\$ (3,615.00)
12/29/2022	10,500	\$ 7.800	\$ 3.365	\$	(4.44) \$ (46,567.50)	12/29/2022	1,000	\$ 6.980	\$ 3.365	\$ (3.62)	\$ (3,615.00)
12/30/2022	10,500	\$ 7.800	\$ 3.365	\$	(4.44) \$ (46,567.50)	12/30/2022	1,000	\$ 6.980	\$ 3.365	\$ (3.62)	\$ (3,615.00)
12/31/2022	10,500	\$ 7.800	\$ 3.365	\$	(4.44) \$ (46,567.50)	12/31/2022	1,000	\$ 6.980	\$ 3.365	\$ (3.62)	\$ (3,615.00)
					\$ (586,792.50)						\$ (30,465.00)

Transaction 9

Date	Hedge Vol	Hedge Price	Daily Pricing	Difference	Savings or Cost
12/1/2022	2,500	\$ 6.260	\$ 5.950	\$ (0.31)	\$ (775.00)
12/2/2022	2,500	\$ 6.260	\$ 5.420	\$ (0.84)	\$ (2,100.00)
12/3/2022	2,500	\$ 6.260	\$ 4.550	\$ (1.71)	\$ (4,275.00)
12/4/2022	2,500	\$ 6.260	\$ 4.550	\$ (1.71)	\$ (4,275.00)
12/5/2022	2,500	\$ 6.260	\$ 4.550	\$ (1.71)	\$ (4,275.00)
12/6/2022	2,500	\$ 6.260	\$ 4.060	\$ (2.20)	\$ (5,500.00)
12/7/2022	2,500	\$ 6.260	\$ 4.195	\$ (2.07)	\$ (5,162.50)
12/8/2022	2,500	\$ 6.260	\$ 4.180	\$ (2.08)	\$ (5,200.00)
12/9/2022	2,500	\$ 6.260	\$ 4.605	\$ (1.66)	\$ (4,137.50)
12/10/2022	2,500	\$ 6.260	\$ 4.825	\$ (1.44)	\$ (3,587.50)
12/11/2022	2,500	\$ 6.260	\$ 4.825	\$ (1.44)	\$ (3,587.50)
12/12/2022	2,500	\$ 6.260	\$ 4.825	\$ (1.44)	\$ (3,587.50)
12/13/2022	2,500	\$ 6.260	\$ 5.750	\$ (0.51)	\$ (1,275.00)
12/14/2022	2,500	\$ 6.260	\$ 6.220	\$ (0.04)	\$ (100.00)
12/15/2022	2,500	\$ 6.260	\$ 5.735	\$ (0.52)	\$ (1,312.50)
12/16/2022	2,500	\$ 6.260	\$ 6.235	\$ (0.02)	\$ (62.50)
12/17/2022	2,500	\$ 6.260	\$ 6.075	\$ (0.19)	\$ (462.50)
12/18/2022	2,500	\$ 6.260	\$ 6.075	\$ (0.19)	\$ (462.50)
12/19/2022	2,500	\$ 6.260	\$ 6.075	\$ (0.19)	\$ (462.50)
12/20/2022	2,500	\$ 6.260	\$ 5.485	\$ (0.77)	\$ (1,937.50)
12/21/2022	2,500	\$ 6.260	\$ 4.985	\$ (1.28)	\$ (3,187.50)
12/22/2022	2,500	\$ 6.260	\$ 5.885	\$ (0.38)	\$ (937.50)
12/23/2022	2,500	\$ 6.260	\$ 8.350	\$ 2.09	\$ 5,225.00
12/24/2022	2,500	\$ 6.260	\$ 7.180	\$ 0.92	\$ 2,300.00
12/25/2022	2,500	\$ 6.260	\$ 7.180	\$ 0.92	\$ 2,300.00
12/26/2022	2,500	\$ 6.260	\$ 7.180	\$ 0.92	\$ 2,300.00
12/27/2022	2,500	\$ 6.260	\$ 7.180	\$ 0.92	\$ 2,300.00
12/28/2022	2,500	\$ 6.260	\$ 4.440	\$ (1.82)	\$ (4,550.00)
12/29/2022	2,500	\$ 6.260	\$ 3.820	\$ (2.44)	\$ (6,100.00)
12/30/2022	2,500	\$ 6.260	\$ 3.200	\$ (3.06)	\$ (7,650.00)
12/31/2022	2,500	\$ 6.260	\$ 3.200	\$ (3.06)	\$ (7,650.00)
					\$ (68,187.50)

Total Gas Hedge Gains/(Losses) for January: \$ (10,476,275.00)

AES Indiana
Cause No. 38703 FAC 139
Attachmnet DJ-5

Transaction 1						Transaction 2					
Date	Hedge Vol	Hedge Price	Daily Pricing	Difference	Savings or Cost	Date	Hedge Vol	Hedge Price	Daily Pricing	Difference	Savings or Cost
1/1/2023	10,000	\$ 6.700	\$ 3.270	\$ (3.43)	\$ (34,300.00)	1/1/2023	10,000	\$ 7.930	\$ 3.270	\$ (4.66)	\$ (46,600.00)
1/2/2023	10,000	\$ 6.700	\$ 3.270	\$ (3.43)	\$ (34,300.00)	1/2/2023	10,000	\$ 7.930	\$ 3.270	\$ (4.66)	\$ (46,600.00)
1/3/2023	10,000	\$ 6.700	\$ 3.270	\$ (3.43)	\$ (34,300.00)	1/3/2023	10,000	\$ 7.930	\$ 3.270	\$ (4.66)	\$ (46,600.00)
1/4/2023	10,000	\$ 6.700	\$ 3.285	\$ (3.42)	\$ (34,150.00)	1/4/2023	10,000	\$ 7.930	\$ 3.285	\$ (4.65)	\$ (46,450.00)
1/5/2023	10,000	\$ 6.700	\$ 3.365	\$ (3.34)	\$ (33,350.00)	1/5/2023	10,000	\$ 7.930	\$ 3.365	\$ (4.57)	\$ (45,650.00)
1/6/2023	10,000	\$ 6.700	\$ 3.280	\$ (3.42)	\$ (34,200.00)	1/6/2023	10,000	\$ 7.930	\$ 3.280	\$ (4.65)	\$ (46,500.00)
1/7/2023	10,000	\$ 6.700	\$ 3.190	\$ (3.51)	\$ (35,100.00)	1/7/2023	10,000	\$ 7.930	\$ 3.190	\$ (4.74)	\$ (47,400.00)
1/8/2023	10,000	\$ 6.700	\$ 3.190	\$ (3.51)	\$ (35,100.00)	1/8/2023	10,000	\$ 7.930	\$ 3.190	\$ (4.74)	\$ (47,400.00)
1/9/2023	10,000	\$ 6.700	\$ 3.190	\$ (3.51)	\$ (35,100.00)	1/9/2023	10,000	\$ 7.930	\$ 3.190	\$ (4.74)	\$ (47,400.00)
1/10/2023	10,000	\$ 6.700	\$ 3.365	\$ (3.34)	\$ (33,350.00)	1/10/2023	10,000	\$ 7.930	\$ 3.365	\$ (4.57)	\$ (45,650.00)
1/11/2023	10,000	\$ 6.700	\$ 3.030	\$ (3.67)	\$ (36,700.00)	1/11/2023	10,000	\$ 7.930	\$ 3.030	\$ (4.90)	\$ (49,000.00)
1/12/2023	10,000	\$ 6.700	\$ 3.070	\$ (3.63)	\$ (36,300.00)	1/12/2023	10,000	\$ 7.930	\$ 3.070	\$ (4.86)	\$ (48,600.00)
1/13/2023	10,000	\$ 6.700	\$ 3.305	\$ (3.40)	\$ (33,950.00)	1/13/2023	10,000	\$ 7.930	\$ 3.305	\$ (4.63)	\$ (46,250.00)
1/14/2023	10,000	\$ 6.700	\$ 2.980	\$ (3.72)	\$ (37,200.00)	1/14/2023	10,000	\$ 7.930	\$ 2.980	\$ (4.95)	\$ (49,500.00)
1/15/2023	10,000	\$ 6.700	\$ 2.980	\$ (3.72)	\$ (37,200.00)	1/15/2023	10,000	\$ 7.930	\$ 2.980	\$ (4.95)	\$ (49,500.00)
1/16/2023	10,000	\$ 6.700	\$ 2.980	\$ (3.72)	\$ (37,200.00)	1/16/2023	10,000	\$ 7.930	\$ 2.980	\$ (4.95)	\$ (49,500.00)
1/17/2023	10,000	\$ 6.700	\$ 2.980	\$ (3.72)	\$ (37,200.00)	1/17/2023	10,000	\$ 7.930	\$ 2.980	\$ (4.95)	\$ (49,500.00)
1/18/2023	10,000	\$ 6.700	\$ 3.065	\$ (3.64)	\$ (36,350.00)	1/18/2023	10,000	\$ 7.930	\$ 3.065	\$ (4.87)	\$ (48,650.00)
1/19/2023	10,000	\$ 6.700	\$ 2.910	\$ (3.79)	\$ (37,900.00)	1/19/2023	10,000	\$ 7.930	\$ 2.910	\$ (5.02)	\$ (50,200.00)
1/20/2023	10,000	\$ 6.700	\$ 2.885	\$ (3.82)	\$ (38,150.00)	1/20/2023	10,000	\$ 7.930	\$ 2.885	\$ (5.05)	\$ (50,450.00)
1/21/2023	10,000	\$ 6.700	\$ 3.025	\$ (3.68)	\$ (36,750.00)	1/21/2023	10,000	\$ 7.930	\$ 3.025	\$ (4.91)	\$ (49,050.00)
1/22/2023	10,000	\$ 6.700	\$ 3.025	\$ (3.68)	\$ (36,750.00)	1/22/2023	10,000	\$ 7.930	\$ 3.025	\$ (4.91)	\$ (49,050.00)
1/23/2023	10,000	\$ 6.700	\$ 3.025	\$ (3.68)	\$ (36,750.00)	1/23/2023	10,000	\$ 7.930	\$ 3.025	\$ (4.91)	\$ (49,050.00)
1/24/2023	10,000	\$ 6.700	\$ 3.105	\$ (3.60)	\$ (35,950.00)	1/24/2023	10,000	\$ 7.930	\$ 3.105	\$ (4.83)	\$ (48,250.00)
1/25/2023	10,000	\$ 6.700	\$ 3.090	\$ (3.61)	\$ (36,100.00)	1/25/2023	10,000	\$ 7.930	\$ 3.090	\$ (4.84)	\$ (48,400.00)
1/26/2023	10,000	\$ 6.700	\$ 2.900	\$ (3.80)	\$ (38,000.00)	1/26/2023	10,000	\$ 7.930	\$ 2.900	\$ (5.03)	\$ (50,300.00)
1/27/2023	10,000	\$ 6.700	\$ 2.700	\$ (4.00)	\$ (40,000.00)	1/27/2023	10,000	\$ 7.930	\$ 2.700	\$ (5.23)	\$ (52,300.00)
1/28/2023	10,000	\$ 6.700	\$ 4.080	\$ (2.62)	\$ (26,200.00)	1/28/2023	10,000	\$ 7.930	\$ 4.080	\$ (3.85)	\$ (38,500.00)
1/29/2023	10,000	\$ 6.700	\$ 4.080	\$ (2.62)	\$ (26,200.00)	1/29/2023	10,000	\$ 7.930	\$ 4.080	\$ (3.85)	\$ (38,500.00)
1/30/2023	10,000	\$ 6.700	\$ 4.080	\$ (2.62)	\$ (26,200.00)	1/30/2023	10,000	\$ 7.930	\$ 4.080	\$ (3.85)	\$ (38,500.00)
1/31/2023	10,000	\$ 6.700	\$ 3.160	\$ (3.54)	\$ (35,400.00)	1/31/2023	10,000	\$ 7.930	\$ 3.160	\$ (4.77)	\$ (47,700.00)
					\$ (1,085,700.00)						\$ (1,467,000.00)

Transaction 3						Transaction 4					
Date	Hedge Vol	Hedge Price	Daily Pricing	Difference	Savings or Cost	Date	Hedge Vol	Hedge Price	Daily Pricing	Difference	Savings or Cost
12/1/2022	10,000	\$ 9.110	\$ 3.270	\$ (5.84)	\$ (58,400.00)	12/1/2022	10,000	\$ 6.440	\$ 3.270	\$ (3.17)	\$ (31,700.00)
12/2/2022	10,000	\$ 9.110	\$ 3.270	\$ (5.84)	\$ (58,400.00)	12/2/2022	10,000	\$ 6.440	\$ 3.270	\$ (3.17)	\$ (31,700.00)
12/3/2022	10,000	\$ 9.110	\$ 3.270	\$ (5.84)	\$ (58,400.00)	12/3/2022	10,000	\$ 6.440	\$ 3.270	\$ (3.17)	\$ (31,700.00)
12/4/2022	10,000	\$ 9.110	\$ 3.285	\$ (5.83)	\$ (58,250.00)	12/4/2022	10,000	\$ 6.440	\$ 3.285	\$ (3.16)	\$ (31,550.00)
12/5/2022	10,000	\$ 9.110	\$ 3.365	\$ (5.75)	\$ (57,450.00)	12/5/2022	10,000	\$ 6.440	\$ 3.365	\$ (3.08)	\$ (30,750.00)
12/6/2022	10,000	\$ 9.110	\$ 3.280	\$ (5.83)	\$ (58,300.00)	12/6/2022	10,000	\$ 6.440	\$ 3.280	\$ (3.16)	\$ (31,600.00)
12/7/2022	10,000	\$ 9.110	\$ 3.190	\$ (5.92)	\$ (59,200.00)	12/7/2022	10,000	\$ 6.440	\$ 3.190	\$ (3.25)	\$ (32,500.00)
12/8/2022	10,000	\$ 9.110	\$ 3.190	\$ (5.92)	\$ (59,200.00)	12/8/2022	10,000	\$ 6.440	\$ 3.190	\$ (3.25)	\$ (32,500.00)
12/9/2022	10,000	\$ 9.110	\$ 3.190	\$ (5.92)	\$ (59,200.00)	12/9/2022	10,000	\$ 6.440	\$ 3.190	\$ (3.25)	\$ (32,500.00)
12/10/2022	10,000	\$ 9.110	\$ 3.365	\$ (5.75)	\$ (57,450.00)	12/10/2022	10,000	\$ 6.440	\$ 3.365	\$ (3.08)	\$ (30,750.00)
12/11/2022	10,000	\$ 9.110	\$ 3.030	\$ (6.08)	\$ (60,800.00)	12/11/2022	10,000	\$ 6.440	\$ 3.030	\$ (3.41)	\$ (34,100.00)
12/12/2022	10,000	\$ 9.110	\$ 3.070	\$ (6.04)	\$ (60,400.00)	12/12/2022	10,000	\$ 6.440	\$ 3.070	\$ (3.37)	\$ (33,700.00)
12/13/2022	10,000	\$ 9.110	\$ 3.305	\$ (5.81)	\$ (58,050.00)	12/13/2022	10,000	\$ 6.440	\$ 3.305	\$ (3.14)	\$ (31,350.00)
12/14/2022	10,000	\$ 9.110	\$ 2.980	\$ (6.13)	\$ (61,300.00)	12/14/2022	10,000	\$ 6.440	\$ 2.980	\$ (3.46)	\$ (34,600.00)
12/15/2022	10,000	\$ 9.110	\$ 2.980	\$ (6.13)	\$ (61,300.00)	12/15/2022	10,000	\$ 6.440	\$ 2.980	\$ (3.46)	\$ (34,600.00)
12/16/2022	10,000	\$ 9.110	\$ 2.980	\$ (6.13)	\$ (61,300.00)	12/16/2022	10,000	\$ 6.440	\$ 2.980	\$ (3.46)	\$ (34,600.00)
12/17/2022	10,000	\$ 9.110	\$ 2.980	\$ (6.13)	\$ (61,300.00)	12/17/2022	10,000	\$ 6.440	\$ 2.980	\$ (3.46)	\$ (34,600.00)
12/18/2022	10,000	\$ 9.110	\$ 3.065	\$ (6.05)	\$ (60,450.00)	12/18/2022	10,000	\$ 6.440	\$ 3.065	\$ (3.38)	\$ (33,750.00)
12/19/2022	10,000	\$ 9.110	\$ 2.910	\$ (6.20)	\$ (62,000.00)	12/19/2022	10,000	\$ 6.440	\$ 2.910	\$ (3.53)	\$ (35,300.00)
12/20/2022	10,000	\$ 9.110	\$ 2.885	\$ (6.23)	\$ (62,250.00)	12/20/2022	10,000	\$ 6.440	\$ 2.885	\$ (3.56)	\$ (35,550.00)
12/21/2022	10,000	\$ 9.110	\$ 3.025	\$ (6.09)	\$ (60,850.00)	12/21/2022	10,000	\$ 6.440	\$ 3.025	\$ (3.42)	\$ (34,150.00)
12/22/2022	10,000	\$ 9.110	\$ 3.025	\$ (6.09)	\$ (60,850.00)	12/22/2022	10,000	\$ 6.440	\$ 3.025	\$ (3.42)	\$ (34,150.00)
12/23/2022	10,000	\$ 9.110	\$ 3.025	\$ (6.09)	\$ (60,850.00)	12/23/2022	10,000	\$ 6.440	\$ 3.025	\$ (3.42)	\$ (34,150.00)
12/24/2022	10,000	\$ 9.110	\$ 3.105	\$ (6.01)	\$ (60,050.00)	12/24/2022	10,000	\$ 6.440	\$ 3.105	\$ (3.34)	\$ (33,350.00)
12/25/2022	10,000	\$ 9.110	\$ 3.090	\$ (6.02)	\$ (60,200.00)	12/25/2022	10,000	\$ 6.440	\$ 3.090	\$ (3.35)	\$ (33,500.00)
12/26/2022	10,000	\$ 9.110	\$ 2.900	\$ (6.21)	\$ (62,100.00)	12/26/2022	10,000	\$ 6.440	\$ 2.900	\$ (3.54)	\$ (35,400.00)
12/27/2022	10,000	\$ 9.110	\$ 2.700	\$ (6.41)	\$ (64,100.00)	12/27/2022	10,000	\$ 6.440	\$ 2.700	\$ (3.74)	\$ (37,400.00)
12/28/2022	10,000	\$ 9.110	\$ 4.080	\$ (5.03)	\$ (50,300.00)	12/28/2022	10,000	\$ 6.440	\$ 4.080	\$ (2.36)	\$ (23,600.00)
12/29/2022	10,000	\$ 9.110	\$ 4.080	\$ (5.03)	\$ (50,300.00)	12/29/2022	10,000	\$ 6.440	\$ 4.080	\$ (2.36)	\$ (23,600.00)
12/30/2022	10,000	\$ 9.110	\$ 4.080	\$ (5.03)	\$ (50,300.00)	12/30/2022	10,000	\$ 6.440	\$ 4.080	\$ (2.36)	\$ (23,600.00)
12/31/2022	10,000	\$ 9.110	\$ 3.160	\$ (5.95)	\$ (59,500.00)	12/31/2022	10,000	\$ 6.440	\$ 3.160	\$ (3.28)	\$ (32,800.00)
					\$ (1,832,800.00)						\$ (1,005,100.00)

Transaction 5						Transaction 6					
Date	Hedge Vol	Hedge Price	Daily Pricing	Difference	Savings or Cost	Date	Hedge Vol	Hedge Price	Daily Pricing	Difference	Savings or Cost
12/1/2022	10,000	\$ 8.294	\$ 3.270	\$ (5.02)	\$ (50,240.00)	12/1/2022	10,000	\$ 8.460	\$ 3.270	\$ (5.19)	\$ (51,900.00)
12/2/2022	10,000	\$ 8.294	\$ 3.270	\$ (5.02)	\$ (50,240.00)	12/2/2022	10,000	\$ 8.460	\$ 3.270	\$ (5.19)	\$ (51,900.00)
12/3/2022	10,000	\$ 8.294	\$ 3.270	\$ (5.02)	\$ (50,240.00)	12/3/2022	10,000	\$ 8.460	\$ 3.270	\$ (5.19)	\$ (51,900.00)
12/4/2022	10,000	\$ 8.294	\$ 3.285	\$ (5.01)	\$ (50,090.00)	12/4/2022	10,000	\$ 8.460	\$ 3.285	\$ (5.18)	\$ (51,750.00)
12/5/2022	10,000	\$ 8.294	\$ 3.365	\$ (4.93)	\$ (49,290.00)	12/5/2022	10,000	\$ 8.460	\$ 3.365	\$ (5.10)	\$ (50,950.00)
12/6/2022	10,000	\$ 8.294	\$ 3.280	\$ (5.01)	\$ (50,140.00)	12/6/2022	10,000	\$ 8.460	\$ 3.280	\$ (5.18)	\$ (51,800.00)
12/7/2022	10,000	\$ 8.294	\$ 3.190	\$ (5.10)	\$ (51,040.00)	12/7/2022	10,000	\$ 8.460	\$ 3.190	\$ (5.27)	\$ (52,700.00)
12/8/2022	10,000	\$ 8.294	\$ 3.190	\$ (5.10)	\$ (51,040.00)	12/8/2022	10,000	\$ 8.460	\$ 3.190	\$ (5.27)	\$ (52,700.00)
12/9/2022	10,000	\$ 8.294	\$ 3.190	\$ (5.10)	\$ (51,040.00)	12/9/2022	10,000	\$ 8.460	\$ 3.190	\$ (5.27)	\$ (52,700.00)
12/10/2022	10,000	\$ 8.294	\$ 3.365	\$ (4.93)	\$ (49,290.00)	12/10/2022	10,000	\$ 8.460	\$ 3.365	\$ (5.10)	\$ (50,950.00)
12/11/2022	10,000	\$ 8.294	\$ 3.030	\$ (5.26)	\$ (52,640.00)	12/11/2022	10,000	\$ 8.460	\$ 3.030	\$ (5.43)	\$ (54,300.00)
12/12/2022	10,000	\$ 8.294	\$ 3.070	\$ (5.22)	\$ (52,240.00)	12/12/2022	10,000	\$ 8.460	\$ 3.070	\$ (5.39)	\$ (53,900.00)
12/13/2022	10,000	\$ 8.294	\$ 3.305	\$ (4.99)	\$ (49,890.00)	12/13/2022	10,000	\$ 8.460	\$ 3.305	\$ (5.16)	\$ (51,550.00)
12/14/2022	10,000	\$ 8.294	\$ 2.980	\$ (5.31)	\$ (53,140.00)	12/14/2022	10,000	\$ 8.460	\$ 2.980	\$ (5.48)	\$ (54,800.00)
12/15/2022	10,000	\$ 8.294	\$ 2.980	\$ (5.31)	\$ (53,140.00)	12/15/2022	10,000	\$ 8.460	\$ 2.980	\$ (5.48)	\$ (54,800.00)
12/16/2022	10,000	\$ 8.294	\$ 2.980	\$ (5.31)	\$ (53,140.00)	12/16/2022	10,000	\$ 8.460	\$ 2.980	\$ (5.48)	\$ (54,800.00)
12/17/2022	10,000	\$ 8.294	\$ 2.980	\$ (5.31)	\$ (53,140.00)	12/17/2022	10,000	\$ 8.460	\$ 2.980	\$ (5.48)	\$ (54,800.00)
12/18/2022	10,000	\$ 8.294	\$ 3.065	\$ (5.23)	\$ (52,290.00)	12/18/2022	10,000	\$ 8.460	\$ 3.065	\$ (5.40)	\$ (53,950.00)
12/19/2022	10,000	\$ 8.294	\$ 2.910	\$ (5.38)	\$ (53,840.00)	12/19/2022	10,000	\$ 8.460	\$ 2.910	\$ (5.55)	\$ (55,500.00)
12/20/2022	10,000	\$ 8.294	\$ 2.885	\$ (5.41)	\$ (54,090.00)	12/20/2022	10,000	\$ 8.460	\$ 2.885	\$ (5.58)	\$ (55,750.00)
12/21/2022	10,000	\$ 8.294	\$ 3.025	\$ (5.27)	\$ (52,690.00)	12/21/2022	10,000	\$ 8.460	\$ 3.025	\$ (5.44)	\$ (54,350.00)
12/22/2022	10,000	\$ 8.294	\$ 3.025	\$ (5.27)	\$ (52,690.00)	12/22/2022	10,000	\$ 8.460	\$ 3.025	\$ (5.44)	\$ (54,350.00)
12/23/2022	10,000	\$ 8.294	\$ 3.025	\$ (5.27)	\$ (52,690.00)	12/23/2022	10,000	\$ 8.460	\$ 3.025	\$ (5.44)	\$ (54,350.00)
12/24/2022	10,000	\$ 8.294	\$ 3.105	\$ (5.19)	\$ (51,890.00)	12/24/2022	10,000	\$ 8.460	\$ 3.105	\$ (5.36)	\$ (53,550.00)
12/25/2022	10,000	\$ 8.294	\$ 3.090	\$ (5.20)	\$ (52,040.00)	12/25/2022	10,000	\$ 8.460	\$ 3.090	\$ (5.37)	\$ (53,700.00)
12/26/2022	10,000	\$ 8.294	\$ 2.900	\$ (5.39)	\$ (53,940.00)	12/26/2022	10,000	\$ 8.460	\$ 2.900	\$ (5.56)	\$ (55,600.00)
12/27/2022	10,000	\$ 8.294	\$ 2.700	\$ (5.59)	\$ (55,940.00)	12/27/2022	10,000	\$ 8.460	\$ 2.700	\$ (5.76)	\$ (57,600.00)
12/28/2022	10,000	\$ 8.294	\$ 4.080	\$ (4.21)	\$ (42,140.00)	12/28/2022	10,000	\$ 8.460	\$ 4.080	\$ (4.38)	\$ (43,800.00)
12/29/2022	10,000	\$ 8.294	\$ 4.080	\$ (4.21)	\$ (42,140.00)	12/29/2022	10,000	\$ 8.460	\$ 4.080	\$ (4.38)	\$ (43,800.00)
12/30/2022	10,000	\$ 8.294	\$ 4.080	\$ (4.21)	\$ (42,140.00)	12/30/2022	10,000	\$ 8.460	\$ 4.080	\$ (4.38)	\$ (43,800.00)
12/31/2022	10,000	\$ 8.294	\$ 3.160	\$ (5.13)	\$ (51,340.00)	12/31/2022	10,000	\$ 8.460	\$ 3.160	\$ (5.30)	\$ (53,000.00)
\$ (1,579,840.00)						\$ (1,631,300.00)					

Transaction 7						Transaction 8					
Date	Hedge Vol	Hedge Price	Daily Pricing	Difference	Savings or Cost	Date	Hedge Vol	Hedge Price	Daily Pricing	Difference	Savings or Cost
12/1/2022	10,500	\$ 7.800	\$ 3.270	\$ (4.53)	\$ (47,565.00)	12/1/2022	1,000	\$ 6.980	\$ 3.270	\$ (3.71)	\$ (3,710.00)
12/2/2022	10,500	\$ 7.800	\$ 3.270	\$ (4.53)	\$ (47,565.00)	12/2/2022	1,000	\$ 6.980	\$ 3.270	\$ (3.71)	\$ (3,710.00)
12/3/2022	10,500	\$ 7.800	\$ 3.270	\$ (4.53)	\$ (47,565.00)	12/3/2022	1,000	\$ 6.980	\$ 3.270	\$ (3.71)	\$ (3,710.00)
12/4/2022	10,500	\$ 7.800	\$ 3.285	\$ (4.52)	\$ (47,407.50)	12/4/2022	1,000	\$ 6.980	\$ 3.285	\$ (3.70)	\$ (3,695.00)
12/5/2022	10,500	\$ 7.800	\$ 3.365	\$ (4.44)	\$ (46,567.50)	12/5/2022	1,000	\$ 6.980	\$ 3.365	\$ (3.62)	\$ (3,615.00)
12/6/2022	10,500	\$ 7.800	\$ 3.280	\$ (4.52)	\$ (47,460.00)	12/6/2022	1,000	\$ 6.980	\$ 3.280	\$ (3.70)	\$ (3,700.00)
12/7/2022	10,500	\$ 7.800	\$ 3.190	\$ (4.61)	\$ (48,405.00)	12/7/2022	1,000	\$ 6.980	\$ 3.190	\$ (3.79)	\$ (3,790.00)
12/8/2022	10,500	\$ 7.800	\$ 3.190	\$ (4.61)	\$ (48,405.00)	12/8/2022	1,000	\$ 6.980	\$ 3.190	\$ (3.79)	\$ (3,790.00)
12/9/2022	10,500	\$ 7.800	\$ 3.190	\$ (4.61)	\$ (48,405.00)	12/9/2022	1,000	\$ 6.980	\$ 3.190	\$ (3.79)	\$ (3,790.00)
12/10/2022	10,500	\$ 7.800	\$ 3.365	\$ (4.44)	\$ (46,567.50)	12/10/2022	1,000	\$ 6.980	\$ 3.365	\$ (3.62)	\$ (3,615.00)
12/11/2022	10,500	\$ 7.800	\$ 3.030	\$ (4.77)	\$ (50,085.00)	12/11/2022	1,000	\$ 6.980	\$ 3.030	\$ (3.95)	\$ (3,950.00)
12/12/2022	10,500	\$ 7.800	\$ 3.070	\$ (4.73)	\$ (49,665.00)	12/12/2022	1,000	\$ 6.980	\$ 3.070	\$ (3.91)	\$ (3,910.00)
12/13/2022	10,500	\$ 7.800	\$ 3.305	\$ (4.50)	\$ (47,197.50)	12/13/2022	1,000	\$ 6.980	\$ 3.305	\$ (3.68)	\$ (3,675.00)
12/14/2022	10,500	\$ 7.800	\$ 2.980	\$ (4.82)	\$ (50,610.00)	12/14/2022	1,000	\$ 6.980	\$ 2.980	\$ (4.00)	\$ (4,000.00)
12/15/2022	10,500	\$ 7.800	\$ 2.980	\$ (4.82)	\$ (50,610.00)	12/15/2022	1,000	\$ 6.980	\$ 2.980	\$ (4.00)	\$ (4,000.00)
12/16/2022	10,500	\$ 7.800	\$ 2.980	\$ (4.82)	\$ (50,610.00)	12/16/2022	1,000	\$ 6.980	\$ 2.980	\$ (4.00)	\$ (4,000.00)
12/17/2022	10,500	\$ 7.800	\$ 2.980	\$ (4.82)	\$ (50,610.00)	12/17/2022	1,000	\$ 6.980	\$ 2.980	\$ (4.00)	\$ (4,000.00)
12/18/2022	10,500	\$ 7.800	\$ 3.065	\$ (4.74)	\$ (49,717.50)	12/18/2022	1,000	\$ 6.980	\$ 3.065	\$ (3.92)	\$ (3,915.00)
12/19/2022	10,500	\$ 7.800	\$ 2.910	\$ (4.89)	\$ (51,345.00)	12/19/2022	1,000	\$ 6.980	\$ 2.910	\$ (4.07)	\$ (4,070.00)
12/20/2022	10,500	\$ 7.800	\$ 2.885	\$ (4.92)	\$ (51,607.50)	12/20/2022	1,000	\$ 6.980	\$ 2.885	\$ (4.10)	\$ (4,095.00)
12/21/2022	10,500	\$ 7.800	\$ 3.025	\$ (4.78)	\$ (50,137.50)	12/21/2022	1,000	\$ 6.980	\$ 3.025	\$ (3.96)	\$ (3,955.00)
12/22/2022	10,500	\$ 7.800	\$ 3.025	\$ (4.78)	\$ (50,137.50)	12/22/2022	1,000	\$ 6.980	\$ 3.025	\$ (3.96)	\$ (3,955.00)
12/23/2022	10,500	\$ 7.800	\$ 3.025	\$ (4.78)	\$ (50,137.50)	12/23/2022	1,000	\$ 6.980	\$ 3.025	\$ (3.96)	\$ (3,955.00)
12/24/2022	10,500	\$ 7.800	\$ 3.105	\$ (4.70)	\$ (49,297.50)	12/24/2022	1,000	\$ 6.980	\$ 3.105	\$ (3.88)	\$ (3,875.00)
12/25/2022	10,500	\$ 7.800	\$ 3.090	\$ (4.71)	\$ (49,455.00)	12/25/2022	1,000	\$ 6.980	\$ 3.090	\$ (3.89)	\$ (3,890.00)
12/26/2022	10,500	\$ 7.800	\$ 2.900	\$ (4.90)	\$ (51,450.00)	12/26/2022	1,000	\$ 6.980	\$ 2.900	\$ (4.08)	\$ (4,080.00)
12/27/2022	10,500	\$ 7.800	\$ 2.700	\$ (5.10)	\$ (53,550.00)	12/27/2022	1,000	\$ 6.980	\$ 2.700	\$ (4.28)	\$ (4,280.00)
12/28/2022	10,500	\$ 7.800	\$ 4.080	\$ (3.72)	\$ (39,060.00)	12/28/2022	1,000	\$ 6.980	\$ 4.080	\$ (2.90)	\$ (2,900.00)
12/29/2022	10,500	\$ 7.800	\$ 4.080	\$ (3.72)	\$ (39,060.00)	12/29/2022	1,000	\$ 6.980	\$ 4.080	\$ (2.90)	\$ (2,900.00)
12/30/2022	10,500	\$ 7.800	\$ 4.080	\$ (3.72)	\$ (39,060.00)	12/30/2022	1,000	\$ 6.980	\$ 4.080	\$ (2.90)	\$ (2,900.00)
12/31/2022	10,500	\$ 7.800	\$ 3.160	\$ (4.64)	\$ (48,720.00)	12/31/2022	1,000	\$ 6.980	\$ 3.160	\$ (3.82)	\$ (3,820.00)
					\$ (1,498,035.00)						\$ (117,250.00)

Transaction 9

Date	Hedge Vol	Hedge Price	Daily Pricing	Difference	Savings or Cost
12/1/2022	2,500	\$ 6.260	\$ 2.805	\$ (3.46)	\$ (8,637.50)
12/2/2022	2,500	\$ 6.260	\$ 2.805	\$ (3.46)	\$ (8,637.50)
12/3/2022	2,500	\$ 6.260	\$ 2.805	\$ (3.46)	\$ (8,637.50)
12/4/2022	2,500	\$ 6.260	\$ 3.095	\$ (3.17)	\$ (7,912.50)
12/5/2022	2,500	\$ 6.260	\$ 3.335	\$ (2.93)	\$ (7,312.50)
12/6/2022	2,500	\$ 6.260	\$ 3.115	\$ (3.15)	\$ (7,862.50)
12/7/2022	2,500	\$ 6.260	\$ 3.005	\$ (3.26)	\$ (8,137.50)
12/8/2022	2,500	\$ 6.260	\$ 3.005	\$ (3.26)	\$ (8,137.50)
12/9/2022	2,500	\$ 6.260	\$ 3.005	\$ (3.26)	\$ (8,137.50)
12/10/2022	2,500	\$ 6.260	\$ 3.250	\$ (3.01)	\$ (7,525.00)
12/11/2022	2,500	\$ 6.260	\$ 2.905	\$ (3.36)	\$ (8,387.50)
12/12/2022	2,500	\$ 6.260	\$ 2.920	\$ (3.34)	\$ (8,350.00)
12/13/2022	2,500	\$ 6.260	\$ 3.265	\$ (3.00)	\$ (7,487.50)
12/14/2022	2,500	\$ 6.260	\$ 2.910	\$ (3.35)	\$ (8,375.00)
12/15/2022	2,500	\$ 6.260	\$ 2.910	\$ (3.35)	\$ (8,375.00)
12/16/2022	2,500	\$ 6.260	\$ 2.910	\$ (3.35)	\$ (8,375.00)
12/17/2022	2,500	\$ 6.260	\$ 2.910	\$ (3.35)	\$ (8,375.00)
12/18/2022	2,500	\$ 6.260	\$ 2.940	\$ (3.32)	\$ (8,300.00)
12/19/2022	2,500	\$ 6.260	\$ 2.795	\$ (3.47)	\$ (8,662.50)
12/20/2022	2,500	\$ 6.260	\$ 2.790	\$ (3.47)	\$ (8,675.00)
12/21/2022	2,500	\$ 6.260	\$ 2.935	\$ (3.33)	\$ (8,312.50)
12/22/2022	2,500	\$ 6.260	\$ 2.935	\$ (3.33)	\$ (8,312.50)
12/23/2022	2,500	\$ 6.260	\$ 2.935	\$ (3.33)	\$ (8,312.50)
12/24/2022	2,500	\$ 6.260	\$ 3.010	\$ (3.25)	\$ (8,125.00)
12/25/2022	2,500	\$ 6.260	\$ 3.090	\$ (3.17)	\$ (7,925.00)
12/26/2022	2,500	\$ 6.260	\$ 2.880	\$ (3.38)	\$ (8,450.00)
12/27/2022	2,500	\$ 6.260	\$ 2.530	\$ (3.73)	\$ (9,325.00)
12/28/2022	2,500	\$ 6.260	\$ 2.645	\$ (3.62)	\$ (9,037.50)
12/29/2022	2,500	\$ 6.260	\$ 2.645	\$ (3.62)	\$ (9,037.50)
12/30/2022	2,500	\$ 6.260	\$ 2.645	\$ (3.62)	\$ (9,037.50)
12/31/2022	2,500	\$ 6.260	\$ 2.630	\$ (3.63)	\$ (9,075.00)
					\$ (259,250.00)

CONFIDENTIAL ATTACHMENT DJ-6

[CONFIDENTIAL – NOT REPRODUCED HEREIN]