

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 MARCH 2023 THROUGH MAY)
2023, IN ACCORDANCE WITH THE) CAUSE NO. 38703 FAC 138
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 December, 2022, 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
18 Operations AES Ohio Generation. Prior to AES, I worked at Duke Energy, Cincinnati,

1 Ohio (previously Cinergy Services, Inc.) between 2002 to 2015, as the Director, Coal
2 Trading.

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

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

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

7 A6. My testimony supports:

- 8 • AES Indiana’s request to recover through the FAC proceeding certain costs incurred
9 by AES Indiana as a result of taking transmission service under the MISO Open
10 Access Transmission and Energy Markets Tariff (“TEMET”) to serve its retail electric
11 customers, and participating in the MISO Day-Ahead and Real-Time Energy and
12 Financial Transmission Rights (“FTR”) Markets and MISO Energy and Operating
13 Reserves Market (“MISO EOR”).
- 14 • AES Indiana’s unit commitment process and decisions.
- 15 • AES Indiana’s inclusion of its wind and natural gas purchases in this FAC, coal
16 purchases, and the reasonableness of AES Indiana’s fuel costs.
- 17 • Update on AES Indiana’s 2022 and 2023 projected coal burn and coal purchases.
- 18 • Update on natural gas hedging program volumes and pricing.
- 19 • Settlement evaluation associated with natural gas hedges.
- 20 • Updates on the short-term model used to track Petersburg Generation Station
21 (“Petersburg”) economics, which has been in use since the end of May 2020.

22 **Q7. Are you sponsoring any attachments?**

1 A7. Yes. I am sponsoring the following attachments:

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

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

16 A8. Yes.

17 **Q9. Are you submitting any workpapers?**

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

MISO

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

A10. Yes, I am.

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

A11. Yes.

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

A12. Yes.

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

A13. Yes.

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

A14. Yes.

Q15. Can you briefly explain the benefits to AES Indiana's customers of AES Indiana's participation in the MISO EOR?

A15. The MISO EOR gives all participants open access to the transmission system and all available resources are centrally dispatched using simultaneous co-optimization. MISO provides a transparent and liquid energy market across its entire footprint. Furthermore,

on-going coordination between MISO and adjacent ISO systems increases grid reliability and makes it possible to regionally coordinate transmission expansion. While benefiting from improved grid reliability, the greater benefit for AES Indiana and its customers is the transparent and liquid energy market that brings about an even playing field for all utilities. This allows AES Indiana to make more economic purchases from the open market with the benefits flowing directly to its customers. The EOR provides the same level playing field for ancillary services (regulation and contingency reserves) while also more effectively and economically allocating resources to provide those reserves. In addition, the EOR provides an opportunity to reduce the overall amount of reserves being held by market participants thereby further reducing the cost of providing those reserves to customers.

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

A16. AES Indiana is requesting recovery of projected fuel-related MISO costs for the period of March 2023 through May 2023. These projected costs include the estimated level of the net effect of revenues and costs associated with delta Locational Marginal Pricing (“LMP”), Day-Ahead and Reliability Assessment Commitment (“RAC”) unit commitment, FTRs, Real-Time Marginal Loss Surplus, and Ancillary Services. In addition, AES Indiana’s calculation of the fuel factor reflects a reconciliation of these fuel-related MISO costs and revenues for the historical period of August 2022 through October 2022. Attachment NHC-1, Schedule 6 contains a summary of the determination of actual MISO Components of Fuel Costs, exclusive of purchased power costs for this period.

Q17. How did AES Indiana forecast costs for the March 2023 through May 2023 period?

1 A17. The longer-term forecasts presented in this proceeding were generated in a planning model
2 that looks at the economic dispatch of the units on the day the model is run to allow for
3 preparation of the schedules used in this filing. It is reasonable to use this forecast for
4 purposes of this proceeding. As discussed below, commitment decisions in the actual
5 period will be driven by pricing, protecting customers from price risk, operational
6 conditions, and reliability.

7 **Q18. Has AES Indiana compared natural gas prices for the forecast period March 2023**
8 **through May 2023 to the forecast period for March 2022 through May 2022?**

9 A18. Yes. As evident in the table below, natural gas prices have increased significantly, 157%
10 higher, for the forecast period of March 2023 through May 2023, versus the same forecast
11 period one year ago. This significant increase in natural gas prices for the forecast period
12 is the primary driver for the fuel adjustment factor proposed in this proceeding. The key
13 drivers of the natural gas price increase are uncertainty of domestic supply and increased
14 demand. Natural gas production has been slow to respond to higher prices and demand
15 from electric generation has been high. Export demand in the LNG market remains robust.
16 The war between Russia and Ukraine continues to support higher natural gas and coal
17 prices due to concern of global supply interruption and trade embargos on Russian
18 commodities. Coal markets remain tight and the assumption is that natural gas will see
19 increased burns from fuel switching due to availability concerns of coal on a national level.
20 Changes in the EPA Seasonal NOx program have also encouraged fuel switching from coal
21 to natural gas.

Table DJ-1 Comparison of Natural Gas Prices

Natural Gas \$/MMBtu	March	April	May	3 Month Average
Forecast FAC 134	3.59	3.5	3.51	3.53
Forecast FAC 138	6.17	5.25	5.18	5.53
Price Variance	2.58	1.75	1.67	2.00
% Change	172%	150%	148%	157%

Q19. Are there other factors impacting the forecast period?

A19. Yes. Because of the amount of generation forecast to be online, the fuel mix of power to serve load is elevating the cost of power due to the higher cost of natural gas units. The offsetting benefit is the expectation of higher OSS margins, which flow 100% back to customers.

Q20. 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?

A20. 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.

Q21. 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?

A21. 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.

1 **Q22. Please discuss AES Indiana’s experience with MISO’s Ancillary Services Market**
2 **(“ASM”).**

3 A22. MISO launched its ASM on January 6, 2009, and to my knowledge the ASM has generally
4 functioned without major issue. AES Indiana’s generators follow real time signals as
5 directed by MISO. As discussed in FAC 134, MISO implemented a new ancillary services
6 product called Short Term Reserve (“STR”). The new product and settlements treatment
7 were discussed in FAC 134. MISO Day Ahead and Real Time market clearing prices for
8 Regulation, Spinning, Supplemental Reserves and Short Term Reserve appear to be at
9 reasonable levels consistent with market conditions. For the period of August 2022
10 through October 2022, the average ASM prices per megawatt hour were as follows:

11 **Table DJ-2 Average ASM Prices per Megawatt-Hour**

Month	Regulation	Spinning	Supplemental	STR
August 2022	\$0.0444	\$0.0276	\$0.0118	\$0.0083
September 2022	\$0.0497	\$0.0374	\$0.0067	\$0.0119
October 2022	\$0.0560	\$0.0647	\$0.0072	\$0.0086

12
13 **Q23. Is AES Indiana requesting recovery of Revenue Sufficiency Guarantee (“RSG”)**
14 **Payments in this FAC proceeding?**

15 A23. Yes.

16 **Q24. Have you reviewed the Commission’s June 3, 2009 Order in Cause No. 43664 (the**
17 **“RSG Order”)?**

18 A24. Yes.

19 **Q25. Is AES Indiana’s request for recovery of RSG Payments consistent with your**
20 **understanding of the Commission’s RSG Order?**

21 A25. Yes.

1 **Q26. Are you familiar with the term “Contestable RT RSG Charges”?**

2 A26. Yes. In its RSG Order, the Commission approved the following calculation method (“RSG
3 Daily Benchmarks”) to be used to determine the RSG Benchmark:

4 Each day a “Benchmark” shall be established based upon a generic Gas
5 Turbine (“GT”), using a generic GT heat rate of 12,500 btu/kwh using the
6 day-ahead natural gas prices for the NYMEX Henry Hub, plus a
7 \$0.60/mmbtu gas transport charge for a generic gas-fired GT.

8 Any Revenue Sufficiency Guarantee First Pass Distribution amounts in excess of the RSG
9 Daily Benchmarks are termed “Contestable RT RSG Charges” and are currently recovered
10 through the RTO rate adjustment mechanism.

11 **Q27. What are the RSG Daily Benchmarks for the period of August 2022 through October**
12 **2022?**

13 A27. The applicable RSG Daily Benchmarks per MWh for RSG during the historical period are
14 shown on Attachment DJ-1. The RSG Daily Benchmark calculations have been done in
15 conformity with the RSG Order.

16 **Q28. How does AES Indiana recover the cost of power purchased in the MISO markets?**

17 A28. AES Indiana recovers power costs purchased through the MISO energy market, up to a
18 Daily Benchmark, through the FAC. In Cause No. 43414, the Commission approved a
19 “benchmark” triggering mechanism to assess the reasonableness of purchased power costs
20 (“Purchased Power Order”). Each day, a Benchmark is established based upon a generic
21 Gas Turbine (“GT”), using a generic GT heat rate of 12,500 btu/kWh, using the day ahead
22 natural gas prices for the NYMEX Henry Hub, plus \$0.60/mmbtu gas transport charge for
23 a generic gas-fired GT. The Benchmark methodology was approved in Cause No. 43414
24 on April 23, 2008 (“Purchased Power Daily Benchmark(s)”). AES Indiana continues to

1 follow the guidelines and procedures established in the Purchased Power Order. Purchases
2 made in the course of MISO's economic dispatch regime to meet jurisdictional retail load
3 are a cost of fuel and are fully recoverable in the utility's FAC up to the actual cost or the
4 Purchased Power Daily Benchmark, whichever is lower.

5 **Q29. What are the Purchased Power Daily Benchmarks for August 2022 through October**
6 **2022?**

7 A29. The applicable Purchased Power Daily Benchmarks during this accounting period are
8 shown in Attachment DJ-1. The approved methodology for determining the Purchased
9 Power Daily Benchmarks and the RSG Daily Benchmarks is identical.

10 **Q30. Is AES Indiana seeking to recover any purchased power costs that are in excess of the**
11 **Daily Benchmarks calculated pursuant to the Purchased Power Order?**

12 A30. Yes. For the FAC 138 historical period, AES Indiana incurred a total of \$212,166 of
13 purchased power costs over the applicable Purchased Power Daily Benchmarks during
14 August 2022 through October 2022. AES Indiana makes power purchases when
15 economical or due to unit unavailability. Consistent with the Purchased Power Order, AES
16 Indiana has an opportunity to request recovery of and justify the reasonableness of
17 purchased power costs above the applicable Purchased Power Daily Benchmark.
18 Attachment DJ-2 was prepared to aid the Commission in its review of AES Indiana's
19 request. Attachment DJ-2 summarizes the purchased power volumes, costs, the total of
20 hourly purchased power costs above the applicable Purchased Power Daily Benchmarks
21 and the reasons for the purchases at-risk after consideration of MISO economic dispatch
22 for FAC 138. Utilizing the methodology approved in the Purchased Power Order, all of the
23 purchased power is recoverable during this accounting period.

1 **Q31. What were the primary drivers of the purchased power costs above the benchmark**
2 **during the historical FAC period?**

3 A31. Almost 75% of the purchased power over benchmark occurred on one day. On October
4 19, 2022 Petersburg Unit 2 tripped due to a tube leak and replacement power purchased on
5 the real time market was impacted by high priced power in the afternoon and evening
6 periods. Additionally, high priced Seasonal NOx impacted dispatch of units without NOx
7 removal equipment through the historical FAC period. NOx price is not a component of
8 the Purchased Power Daily Benchmark calculation.

9 **Q32. Do you believe the total purchased power costs incurred in August 2022 through**
10 **October 2022 are reasonable?**

11 A32. Yes.

12 **FUEL PURCHASES**

13 **Q33. Are you familiar with AES Indiana's purchases of fuel for use in its generating**
14 **stations?**

15 A33. Yes, I have reviewed the coal and natural gas contracts. I am copied on communications
16 for daily activity in the natural gas purchases for real time and day ahead needs.

17 **Q34. Are purchases for natural gas included in this FAC?**

18 A34. Yes. Natural gas purchases to supply the generating units at Georgetown, Eagle Valley,
19 and Harding Street are included in this filing. The forecasted natural gas generation is
20 included on Attachment NHC-1, Schedule 1, Line 5, and the forecasted cost of natural gas
21 is included on Attachment NHC-1, Schedule 1, Line 19. The actual natural gas generation
22 is included on Attachment NHC-1, Schedule 5, Line 5, and the actual cost of natural gas is

1 included on Attachment NHC-1, Schedule 5, Line 19. The cost of gas generation contains
2 the delivered cost of natural gas including firm transportation.

3 **Q35. How does AES Indiana make fuel oil purchases?**

4 A35. Harding Street and Petersburg manage their own fuel oil purchases based on inventory set-
5 points and regional market index pricing negotiated in a competitively bid contract.

6 **Q36. How does AES Indiana purchase its coal supply?**

7 A36. AES Indiana normally purchases all of its coal from the Illinois Basin, primarily from
8 Indiana producers. We currently have contracts with three coal producers and receive coal
9 from up to four different mines.

10 **Q37. With what coal companies does AES Indiana presently have contracts?**

11 A37. Peabody Energy Corporation, Sunrise Coal, LLC, Gibson County Coal Company.

12 **Q38. Does AES Indiana have any ownership interest in any of these companies?**

13 A38. No.

14 **Q39. Why does AES Indiana engage in spot purchases of coal?**

15 A39. We use spot purchases of coal in three ways: (1) to provide the differential requirement
16 between our long-term contracts and our projected burn for the year; (2) to test the quality
17 and reliability of a producer to see if we may want to utilize the company as a long-term
18 supplier; and (3) when our projected inventory levels allow, to take advantage of occasional
19 low price market opportunities.

20 **Q40. What procedure does AES Indiana follow in negotiating long-term coal contracts?**

21 A40. Fuel Supply has the responsibility of obtaining the necessary coal supplies and uses as a
22 resource the long-range load and energy forecasts provided by our Resource Planning

1 Group. AES Indiana constantly monitors coal producers as to the availability of reserves,
2 capacity to produce, and current mining costs. Based on the above data, we solicit the
3 market through a competitive bidding process and negotiate the price, terms and conditions
4 on any contract extension or new contracts. AES Indiana typically uses long-term contracts
5 of staggered lengths in order to limit our exposure to the market in any given year.

6 **Q41. Why does AES Indiana normally purchase substantially all of its coal from Indiana**
7 **providers?**

8 A41. Although Fuel Supply actively solicits bids from Indiana and non-Indiana coal producers,
9 potential coal contracts are evaluated on the total delivered cost to the plant. In the last few
10 years, some out-of-state bidders have offered very competitive coal prices at the mine, but
11 because of transportation costs, these bids were not our lowest cost option on a delivered
12 basis. In addition, buying from local suppliers increases the reliability of supply by
13 decreasing the risk of disruptions and lengthy delays in the transportation of coal to the
14 plants. AES Indiana's present boilers are all designed for Indiana coal.

15 **Q42. You stress that a reliable supply of fuel is necessary. Will you elaborate on the need**
16 **for a reliable coal supply and the use of long-term contracts to meet that end?**

17 A42. As a public utility, AES Indiana has an obligation to make every reasonable effort to
18 acquire fuel and generate or purchase power, or both, so as to provide electricity to its retail
19 customers at the lowest fuel cost reasonably possible. We continue using long-term coal
20 contracts as our primary means of maintaining a reliable supply. Long-term contracts
21 provide coal producers with certainty and the ability to most economically allocate their
22 resources, thereby reducing their overall production costs and allowing producers to sell at
23 a lower cost. Even though most long-term contracts contain some volumetric flexibility,

1 this flexibility may not be enough to absorb the volatility seen in recent markets. While
2 AES Indiana cannot primarily rely on spot purchases for a reliable supply of coal, the spot
3 market can be a useful tool for managing exposure to volatile markets. However, over-
4 reliance on the spot market presents a number of risks. While spot contracts vary over
5 time, they do not create the market efficiencies that translate into the lowest price over an
6 extended period of time. Some spot market suppliers may not have enough capital to
7 protect themselves in market downturns and they could go out of business, which could
8 leave AES Indiana without coal. In addition, some small producers do not have adequate
9 quality control in their mining operations, and it may be necessary to reject them as
10 suppliers based on their inability to supply uniform coal quality in terms of Btu, moisture,
11 ash, and sulfur content. Finally, even well-financed producers of high-quality coal may
12 have their entire production run committed to established contracts and have no extra coal
13 to offer to the spot market.

14 **Q43. What does AES Indiana do to verify the reasonableness of its coal costs?**

15 A43. AES Indiana uses a formal competitive bidding process to award its coal contracts. For
16 some spot purchases when a formal competitive bid process might not be feasible, an
17 informal survey of local coal providers is performed to assure that the agreed upon price is
18 at or below AES Indiana's next best alternative. In addition, in long-term contracts that
19 contain specific cost elements that can be passed through to AES Indiana (for example,
20 costs associated with meeting new governmental regulations), we reserve the right to have
21 those costs audited by an independent expert to aid in the proper administration of the
22 contracts. This is done to protect our customers from any unnecessary or unreasonable fuel

1 expense. Transportation costs are reviewed and monthly delivery schedules are designed
2 to minimize the total transportation cost.

3 **WIND PURCHASES**

4 **Q44. Are any purchases from the Hoosier Wind Park and/or Lakefield Wind Park**
5 **included in this FAC, either in projected or actual fuel costs?**

6 A44. Yes, wind purchases are included in AES Indiana's projected and actual fuel costs. The
7 wind park operators provide AES Indiana with monthly wind production projections. AES
8 Indiana forecasts wind purchase costs using the monthly production projections, contract
9 rates, and a factor to account for the impact of expected levels of MISO real-time
10 curtailments. AES Indiana forecasts wind purchase volumes by reducing the monthly
11 production projections by the expected level of MISO real-time curtailments, which is
12 largely based on historical curtailments at each park for the forecast period. Pursuant to
13 the approval received in Cause No. 43485, AES Indiana began receiving power from
14 Hoosier Wind Park on November 1, 2009. For the months of August 2022, September
15 2022, and October 2022, AES Indiana received 11,227 MWhs, 13,060 MWhs, and 21,020
16 MWhs, respectively. Pursuant to the approval received in Cause No. 43740, AES Indiana
17 began receiving power from Lakefield Wind Park on October 4, 2011. For the months of
18 August 2022, September 2022, and October 2022, AES Indiana received 29,540 MWhs,
19 33,687 MWhs, and 27,990 MWhs, respectively. Pursuant to Cause No. 43740, AES
20 Indiana is reflecting credits to jurisdictional fuel costs for the off-system sales profits made
21 possible because of the energy received from the Lakefield Wind Park PPA.

22 **Q45. Where are these wind purchases shown in AES Indiana's schedules in this**
23 **proceeding?**

1 A45. Projected wind purchases are included in Purchases through MISO on Attachment NHC-
2 1, Schedule 1, Line 6 and Line 20. Actual purchases are included on Attachment NHC-1,
3 Schedule 5, Line 6 and Line 21.

4 **Q46. Please provide an update regarding the Locational Marginal Prices (“LMPs”) at the**
5 **Lakefield Wind Park and the Hoosier Wind Park.**

6 A46. The Lakefield Wind Park and the Hoosier Wind Park are Dispatchable Intermittent
7 Resources (“DIRs”) in the MISO market. A DIR is sent dispatch instructions from MISO
8 by an electronic signal every five minutes, similar to the operation of the other generating
9 units. The Lakefield Wind Park and Hoosier Wind Park can ramp quickly, largely avoiding
10 negative LMPs. Curtailed power at the Lakefield Wind Park is billable when certain
11 criteria are met. Curtailments at Hoosier Wind Park fall into two categories: Transmission
12 Curtailments and Economic Curtailments. AES Indiana must pay for (i) Transmission
13 Curtailments up to an identified annual quantity threshold and (ii) all Economic
14 Curtailments. The level of curtailment at the Lakefield Wind Park, measured as a
15 percentage of full theoretical production at the Lakefield Wind Park, were lower than the
16 level of curtailments experienced during the historical period from the last FAC, and lower
17 than during the historical period from one year ago. There were no billable curtailments at
18 the Hoosier Wind Park for this FAC reconciliation period. AES Indiana also offers the
19 Lakefield Wind Park and the Hoosier Wind Park into the day-ahead market to mitigate the
20 impact of negative LMPs in real-time.

21 **PETERSBURG UNIT COMMITMENT**

22 **Q47. Please provide an overview of the AES Indiana’s unit commitment process.**

1 A47. AES Indiana's units can be offered into the MISO market under one of five designations:
2 "outage", "economic", "emergency", "not participating", or "must run". The outage
3 designation indicates that the unit is under repair, either scheduled or forced. The economic
4 designation offers the unit to the market at a set price and MISO decides whether that unit
5 runs or not. As stated in the MISO Tariff Module C, an emergency commitment status
6 indicates the unit is only available under an emergency condition for the hour. A not
7 participating status indicates the Market Participant will not operate a unit that is otherwise
8 available. The must run designation indicates that the unit should run through the period
9 regardless of price signals, although the output level will be determined by market price.
10 Generally, AES Indiana looks at the *predicted* economic performance of each generating
11 unit over a period of one week when deciding whether to commit the unit. The startup cost
12 that would be necessary to re-start the unit is also considered. Additionally, AES Indiana
13 considers reliability, price certainty from running generation, and opportunities from
14 participating in both Day Ahead and Real Time energy markets. During seasonal periods
15 (summer and winter) with historical high market price and potential high load, AES Indiana
16 will maintain a generation mix that includes coal, natural gas, and renewables. AES
17 Indiana raises the minimum operating level when required to maintain reliability or for
18 other operational reasons. Under normal conditions, AES Indiana offers the Petersburg
19 units to be dispatched by MISO between their minimum economic operation level and
20 maximum economic operation level. In other words, the decision to offer a unit considers
21 a wide range of factors. Some are economic, such as the predicted prices in the near future
22 market, and the avoidance of start-up costs required to bring the unit back on-line. Some
23 are operational, such as the time and manpower required to bring units back on-line, plant

1 limitations, and wear and tear of cycling units designed for long term base load operations.
2 Finally, some considerations revolve around system reliability. System reliability issues
3 are particularly important during the winter and summer peaks. A system is more reliable
4 when supported by a diverse fuel mix. Units that are taken down do not always come back
5 fully operational, and sudden system disruptions can cause significant price spikes as units
6 struggle to come back on-line to fill the energy demand.

7 **Q48. Please explain what you mean by *predicted* economic performance of the unit and**
8 **“realized day ahead pricing”.**

9 A48. *Predicted* economic performance is based on expectations of the forward pricing. AES
10 Indiana uses the Intercontinental Exchange (“ICE”) financial trading platform and power
11 broker end of day markets for forward pricing. *Realized* day ahead pricing is the price
12 awarded by MISO when the unit is cleared in the day ahead market. Forward pricing is
13 based on market expectations of factors that impact those prices. Forward prices are not
14 always what are realized and, as mentioned previously, there are other critical factors
15 considered in unit commitment including price certainty and reliability.

16 In the summer and winter months, forward power markets typically have price uncertainty
17 due to the potential for abrupt changes in weather. The Company’s unit commitment
18 decisions are based on forward prices, as well as the other factors previously described.

19 While the Company commits its generating units utilizing the best known information at
20 the time, the future can unfold in different ways. The Company monitors the realized
21 pricing to facilitate understanding of the market going forward. However, at the point in
22 time a unit commitment decision is made, the Company does so without the benefit of
23 hindsight. Even where the realized prices come in lower than expectation, the Company

1 cannot know, with confidence, how the market will continue to move. Also, it is difficult
2 to make the decision to de-commit a coal unit in a time period that presents a great deal of
3 price risk for our customers. Operating baseload coal units assures relatively low cost of
4 power during a historically volatile summer and winter time period for AES Indiana's
5 customers and reduces price risk for the benefit of customers.

6 The commitment of baseload units may result in certain periods where individual units
7 operate below their respective cost. However, as previously discussed, committing
8 baseload units during certain periods provides a reasonable hedge for customers. By
9 creating a ceiling for power prices that will ultimately be flowed through rates, the hedge
10 protects the customer during periods of higher risk and associated higher costs, including
11 costs that stem from scarcity events that can occur during the summer and winter period.

12 **Q49. What is your understanding of how prudence is assessed?**

13 A49. My understanding is that the focus in a prudence inquiry is not whether a given decision
14 or action produced a favorable or unfavorable result, but rather, whether the process leading
15 to the decision or action was a logical one, and whether the utility company used good
16 judgement, applied appropriate standards, and reasonably relied on information and
17 planning techniques known at the time.

18 **Q50. Did the Company act prudently with respect to the commitment and operation of**
19 **Petersburg during August 2022 through October 2022?**

20 A50. Yes. The operation of Petersburg Generation Station during this period followed the
21 prudence practices described above. For commitment decisions during this period, we
22 evaluated the visible power market prices versus the cost of the Petersburg Units.
23 Decisions were based on market pricing that the Company witnessed at the time

1 commitment decisions were made. The Company also considered non-economic factors
2 as discussed earlier in my testimony.

3 **Q51. Is it reasonable to rely solely on pricing to decide whether and how to commit AES**
4 **Indiana's generating units?**

5 A51. No. Simply looking back on energy prices for a given period, and comparing it to the cost
6 of generation, does not capture the value of the non-monetary considerations weighed
7 during the commitment decision. Oftentimes, running at a short-term loss benefits
8 customers in a number of ways. For example, certain start-up costs are avoided, long-term
9 maintenance costs associated with cycling units are minimized and customer prices are
10 stabilized due to the fact that a unit is on-line and ready to respond to market disruptions.
11 It is also important to again consider the value of the Petersburg Generation Station as a
12 hedge against high prices for customers in traditionally volatile-priced periods. Price
13 forecasts are not perfect and can deviate significantly from actual market conditions for
14 many reasons. Factors such as the time involved in bringing base load units back online,
15 the potential to have difficulty bringing units back after long outage periods, and the
16 potential for other MISO resources to have operational issues, can create significant price
17 risk for AES Indiana's customers.

18 **Q52. Was total fuel cost divided by sales (F/S) on Attachment NHC-1, Schedule 5, Page 4**
19 **of 4, Line 32, higher than forecast during August 2022 through October 2022?**

20 A52. Yes. The actual fuel costs were higher than forecast, resulting in a weighted average
21 deviation of -10.04%. The August 2022, September 2022, and October 2022 deviations of
22 actual to forecast F/S were -28.68%, 0.32%, and 5.51%, respectively. The largest driver
23 of the variance was the increase in natural gas prices. The forecast fuel cost for the months

1 of August 2022, September 2022, and October 2022 used a Henry Hub price of
2 \$4.51/MMBtu, \$6.32/MMBtu, and \$6.30/MMBtu, respectively. Realized values during
3 the historical period were \$8.78/MMBtu in August 2022, \$8.00/MMBtu in September
4 2022, and \$5.75/MMBtu in October 2022. The increase in natural gas price in the first two
5 months of the historical FAC period increased the cost of generation in the AES Indiana
6 gas units and the price of purchased power. Power prices were impacted by other factors
7 as well. Seasonal NOx pricing saw a dramatic increase and impacted power pricing for the
8 three months of the historical FAC period. Seasonal NOx prices began the year near
9 \$3,300/ton and increased to \$30,000/ton to start the Seasonal NOx period (May through
10 September). Seasonal NOx pricing continued higher during the historical FAC period
11 approaching \$47,000/ton, before beginning to pull back in late August through September.
12 Prices at the end of September settled at \$18,000 per ton. Seasonal NOx pricing increased
13 the cost of generation significantly in units without NOx removal equipment and was a
14 factor in higher power prices. Coal prices also experienced a dramatic price increase and
15 while it did not impact costs at AES Indiana Petersburg station due to coal hedges, it did
16 have an impact supporting power prices in the MISO market. The August 2022, September
17 2022, and October 2022 Indianapolis temperature variance from normal was +0.3 degrees,
18 +0.3 degrees, and -1.0 degrees, respectively.

19 **Q53. Can you provide more detail regarding the natural gas price during the August 2022**
20 **through October 2022 period?**

21 A53. Yes. Natural gas prices remained very high during the historical FAC period. Prices were
22 strongest August through the first half of September before trending lower through
23 October, The key drivers of natural gas prices were natural gas production remained static

early in the historical period before beginning to move higher in September, demand from the electric generation has remained high, LNG exports are at maximum levels for the foreseeable future, coal remains tight and combined with rising emissions prices make natural gas fuel switching from coal likely. The ongoing war between Russia and Ukraine continues to create a great deal of uncertainty in the global energy markets and it sent fuel prices (coal and natural gas) markedly higher as a result. Natural gas prices did get some relief in the second half of the historical period as natural gas production increased, weather in late September and October was relatively mild, which allowed the storage numbers to see a large gain towards the 5-year average levels, and Europe reported improving natural gas inventory in preparation for winter.

Q54. Please summarize the status of the Petersburg Units during the August 2022 through October 2022 historical time period.

A54. During the historical FAC period, Petersburg Units 2, 3, and 4 were offered as economic for the majority of the period.

Q55. Please summarize the commitment status of each of the Petersburg units during the August 2022 through October 2022 time period.

A55. 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 138 Historical Period			
	Pete 2	Pete 3	Pete 4
Must Run	0%	0%	0%
Economic	68%	85%	87%
Emergency	0%	0%	0%
Outage	32%	15%	13%

1 Petersburg Units 2, 3, and 4 were typically committed as economic to MISO during the
2 historical FAC period. The majority of the Petersburg Unit 2 outages were due to tube leak
3 repairs. Commitment decisions are discussed in more detail in Q/A 58 and Confidential
4 Attachment DJ-3.

5 **Q56. Did you document the forward pricing reflected in the unit commitment decisions for**
6 **the months of August 2022 through October 2022?**

7 A56. Yes. AES Indiana completed model runs to support the unit commitment decisions which
8 document the prices used at that time. The prices used for the model runs consider
9 observed ICE markets and power broker end of day marks. Confidential Attachment DJ-
10 3 provides a summary and the model runs used for commitment decisions during each
11 week of the August 2022 through October 2022 period.

12 **Q57. In your opinion, was AES Indiana's operation of the Petersburg units during August**
13 **2022 through October 2022 reasonably aligned with market prices?**

14 A57. Yes. During the historical FAC period all of the weekly 7-day model runs showed positive
15 margin for Petersburg Units 2, 3, and 4. The units were offered as economic when available
16 for dispatch.

17 **Q58. Please provide further detail on the unit commitment decisions in the August 2022**
18 **through October 2022 time period.**

19 A58. AES Indiana ran a short-term model to track the economic value of the Petersburg Units
20 and they were offered to MISO as economic, must run, or outage in the day ahead market.
21 The model runs provided a 30 day forward look; we valued the coming weekend and week
22 for evaluation of unit commitment (7-day period). These model runs are shown in
23 Confidential Attachment DJ-3. Non-economic factors were also considered in unit

1 commitment decisions, including reliability, price certainty, operational needs, and
2 avoidance of startup costs. Below is the list of each unit's commitment decisions with
3 commentary.

4 **Petersburg Unit 2**

5 Petersburg Unit 2 ("Unit 2") entered the historical FAC period online and offered as
6 economic to MISO. Unit 2 remained in that status through September 12 when the unit
7 came off line for a tube leak repair. During the repairs, a boiler inspection identified
8 potential tube leaks which were also repaired. Unit 2 returned to service September 29
9 and offered as economic to MISO and on line in that status through October 19. Unit 2
10 came off line for a tube leak repair on October 19 and remained in outage through the end
11 of the historical FAC period.

12 **Petersburg Unit 3**

13 Petersburg Unit 3 ("Unit 3") entered the start of the historical FAC period on line but
14 offered as outage to MISO due to returning from a flame scanner repair. Unit 3 was offered
15 as economic to MISO and online August 2 through August 30. Unit 3 came off line for a
16 tube leak August 30 and remained in that status until returning to service September 3.
17 Unit 3 was on line and offered to as economic to MISO for the period of September 4
18 through September 22. Unit 3 came off line September 23 for a tube leak repair and
19 remained in that status until September 26 when the unit returned to service. Unit 3 was
20 online and offered as economic to MISO September 27 through October 18. Unit 3 was
21 offered as outage October 19 due to tube leak and remained in that status through October
22 24. The unit returned to service October 24 and was online and offered to MISO as
23 economic from October 25 through the end of the historical FAC period.

1 **Petersburg Unit 4**

2 Petersburg Unit 4 (“Unit 4”) entered the historical FAC period online and offered as
3 economic to MISO. The unit remained in that status from August 1 through September 28.
4 Unit 4 came went into a planned outage September 29 and remained in that status through
5 October 9 when the unit began start up. Unit 4 was offered as outage on October 10 while
6 returning to service. Unit 4 was on line and offered as economic to MISO From October
7 11 through the end of the historical FAC period.

8 **Q59. Has AES Indiana performed a look back analysis to assess the economics of the**
9 **Petersburg Station unit commitments for August 2022 through October 2022?**

10 A59. Yes. As recognized in the Commission’s FAC 127 Order, the Company does not have the
11 benefit of hindsight when it makes its unit commitment decisions. Thus, the prudence of
12 the unit commitment decisions should not be based on the hindsight analysis.

13 **Q60. Why did you perform the look back analysis?**

14 A60. We performed the analysis to provide robust information to the Commission. I would add
15 that while the analysis should not be used to judge the prudence of the unit commitment
16 decisions, the Company acknowledges that a look back analysis can inform our decision-
17 making on a going forward basis and support our ongoing effort to improve our modeling
18 and decision process.

19 **Q61. Please discuss the look back analysis for August 2022 through October 2022.**

20 A61. AES Indiana performed an evaluation of Petersburg for August 2022 through October
21 2022 using the value created during the actual unit commitment, as well as other economic
22 benefits, including real time optimization, make whole payments, Auction Revenue Rights,
23 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
August	\$ 17,613,824	\$ 17,657,554	\$ 17,841,274	\$ 53,112,652
September	\$ 6,953,065	\$ 10,625,501	\$ 12,880,828	\$ 30,459,394
October	\$ 3,693,192	\$ 4,462,132	\$ 4,201,315	\$ 12,356,638
Total	\$ 28,260,081	\$ 32,745,187	\$ 34,923,417	\$ 95,928,685

Additionally, during the August 2022 through October 2022 period OSS margin was \$26,832,046 all of which (100%) goes to the customer.

Q62. 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.

A62. 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 March 2023 through May 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 (August 2022 through
6 October 2022) 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 **Q63. Please update the Commission on AES Indiana’s 2022 and 2023 projected coal burn**
16 **and coal purchases.**

17 A63. Confidential Attachment DJ-4 shows the realized and projected monthly purchases and
18 burns for 2022 and 2023. Due to high natural gas prices coal burns have remained strong.
19 Current inventory is above the target range. AES Indiana expects to build coal inventory
20 above the high side of our target range throughout 2022 to have appropriate supply for
21 winter of 2022-2023. AES Indiana will continue to closely monitor projected coal burns
22 and manage inventories to ensure reliable coal supply. AES Indiana plans to discuss this
23 subject in further detail with the OUCC during its FAC 138 audit.

24 **Q64. Is AES Indiana’s coal inventory within its target levels?**

1 A64. No. AES Indiana inventory is currently above the 25-50 day supply of coal inventory target
2 range. This is by plan to secure adequate inventory to manage expected high winter burns
3 and being accomplished with deep in the money coal contracts to assure reliability during
4 the winter.

5 **Q65. What is AES Indiana doing to manage its inventory level?**

6 A65. 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 increase deliveries when coal burns go up and
10 decrease deliveries when coal burns go down. This contract variability is essential in
11 managing the month-to-month variations in coal burns due to weather, market prices and
12 unit availability. Current market conditions make it opportunistic to take all the coal
13 purchased at maximum levels because of favorable market pricing.

14 Current market conditions have created an extremely tight coal market. A combination of
15 high export demand and strong domestic coal burns along with coal producers struggling
16 to add output to meet demand and delays in the transportation have led to scarcity in the
17 coal markets. AES Indiana does not expect to experience issues with coal supply that
18 impacted last winter based on current purchases and burn projections.

19 **Q66. Does decrement pricing impact the forecast or reconciliation in this FAC proceeding?**

20 A66. No. There is no decrement pricing in the forecast period of March 2023 through May
21 2023 or in the historical FAC period of August 2022 through October 2022.

22 **Q67. Has AES Indiana been impacted by any coal supply interruptions?**

23 A67. No.

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

2 **Q68. Has AES Indiana completed any natural gas transactions for the Eagle Valley CCGT**
3 **under the fuel hedging policy approved in FAC 133?**

4 A68. Yes. AES Indiana initiated the Long-Term Hedging Program for Eagle Valley on March
5 28, 2022. Once the plant was online and running as expected, the Company moved
6 expeditiously and in accordance with the hedging plan to bring hedged volumes in line
7 with approved guidelines. Attachment DJ-5 provides an evaluation of the hedges'
8 economic settlement in August 2022, September 2022, and October 2022, by comparing
9 the hedge price to the daily index price for the natural gas delivery point associated with
10 the hedges. In the month of August 2022, hedges on natural gas represented a savings of
11 \$1,748,750. In the month of September 2022, hedges on natural gas represented a cost of
12 \$5,550. In the month of October 2022, hedges on natural gas represented a cost of
13 \$1,850,875. Confidential Attachment DJ-6 shows completed hedging transactions and
14 remaining balances to be completed for the hedging policy approved in FAC 133. AES
15 Indiana will provide hedging transactions, modeling to support hedge volumes, market
16 pricing at the time of the transactions, and hedge settlement calculations in the confidential
17 audit package provided to the OUCC and review the information in the FAC 138 audit.

18 **SHORT TERM MODEL**

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

21 A69. AES Indiana has created a short-term model on the Allegro risk management platform for
22 Petersburg coal units. The model utilizes a combination of two types of trades to calculate
23 the operating cost and potential margin for the Petersburg coal units. The two trades

1 represent different aspects of the Petersburg units and combined provide a representation
2 of the potential daily margin.

3 The first trade characterizes the minimum generation of each of the units and does so at a
4 set cost. AES Indiana can break this down into different costs for on peak, off peak, and a
5 24-hour weekend run. This determines whether the unit has positive margin at minimum
6 load with the expectation that the unit will not be at minimum over the peak hours of the
7 day, hence the different heat rates for peak and off peak. For the weekend, AES Indiana
8 calculates the cost for this trade assuming 12 hours of the unit at full load and 12 hours at
9 minimum. This blended heat rate provides a reasonable expectation of cost over the course
10 of a weekend day.

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

19 AES Indiana also incorporates volatilities and correlations into the model. A volatility
20 measures how often and to what degree prices change measured as a percentage. A
21 correlation shows how those prices move together, whether they often move together, or
22 whether they do not have anything to do with one another. For example, coal and power
23 have a very low correlation. Power will move without any corresponding change in coal.

1 However, natural gas and power have a much stronger correlation. As natural gas prices
2 move there are often corresponding changes in power price. These factors are then utilized
3 to add additional nuance to the model. AES Indiana marks the power prices daily based
4 on weather, load, and market information. These prices are loaded daily into the risk
5 management system to feed update prices to the model.

6 AES Indiana makes other updates to the model monthly. Coal cost is adjusted based on its
7 weighted average cost of inventory (“WACI”) price. Also, for a short-term model AES
8 Indiana believes that utilizing a shorter time horizon for power basis measurement is
9 appropriate. Therefore, AES Indiana measures the power basis from Indiana Hub to
10 Petersburg during the previous month and then applies that to the next month. This
11 considers current conditions and potential congestion issues or load demand.

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

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

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

18 A70. AES Indiana will include model output from August 2022 through the end of October 2022
19 in the OUCC packet for review and will review the model and output with the OUCC
20 during the audit as requested.

CONCLUSION

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

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

Q72. Does this conclude your prefled direct testimony?

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 16th day of December 2022.



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-Aug-22	8.3300	0.600	8.9300	12,500	111.63	1-Sep-22	8.9300	0.600	9.5300	12,500	119.13	1-Oct-22	6.4000	0.600	7.0000	12,500	87.50
2-Aug-22	8.2000	0.600	8.8000	12,500	110.00	2-Sep-22	9.3800	0.600	9.9800	12,500	124.75	2-Oct-22	6.4000	0.600	7.0000	12,500	87.50
3-Aug-22	8.0100	0.600	8.6100	12,500	107.63	3-Sep-22	9.1800	0.600	9.7800	12,500	122.25	3-Oct-22	6.4000	0.600	7.0000	12,500	87.50
4-Aug-22	7.8100	0.600	8.4100	12,500	105.13	4-Sep-22	9.1800	0.600	9.7800	12,500	122.25	4-Oct-22	5.6400	0.600	6.2400	12,500	78.00
5-Aug-22	8.4000	0.600	9.0000	12,500	112.50	5-Sep-22	9.1800	0.600	9.7800	12,500	122.25	5-Oct-22	5.4000	0.600	6.0000	12,500	75.00
6-Aug-22	8.3000	0.600	8.9000	12,500	111.25	6-Sep-22	9.1800	0.600	9.7800	12,500	122.25	6-Oct-22	5.8400	0.600	6.4400	12,500	80.50
7-Aug-22	8.3000	0.600	8.9000	12,500	111.25	7-Sep-22	8.5200	0.600	9.1200	12,500	114.00	7-Oct-22	6.9100	0.600	7.5100	12,500	93.88
8-Aug-22	8.3000	0.600	8.9000	12,500	111.25	8-Sep-22	8.1200	0.600	8.7200	12,500	109.00	8-Oct-22	6.2500	0.600	6.8500	12,500	85.63
9-Aug-22	7.7600	0.600	8.3600	12,500	104.50	9-Sep-22	8.2700	0.600	8.8700	12,500	110.88	9-Oct-22	6.2500	0.600	6.8500	12,500	85.63
10-Aug-22	7.8700	0.600	8.4700	12,500	105.88	10-Sep-22	8.3100	0.600	8.9100	12,500	111.38	10-Oct-22	6.2500	0.600	6.8500	12,500	85.63
11-Aug-22	7.8600	0.600	8.4600	12,500	105.75	11-Sep-22	8.3100	0.600	8.9100	12,500	111.38	11-Oct-22	6.2500	0.600	6.8500	12,500	85.63
12-Aug-22	8.5300	0.600	9.1300	12,500	114.13	12-Sep-22	8.3100	0.600	8.9100	12,500	111.38	12-Oct-22	6.2000	0.600	6.8000	12,500	85.00
13-Aug-22	8.7300	0.600	9.3300	12,500	116.63	13-Sep-22	8.2000	0.600	8.8000	12,500	110.00	13-Oct-22	6.6000	0.600	7.2000	12,500	90.00
14-Aug-22	8.7300	0.600	9.3300	12,500	116.63	14-Sep-22	8.4900	0.600	9.0900	12,500	113.63	14-Oct-22	6.2500	0.600	6.8500	12,500	85.63
15-Aug-22	8.7300	0.600	9.3300	12,500	116.63	15-Sep-22	8.7000	0.600	9.3000	12,500	116.25	15-Oct-22	6.1000	0.600	6.7000	12,500	83.75
16-Aug-22	8.6200	0.600	9.2200	12,500	115.25	16-Sep-22	8.6000	0.600	9.2000	12,500	115.00	16-Oct-22	6.1000	0.600	6.7000	12,500	83.75
17-Aug-22	9.2800	0.600	9.8800	12,500	123.50	17-Sep-22	8.1100	0.600	8.7100	12,500	108.88	17-Oct-22	6.1000	0.600	6.7000	12,500	83.75
18-Aug-22	9.5100	0.600	10.1100	12,500	126.38	18-Sep-22	8.1100	0.600	8.7100	12,500	108.88	18-Oct-22	6.0800	0.600	6.6800	12,500	83.50
19-Aug-22	9.4200	0.600	10.0200	12,500	125.25	19-Sep-22	8.1100	0.600	8.7100	12,500	108.88	19-Oct-22	6.1600	0.600	6.7600	12,500	84.50
20-Aug-22	9.1400	0.600	9.7400	12,500	121.75	20-Sep-22	7.9600	0.600	8.5600	12,500	107.00	20-Oct-22	5.6300	0.600	6.2300	12,500	77.88
21-Aug-22	9.1400	0.600	9.7400	12,500	121.75	21-Sep-22	8.0100	0.600	8.6100	12,500	107.63	21-Oct-22	5.1000	0.600	5.7000	12,500	71.25
22-Aug-22	9.1400	0.600	9.7400	12,500	121.75	22-Sep-22	7.9900	0.600	8.5900	12,500	107.38	22-Oct-22	4.4500	0.600	5.0500	12,500	63.13
23-Aug-22	9.8500	0.600	10.4500	12,500	130.63	23-Sep-22	7.7600	0.600	8.3600	12,500	104.50	23-Oct-22	4.4500	0.600	5.0500	12,500	63.13
24-Aug-22	9.7500	0.600	10.3500	12,500	129.38	24-Sep-22	6.7500	0.600	7.3500	12,500	91.88	24-Oct-22	4.4500	0.600	5.0500	12,500	63.13
25-Aug-22	9.2700	0.600	9.8700	12,500	123.38	25-Sep-22	6.7500	0.600	7.3500	12,500	91.88	25-Oct-22	4.8100	0.600	5.4100	12,500	67.63
26-Aug-22	9.4700	0.600	10.0700	12,500	125.88	26-Sep-22	6.7500	0.600	7.3500	12,500	91.88	26-Oct-22	5.1700	0.600	5.7700	12,500	72.13
27-Aug-22	9.4800	0.600	10.0800	12,500	126.00	27-Sep-22	6.7500	0.600	7.3500	12,500	91.88	27-Oct-22	5.2800	0.600	5.8800	12,500	73.50
28-Aug-22	9.4800	0.600	10.0800	12,500	126.00	28-Sep-22	6.8300	0.600	7.4300	12,500	92.88	28-Oct-22	5.3000	0.600	5.9000	12,500	73.75
29-Aug-22	9.4800	0.600	10.0800	12,500	126.00	29-Sep-22	6.5900	0.600	7.1900	12,500	89.88	29-Oct-22	5.0200	0.600	5.6200	12,500	70.25
30-Aug-22	9.2400	0.600	9.8400	12,500	123.00	30-Sep-22	6.5700	0.600	7.1700	12,500	89.63	30-Oct-22	5.0200	0.600	5.6200	12,500	70.25
31-Aug-22	9.1000	0.600	9.7000	12,500	121.25							31-Oct-22	5.0200	0.600	5.6200	12,500	70.25

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	8/8/2022	\$ 12,431	107	\$ 528	-	\$ -		-	\$ -	-	-
	Aug Total		107	\$ 528	-	\$ -		-	\$ -	-	-
2	9/15/2022	\$ 54,743	405	\$ 7,662	-	\$ -		-	\$ -	-	-
3	9/16/2022	\$ 67,747	239	\$ 40,262	-	\$ -		-	\$ -	-	-
4	9/21/2022	\$ 148	1	\$ 41	-	\$ -		-	\$ -	-	-
	Sep Total		645	\$ 47,965	-	\$ -		-	\$ -	-	-
5	10/15/2022	\$ 168	2	\$ 0	-	\$ -		-	\$ -	-	-
6	10/18/2022	\$ 9,432	75	\$ 3,170	-	\$ -		-	\$ -	-	-
7	10/19/2022	\$ 231,094	861	\$ 158,339	-	\$ -		-	\$ -	-	-
8	10/20/2022	\$ 13,067	140	\$ 2,164	-	\$ -		-	\$ -	-	-
	Oct Total		1,078	\$ 163,673	-	\$ -		-	\$ -	-	-
	Grand Total			\$ 212,166		\$ -			\$ -		-

¹This column is the total cost of purchased power for those hours during the operating day when the price was above the benchmark.

CONFIDENTIAL ATTACHMENT DJ-3

[CONFIDENTIAL – NOT REPRODUCED HEREIN]

CONFIDENTIAL ATTACHMENT DJ-4

[CONFIDENTIAL – NOT REPRODUCED HEREIN]

Total Gas Hedge Gains/(Losses) for August: \$ 1,748,750.00

Indianapolis Power & Light Company
Cause No. 38703 FAC 138
Attachment 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
8/1/2022	5,000	\$ 6.110	\$ 7.920	\$	1.81 \$ 9,050.00	8/1/2022	5,000	\$ 6.630	\$ 7.920	\$ 1.29	\$ 6,450.00
8/2/2022	5,000	\$ 6.110	\$ 7.605	\$	1.50 \$ 7,475.00	8/2/2022	5,000	\$ 6.630	\$ 7.605	\$ 0.98	\$ 4,875.00
8/3/2022	5,000	\$ 6.110	\$ 7.450	\$	1.34 \$ 6,700.00	8/3/2022	5,000	\$ 6.630	\$ 7.450	\$ 0.82	\$ 4,100.00
8/4/2022	5,000	\$ 6.110	\$ 7.410	\$	1.30 \$ 6,500.00	8/4/2022	5,000	\$ 6.630	\$ 7.410	\$ 0.78	\$ 3,900.00
8/5/2022	5,000	\$ 6.110	\$ 7.780	\$	1.67 \$ 8,350.00	8/5/2022	5,000	\$ 6.630	\$ 7.780	\$ 1.15	\$ 5,750.00
8/6/2022	5,000	\$ 6.110	\$ 7.755	\$	1.65 \$ 8,225.00	8/6/2022	5,000	\$ 6.630	\$ 7.755	\$ 1.13	\$ 5,625.00
8/7/2022	5,000	\$ 6.110	\$ 7.755	\$	1.65 \$ 8,225.00	8/7/2022	5,000	\$ 6.630	\$ 7.755	\$ 1.13	\$ 5,625.00
8/8/2022	5,000	\$ 6.110	\$ 7.755	\$	1.65 \$ 8,225.00	8/8/2022	5,000	\$ 6.630	\$ 7.755	\$ 1.13	\$ 5,625.00
8/9/2022	5,000	\$ 6.110	\$ 7.400	\$	1.29 \$ 6,450.00	8/9/2022	5,000	\$ 6.630	\$ 7.400	\$ 0.77	\$ 3,850.00
8/10/2022	5,000	\$ 6.110	\$ 7.620	\$	1.51 \$ 7,550.00	8/10/2022	5,000	\$ 6.630	\$ 7.620	\$ 0.99	\$ 4,950.00
8/11/2022	5,000	\$ 6.110	\$ 7.700	\$	1.59 \$ 7,950.00	8/11/2022	5,000	\$ 6.630	\$ 7.700	\$ 1.07	\$ 5,350.00
8/12/2022	5,000	\$ 6.110	\$ 8.120	\$	2.01 \$ 10,050.00	8/12/2022	5,000	\$ 6.630	\$ 8.120	\$ 1.49	\$ 7,450.00
8/13/2022	5,000	\$ 6.110	\$ 8.265	\$	2.16 \$ 10,775.00	8/13/2022	5,000	\$ 6.630	\$ 8.265	\$ 1.64	\$ 8,175.00
8/14/2022	5,000	\$ 6.110	\$ 8.265	\$	2.16 \$ 10,775.00	8/14/2022	5,000	\$ 6.630	\$ 8.265	\$ 1.64	\$ 8,175.00
8/15/2022	5,000	\$ 6.110	\$ 8.265	\$	2.16 \$ 10,775.00	8/15/2022	5,000	\$ 6.630	\$ 8.265	\$ 1.64	\$ 8,175.00
8/16/2022	5,000	\$ 6.110	\$ 8.045	\$	1.94 \$ 9,675.00	8/16/2022	5,000	\$ 6.630	\$ 8.045	\$ 1.42	\$ 7,075.00
8/17/2022	5,000	\$ 6.110	\$ 8.660	\$	2.55 \$ 12,750.00	8/17/2022	5,000	\$ 6.630	\$ 8.660	\$ 2.03	\$ 10,150.00
8/18/2022	5,000	\$ 6.110	\$ 8.785	\$	2.68 \$ 13,375.00	8/18/2022	5,000	\$ 6.630	\$ 8.785	\$ 2.16	\$ 10,775.00
8/19/2022	5,000	\$ 6.110	\$ 8.600	\$	2.49 \$ 12,450.00	8/19/2022	5,000	\$ 6.630	\$ 8.600	\$ 1.97	\$ 9,850.00
8/20/2022	5,000	\$ 6.110	\$ 8.380	\$	2.27 \$ 11,350.00	8/20/2022	5,000	\$ 6.630	\$ 8.380	\$ 1.75	\$ 8,750.00
8/21/2022	5,000	\$ 6.110	\$ 8.380	\$	2.27 \$ 11,350.00	8/21/2022	5,000	\$ 6.630	\$ 8.380	\$ 1.75	\$ 8,750.00
8/22/2022	5,000	\$ 6.110	\$ 8.380	\$	2.27 \$ 11,350.00	8/22/2022	5,000	\$ 6.630	\$ 8.380	\$ 1.75	\$ 8,750.00
8/23/2022	5,000	\$ 6.110	\$ 8.815	\$	2.71 \$ 13,525.00	8/23/2022	5,000	\$ 6.630	\$ 8.815	\$ 2.19	\$ 10,925.00
8/24/2022	5,000	\$ 6.110	\$ 9.050	\$	2.94 \$ 14,700.00	8/24/2022	5,000	\$ 6.630	\$ 9.050	\$ 2.42	\$ 12,100.00
8/25/2022	5,000	\$ 6.110	\$ 8.670	\$	2.56 \$ 12,800.00	8/25/2022	5,000	\$ 6.630	\$ 8.670	\$ 2.04	\$ 10,200.00
8/26/2022	5,000	\$ 6.110	\$ 8.660	\$	2.55 \$ 12,750.00	8/26/2022	5,000	\$ 6.630	\$ 8.660	\$ 2.03	\$ 10,150.00
8/27/2022	5,000	\$ 6.110	\$ 8.675	\$	2.57 \$ 12,825.00	8/27/2022	5,000	\$ 6.630	\$ 8.675	\$ 2.05	\$ 10,225.00
8/28/2022	5,000	\$ 6.110	\$ 8.675	\$	2.57 \$ 12,825.00	8/28/2022	5,000	\$ 6.630	\$ 8.675	\$ 2.05	\$ 10,225.00
8/29/2022	5,000	\$ 6.110	\$ 8.675	\$	2.57 \$ 12,825.00	8/29/2022	5,000	\$ 6.630	\$ 8.675	\$ 2.05	\$ 10,225.00
8/30/2022	5,000	\$ 6.110	\$ 8.755	\$	2.65 \$ 13,225.00	8/30/2022	5,000	\$ 6.630	\$ 8.755	\$ 2.13	\$ 10,625.00
8/31/2022	5,000	\$ 6.110	\$ 8.420	\$	2.31 \$ 11,550.00	8/31/2022	5,000	\$ 6.630	\$ 8.420	\$ 1.79	\$ 8,950.00
					\$ 326,400.00						\$ 245,800.00

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
8/1/2022	5,000	\$ 6.840	\$ 7.920	\$	1.08 \$ 5,400.00	8/1/2022	5,000	\$ 6.805	\$ 7.920	\$ 1.12	\$ 5,575.00
8/2/2022	5,000	\$ 6.840	\$ 7.605	\$	0.77 \$ 3,825.00	8/2/2022	5,000	\$ 6.805	\$ 7.605	\$ 0.80	\$ 4,000.00
8/3/2022	5,000	\$ 6.840	\$ 7.450	\$	0.61 \$ 3,050.00	8/3/2022	5,000	\$ 6.805	\$ 7.450	\$ 0.65	\$ 3,225.00
8/4/2022	5,000	\$ 6.840	\$ 7.410	\$	0.57 \$ 2,850.00	8/4/2022	5,000	\$ 6.805	\$ 7.410	\$ 0.61	\$ 3,025.00
8/5/2022	5,000	\$ 6.840	\$ 7.780	\$	0.94 \$ 4,700.00	8/5/2022	5,000	\$ 6.805	\$ 7.780	\$ 0.98	\$ 4,875.00
8/6/2022	5,000	\$ 6.840	\$ 7.755	\$	0.92 \$ 4,575.00	8/6/2022	5,000	\$ 6.805	\$ 7.755	\$ 0.95	\$ 4,750.00
8/7/2022	5,000	\$ 6.840	\$ 7.755	\$	0.92 \$ 4,575.00	8/7/2022	5,000	\$ 6.805	\$ 7.755	\$ 0.95	\$ 4,750.00
8/8/2022	5,000	\$ 6.840	\$ 7.755	\$	0.92 \$ 4,575.00	8/8/2022	5,000	\$ 6.805	\$ 7.755	\$ 0.95	\$ 4,750.00
8/9/2022	5,000	\$ 6.840	\$ 7.400	\$	0.56 \$ 2,800.00	8/9/2022	5,000	\$ 6.805	\$ 7.400	\$ 0.60	\$ 2,975.00
8/10/2022	5,000	\$ 6.840	\$ 7.620	\$	0.78 \$ 3,900.00	8/10/2022	5,000	\$ 6.805	\$ 7.620	\$ 0.82	\$ 4,075.00
8/11/2022	5,000	\$ 6.840	\$ 7.700	\$	0.86 \$ 4,300.00	8/11/2022	5,000	\$ 6.805	\$ 7.700	\$ 0.90	\$ 4,475.00
8/12/2022	5,000	\$ 6.840	\$ 8.120	\$	1.28 \$ 6,400.00	8/12/2022	5,000	\$ 6.805	\$ 8.120	\$ 1.32	\$ 6,575.00
8/13/2022	5,000	\$ 6.840	\$ 8.265	\$	1.43 \$ 7,125.00	8/13/2022	5,000	\$ 6.805	\$ 8.265	\$ 1.46	\$ 7,300.00
8/14/2022	5,000	\$ 6.840	\$ 8.265	\$	1.43 \$ 7,125.00	8/14/2022	5,000	\$ 6.805	\$ 8.265	\$ 1.46	\$ 7,300.00
8/15/2022	5,000	\$ 6.840	\$ 8.265	\$	1.43 \$ 7,125.00	8/15/2022	5,000	\$ 6.805	\$ 8.265	\$ 1.46	\$ 7,300.00
8/16/2022	5,000	\$ 6.840	\$ 8.045	\$	1.21 \$ 6,025.00	8/16/2022	5,000	\$ 6.805	\$ 8.045	\$ 1.24	\$ 6,200.00
8/17/2022	5,000	\$ 6.840	\$ 8.660	\$	1.82 \$ 9,100.00	8/17/2022	5,000	\$ 6.805	\$ 8.660	\$ 1.86	\$ 9,275.00
8/18/2022	5,000	\$ 6.840	\$ 8.785	\$	1.95 \$ 9,725.00	8/18/2022	5,000	\$ 6.805	\$ 8.785	\$ 1.98	\$ 9,900.00
8/19/2022	5,000	\$ 6.840	\$ 8.600	\$	1.76 \$ 8,800.00	8/19/2022	5,000	\$ 6.805	\$ 8.600	\$ 1.80	\$ 8,975.00
8/20/2022	5,000	\$ 6.840	\$ 8.380	\$	1.54 \$ 7,700.00	8/20/2022	5,000	\$ 6.805	\$ 8.380	\$ 1.58	\$ 7,875.00
8/21/2022	5,000	\$ 6.840	\$ 8.380	\$	1.54 \$ 7,700.00	8/21/2022	5,000	\$ 6.805	\$ 8.380	\$ 1.58	\$ 7,875.00
8/22/2022	5,000	\$ 6.840	\$ 8.380	\$	1.54 \$ 7,700.00	8/22/2022	5,000	\$ 6.805	\$ 8.380	\$ 1.58	\$ 7,875.00
8/23/2022	5,000	\$ 6.840	\$ 8.815	\$	1.98 \$ 9,875.00	8/23/2022	5,000	\$ 6.805	\$ 8.815	\$ 2.01	\$ 10,050.00
8/24/2022	5,000	\$ 6.840	\$ 9.050	\$	2.21 \$ 11,050.00	8/24/2022	5,000	\$ 6.805	\$ 9.050	\$ 2.25	\$ 11,225.00
8/25/2022	5,000	\$ 6.840	\$ 8.670	\$	1.83 \$ 9,150.00	8/25/2022	5,000	\$ 6.805	\$ 8.670	\$ 1.87	\$ 9,325.00
8/26/2022	5,000	\$ 6.840	\$ 8.660	\$	1.82 \$ 9,100.00	8/26/2022	5,000	\$ 6.805	\$ 8.660	\$ 1.86	\$ 9,275.00
8/27/2022	5,000	\$ 6.840	\$ 8.675	\$	1.84 \$ 9,175.00	8/27/2022	5,000	\$ 6.805	\$ 8.675	\$ 1.87	\$ 9,350.00
8/28/2022	5,000	\$ 6.840	\$ 8.675	\$	1.84 \$ 9,175.00	8/28/2022	5,000	\$ 6.805	\$ 8.675	\$ 1.87	\$ 9,350.00
8/29/2022	5,000	\$ 6.840	\$ 8.675	\$	1.84 \$ 9,175.00	8/29/2022	5,000	\$ 6.805	\$ 8.675	\$ 1.87	\$ 9,350.00
8/30/2022	5,000	\$ 6.840	\$ 8.755	\$	1.92 \$ 9,575.00	8/30/2022	5,000	\$ 6.805	\$ 8.755	\$ 1.95	\$ 9,750.00
8/31/2022	5,000	\$ 6.840	\$ 8.420	\$	1.58 \$ 7,900.00	8/31/2022	5,000	\$ 6.805	\$ 8.420	\$ 1.62	\$ 8,075.00
					\$ 213,250.00						\$ 218,675.00

Total Gas Hedge Gains/(Losses) for September: \$ (5,550.00)

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
9/1/2022	5,000	\$ 6.110	\$ 8.430	\$ 2.32	\$ 11,600.00	9/1/2022	5,000	\$ 6.630	\$ 8.430	\$ 1.80	\$ 9,000.00
9/2/2022	5,000	\$ 6.110	\$ 8.725	\$ 2.62	\$ 13,075.00	9/2/2022	5,000	\$ 6.630	\$ 8.725	\$ 2.10	\$ 10,475.00
9/3/2022	5,000	\$ 6.110	\$ 8.285	\$ 2.18	\$ 10,875.00	9/3/2022	5,000	\$ 6.630	\$ 8.285	\$ 1.66	\$ 8,275.00
9/4/2022	5,000	\$ 6.110	\$ 8.285	\$ 2.18	\$ 10,875.00	9/4/2022	5,000	\$ 6.630	\$ 8.285	\$ 1.66	\$ 8,275.00
9/5/2022	5,000	\$ 6.110	\$ 8.285	\$ 2.18	\$ 10,875.00	9/5/2022	5,000	\$ 6.630	\$ 8.285	\$ 1.66	\$ 8,275.00
9/6/2022	5,000	\$ 6.110	\$ 8.285	\$ 2.18	\$ 10,875.00	9/6/2022	5,000	\$ 6.630	\$ 8.285	\$ 1.66	\$ 8,275.00
9/7/2022	5,000	\$ 6.110	\$ 7.850	\$ 1.74	\$ 8,700.00	9/7/2022	5,000	\$ 6.630	\$ 7.850	\$ 1.22	\$ 6,100.00
9/8/2022	5,000	\$ 6.110	\$ 7.515	\$ 1.41	\$ 7,025.00	9/8/2022	5,000	\$ 6.630	\$ 7.515	\$ 0.89	\$ 4,425.00
9/9/2022	5,000	\$ 6.110	\$ 7.470	\$ 1.36	\$ 6,800.00	9/9/2022	5,000	\$ 6.630	\$ 7.470	\$ 0.84	\$ 4,200.00
9/10/2022	5,000	\$ 6.110	\$ 7.320	\$ 1.21	\$ 6,050.00	9/10/2022	5,000	\$ 6.630	\$ 7.320	\$ 0.69	\$ 3,450.00
9/11/2022	5,000	\$ 6.110	\$ 7.320	\$ 1.21	\$ 6,050.00	9/11/2022	5,000	\$ 6.630	\$ 7.320	\$ 0.69	\$ 3,450.00
9/12/2022	5,000	\$ 6.110	\$ 7.320	\$ 1.21	\$ 6,050.00	9/12/2022	5,000	\$ 6.630	\$ 7.320	\$ 0.69	\$ 3,450.00
9/13/2022	5,000	\$ 6.110	\$ 7.470	\$ 1.36	\$ 6,800.00	9/13/2022	5,000	\$ 6.630	\$ 7.470	\$ 0.84	\$ 4,200.00
9/14/2022	5,000	\$ 6.110	\$ 7.680	\$ 1.57	\$ 7,850.00	9/14/2022	5,000	\$ 6.630	\$ 7.680	\$ 1.05	\$ 5,250.00
9/15/2022	5,000	\$ 6.110	\$ 8.015	\$ 1.91	\$ 9,525.00	9/15/2022	5,000	\$ 6.630	\$ 8.015	\$ 1.39	\$ 6,925.00
9/16/2022	5,000	\$ 6.110	\$ 7.610	\$ 1.50	\$ 7,500.00	9/16/2022	5,000	\$ 6.630	\$ 7.610	\$ 0.98	\$ 4,900.00
9/17/2022	5,000	\$ 6.110	\$ 6.905	\$ 0.80	\$ 3,975.00	9/17/2022	5,000	\$ 6.630	\$ 6.905	\$ 0.28	\$ 1,375.00
9/18/2022	5,000	\$ 6.110	\$ 6.905	\$ 0.80	\$ 3,975.00	9/18/2022	5,000	\$ 6.630	\$ 6.905	\$ 0.28	\$ 1,375.00
9/19/2022	5,000	\$ 6.110	\$ 6.905	\$ 0.80	\$ 3,975.00	9/19/2022	5,000	\$ 6.630	\$ 6.905	\$ 0.28	\$ 1,375.00
9/20/2022	5,000	\$ 6.110	\$ 6.945	\$ 0.84	\$ 4,175.00	9/20/2022	5,000	\$ 6.630	\$ 6.945	\$ 0.32	\$ 1,575.00
9/21/2022	5,000	\$ 6.110	\$ 6.945	\$ 0.84	\$ 4,175.00	9/21/2022	5,000	\$ 6.630	\$ 6.945	\$ 0.32	\$ 1,575.00
9/22/2022	5,000	\$ 6.110	\$ 6.745	\$ 0.64	\$ 3,175.00	9/22/2022	5,000	\$ 6.630	\$ 6.745	\$ 0.12	\$ 575.00
9/23/2022	5,000	\$ 6.110	\$ 6.285	\$ 0.18	\$ 875.00	9/23/2022	5,000	\$ 6.630	\$ 6.285	\$ (0.35)	\$ (1,725.00)
9/24/2022	5,000	\$ 6.110	\$ 4.915	\$ (1.20)	\$ (5,975.00)	9/24/2022	5,000	\$ 6.630	\$ 4.915	\$ (1.72)	\$ (8,575.00)
9/25/2022	5,000	\$ 6.110	\$ 4.915	\$ (1.20)	\$ (5,975.00)	9/25/2022	5,000	\$ 6.630	\$ 4.915	\$ (1.72)	\$ (8,575.00)
9/26/2022	5,000	\$ 6.110	\$ 4.915	\$ (1.20)	\$ (5,975.00)	9/26/2022	5,000	\$ 6.630	\$ 4.915	\$ (1.72)	\$ (8,575.00)
9/27/2022	5,000	\$ 6.110	\$ 4.970	\$ (1.14)	\$ (5,700.00)	9/27/2022	5,000	\$ 6.630	\$ 4.970	\$ (1.66)	\$ (8,300.00)
9/28/2022	5,000	\$ 6.110	\$ 5.260	\$ (0.85)	\$ (4,250.00)	9/28/2022	5,000	\$ 6.630	\$ 5.260	\$ (1.37)	\$ (6,850.00)
9/29/2022	5,000	\$ 6.110	\$ 5.090	\$ (1.02)	\$ (5,100.00)	9/29/2022	5,000	\$ 6.630	\$ 5.090	\$ (1.54)	\$ (7,700.00)
9/30/2022	5,000	\$ 6.110	\$ 4.995	\$ (1.12)	\$ (5,575.00)	9/30/2022	5,000	\$ 6.630	\$ 4.995	\$ (1.64)	\$ (8,175.00)
\$ 126,300.00						\$ 48,300.00					

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
9/1/2022	5,000	\$ 6.840	\$ 8.430	\$ 1.59	\$ 7,950.00	9/1/2022	5,000	\$ 6.805	\$ 8.430	\$ 1.63	\$ 8,125.00
9/2/2022	5,000	\$ 6.840	\$ 8.725	\$ 1.89	\$ 9,425.00	9/2/2022	5,000	\$ 6.805	\$ 8.725	\$ 1.92	\$ 9,600.00
9/3/2022	5,000	\$ 6.840	\$ 8.285	\$ 1.45	\$ 7,225.00	9/3/2022	5,000	\$ 6.805	\$ 8.285	\$ 1.48	\$ 7,400.00
9/4/2022	5,000	\$ 6.840	\$ 8.285	\$ 1.45	\$ 7,225.00	9/4/2022	5,000	\$ 6.805	\$ 8.285	\$ 1.48	\$ 7,400.00
9/5/2022	5,000	\$ 6.840	\$ 8.285	\$ 1.45	\$ 7,225.00	9/5/2022	5,000	\$ 6.805	\$ 8.285	\$ 1.48	\$ 7,400.00
9/6/2022	5,000	\$ 6.840	\$ 8.285	\$ 1.45	\$ 7,225.00	9/6/2022	5,000	\$ 6.805	\$ 8.285	\$ 1.48	\$ 7,400.00
9/7/2022	5,000	\$ 6.840	\$ 7.850	\$ 1.01	\$ 5,050.00	9/7/2022	5,000	\$ 6.805	\$ 7.850	\$ 1.05	\$ 5,225.00
9/8/2022	5,000	\$ 6.840	\$ 7.515	\$ 0.68	\$ 3,375.00	9/8/2022	5,000	\$ 6.805	\$ 7.515	\$ 0.71	\$ 3,550.00
9/9/2022	5,000	\$ 6.840	\$ 7.470	\$ 0.63	\$ 3,150.00	9/9/2022	5,000	\$ 6.805	\$ 7.470	\$ 0.67	\$ 3,325.00
9/10/2022	5,000	\$ 6.840	\$ 7.320	\$ 0.48	\$ 2,400.00	9/10/2022	5,000	\$ 6.805	\$ 7.320	\$ 0.52	\$ 2,575.00
9/11/2022	5,000	\$ 6.840	\$ 7.320	\$ 0.48	\$ 2,400.00	9/11/2022	5,000	\$ 6.805	\$ 7.320	\$ 0.52	\$ 2,575.00
9/12/2022	5,000	\$ 6.840	\$ 7.320	\$ 0.48	\$ 2,400.00	9/12/2022	5,000	\$ 6.805	\$ 7.320	\$ 0.52	\$ 2,575.00
9/13/2022	5,000	\$ 6.840	\$ 7.470	\$ 0.63	\$ 3,150.00	9/13/2022	5,000	\$ 6.805	\$ 7.470	\$ 0.67	\$ 3,325.00
9/14/2022	5,000	\$ 6.840	\$ 7.680	\$ 0.84	\$ 4,200.00	9/14/2022	5,000	\$ 6.805	\$ 7.680	\$ 0.88	\$ 4,375.00
9/15/2022	5,000	\$ 6.840	\$ 8.015	\$ 1.18	\$ 5,875.00	9/15/2022	5,000	\$ 6.805	\$ 8.015	\$ 1.21	\$ 6,050.00
9/16/2022	5,000	\$ 6.840	\$ 7.610	\$ 0.77	\$ 3,850.00	9/16/2022	5,000	\$ 6.805	\$ 7.610	\$ 0.81	\$ 4,025.00
9/17/2022	5,000	\$ 6.840	\$ 6.905	\$ 0.07	\$ 325.00	9/17/2022	5,000	\$ 6.805	\$ 6.905	\$ 0.10	\$ 500.00
9/18/2022	5,000	\$ 6.840	\$ 6.905	\$ 0.07	\$ 325.00	9/18/2022	5,000	\$ 6.805	\$ 6.905	\$ 0.10	\$ 500.00
9/19/2022	5,000	\$ 6.840	\$ 6.905	\$ 0.07	\$ 325.00	9/19/2022	5,000	\$ 6.805	\$ 6.905	\$ 0.10	\$ 500.00
9/20/2022	5,000	\$ 6.840	\$ 6.945	\$ 0.11	\$ 525.00	9/20/2022	5,000	\$ 6.805	\$ 6.945	\$ 0.14	\$ 700.00
9/21/2022	5,000	\$ 6.840	\$ 6.945	\$ 0.11	\$ 525.00	9/21/2022	5,000	\$ 6.805	\$ 6.945	\$ 0.14	\$ 700.00
9/22/2022	5,000	\$ 6.840	\$ 6.745	\$ (0.09)	\$ (475.00)	9/22/2022	5,000	\$ 6.805	\$ 6.745	\$ (0.06)	\$ (300.00)
9/23/2022	5,000	\$ 6.840	\$ 6.285	\$ (0.56)	\$ (2,775.00)	9/23/2022	5,000	\$ 6.805	\$ 6.285	\$ (0.52)	\$ (2,600.00)
9/24/2022	5,000	\$ 6.840	\$ 4.915	\$ (1.93)	\$ (9,625.00)	9/24/2022	5,000	\$ 6.805	\$ 4.915	\$ (1.89)	\$ (9,450.00)
9/25/2022	5,000	\$ 6.840	\$ 4.915	\$ (1.93)	\$ (9,625.00)	9/25/2022	5,000	\$ 6.805	\$ 4.915	\$ (1.89)	\$ (9,450.00)
9/26/2022	5,000	\$ 6.840	\$ 4.915	\$ (1.93)	\$ (9,625.00)	9/26/2022	5,000	\$ 6.805	\$ 4.915	\$ (1.89)	\$ (9,450.00)
9/27/2022	5,000	\$ 6.840	\$ 4.970	\$ (1.87)	\$ (9,350.00)	9/27/2022	5,000	\$ 6.805	\$ 4.970	\$ (1.84)	\$ (9,175.00)
9/28/2022	5,000	\$ 6.840	\$ 5.260	\$ (1.58)	\$ (7,900.00)	9/28/2022	5,000	\$ 6.805	\$ 5.260	\$ (1.55)	\$ (7,725.00)
9/29/2022	5,000	\$ 6.840	\$ 5.090	\$ (1.75)	\$ (8,750.00)	9/29/2022	5,000	\$ 6.805	\$ 5.090	\$ (1.72)	\$ (8,575.00)
9/30/2022	5,000	\$ 6.840	\$ 4.995	\$ (1.85)	\$ (9,225.00)	9/30/2022	5,000	\$ 6.805	\$ 4.995	\$ (1.81)	\$ (9,050.00)
					\$ 16,800.00						\$ 22,050.00

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
9/1/2022	5,000	\$ 7.240	\$ 8.430	\$ 1.19	\$ 5,950.00	9/1/2022	5,000	\$ 7.140	\$ 8.430	\$ 1.29	\$ 6,450.00
9/2/2022	5,000	\$ 7.240	\$ 8.725	\$ 1.49	\$ 7,425.00	9/2/2022	5,000	\$ 7.140	\$ 8.725	\$ 1.59	\$ 7,925.00
9/3/2022	5,000	\$ 7.240	\$ 8.285	\$ 1.05	\$ 5,225.00	9/3/2022	5,000	\$ 7.140	\$ 8.285	\$ 1.15	\$ 5,725.00
9/4/2022	5,000	\$ 7.240	\$ 8.285	\$ 1.05	\$ 5,225.00	9/4/2022	5,000	\$ 7.140	\$ 8.285	\$ 1.15	\$ 5,725.00
9/5/2022	5,000	\$ 7.240	\$ 8.285	\$ 1.05	\$ 5,225.00	9/5/2022	5,000	\$ 7.140	\$ 8.285	\$ 1.15	\$ 5,725.00
9/6/2022	5,000	\$ 7.240	\$ 8.285	\$ 1.05	\$ 5,225.00	9/6/2022	5,000	\$ 7.140	\$ 8.285	\$ 1.15	\$ 5,725.00
9/7/2022	5,000	\$ 7.240	\$ 7.850	\$ 0.61	\$ 3,050.00	9/7/2022	5,000	\$ 7.140	\$ 7.850	\$ 0.71	\$ 3,550.00
9/8/2022	5,000	\$ 7.240	\$ 7.515	\$ 0.27	\$ 1,375.00	9/8/2022	5,000	\$ 7.140	\$ 7.515	\$ 0.38	\$ 1,875.00
9/9/2022	5,000	\$ 7.240	\$ 7.470	\$ 0.23	\$ 1,150.00	9/9/2022	5,000	\$ 7.140	\$ 7.470	\$ 0.33	\$ 1,650.00
9/10/2022	5,000	\$ 7.240	\$ 7.320	\$ 0.08	\$ 400.00	9/10/2022	5,000	\$ 7.140	\$ 7.320	\$ 0.18	\$ 900.00
9/11/2022	5,000	\$ 7.240	\$ 7.320	\$ 0.08	\$ 400.00	9/11/2022	5,000	\$ 7.140	\$ 7.320	\$ 0.18	\$ 900.00
9/12/2022	5,000	\$ 7.240	\$ 7.320	\$ 0.08	\$ 400.00	9/12/2022	5,000	\$ 7.140	\$ 7.320	\$ 0.18	\$ 900.00
9/13/2022	5,000	\$ 7.240	\$ 7.470	\$ 0.23	\$ 1,150.00	9/13/2022	5,000	\$ 7.140	\$ 7.470	\$ 0.33	\$ 1,650.00
9/14/2022	5,000	\$ 7.240	\$ 7.680	\$ 0.44	\$ 2,200.00	9/14/2022	5,000	\$ 7.140	\$ 7.680	\$ 0.54	\$ 2,700.00
9/15/2022	5,000	\$ 7.240	\$ 8.015	\$ 0.78	\$ 3,875.00	9/15/2022	5,000	\$ 7.140	\$ 8.015	\$ 0.88	\$ 4,375.00
9/16/2022	5,000	\$ 7.240	\$ 7.610	\$ 0.37	\$ 1,850.00	9/16/2022	5,000	\$ 7.140	\$ 7.610	\$ 0.47	\$ 2,350.00
9/17/2022	5,000	\$ 7.240	\$ 6.905	\$ (0.34)	\$ (1,675.00)	9/17/2022	5,000	\$ 7.140	\$ 6.905	\$ (0.23)	\$ (1,175.00)
9/18/2022	5,000	\$ 7.240	\$ 6.905	\$ (0.34)	\$ (1,675.00)	9/18/2022	5,000	\$ 7.140	\$ 6.905	\$ (0.23)	\$ (1,175.00)
9/19/2022	5,000	\$ 7.240	\$ 6.905	\$ (0.34)	\$ (1,675.00)	9/19/2022	5,000	\$ 7.140	\$ 6.905	\$ (0.23)	\$ (1,175.00)
9/20/2022	5,000	\$ 7.240	\$ 6.945	\$ (0.30)	\$ (1,475.00)	9/20/2022	5,000	\$ 7.140	\$ 6.945	\$ (0.19)	\$ (975.00)
9/21/2022	5,000	\$ 7.240	\$ 6.945	\$ (0.30)	\$ (1,475.00)	9/21/2022	5,000	\$ 7.140	\$ 6.945	\$ (0.19)	\$ (975.00)
9/22/2022	5,000	\$ 7.240	\$ 6.745	\$ (0.50)	\$ (2,475.00)	9/22/2022	5,000	\$ 7.140	\$ 6.745	\$ (0.40)	\$ (1,975.00)
9/23/2022	5,000	\$ 7.240	\$ 6.285	\$ (0.96)	\$ (4,775.00)	9/23/2022	5,000	\$ 7.140	\$ 6.285	\$ (0.86)	\$ (4,275.00)
9/24/2022	5,000	\$ 7.240	\$ 4.915	\$ (2.33)	\$ (11,625.00)	9/24/2022	5,000	\$ 7.140	\$ 4.915	\$ (2.23)	\$ (11,125.00)
9/25/2022	5,000	\$ 7.240	\$ 4.915	\$ (2.33)	\$ (11,625.00)	9/25/2022	5,000	\$ 7.140	\$ 4.915	\$ (2.23)	\$ (11,125.00)
9/26/2022	5,000	\$ 7.240	\$ 4.915	\$ (2.33)	\$ (11,625.00)	9/26/2022	5,000	\$ 7.140	\$ 4.915	\$ (2.23)	\$ (11,125.00)
9/27/2022	5,000	\$ 7.240	\$ 4.970	\$ (2.27)	\$ (11,350.00)	9/27/2022	5,000	\$ 7.140	\$ 4.970	\$ (2.17)	\$ (10,850.00)
9/28/2022	5,000	\$ 7.240	\$ 5.260	\$ (1.98)	\$ (9,900.00)	9/28/2022	5,000	\$ 7.140	\$ 5.260	\$ (1.88)	\$ (9,400.00)
9/29/2022	5,000	\$ 7.240	\$ 5.090	\$ (2.15)	\$ (10,750.00)	9/29/2022	5,000	\$ 7.140	\$ 5.090	\$ (2.05)	\$ (10,250.00)
9/30/2022	5,000	\$ 7.240	\$ 4.995	\$ (2.25)	\$ (11,225.00)	9/30/2022	5,000	\$ 7.140	\$ 4.995	\$ (2.15)	\$ (10,725.00)
					\$ (43,200.00)						\$ (28,200.00)

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
9/1/2022	5,000	\$ 8.065	\$ 8.430	\$ 0.37	\$ 1,825.00	9/1/2022	5,000	\$ 8.580	\$ 8.430	\$ (0.15)	\$ (750.00)
9/2/2022	5,000	\$ 8.065	\$ 8.725	\$ 0.66	\$ 3,300.00	9/2/2022	5,000	\$ 8.580	\$ 8.725	\$ 0.15	\$ 725.00
9/3/2022	5,000	\$ 8.065	\$ 8.285	\$ 0.22	\$ 1,100.00	9/3/2022	5,000	\$ 8.580	\$ 8.285	\$ (0.30)	\$ (1,475.00)
9/4/2022	5,000	\$ 8.065	\$ 8.285	\$ 0.22	\$ 1,100.00	9/4/2022	5,000	\$ 8.580	\$ 8.285	\$ (0.30)	\$ (1,475.00)
9/5/2022	5,000	\$ 8.065	\$ 8.285	\$ 0.22	\$ 1,100.00	9/5/2022	5,000	\$ 8.580	\$ 8.285	\$ (0.30)	\$ (1,475.00)
9/6/2022	5,000	\$ 8.065	\$ 8.285	\$ 0.22	\$ 1,100.00	9/6/2022	5,000	\$ 8.580	\$ 8.285	\$ (0.30)	\$ (1,475.00)
9/7/2022	5,000	\$ 8.065	\$ 7.850	\$ (0.22)	\$ (1,075.00)	9/7/2022	5,000	\$ 8.580	\$ 7.850	\$ (0.73)	\$ (3,650.00)
9/8/2022	5,000	\$ 8.065	\$ 7.515	\$ (0.55)	\$ (2,750.00)	9/8/2022	5,000	\$ 8.580	\$ 7.515	\$ (1.07)	\$ (5,325.00)
9/9/2022	5,000	\$ 8.065	\$ 7.470	\$ (0.60)	\$ (2,975.00)	9/9/2022	5,000	\$ 8.580	\$ 7.470	\$ (1.11)	\$ (5,550.00)
9/10/2022	5,000	\$ 8.065	\$ 7.320	\$ (0.74)	\$ (3,725.00)	9/10/2022	5,000	\$ 8.580	\$ 7.320	\$ (1.26)	\$ (6,300.00)
9/11/2022	5,000	\$ 8.065	\$ 7.320	\$ (0.74)	\$ (3,725.00)	9/11/2022	5,000	\$ 8.580	\$ 7.320	\$ (1.26)	\$ (6,300.00)
9/12/2022	5,000	\$ 8.065	\$ 7.320	\$ (0.74)	\$ (3,725.00)	9/12/2022	5,000	\$ 8.580	\$ 7.320	\$ (1.26)	\$ (6,300.00)
9/13/2022	5,000	\$ 8.065	\$ 7.470	\$ (0.60)	\$ (2,975.00)	9/13/2022	5,000	\$ 8.580	\$ 7.470	\$ (1.11)	\$ (5,550.00)
9/14/2022	5,000	\$ 8.065	\$ 7.680	\$ (0.39)	\$ (1,925.00)	9/14/2022	5,000	\$ 8.580	\$ 7.680	\$ (0.90)	\$ (4,500.00)
9/15/2022	5,000	\$ 8.065	\$ 8.015	\$ (0.05)	\$ (250.00)	9/15/2022	5,000	\$ 8.580	\$ 8.015	\$ (0.57)	\$ (2,825.00)
9/16/2022	5,000	\$ 8.065	\$ 7.610	\$ (0.45)	\$ (2,275.00)	9/16/2022	5,000	\$ 8.580	\$ 7.610	\$ (0.97)	\$ (4,850.00)
9/17/2022	5,000	\$ 8.065	\$ 6.905	\$ (1.16)	\$ (5,800.00)	9/17/2022	5,000	\$ 8.580	\$ 6.905	\$ (1.68)	\$ (8,375.00)
9/18/2022	5,000	\$ 8.065	\$ 6.905	\$ (1.16)	\$ (5,800.00)	9/18/2022	5,000	\$ 8.580	\$ 6.905	\$ (1.68)	\$ (8,375.00)
9/19/2022	5,000	\$ 8.065	\$ 6.905	\$ (1.16)	\$ (5,800.00)	9/19/2022	5,000	\$ 8.580	\$ 6.905	\$ (1.68)	\$ (8,375.00)
9/20/2022	5,000	\$ 8.065	\$ 6.945	\$ (1.12)	\$ (5,600.00)	9/20/2022	5,000	\$ 8.580	\$ 6.945	\$ (1.64)	\$ (8,175.00)
9/21/2022	5,000	\$ 8.065	\$ 6.945	\$ (1.12)	\$ (5,600.00)	9/21/2022	5,000	\$ 8.580	\$ 6.945	\$ (1.64)	\$ (8,175.00)
9/22/2022	5,000	\$ 8.065	\$ 6.745	\$ (1.32)	\$ (6,600.00)	9/22/2022	5,000	\$ 8.580	\$ 6.745	\$ (1.84)	\$ (9,175.00)
9/23/2022	5,000	\$ 8.065	\$ 6.285	\$ (1.78)	\$ (8,900.00)	9/23/2022	5,000	\$ 8.580	\$ 6.285	\$ (2.30)	\$ (11,475.00)
9/24/2022	5,000	\$ 8.065	\$ 4.915	\$ (3.15)	\$ (15,750.00)	9/24/2022	5,000	\$ 8.580	\$ 4.915	\$ (3.67)	\$ (18,325.00)
9/25/2022	5,000	\$ 8.065	\$ 4.915	\$ (3.15)	\$ (15,750.00)	9/25/2022	5,000	\$ 8.580	\$ 4.915	\$ (3.67)	\$ (18,325.00)
9/26/2022	5,000	\$ 8.065	\$ 4.915	\$ (3.15)	\$ (15,750.00)	9/26/2022	5,000	\$ 8.580	\$ 4.915	\$ (3.67)	\$ (18,325.00)
9/27/2022	5,000	\$ 8.065	\$ 4.970	\$ (3.10)	\$ (15,475.00)	9/27/2022	5,000	\$ 8.580	\$ 4.970	\$ (3.61)	\$ (18,050.00)
9/28/2022	5,000	\$ 8.065	\$ 5.260	\$ (2.81)	\$ (14,025.00)	9/28/2022	5,000	\$ 8.580	\$ 5.260	\$ (3.32)	\$ (16,600.00)
9/29/2022	5,000	\$ 8.065	\$ 5.090	\$ (2.98)	\$ (14,875.00)	9/29/2022	5,000	\$ 8.580	\$ 5.090	\$ (3.49)	\$ (17,450.00)
9/30/2022	5,000	\$ 8.065	\$ 4.995	\$ (3.07)	\$ (15,350.00)	9/30/2022	5,000	\$ 8.580	\$ 4.995	\$ (3.59)	\$ (17,925.00)
					\$ (166,950.00)						\$ (244,200.00)

Total Gas Hedge Gains/(Losses) for October: \$ (1,850,875.00)

Indianapolis Power & Light Company

Cause No. 38703 FAC 138

Attachment 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
10/1/2022	5,000	\$ 7.020	4.43	\$	(2.59) \$ (12,950.00)	10/1/2022	5,000	\$ 8.100	4.43	\$ (3.67) \$	(18,350.00)
10/2/2022	5,000	\$ 7.020	4.43	\$	(2.59) \$ (12,950.00)	10/2/2022	5,000	\$ 8.100	4.43	\$ (3.67) \$	(18,350.00)
10/3/2022	5,000	\$ 7.020	4.43	\$	(2.59) \$ (12,950.00)	10/3/2022	5,000	\$ 8.100	4.43	\$ (3.67) \$	(18,350.00)
10/4/2022	5,000	\$ 7.020	4.625	\$	(2.40) \$ (11,975.00)	10/4/2022	5,000	\$ 8.100	4.625	\$ (3.48) \$	(17,375.00)
10/5/2022	5,000	\$ 7.020	5.105	\$	(1.92) \$ (9,575.00)	10/5/2022	5,000	\$ 8.100	5.105	\$ (3.00) \$	(14,975.00)
10/6/2022	5,000	\$ 7.020	6.055	\$	(0.97) \$ (4,825.00)	10/6/2022	5,000	\$ 8.100	6.055	\$ (2.05) \$	(10,225.00)
10/7/2022	5,000	\$ 7.020	6.2	\$	(0.82) \$ (4,100.00)	10/7/2022	5,000	\$ 8.100	6.2	\$ (1.90) \$	(9,500.00)
10/8/2022	5,000	\$ 7.020	5.54	\$	(1.48) \$ (7,400.00)	10/8/2022	5,000	\$ 8.100	5.54	\$ (2.56) \$	(12,800.00)
10/9/2022	5,000	\$ 7.020	5.54	\$	(1.48) \$ (7,400.00)	10/9/2022	5,000	\$ 8.100	5.54	\$ (2.56) \$	(12,800.00)
10/10/2022	5,000	\$ 7.020	5.54	\$	(1.48) \$ (7,400.00)	10/10/2022	5,000	\$ 8.100	5.54	\$ (2.56) \$	(12,800.00)
10/11/2022	5,000	\$ 7.020	5.47	\$	(1.55) \$ (7,750.00)	10/11/2022	5,000	\$ 8.100	5.47	\$ (2.63) \$	(13,150.00)
10/12/2022	5,000	\$ 7.020	5.325	\$	(1.70) \$ (8,475.00)	10/12/2022	5,000	\$ 8.100	5.325	\$ (2.78) \$	(13,875.00)
10/13/2022	5,000	\$ 7.020	5.71	\$	(1.31) \$ (6,550.00)	10/13/2022	5,000	\$ 8.100	5.71	\$ (2.39) \$	(11,950.00)
10/14/2022	5,000	\$ 7.020	5.455	\$	(1.57) \$ (7,825.00)	10/14/2022	5,000	\$ 8.100	5.455	\$ (2.65) \$	(13,225.00)
10/15/2022	5,000	\$ 7.020	5.32	\$	(1.70) \$ (8,500.00)	10/15/2022	5,000	\$ 8.100	5.32	\$ (2.78) \$	(13,900.00)
10/16/2022	5,000	\$ 7.020	5.32	\$	(1.70) \$ (8,500.00)	10/16/2022	5,000	\$ 8.100	5.32	\$ (2.78) \$	(13,900.00)
10/17/2022	5,000	\$ 7.020	5.32	\$	(1.70) \$ (8,500.00)	10/17/2022	5,000	\$ 8.100	5.32	\$ (2.78) \$	(13,900.00)
10/18/2022	5,000	\$ 7.020	5.57	\$	(1.45) \$ (7,250.00)	10/18/2022	5,000	\$ 8.100	5.57	\$ (2.53) \$	(12,650.00)
10/19/2022	5,000	\$ 7.020	5.695	\$	(1.33) \$ (6,625.00)	10/19/2022	5,000	\$ 8.100	5.695	\$ (2.41) \$	(12,025.00)
10/20/2022	5,000	\$ 7.020	5.11	\$	(1.91) \$ (9,550.00)	10/20/2022	5,000	\$ 8.100	5.11	\$ (2.99) \$	(14,950.00)
10/21/2022	5,000	\$ 7.020	4.54	\$	(2.48) \$ (12,400.00)	10/21/2022	5,000	\$ 8.100	4.54	\$ (3.56) \$	(17,800.00)
10/22/2022	5,000	\$ 7.020	3.775	\$	(3.25) \$ (16,225.00)	10/22/2022	5,000	\$ 8.100	3.775	\$ (4.33) \$	(21,625.00)
10/23/2022	5,000	\$ 7.020	3.775	\$	(3.25) \$ (16,225.00)	10/23/2022	5,000	\$ 8.100	3.775	\$ (4.33) \$	(21,625.00)
10/24/2022	5,000	\$ 7.020	3.775	\$	(3.25) \$ (16,225.00)	10/24/2022	5,000	\$ 8.100	3.775	\$ (4.33) \$	(21,625.00)
10/25/2022	5,000	\$ 7.020	4.28	\$	(2.74) \$ (13,700.00)	10/25/2022	5,000	\$ 8.100	4.28	\$ (3.82) \$	(19,100.00)
10/26/2022	5,000	\$ 7.020	4.725	\$	(2.30) \$ (11,475.00)	10/26/2022	5,000	\$ 8.100	4.725	\$ (3.38) \$	(16,875.00)
10/27/2022	5,000	\$ 7.020	4.855	\$	(2.17) \$ (10,825.00)	10/27/2022	5,000	\$ 8.100	4.855	\$ (3.25) \$	(16,225.00)
10/28/2022	5,000	\$ 7.020	4.79	\$	(2.23) \$ (11,150.00)	10/28/2022	5,000	\$ 8.100	4.79	\$ (3.31) \$	(16,550.00)
10/29/2022	5,000	\$ 7.020	4.38	\$	(2.64) \$ (13,200.00)	10/29/2022	5,000	\$ 8.100	4.38	\$ (3.72) \$	(18,600.00)
10/30/2022	5,000	\$ 7.020	4.38	\$	(2.64) \$ (13,200.00)	10/30/2022	5,000	\$ 8.100	4.38	\$ (3.72) \$	(18,600.00)
10/31/2022	5,000	\$ 7.020	4.38			10/31/2022	5,000	\$ 8.100	4.38	\$ (3.72) \$	(18,600.00)
					\$ (305,675.00)						\$ (486,275.00)

Transaction 3

Date	Hedge Vol	Hedge Price	Daily Pricing	Difference	Savings or Cost	
10/1/2022	15,000	\$ 7.240	\$ 4.430	\$	(2.81)	\$ (42,150.00)
10/2/2022	15,000	\$ 7.240	\$ 4.430	\$	(2.81)	\$ (42,150.00)
10/3/2022	15,000	\$ 7.240	\$ 4.430	\$	(2.81)	\$ (42,150.00)
10/4/2022	15,000	\$ 7.240	\$ 4.625	\$	(2.62)	\$ (39,225.00)
10/5/2022	15,000	\$ 7.240	\$ 5.105	\$	(2.14)	\$ (32,025.00)
10/6/2022	15,000	\$ 7.240	\$ 6.055	\$	(1.19)	\$ (17,775.00)
10/7/2022	15,000	\$ 7.240	\$ 6.200	\$	(1.04)	\$ (15,600.00)
10/8/2022	15,000	\$ 7.240	\$ 5.540	\$	(1.70)	\$ (25,500.00)
10/9/2022	15,000	\$ 7.240	\$ 5.540	\$	(1.70)	\$ (25,500.00)
10/10/2022	15,000	\$ 7.240	\$ 5.540	\$	(1.70)	\$ (25,500.00)
10/11/2022	15,000	\$ 7.240	\$ 5.470	\$	(1.77)	\$ (26,550.00)
10/12/2022	15,000	\$ 7.240	\$ 5.325	\$	(1.92)	\$ (28,725.00)
10/13/2022	15,000	\$ 7.240	\$ 5.710	\$	(1.53)	\$ (22,950.00)
10/14/2022	15,000	\$ 7.240	\$ 5.455	\$	(1.79)	\$ (26,775.00)
10/15/2022	15,000	\$ 7.240	\$ 5.320	\$	(1.92)	\$ (28,800.00)
10/16/2022	15,000	\$ 7.240	\$ 5.320	\$	(1.92)	\$ (28,800.00)
10/17/2022	15,000	\$ 7.240	\$ 5.320	\$	(1.92)	\$ (28,800.00)
10/18/2022	15,000	\$ 7.240	\$ 5.570	\$	(1.67)	\$ (25,050.00)
10/19/2022	15,000	\$ 7.240	\$ 5.695	\$	(1.55)	\$ (23,175.00)
10/20/2022	15,000	\$ 7.240	\$ 5.110	\$	(2.13)	\$ (31,950.00)
10/21/2022	15,000	\$ 7.240	\$ 4.540	\$	(2.70)	\$ (40,500.00)
10/22/2022	15,000	\$ 7.240	\$ 3.775	\$	(3.47)	\$ (51,975.00)
10/23/2022	15,000	\$ 7.240	\$ 3.775	\$	(3.47)	\$ (51,975.00)
10/24/2022	15,000	\$ 7.240	\$ 3.775	\$	(3.47)	\$ (51,975.00)
10/25/2022	15,000	\$ 7.240	\$ 4.280	\$	(2.96)	\$ (44,400.00)
10/26/2022	15,000	\$ 7.240	\$ 4.725	\$	(2.52)	\$ (37,725.00)
10/27/2022	15,000	\$ 7.240	\$ 4.855	\$	(2.39)	\$ (35,775.00)
10/28/2022	15,000	\$ 7.240	\$ 4.790	\$	(2.45)	\$ (36,750.00)
10/29/2022	15,000	\$ 7.240	\$ 4.380	\$	(2.86)	\$ (42,900.00)
10/30/2022	15,000	\$ 7.240	\$ 4.380	\$	(2.86)	\$ (42,900.00)
10/31/2022	15,000	\$ 7.240	\$ 4.380	\$	(2.86)	\$ (42,900.00)
					\$	(1,058,925.00)

CONFIDENTIAL ATTACHMENT DJ-6

[CONFIDENTIAL – NOT REPRODUCED HEREIN]