CAUSE NO. 45990

SOUTHERN INDIANA GAS AND ELECTRIC COMPANY
d/b/a CENTERPOINT ENERGY INDIANA SOUTH
(CEI SOUTH)

DIRECT TESTIMONY
OF
F. SHANE BRADFORD
VICE PRESIDENT OF POWER GENERATION OPERATIONS

ON

GENERATION TRANSITION, WARRICK UNIT 4, WPM SHARING, AND ULRC PROJECT

SPONSORING PETITIONER'S EXHIBIT NO. 7 (PUBLIC),
ATTACHMENTS FSB-1 AND FSB-2

DIRECT TESTIMONY OF F. SHANE BRADFORD

I. INTRODUCTION

Q. PLEASE STATE YOUR NAME AND BUSINESS ADDRESS.

A. My name is F. Shane Bradford. My business address is 211 NW Riverside Drive, Evansville, Indiana 47708.

Q. BY WHOM ARE YOU EMPLOYED?

A. I am employed by Southern Indiana Gas and Electric Company d/b/a CenterPoint Energy Indiana South ("CEI South", "Petitioner", or "Company"), which is an indirect subsidiary of CenterPoint Energy, Inc.

Q. ON WHOSE BEHALF ARE YOU SUBMITTING THIS DIRECT TESTIMONY?

A. I am submitting testimony on behalf of CEI South.

Q. WHAT IS YOUR ROLE WITH RESPECT TO PETITIONER CEI SOUTH?

A. I am Vice President of Power Generation Operations.

Q. PLEASE DESCRIBE YOUR EDUCATIONAL BACKGROUND.

A. I received a Bachelor of Science in Civil Engineering (1992) from the University of Dayton and a Master's in Business Administration (2002) from Indiana State University.

Q. PLEASE DESCRIBE YOUR PROFESSIONAL EXPERIENCE.

A. I began my career in the utility industry at Dayton Power and Light Co. performing various maintenance and production roles within the electric generation division from 1992 to 1999. In 1999, I joined Cinergy's electric generation division and carried out various maintenance and production responsibilities until 2003 when I became a plant manager for one of Cinergy's subsidiaries, Trigen Cinergy Solutions LLC. In 2004, I took a position with CEI South[1] as a Power Plant Director responsible for providing leadership and management focused on safe, environmentally responsible, reliable, and efficient electric generation. In 2021, I was reassigned to Director, Power Supply

[1] For the sake of clarity, my testimony refers to CEI South, even though in certain situations, I may be referring to Southern Indiana Gas and Electric Company operating under a prior assumed business name.

Service where I was responsible for Wholesale Power Marketing, Market Settlements, and Market Development. I was named to my current position in January 2023.

Q. PLEASE DESCRIBE YOUR PRESENT DUTIES AND RESPONSIBILITIES AS CEI SOUTH'S VICE PRESIDENT OF POWER GENERATION OPERATIONS.

A. As Vice President of Power Generation Operations, I am responsible for the overall budgeting, operation, maintenance, and personnel decisions for CEI South's electric generation fleet. In addition, I have responsibility for ensuring demand of our customers is met at a reasonable cost through the production and purchase of electric energy (including fuel purchases) necessary to meet the needs of our jurisdictional customers. I am responsible for completing these functions while ensuring compliance with the environmental requirements of all applicable regulatory or governmental agencies. As part of overseeing CEI South's generation assets, I supervise personnel providing cost inputs to the modeling associated with the Integrated Resource Plan ("IRP") process. In addition, I have responsibility for the commercial negotiations and dealings with generation resources.

Q. HAVE YOU PREVIOUSLY TESTIFIED BEFORE THE INDIANA UTILITY REGULATORY COMMISSION ("COMMISSION")?

A. Yes. I have testified before the Commission on behalf of CEI South for a certificate of public convenience and necessity ("CPCN") in Cause Nos. 45501, 45564, 45754, 45836, 45847, and 45903. Additionally, I have testified on behalf of CEI South in its Fuel Adjustment Clause ("FAC") proceedings and the FAC 137 subdocket under Cause No. 38708; its Clean Energy Cost Adjustment ("CECA") under Cause No. 44909; its Environmental Cost Adjustment ("ECA") under Cause No. 45052; and the Midcontinent Independent System Operator ("MISO") Cost and Revenue Adjustment ("MCRA") under Cause No. 43354; and Reliability Cost and Revenue Adjustment ("RCRA") under Cause No. 43406.

II. PURPOSE AND SCOPE

Q. WHAT IS THE PURPOSE OF YOUR TESTIMONY IN THIS PROCEEDING?

A. I provide an overview of CEI South's Generation Transition Plan, including but not limited to generation resource retirements, exit of Warrick Unit 4, and replacement resources. In addition, I share a summary of the material generation capital

investments that have been made or are projected to be made since the last rate case through 2025. I will describe how CEI South's generation transition plan supports what the Indiana General Assembly has identified as the "Five Pillars." I also describe CEI South's plan to forego the Wholesale Power Market ("WPM") sharing mechanism – giving CEI South customers full benefit of all WPM sales opportunity. Lastly, I provide a summary of CEI South's Urban Research Living Center ("ULRC") project.

Q. ARE YOU SPONSORING ANY ATTACHMENTS IN THIS PROCEEDING?

A. Yes. I am sponsoring the following attachments in this proceeding:

- Petitioner's Exhibit No. 7, **Attachment FSB-1:** Power Generation Capital Investments 2009 – 2025
- Petitioner's Exhibit No. 7, **Attachment FSB-2 (CONFIDENTIAL):** 1968 Warrick Unit 4 Joint Operating Agreement with seven amendments (collectively, the "JOA")

Q. WERE THESE ATTACHMENTS PREPARED BY YOU OR UNDER YOUR SUPERVISION?

A. Yes, they were or they were reviewed, and relied upon, by me as part of my role as Vice President Power Generation Operations.

III. GENERATION TRANSITION PLAN

Q. PLEASE PROVIDE AN OVERVIEW OF CEI SOUTH'S GENERATION TRANSITION PLAN.

A. The Company's 2019/2020 Integrated Resource Plan ("IRP") identified a Preferred Portfolio, which calls for timely retirement of certain identified existing generation resources and replacement of the capacity derived from those units with new generation resources. Consistent with the findings of the 2019/2020 IRP, CEI South developed a Generation Transition Plan (the "Plan") to effectuate the transition. The Plan required an initial step of identifying and selecting approximately 700–1,000 megawatt alternating current ("MWac") of solar generation, 300 megawatt ("MW") of wind generation, and approximately 460 MW of natural gas Combustion Turbine ("CT") generation.

Q. AS OF THE TIME OF THIS FILING, PLEASE DISCUSS THE GENERATION RESOURCES THAT HAVE RETIRED SINCE JUNE 30, 2009 – THE DATE OF THE RATE BASE CUTOFF FROM CEI SOUTH'S LAST ELECTRIC RATE CASE (CAUSE NO. 43839) (THE "43839 RATE BASE CUTOFF DATE").

A. As shown in **Table FSB-1** (below), the A.B. Brown coal-fired Units 1 & 2 were removed from service in mid-October 2023, while the gas-fired resources were retired in 2018 and 2019.

Table FSB-1 – CEI South's Generation Resource Retirements

Unit	Installed Capacity ("ICAP") (MW)	Primary Fuel	Year Retired
A.B. Brown 1	245	Coal	2023
A.B. Brown 2	245	Coal	2023
Broadway Avenue (BAGS) 2	65	Gas	2019
Northeast 1	10	Gas	2019
Northeast 2	10	Gas	2019
Broadway Avenue (BAGS) 1	50	Gas	2018

Q. WITH A.B. BROWN UNITS 1 & 2 BEING REMOVED FROM SERVICE IN MID-OCTOBER 2023, PLEASE EXPLAIN WHAT HAPPENS TO THE A.B. BROWN WORKFORCE.

A. CEI South has managed the Generation Operations workforce through attrition from approximately 188 full-time equivalents ("FTEs") in 2019 to approximately 138 FTEs year-end 2023 by utilizing contractors. As such, the A.B. Brown workforce has been reassigned to other departments within Generation Operations.

Q. DOES CEI SOUTH PLAN TO RETIRE OR EXIT OTHER GENERATION RESOURCES?

A. Yes. Under the 2017 JOA Amendment, the term for Warrick Unit 4 continued until December 31, 2023 and thereafter until terminated by written notice by either party. [redacted] timely written notice, the JOA for Warrick Unit 4[2] will terminate at the end of 2023. In addition, CEI South plans to cease operation of its F.B. Culley Unit 2 90 MW coal-fired unit at the end of 2025.

[2] Warrick Unit 4 is a 300 MW coal-fired unit co-owned with Alcoa – the 150 MW of installed capacity ("ICAP") represents CEI South's 50% ownership.

Q. WHAT IS THE FORECASTED SAVINGS ASSOCIATED WITH THE CLOSURE OF A.B. BROWN UNITS 1 & 2 AND THE EXIT OF WARRICK UNIT 4?

A. The forecasted savings related to the closure of A.B. Brown Units 1 & 2 and the exit of Warrick Unit 4 combined is approximately $31 million annually starting in 2024, which is illustrated in **Figure SEG-2** in Petitioner's Exhibit No. 3, which is a waterfall chart comparing 2022 actual operations and maintenance ("O&M") to 2025 forecasted O&M.

Q. WHAT IS THE FORECASTED SAVINGS ASSOCIATED WITH THE CLOSURE OF F.B. CULLEY UNIT 2?

A. The forecasted savings related to the retirement of F.B. Culley Unit 2 is approximately $2.8 million annually starting in 2026, as further discussed by Petitioner's Witness Chrissy M. Behme.

Q. WITH THE COAL-FIRED RETIREMENTS AND EXIT IDENTIFIED EARLIER IN TESTIMONY, PLEASE PROVIDE CEI SOUTH'S REMAINING EXISTING GENERATION PORTFOLIO.

A. **Table FSB-2** (below) shows the remaining portfolio containing 270 MWs of coal-fired generation, 160 MWs of natural gas-fired generation, 54 MWs of solar, 3 MWs of landfill gas, 1 MW of battery storage, two wind Purchase Power Agreements ("PPA") totaling 80 MWs, and 32 MWs associated with a 1.5% ownership in the Ohio Valley Electric Cooperative ("OVEC").

Table FSB-2 – CEI South's Post-2025 Remaining Existing Resources

Unit	ICAP (MW)	Primary Fuel	Commercial Operation
F.B. Culley Unit 3	270	Coal	1973
OVEC[3]	32	Coal	1950's-60's
A.B. Brown 3	80	Gas	1991
A.B. Brown 4	80	Gas	2002
Blackfoot	3	Landfill Gas	2009
Benton County PPA	30	Wind	2008
Fowler Ridge PPA	50	Wind	2009
Oak Hill Solar	2	Solar	2018
Volkman Solar[4]	2	Solar	2018
Troy Solar	50	Solar	2021
TOTAL	**599**		

Q. FROM THE GENERATION TRANSITION PLAN, WHAT ADDITIONAL GENERATION RESOURCES WILL BE ADDED TO CEI SOUTH'S GENERATION PORTFOLIO?

A. As shown in **Table FSB-3** (below), CEI South will add approximately 756 MW of solar, 460 MW of gas-fired generation, and 200 MW of wind to its generation portfolio.

[3] OVEC has over 2,000 MW of coal fired generation – the 32 MW ICAP identified represents CEI South's 1.5% share of net output.
[4] The Volkman site includes 1 MW of battery storage.

Table FSB-3 – CEI South's New Planned Generation Resources

Unit	ICAP (MW)	Primary Fuel	Commercial Operation
Knox County PPA	150	Solar	2024
A.B. Brown 5	230	Gas	2025
A.B. Brown 6	230	Gas	2025
Posey County Solar Project	191	Solar	2025
Warrick County PPA	100	Solar	2025
Vermillion County PPA	185	Solar	2025
Pike County Solar Project	130	Solar	2026[5]
MISO Zone 4 Wind Project	200	Wind	2026[6]

Q. PLEASE DESCRIBE CEI SOUTH'S PROGRESS IN EXECUTING ITS GENERATION TRANSITION PLAN.

A. CEI South has received approval for the following generation resources:

- approval in the Commission's June 28, 2022 Order in Cause No. 45564 to construct two CTs (or "A.B. Brown Units 5 & 6");
- approval in the Commission's January 11, 2023 Order in Cause No. 45754 to acquire a 130 MW solar project in Pike County, Indiana (the "Pike County Solar Project" or "Crosstrack");
- approval in the Commission's February 24, 2023 Order in Cause No. 45786 for the amendments to a solar PPA in Knox County, Indiana (the "Knox County PPA"[7]);
- approval in the Commission's May 30, 2023 Order in Cause No. 45839 for the amendments to PPAs located in Warrick County, Indiana (the "Warrick County

[5] The in-service date for the Pike County Solar Project (also referred to as Crosstrack), approved in Cause No. 45754, has now shifted from 2025 to 2026; and as such is beyond the test year of this proceeding.

[6] The in-service date for the MISO Zone 4 Wind Project, approved in Cause No. 45836, was expected to be captured within the future test year of this rate case (in 2025) but has since shifted and is now anticipated to be in service in 2026. Cause No. 45836 authorizes CEI South to use its Clean Energy Cost Adjustment ("CECA") mechanism for timely recovery of the MISO Zone 4 Wind Project if, for whatever reason, the MISO Zone 4 Wind Project is not included in this general rate case.

[7] Knox County Solar PPA originally approved in the Commission's May 4, 2022 Order in Cause No. 45600.

PPA"[8]) and Vermillion County, Indiana (the "Vermillion County PPA"[9]); and

- approval in the Commission's June 6, 2023 Order in Cause No. 45836 to acquire a 200 MW wind project located in MISO Zone 4 (the "MISO Zone 4 Wind Project");
- most recently, approval in the Commission's September 6, 2023 Order in Cause No. 45847 to acquire, subject to the Amended and Restated Build Transfer Agreement ("BTA"), a 191 MW solar project located in Posey County (the "Posey County Solar Project"[10]).

IV. FIVE PILLARS

Q. ARE YOU FAMILIAR WITH HOUSE ENROLLED ACT 1007, CODIFIED AS IND. CODE § 8-1-2-0.6, WHICH BECAME EFFECTIVE JULY 1, 2023?

A. Yes. House Enrolled Act 1007, codified as Ind. Code § 8-1-2-0.6, declared that "decisions concerning Indiana's electric generation resource mix, energy infrastructure, and electric service ratemaking constructs must consider" certain attributes commonly referenced as the "Five Pillars". I reviewed the Five Pillars utilities need to consider when submitting various types of petitions, filings, plans, and reports with the Commission.

Q. PLEASE DESCRIBE THE FIVE PILLARS.

A. The Five Pillars are:

(1) **Reliability** consists of two fundamental concepts – adequacy and operating reliability. Adequacy is the ability of the electric system to supply the aggregate electric power and energy requirements of electricity consumers at all times, taking into account scheduled and reasonably expected unscheduled outages of system components. Operating reliability is the ability of the electric system to withstand sudden disturbances, such as electric short circuits or

[8] Warrick County Solar PPA originally approved in the Commission's October 27, 2021 Order in Cause No. 45501.
[9] Vermillion County Solar PPA originally approved in the Commission's May 4, 2022 Order in Cause No. 45600.
[10] Posey County Solar Project originally approved in the Commission's October 27, 2021 Order in Cause No. 45501.

unanticipated loss of system components.

(2) **Resiliency** is the ability of a system or its components to adapt to changing conditions, and to withstand and rapidly recover from disruptions or off-nominal events.

(3) **Stability** refers to the ability of an electric system to maintain a state of equilibrium during normal and abnormal conditions or disturbances, and deliver a stable source of electricity, in which frequency and voltage are maintained within defined parameters, consistent with industry standards.

(4) **Affordability** relates to designing the generation and resource mix and ratemaking constructs in a manner aimed at producing bills for retail electric service that are affordable across the residential, commercial, and industrial customer classes.

(5) **Environmental sustainability** accounts for both environmental regulations and consumers' demands for sustainable sources of generation.

The Five Pillars frequently work against each other, and so that is why all five must be considered together with not one pillar seen as superior and exclusive to the others.

Q. PLEASE DISCUSS, IN YOUR OPINION, HOW THE PROJECTS ASSOCIATED WITH CEI SOUTH'S GENERATION TRANSITION PLAN, AND APPROVED TO DATE, ARE CONSISTENT WITH THE FIVE PILLARS?

A. CEI South's Generation Transition Plan not only promotes reliability but is consistent with the resilience and stability pillars. First, all resources selected are proven technologies that will help ensure CEI South can continue to meet capacity requirements. The CTs, solar, and wind projects will supply the aggregate energy requirements of CEI South's electric consumers at all times. Next, CEI South's Generation Transition portfolio is consistent with the resilience and stability pillars in that it offers a balanced, diverse set of resources not only available to serve customer load (including wind, solar, energy efficiency, and gas) but that complement each other thereby offering protection from market volatility, while also minimizing the risk of disturbances and supporting swift recovery should a disruption occur. The wind and solar assets complement each other – hitting their peaks at different times of the day

as well as different seasons of the year. In fact, wind assets are well suited to provide a source of energy in the winter when solar energy output is at its lowest and customer usage is at its second highest annual level; while solar assets are well suited to provide a stable source of energy in the summer when usage is at its highest. Further, the CTs are paired with the renewable generation, providing fast-start and quick-ramping dispatchable energy necessary to complement CEI South's renewable energy resources and to ensure sufficient dispatchable capacity to serve CEI South's load reliably and efficiently when the intermittent renewable resources are not available for short or prolonged periods of time. This pairing further enhances the ability of the system to withstand sudden disturbances. In addition, while renewable resources are intermittent in nature, they are no more impacted by short circuits or unanticipated loss of system components than other generation resources.

Q. YOU TOUCHED UPON THE FIRST THREE PILLARS (RELIABILITY, RESILIENCE, AND STABILITY) EARLIER, WHAT ABOUT THE FOURTH PILLAR – AFFORDABILITY?

A. CEI South's Generation Transition Plan is also consistent with the fourth pillar - affordability. The Generation Transition Plan is designed to be affordable over the long term for our customers. The replacement solar and wind resources are an important part of the future of the electric industry, and utility-scale solar and wind have emerged as efficient, relatively low-cost sources of energy – simply put, unlike with the coal units, the O&M or capital to operate and maintain wind and solar assets is relatively low and each benefit from no ongoing fuel costs. Another benefit to solar and wind resources is the federal tax incentives received, in the form of tax credits like the investment tax credit ("ITC") or production tax credit ("PTC"). The benefits from ITCs are flowed through customer rates via amortization of the credit over the productive life of the underlying asset. PTC benefits are not subject to normalization and the benefits can be flowed to customers as soon as they are monetized by the utility. In addition to the tax credits, customers directly benefit from the renewable energy credits ("RECs") generated from these solar and wind resources which will be sold to the market or to large customers through the Green Energy Rider proposed in this Cause. Revenues from these sales minus any MISO fees will be passed back to customers dollar for dollar through the CECA mechanism, directly offsetting the cost of the renewable project for customers. The CTs in CEI South's Generation Transition

portfolio are also consistent with the affordability pillar, supplying power and energy when called upon by MISO for reliability or when market prices are sufficiently high, shielding customers from price risk.

Q. PLEASE DISCUSS WHETHER CEI SOUTH'S GENERATION TRANSITION PLAN IS CONSISTENT WITH AFFORDABILITY, AS IT RELATES TO THE REQUEST IN THIS CAUSE.

A. CEI South's Generation Transition Plan is also consistent with the affordability pillar in relation to the electric service ratemaking constructs at issue in this proceeding. As I discussed earlier in my testimony, the closure of the A.B. Brown coal-fired units and the exit of Warrick Unit 4 will reduce O&M by approximately $31 million annually starting in 2024; and CEI South's closure of F.B. Culley Unit 2 will reduce O&M by approximately an additional $2.8 million in 2026. In addition, CEI South customers will benefit from fuel cost savings associated with these closures and exits reflected in the FAC, as well as the savings from no longer having ongoing capital investments to maintain and environmentally control these coal-fired assets.

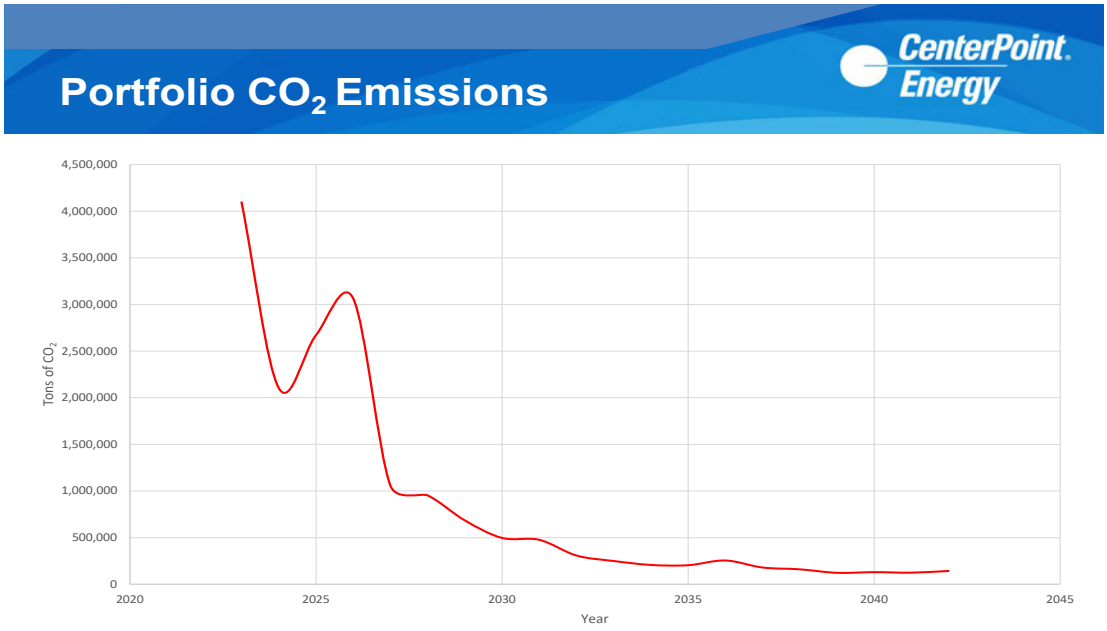
Q. PLEASE DISCUSS WHETHER THE GENERATION TRANSITION PLAN IS CONSISTENT WITH THE FIFTH PILLAR – ENVIRONMENTAL SUSTAINABILITY.

A. The addition of clean renewable energy resources (like wind and solar) is consistent with the Environmental Sustainability pillar. Renewable energy resources do not use fossil or nuclear fuel, which means there is no need for mining or drilling for fuel, no radioactive or hazardous wastes, no use of water for steam or cooling, and no emissions of greenhouse gases or other pollutants emitted during generation. Also, the price of renewable power is not impacted by the volatility of fuel commodities, as other, non-renewable sources are.

With CEI South's customers increasingly interested in the addition of more renewable resources to meet their energy needs, renewable energy helps CEI South and central and southwestern Indiana move towards a cleaner generation portfolio by lowering the amount of CO_2 emitted from generating resources. Not only does the addition of wind and solar energy resources to CEI South's generation portfolio help CEI South achieve its commitments to environmental stewardship and sustainability, but the addition of the two CTs is also consistent with the Environmental Sustainability pillar. The CTs will not be base load; as such, they are not intended to run much, but rather are

intended to support, and complement, the addition of clean, renewable resources to CEI South's generation portfolio. The CTs are projected to have a low-capacity factor, operating only when economical for the customer. To put things into perspective, CEI South Generation Transition plan is expected to reduce the direct carbon emissions from 2005 levels by 98% by 2035. **Figure FSB-1** illustrates the emissions reduction.

Figure FSB-1 – Portfolio CO_2 Emissions Reduction



V. CAPITAL INVESTMENTS INCLUDED IN THIS CAUSE

Q. OF THE NEW RESOURCES BEING ADDED TO CEI SOUTH'S GENERATION PORTFOLIO, WHICH ARE INCLUDED IN THIS RATE CASE?

A. The two CTs, A.B. Brown Units 5 & 6 approved in Cause No. 45564, and the Posey County Solar Project, approved in Cause No. 45847, are included in the forecasted rate base in this case.

Q. PLEASE PROVIDE AN UPDATE ON THE A.B. BROWN UNITS 5 AND 6 COMBUSTION TURBINES.

A. First, the construction of the CTs is well underway. The anticipated in-service date is Q2 2025 – ahead of the MISO's 2025/2026 capacity planning year. The expected total capital expenditure remains approximately $334 million, which is consistent with the

best estimate approved in Cause No. 45564.

Q. PLEASE PROVIDE AN UPDATE ON THE POSEY SOLAR PROJECT.

A. The Posey County Solar Project is expected to break ground in Q1 2024 with an expected in-service date of May 2025 – also ahead of MISO's 2025/2026 capacity planning year. The expected total capital expenditure for the project remains $429 million, also consistent with the best estimate approved in Cause No. 45847.

Q. WITH THE A.B. BROWN COAL-FIRED UNIT 1 & 2 RETIREMENTS AND THE EXIT OF THE WARRICK UNIT 4 AT THE END OF 2023, PLEASE DESCRIBE HOW CEI SOUTH HAS MANAGED THE CAPACITY NEEDS UNTIL THE REPLACEMENT GENERATION IS PLACED IN SERVICE IN 2025.

A. With the closure of the A.B. Brown Units 1 & 2 and exit of Warrick Unit 4 by the end of 2023, CEI South purchased [redacted] MW of capacity through bilateral contracts for the MISO 2023 – 2024 planning year to meet MISO's Planning Reserve Margin Requirement ("PRMR"). CEI South has also secured [redacted] MW of capacity for the summer season and [redacted] MW of capacity for the fall, winter, and spring seasons through bilateral contracts for the MISO 2024 – 2025 planning year. **Table FSB-4** (below) shows CEI South's capacity position to meet MISO's PRMR.

Table FSB-4: CEI South's Capacity PRMR Position (MW)

MISO Planning Year	Summer	Fall	Winter	Spring
2023-2024[11]	[redacted]	[redacted]	[redacted]	[redacted]
2024-2025	[redacted]	[redacted]	[redacted]	[redacted]
2025-2026	[redacted]	[redacted]	[redacted]	[redacted]

Q. WHY IS IT IMPORTANT TO HAVE BOTH THE CTS AND POSEY COUNTY SOLAR PROJECT IN SERVICE PRIOR TO THE MISO 2025 – 2026 CAPACITY PLANNING YEAR?

A. Quite simply, having the CTs and Posey County Solar Project resources in service prior to MISO's 2025 – 2026 capacity planning year is to avoid the possible high-cost of securing capacity either through bilateral capacity contract and/or purchasing

[11] In Planning Year 2023-2024, MISO implemented the seasonal construct and as such, the A.B. Brown Units 1 & 2 and Warrick capacity became available for the summer season and summer/fall seasons, respectively.

capacity via MISO's Planning Resource Auction. In addition, the possibility of capacity deficits within MISO's central region due to demand growth and continued resource retirements could potentially require temporary controlled load sheds to customers, making it imperative for each utility in each MISO zone to meet its own PRMR.

Q. YOU TESTIFIED THAT YOU WOULD IDENTIFY THE MATERIAL GENERATION-RELATED CAPITAL INVESTMENTS THAT HAVE BEEN MADE SINCE THE RATE BASE CUTOFF IN CEI SOUTH'S LAST GENERAL RATE CASE AND THAT ARE PROJECTED TO BE MADE BEFORE THE END OF THE TEST YEAR IN THIS CASE. CAN YOU IDENTIFY ATTACHMENT FSB-1?

A. Yes. **Attachment FSB-1** is a summary of capital investments made at CEI South generating stations since the 43839 rate base cutoff date and projected through the end of the test year in this case, with projects greater than $5 million individually identified. Where the investment has been approved by the Commission in a prior proceeding, it lists the Cause Number. It is broken down by investments made by the end of the base period (December 31, 2022), and then investments projected for 2023 through 2025. This attachment includes the CT Project and Posey Solar, and excludes Troy Solar, Crosstrack Solar, and those investments that have since been retired with the securitization of A.B. Brown Units 1 & 2.

VI. WARRICK UNIT 4

Q. PLEASE DESCRIBE THE AGREEMENT WITH ALCOA FOR WARRICK UNIT 4, TO INCLUDE WHEN THE AGREEMENT WAS EXECUTED BETWEEN ALCOA AND CEI SOUTH.

A. CEI South and Alcoa have jointly owned and operated Warrick Unit 4, a 300 MW coal-fired unit, since 1968, when the Joint Operating Agreement was executed. CEI South's 50% share of Warrick Unit 4 is 150 MW of the installed capacity. The 1968 agreement focused on the ownership, design construction, and operation and maintenance of the 300 MW generating unit with an expected operating term to be the earlier of [redacted].

Q. OVER THE YEARS, WERE THERE AMENDMENTS TO THE ORIGINAL AGREEMENT?

A. Yes. The 1968, or original, agreement has had seven amendments over the years.

Petitioner's Exhibit No. 7, **Attachment FSB-2 (CONFIDENTIAL)** includes the 1968 agreement along with the First, Second, Third, Fourth, Fifth, Sixth, and Seventh Amendments thereto , collectively referred to as the JOA.

Q. PLEASE DESCRIBE THE AMENDMENTS TO THE ORIGINAL AGREEMENT.

A. The first amendment was executed shortly after the original agreement to address various particulars not considered originally. The second amendment was finalized in March 2001 for [redacted]. In October and December 2010, a letter agreement and an amendment (the third and fourth amendments, respectively), were signed to address some operational parameters as well as some billing and/or fees. In March 2016, the fifth amendment was established [redacted]. A sixth amendment in March 2017 was reached highlighting provisions should [redacted] And then lastly, in September 2017, the seventh amendment (the "2017 JOA Amendment") was executed to update the operating term to December 31, 2023 or continuing thereafter until terminated by either party [redacted].

Q. DID THE 2017 JOA AMENDMENT INCLUDE ANY OTHER PROVISIONS?

A. Yes, several other provisions. The first provision provides an option and a process for [redacted] The next provision defined [redacted]. Another provision [redacted] Also included [redacted] Lastly, the amendment addressed [redacted].

Q. BASED ON THE 2017 JOA AMENDMENT, WAS A TERMINATION NOTICE ISSUED?

A. Yes, [redacted] effective December 31, 2023.

Q. WITH THE NOTICE OF TERMINATION, WHAT HAPPENS TO CEI SOUTH'S INTEREST IN WARRICK UNIT 4 AFTER DECEMBER 31, 2023?

A. Effective December 31, 2023, CEI South's interest in Warrick Unit 4 is no longer used and useful and Warrick Unit 4 is retired and removed from CEI South's books and records. The Direct Testimony of Petitioner's Witness Behme addresses the accounting for the Warrick Unit 4 retirement.

Q. YOU MENTION ABOVE THE 2017 JOA AMENDMENT HAS A PROVISION PROVIDING [redacted]. HAS THAT PROCESS BEGUN?

A. Somewhat. [redacted]

Q. PLEASE DISCUSS HOW [redacted] WILL BENEFIT CUSTOMERS?

A. First, as I mention in my testimony above, in relation to the electric service ratemaking constructs at issue in this proceeding, from an Affordability perspective the exit of Warrick Unit 4 reduces O&M for 2024 and beyond. In addition, the exit from Warrick Unit 4 will also eliminate future capital investments as well as the associated fuel cost within the FAC. Furthermore, the 2017 JOA Amendment [redacted]

VII. WHOLESALE POWER MARKET ("WPM") SALES & MARGIN SHARING

Q. PLEASE DESCRIBE THE OPPORTUNITY TO SELL WHOLESALE ENERGY FROM CEI SOUTH'S UNITS.

A. CEI South's generation units are offered into the Day Ahead ("DA") and Real-Time ("RT') energy markets. MISO evaluates all offers it receives and selects the economic units that will run. As system operator, MISO will also instruct generators to ramp up or ramp down production throughout the day depending on actual regional demand

and supply events such as unplanned outages. Generated megawatt hours in excess of what is required for CEI South native load are allocated to WPM off system sales.

Q. PLEASE DESCRIBE THE CURRENT WPM SHARING MECHANISM.

A. Pursuant to the methodology approved in Cause No. 43111 (CEI South's 2007 electric rate case) and affirmed in Cause No. 43839 (CEI South's last electric rate case), CEI South calculates 50% of the difference between the $7,500,000 annual base level amount of WPM margin and the actual WPM margin for the Reliability Cost and Revenue Adjustment ("RCRA") Reconciliation Period (May 1 through April 30).

Q. IS CEI SOUTH REQUESTING CONTINUATION OF ITS CURRENT WPM SHARING MECHANISM IN THE RATE CASE?

A. No, if approved, CEI South is proposing that following the issuance of an Order in this Cause, CEI South will no longer share in WPM off system sales. Instead, starting upon issuance of an Order in this Cause, 100% of the margin from WPM off system sales will go to the customer. This change is anticipated to occur during the RCRA 23 reconciliation period.

Q. DOES PROVIDING CUSTOMERS 100% OF THE MARGIN FROM WPM OFF SYSTEM SALES BENEFIT CUSTOMERS?

A. Yes, in relation to the electric service ratemaking constructs at issue in this proceeding, this benefit directly ties to the affordability pillar because the additional (50%) margin from WPM off system sales that customers receive will directly help offset the costs associated with the Generation Transition Plan. As described by Witness Matthew A. Rice, this offsets the revenue requirement by $7.1 million.

VIII. URBAN RESEARCH LIVING CENTER ("ULRC") PROJECT

Q. WHAT IS THE ULRC PROJECT?

A. CEI South's ULRC is a Southwest Regional Cities development project, located in downtown Evansville as part of a mixed-use, multi-family housing development (the "Post-House") intended to serve as a platform for research and development of energy efficiency, smart "connected" appliances, and emerging energy technologies such as distributed generation and distributed energy resources. As approved by the Commission in August 2017 in Cause No. 44909 ("44909 Order"), the original

estimated ULRC project plan, based on preliminary building designs, consisted of a rooftop solar facility capable of generating approximately 300 kilowatts alternating current ("kWac") along with approximately 400 kilowatt hours ("kWh") of distributed and shared battery energy storage system (“BESS”) with the goal of achieving a Net Zero energy building. The ULRC’s solar facility and BESS projects were intended to provide an active research and test facility to allow CEI South an opportunity to evaluate emerging technologies and evolving needs of customers on an ongoing basis while also gaining knowledge about the benefits and challenges related to distributed energy resources generally and how it relates to owning and operating distributed energy resources as utility assets on customer properties.

Q. WHAT PROJECT COSTS DID THE COMMISSION APPROVE IN THE 44909 ORDER?

A. In the 44909 Order, the Commission approved an estimated investment of approximately $2 million for the ULRC Project, based on its finding that CEI South was unable to develop a detailed cost estimate due to the design of the ULRC not being complete. The 44909 Order also required CEI South to provide an update on the detailed ULRC project budget once the design phases were complete, to present evidence and report on the final cost of the ULRC (among other facilities) in future CECA filings, and to include justification establishing the reasonableness of any cost that exceeds the approved facility cost estimate.

Q. HOW ARE THE ULRC PROJECT COSTS RECOVERED?

A. The ULRC project costs are recovered through the CECA mechanism.

Q. HAS THE SCOPE OF THE ULRC CHANGED SINCE ITS ORIGINAL APPROVAL IN THE 44909 ORDER? PLEASE EXPLAIN.

A. Yes. In its May 13, 2020 Order in Cause No. 44909 CECA 2 (the “CECA 2 Order”), the Commission approved a change in scope to the ULRC and a corresponding decrease in the project cost estimate, removing the BESS component due to safety concerns with the close integrations of lithium-ion battery storage in occupied residential buildings. In addition, due to necessary redesign of the rooftop solar layouts, the capacity of the final installed solar array was reduced to approximately

180 kWac.[12] The purpose of the remaining aspects of the ULRC, to discover and extract the benefits of decentralized integration of distributed renewables within the electric distribution system and implement optimal energy management strategies, remained unchanged.

Q. WHAT PROJECT COSTS DID THE COMMISSION APPROVE IN THE CECA 2 ORDER?

A. In the CECA 2 Order, the Commission approved a decrease in the project cost estimate from $2 million in the 44909 Order to a revised project estimated cost of $1.5 million based on the change in scope, which consisted of necessary redesign of the rooftop solar layouts and removal of the BESS.

Q. WERE THERE ANY CHANGES TO THE SCOPE OF THE ULRC PROJECT FOLLOWING THOSE APPROVED IN THE CECA 2 ORDER? PLEASE EXPLAIN.

A. Yes. In Cause No. 44909 CECA 4,[13] CEI South provided testimony describing further changes to the ULRC design, including another necessary redesign of the rooftop solar installation to accommodate the as-built rooftop, which varied significantly from the original architectural plans. The redesign necessitated the use of smaller solar arrays than originally designed and reduced the output of the solar array to 105 kWac. In its May 25, 2022 Order in Cause No. 44909 CECA 4 (the "CECA 4 Order"), the Commission acknowledged the updates provided by CEI South regarding the ULRC.

Q. DID THE COMMISSION APPROVE ANY REVISED PROJECT COSTS IN THE CECA 4 ORDER?

A. No. In Cause No. 44909 CECA 4, CEI South provided the current costs incurred through December 31, 2021 as $973,964 and estimated the final project cost (given the changes to the scope related to the roof-redesign) would be approximately $1.15 million. Notably, CEI South did not request approval of, nor did the Commission approve, any revisions to the cost estimate in its CECA 4 Order, meaning the revised estimated cost of $1.5 million provided, and approved, in the CECA 2 Order, was still the approved estimate for the ULRC Project.

[12] For the sake of simple comparison, all references to the ULRC solar output have been converted to kW-ac, assuming a 90% inverter efficiency rating.
[13] In Cause No. 44909 CECA 3, the Commission acknowledged CEI South's notice of changes to the ULRC made to accommodate aspects of the Post House's as-built plans.

Q. WHEN WAS THE ULRC PROJECT PLACED INTO SERVICE?

A. The ULRC Project was completed and placed into service on December 2, 2022 with a final, installed solar array output of 105 kWac. In Cause No. 44909 CECA 5, CEI South requested recovery for the final project cost of $1,465,287.59 in Cause 44909 CECA 5.

Q. DID THE COMMISSION APPROVE THE FINAL ULRC PROJECT COST?

A. Partially. In its May 30, 2023 Order in Cause No. 44909 CECA 5 (the "CECA 5 Order"), the Commission approved $1,150,000 recovery of the $1,465,288 ULRC final project cost, finding that although the final project cost was within the approved estimated cost in the CECA 2 Order, CEI South failed to establish that the remaining costs were reasonable or appropriate for a project with significantly less capacity than was projected in Cause 44909 CECA 2.

Q. DID CEI SOUTH ASK FOR RECONSIDERATION OR APPEAL THE ORDER FOR THE REMAINING $315,288?

A. No. CEI South chose not to ask for reconsideration or appeal the order. Instead, CEI South has included the difference in this case.

Q. PLEASE DESCRIBE THE CHANGES IN COST SINCE THE COMMISSION ISSUED THE CECA 5 ORDER.

A. CEI South received a $56,407 additional reimbursement for the ULRC project from the U.S. Department of Energy ("DOE") out of the $60,000 requested. In addition, CEI South made a $37,195 overhead adjustment to remove costs that had been incorrectly charged to the project. CEI South is seeking to recover the remaining unrecovered balance of the ULRC project in this case, which is $219,348.

Q. WHY IS CEI SOUTH SEEKING $219,348 THROUGH THIS RATE CASE?

A. First, as noted in the 44909 Order, the ULRC was a pilot – specifically, a Southwest Regional Cities development project intended to serve as a platform for research and development of energy efficiency, smart "connected" appliances, and emerging energy technologies such as distributed generation and distributed energy resources. CEI South gained valuable lessons learned on constructing; however, being a pilot project, CEI South ran into unforeseen challenges beyond its control to get the project to fruition in 2022. First, safety issues related to the use of lithium-ion batteries in

occupied residential areas necessitated the removal of the BESS. Second, the physical layout of the rooftop changed from the original architectural plans and Occupational Safety and Health Administration (OSHA) regulations required the installation of a fall protection system, causing the solar project to be redesigned. Third, issues with weight loadings and physical space conflicts necessitated the moving of certain pieces of equipment. Finally, the COVID pandemic delayed the construction timeline. The delays and redesigns added unexpected costs to the project for redesign, labor, and loadings. In addition, upon the start of construction in mid-2021, CEI South discovered that new conduit would need to be installed throughout the building to route proper-sized conductor to the grid interconnection, which resulted in a cost increase. These cost increases were beyond CEI South's control and were necessary costs for the completion of the ULRC project. In addition, the final cost, with the adjustments discussed above, of approximately $1.37 million is still well below the $1.5 million cost estimate approved by the Commission in its CECA 2 Order, which already took into consideration the removal of the BESS. Therefore, in my opinion it is reasonable for CEI South to recover in this case the remaining costs incurred for the ULRC project that were not included for timely recovery through CEI South's CECA mechanism.

Q. WHAT ADDITIONAL INFORMATION WOULD YOU LIKE TO SHARE ABOUT THE CHANGE ORDERS?

A. To address the Commission's finding that CEI South failed to establish the additional costs were reasonable or appropriate, CEI South is providing a detailed breakdown of the additional $219,348 cost above the $1,150,000 cost estimate approved in the CECA 5 Order:

- $[redacted] relates to contractor change orders that consisted of: installing new electrical conduit to address the variance between design and as-built condition; installing a protective cover for the inverter banks; moving the meter location due to building design changes; and miscellaneous communication and security network requirements.
- $[redacted] consisted of additional labor and material increases due to the delay of getting the project in service from Q1 2022 to Q4 2022.
- $[redacted] was contributed to additional overheads such as AFUDC and A&G due to the increase in unexpected costs and prolonged schedule.

CEI South is providing the above detailed breakdown of cost above the $1,150,000 cost estimate approved in the CECA 5 Order to show the costs were reasonable and prudent for the pilot rooftop solar project, given the knowledge and experiences gained in construction, despite the multiple redesign changes requiring the reduced solar array layout.

IX. CONCLUSION

Q. DOES THIS CONCLUDE YOUR DIRECT TESTIMONY?

A. Yes, at the present time.

VERIFICATION

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

SOUTHERN INDIANA GAS AND ELECTRIC COMPANY D/B/A CENTERPOINT ENERGY INDIANA SOUTH

F. Shane Bradford
Vice President, Power Generation Operations

11-27-23
Date

Power Generation Capital Investments 2009 - 2025

Cause No.	Status	Project Name	2009-2022A	2023-2025F
		ABB DCS	8,165,991	-
45280	(5)	ABB Ash Pond Closure	54,667,512	5,796,069
		ABB Buttress & Upper Spillway	10,409,068	-
45564/45052 ECA 4	(1)	ABB Compliance Pond	3,424,922	16,370,462
44446/45052	(2)	ABB NPDES	8,912,718	-
45052	(7)	FBC West Pond Closure	40,583,770	(41,628)
45052	(7)	FBC3 Dry Bottom Ash	13,550,894	-
45903	*	FBC East Pond Closure	4,538,557	47,766,870
		FBC East Pond Improvements	7,049,413	-
45052	(7)	FBC FGD Spray Dry Evaporator	34,760,475	12,719,025
45564	(4)	FBC Compliance Pond	3,650,970	6,690,536
		FBC3 Boiler RH Replacement	6,121,541	-
44446	(8)	FBC2 Precipitator Upgrade	7,159,341	-
		FBC3 Gas Conversion	-	9,000,000
		FBC3 Turbine Overhaul	-	6,000,000
		FBC3 PSH Replacement	-	8,000,000
		FBC 316 (b) Clean Water Act Intake Structures Project	-	5,045,000
45564	(4)	DFA Loadout Facility	15,566,079	-
44909	(6)	Oakhill Solar Array	5,674,052	-
		Ohio River Station Demolition	6,277,143	(605)
45501/45847	(3)	Posey Solar BTA	10,591	420,400,000
45564	(4)	ABB 5&6 CTs	37,484,050	260,196,759
		FBC3 BFPT Failure Outage	3,833,240	3,697,169
44909	(6)	Volkman Solar Array	7,837,459	-
		W4 Transformer Replacement (SIGECO Share Only)	6,250,932	-
		Other (Projects less than $5M)	245,693,094	27,765,079
		Grand Total - Power Generation	**531,621,811**	**829,404,736**

2009-2022A includes AFUDC
2023-2025F excludes AFUDC

* Currently pending before Commission
(1) Approved in Cause No. 45564. Request to increase original estimate in Cause No. 45052 ECA 4 which is currently pending.
(2) CPCN approved in Cause No. 44446. Recovery through ECA approved in Cause No. 45052.
(3) Approved in Cause No. 45501. Amended BTA approved in Cause No. 45847
(4) Approved in Cause No. 45564.
(5) Approved in Cause No. 45280
(6) Approved in Cause No. 44909
(7) Approved in Cause No. 45052
(8) Approved in Cause No. 44446

Attachment FSB-2 (CONFIDENTIAL) Filed Confidentially