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

IURC
PETITIONER'S
EXHIBIT NO. 3
6-21-21 AT
DATE REPORTER

IURC CAUSE NO. 45501

FILED
February 23, 2021
INDIANA UTILITY
REGULATORY COMMISSION

DIRECT TESTIMONY
OF
WAYNE D. GAMES
VICE-PRESIDENT POWER GENERATION OPERATIONS

ON

DESCRIPTION AND BENEFITS OF POSEY COUNTY SOLAR PROJECT, SUPPORT FOR CERTIFICATE OF PUBLIC CONVENIENCE AND NECESSITY, AND REPLACEMENT OF EXISTING INEFFICIENT UNITS

SPONSORING PETITIONER'S EXHIBIT NO. 3 (PUBLIC)
ATTACHMENTS WDG-1 THROUGH WDG-2

DIRECT TESTIMONY OF WAYNE D. GAMES

I. INTRODUCTION

Q. Please state your name and business address.

A. My name is Wayne D. Games. My business address is 211 NW Riverside Drive, Evansville, Indiana 47708.

Q. On whose behalf are you submitting this direct testimony?

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

Q. What is your role with respect to Petitioner?

A. I am Vice President Power Generation Operations.

Q. Please describe your educational background.

A. I received a Bachelor of Arts in Industrial Technology from Ohio Northern University in 1980 and a Master of Arts in Management from Antioch University in 2002.

Q. Please describe your professional experience.

A. I have thirty years of varied experience in the utility industry. I started my career with The Dayton Power & Light Co. in 1991 where I held supervisory, manager, and regional manager titles on the energy delivery side of the business. Upon joining the Company in 2000, I served as Director of Construction and Service and Regional Manager in the Ohio service area. In 2003, I moved to Evansville, Indiana, and accepted responsibility as Director of Petitioner's A.B. Brown generating station. I was promoted to Vice President of Power Supply in April of 2011. I was named to my present position in February 2019.

Q. What are your present duties and responsibilities as Petitioner's Vice President Power Generation Operations?

A. I am responsible for the overall budgeting, operation, maintenance, and personnel decisions for Petitioner's electric generation fleet. In addition, I have responsibility for

ensuring demand of our customers is met at the lowest 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 CenterPoint's generation assets, I supervise personnel providing cost inputs to the modeling associated with the Integrated Resource Plan ("IRP") process and have reviewed the modeling results and the risk evaluation set forth therein.

Q. Have you previously testified before the Indiana Utility Regulatory Commission ("Commission")?

A. Yes. I regularly testify in the Company's fuel adjustment clause ("FAC") proceedings and in the related sub-dockets in Cause No. 38708. I testified in support of the Company's proposal to install pollution control equipment on its coal-fired generation facilities in Cause No. 44446 and in support of the Company's proposal to construct solar facilities in Cause No. 44909. I also testified in Cause No. 45086 in support of Petitioner's proposal to own and operate a solar energy project totaling approximately 50 megawatts of alternating current ("MWac") within its service territory.

Q. Are you sponsoring any attachments in this proceeding?

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

- Petitioner's Exhibit No. 3, **Attachment WDG-1**: Posey County Solar Project Site Map; and
- Petitioner's Exhibit No. 3, **Attachment WDG-2**: Construction Schedule for Posey County Solar Project.

Both documents were provided by the developer and are subject to change based on discoveries during final design, permitting, and construction activities.

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

A. I describe and provide support for Petitioner's request for a certificate of public convenience and necessity ("CPCN") to purchase and acquire, indirectly through a Build Transfer Agreement ("BTA") with an affiliate of Capital Dynamics ("Capital Dynamics"), a solar power electric generating facility in Posey County, Indiana, that will have an

aggregate nameplate capacity of approximately 300 MWac (the "Posey County Solar Project" or "Posey Project") pursuant to Ind. Code ch. 8-1-8.5. I overview the benefits of adding solar resources generally, as well as the benefits of adding the Posey County Solar Project specifically to Petitioner's existing portfolio of generation assets. Additionally, I describe the components of the Posey County Solar Project. Finally, I describe the 2019/2020 IRP-based decision to retire F.B. Culley Unit 2 ("F.B. Culley 2") and the uncertainty surrounding the Joint Operating Agreement ("JOA") with Alcoa Corporation ("Alcoa") for Warrick Unit #4.

Q. Please provide an overview of the 2019/2020 IRP.

A. The 2019/2020 IRP was the result of a long process with stakeholder input to determine the best alternative for CenterPoint's customers. The 2019/2020 IRP Preferred Portfolio provides a significantly diverse, but balanced mix of traditional and emerging renewable generation resources. The new generation called for in the Preferred Portfolio replaces 730 MWs of coal-fired generation that requires significant expenditures to comply with environmental regulations while maintaining safe and reliable operation in 2023. This coal-fired generation will be replaced with 700-1,000 MWs of solar and 300 MWs of wind, as well as approximately 500 MWs of quick start and fast ramping dispatchable natural gas Combustion Turbine ("CT") generation to complement the intermittent renewables. This Generation Transition Plan, in its entirety, will ensure CenterPoint's ability to meet our obligation to serve customer demand 24 hours a day, 7 days a week and 365 days per year, as well as allow the Company to maintain its largest and most efficient coal plant, F.B. Culley 3.

Q. How do the two proposed solar projects fit into the Generation Transition Plan?

A. The 400 MWac of solar generation from these projects will replace the capacity currently supplied by the 150 MWs of CenterPoint's share of Warrick Unit #4, co-owned with Alcoa and currently operated and maintained by Alcoa, and a portion of the capacity produced by F.B. Culley 2 – CenterPoint's smallest and most inefficient unit. The Preferred Portfolio calls for those units to operate through 2023 only to allow time to obtain replacement capacity, which avoids further investment in the oldest units in CenterPoint's generation portfolio. Moreover, as discussed by Petitioner's Witnesses ~~Justin M. Joiner~~ F. Shane Bradford and Brenda L. Musser, it is important to obtain a CPCN as soon as practical to take advantage of the

30 percent Investment Tax Credit ("ITC") for solar investments and have these projects operational in 2023 to provide capacity necessary to meet the Company's Planning Reserve Margin ("PRM") as required by Midcontinent Independent System Operator, Inc. ("MISO").

Q. Will there be other CPCN filings in 2021?

A. Yes. This filing will be followed by a request to construct two quick start and fast ramping CTs to complement renewable resources and replace dispatchable capacity currently supplied by the A.B. Brown coal units and finally a third filing in 2021 to complete the need for the balance of renewable generation per the 2019/2020 IRP Preferred Portfolio.

II. POSEY COUNTY SOLAR PROJECT

Q. Please provide a brief overview of the Posey County Solar Project.

A. The Posey County Solar Project will be a solar photovoltaic ("PV") power plant with a nameplate capacity of approximately 300 MWac. The Posey County Solar Project will be located west of the City of Evansville in Posey County, Indiana, on 2,500 acres of land. The Posey County Solar Project is currently estimated to consist of approximately 731,000 solar modules mounted on a single axis tracking system that tilts panels towards the sun to increase output and approximately 200 linear feet of 345kV generation tie line and related equipment.

Q. Why is Petitioner describing the capacity of the Posey County Solar Project in terms of MWac?

A. Capacity from solar PV systems can be measured by either the alternating current ("AC") or direct current ("DC") capacity. Solar PV panels produce DC power which needs to be converted to AC power for distribution on the utility grid system, as well as for use in electric appliances in homes and businesses. The AC rating of a solar PV system is typically lower than the DC rating to better utilize the capacity of the inverter during the DC to AC conversion process. Because the solar irradiance only meets the peak design condition during a small percentage of hours annually, the oversized DC array allows the inverter to operate at a higher capacity for a greater portion of the year, thereby providing more value for the capital expenditure. Because generating systems are typically rated in

AC, all energy and capacity ratings (MW, MWh, kW, kWh) used in this testimony are stated in AC power, unless otherwise noted.

Q. What is the DC capacity of the proposed Posey County Solar Project?

A. The DC capacity of the Posey County Solar Project will be approximately 380 MWdc.

Q. Please describe Petitioner's Exhibit No. 3, Attachment WDG-1.

A. Petitioner's Exhibit No. 3, Attachment WDG-1 is map showing the location of the land under contract for the proposed Posey County Solar Project.

Q. How is the Company proposing to acquire the Posey County Solar Project?

A. The Company entered into a BTA under which it will purchase all of the membership interests in a special purpose affiliate of Capital Dynamics, subject to fulfillment of the conditions precedent to closing. Prior to closing, Capital Dynamics will complete or enter into any and all contracts, permitting, land agreements, MISO processes, etc., as necessary to successfully place the Posey County Solar Project into service. By acquiring the membership interests, CenterPoint will acquire all "Project Assets" associated with the facility. Those Project Assets include all assets, properties, rights and interests of every kind, including the rights to the project site, contracts, permits, and warranties. In exchange for the membership interests, the Company will pay an amount set forth in the BTA. Petitioner's Witness ~~Joiner~~ Bradford describes the terms of the BTA.

Q. How will CenterPoint ensure Capital Dynamics constructs the Posey County Solar Project in accordance with the Company's standards?

A. CenterPoint will have staff (Project Manager and other subject matter experts) providing oversight throughout the project. Additionally, CenterPoint has engaged Sargent & Lundy to serve as the Owner's Engineer for the project. Sargent & Lundy is a power and energy consulting firm with expertise in grid modernization, renewable energy, and energy storage. Sargent & Lundy performs comprehensive project services for energy projects, including consulting, design, and implementation, as well as construction management, commissioning, and operations/maintenance. Project oversight will be managed by the management team's monitoring and checking progress of the project through achievement of Major Project Milestones. Some of the Major Milestones include design

review stages; permitting; engineering, procurement and construction ("EPC") contractor notification to proceed; and Civil, Mechanical, Substantial and Final Completion. Our team will use its experience in overcoming challenges presented by the two pilot 2 MW solar projects as well as the 50 MW Troy Solar Project to anticipate issues that might arise in constructing the Posey Project. Our in-house team coupled with the Owner's Engineer bring valuable experience to ensure the initial project stages are developed in a complete and timely manner to include identifying constraints such as the Indiana Bat laws and their impact toward tree clearing; laws governing tenant farm agreements and the timing to terminate these agreements; as well as topography and soil conditions which impact suitable site selection within the leased acreage. We have in place an oversight team with experience to monitor, evaluate, and work with the developer and EPC contractor in developing, designing, and implementing a successful project.

Q. What are the duties of an Owner's Engineer?

A. The Owner's Engineer is tasked with representing the interests of the commissioning company by reviewing and commenting on contract terms and project design as well as monitoring contractors involved in construction of the project. The Owner's Engineer is responsible for ensuring the technical and other contractors adhere to the project specifications. In addition, the Owner's Engineer often assists with technology assessment and selection, contract negotiation, project plan execution, review of contractor costs and progress, and support of plant testing and startup, among other tasks.

Q. What are the benefits of the location of the Posey County Solar Project?

A. A number of benefits will result from locating the project in Posey County. In addition to those described by Petitioner's Witness Steven C. Greenley, which included adding to the tax base in a community that Petitioner serves, the terrain is relatively flat and mostly tilled agricultural ground minimizing construction costs. In addition, the site provides easy access to the transmission system and is located near Petitioner's generating facility, enabling operation and maintenance ("O&M") support through the life of the project.

Q. When do you anticipate that the Posey County Solar Project will be completed?

A. Petitioner's Exhibit No. 3, Attachment WDG-2 is a construction schedule for the proposed Posey County Solar Project.

Q. What are the benefits of entering into a BTA as opposed to constructing the facility independently?

A, The greatest benefit is the builder bears the risk of construction cost increases as the project proceeds. As Petitioner's Witness ~~Joiner~~ Brackett explains in more detail, under the BTA, CenterPoint is acquiring the project for a fixed price. Moreover, Capital Dynamics has done the preliminary work to provide a ready-to-build project, including arranging signed leases and steps to submit the project to the MISO interconnection queue.

Q. What are the benefits of entering into a BTA with Capital Dynamics?

A. Capital Dynamics Clean Energy Infrastructure business unit is one of the largest renewable energy investment managers in the world. Capital Dynamics currently manages 7.9 GWdc of contracted gross power generation across more than 150 projects in the United States and Europe and is one of the top three global solar PV owners. In addition to industry expertise, Capital Dynamics has greater buying power than CenterPoint – greater, in fact, than any entity that does not construct solar projects on a regular basis. Existing relationships with Contractors and OEM Suppliers will be leveraged to support this project and other Capital Dynamics projects under development in the area. These benefits result in lower cost of construction and reduced cost to the consumer.

III. COMPONENTS OF THE SOLAR PROJECT

Q. What are the major components of the Posey County Solar Project?

A. The major components of the Posey County Solar Project include the actual solar modules, ground mounted single axis tracking systems on which the panels are mounted, the inverter which transforms DC current into AC current to be used to serve customers, a site substation, transformers, approximately 200 linear feet of 345 kV generation tie-line, and communication systems. The Posey County Solar Project also includes fencing for security and access roads to maneuver within the site for inspections and maintenance.

Q. What are the primary considerations when choosing a solar system?

A. The primary considerations when choosing a solar system are the types of modules, inverters and the type of racking system to be used. Other components, such as the site

substation and generation tie-line, are fairly standard across solar projects. Capital Dynamics has selected Jinko Bifacial Mono Diamond Cells 520 Wdc. Bifacial solar modules offer many advantages over traditional solar panels. Power can be produced from both sides of a bifacial module, increasing total energy generation with a reduced footprint. Balance of system ("BOS") costs also are reduced when more power can be generated from bifacial modules in a smaller array footprint. The Posey County Solar Project will include approximately 731,000 thin film modules, each of which is approximately 90" in height and 45" in width and 1.6" thick.

Q. What are the considerations when selecting the racking systems on which the modules are mounted?

A. Modules either can be secured in racks that are fixed or on motorized racks that have the ability to track with the sun for maximum output. Tracking systems can be single axis pivoting panels that pivot in one direction only or dual axis pivoting panels that tilt in two different directions. Capital Dynamics will install a single axis tracking system. Single axis tracking offers the ability to track the sun and achieve about 20 percent additional output for each module. For a system as large as the Posey County Solar Project, this increased output can be significant.

Q. What is the purpose of the inverters?

A. Inverters convert DC power produced by a solar panel into AC power. Electricity must be AC to be delivered to the electric grid. Inverters can be in the form of string inverters or central inverters. CenterPoint has chosen central inverters. A central inverter takes the DC current from the solar panel array and converts the DC current to AC current and sends the electricity to the site substation. Central inverters typically are used in solar fields of this size due to their economics. Central inverters have fewer components connections, require less space, and have lower maintenance costs.

Q. What is the expected life of the Posey County Solar Project?

A. The expected life of the Posey County Solar Project is approximately 35 years. CenterPoint will have: (i) a 25-year warranty on the modules; (ii) a 5-year warranty with option to extend for two 5-year terms on the inverters; and (iii) a 10-year warranty on the structural tracking systems. Additionally, the EPC contractor is providing a 2-year wrap

warranty on installation of the major components previously discussed and the balance of plant equipment. CenterPoint believes the Posey Project could continue to operate and provide cost effective energy beyond the 35-year expected life. Leases on property that CenterPoint would acquire under the BTA extend for 50 years.

Q. Will the Posey County Solar Project include a battery storage facility?

A. At the present time, no. However, CenterPoint believes a battery storage facility could be incorporated into the Posey County Solar Project in the future if installing such a facility becomes cost effective.

Q. If all of the BTA's conditions precedent are met, does the BTA represent prudent, valuable and reasonably priced renewable energy for Petitioner?

A. Yes. The BTA will provide Petitioner's customers with a more affordable and cleaner energy resource. This is supported by the analysis performed in Petitioner's 2019/2020 IRP. Moreover, Sargent & Lundy has reviewed the purchase price of the BTA and found it to be within the cost range of similar projects.

IV. OPERATION OF POSEY COUNTY SOLAR PROJECT

Q. How will CenterPoint operate the Posey County Solar Project?

A. CenterPoint will take responsibility for the O&M of the Posey County Solar Project. CenterPoint will employ technicians that have the requisite skills necessary to repair and replace facilities. Vegetation control will likely be contracted to an outside company.

Q. What O&M expenses is CenterPoint anticipating once the Posey County Solar Project is transferred to it pursuant to the BTA?

A. Required maintenance activities include remote performance monitoring; resolving any outage or system performance concerns; replacement of panels as needed due to breakage or performance loss; routine maintenance of the inverters and power transformers; repair of electrical connections; property lease costs; insurance costs; audit fees; and routine vegetation management, including mowing and vegetation control. The *pro forma* O&M costs of the Posey Project are $7.0 million annually, including labor costs.

Q. Are there benefits of operating solar resources in tandem with other resources (e.g., gas and wind)?

A. Yes. Solar projects are ideal for producing energy needed during the day. It makes operational sense to operate solar projects in tandem with wind resources that typically produce energy during the night hours. Moreover, intermittent resources, like solar and wind, are best operated as part of a diverse portfolio with dispatchable resources that can be ramped up and down quickly and at a low cost.

Q. In your opinion, is the Posey County Solar Project a good solution for the replacement of F.B. Culley 2 and Warrick Unit #4?

A. Yes. The Posey County Solar Project will add diversity to Petitioner's portfolio. Fuel diversity helps protect electric utilities and customers from risks associated with fuel price fluctuations, and changes in regulatory practices that can drive up the cost of a particular fuel (e.g., environmental regulations). Fuel diversity also can help ensure stability and reliability of electricity supply. The dispatchable coal resource and fast ramping CT resources with firm gas pipeline supply in Petitioner's Preferred Portfolio are critical in meeting our obligation to serve customer demand and to back up the intermittent renewable resources. In a typical year, these dispatchable resources will have the capacity to meet Petitioner's customer demand over 98 percent of the time. The Posey County Solar Project will, however, be an important component of a more diversified generation portfolio that will produce energy with no fuel cost. In addition, as Petitioner's Witness Rina H. Harris testifies, the Posey County Solar Project enables Petitioner to be responsive to customers' interest in green energy and facilitates the ability to respond to potential new customers that place importance on renewable energy.

Q. Why did CenterPoint choose to purchase the Posey County Solar Project as opposed to entering into a PPA for the same amount of capacity?

A. Petitioner is transitioning its generation resource mix to incorporate a significantly greater percentage of renewable resources into its resource mix. Particularly with respect to solar generation, Petitioner is pursuing a mix of utility-owned and third-party owned generation. Both solar BTAs and PPAs have unique benefits to customers, and the Company's plan to balance these risks and benefits will provide additional stability for customers. The primary benefit of the BTA (as opposed to a PPA) is that utility ownership provides

Petitioner and its customers with more stability. Moreover, PPAs typically expire after a term of 20 to 25 years. The BTA will provide Petitioner with a resource that can be operated for beyond 35 years after which the facility will continue to produce and provide low-cost power to the benefit of CenterPoint's customers. This long-term operation, particularly combined with Petitioner's proposed pricing metric, helps insulate customers from the risk that energy prices might rise in the future. That said, purchasing some portion of Petitioner's requirements for energy through PPAs balances the benefits of fixed pricing with the ability to capitalize on future breakthroughs that could further reduce the cost of renewable energy. This is particularly important in the solar market, where technology continues to make the panels more efficient.

Q. Are there other benefits of owning this facility?

A. Yes. With the electric grid and customers becoming more reliant on renewable energy it makes sense for the local utility to have expertise in installing, operating, and maintaining solar systems. In the future, when batteries become cost effective, CenterPoint has the ability to install battery technology to be charged from the solar panels to help meet the evening peak demand. The Posey County Solar Project also could possibly be used to produce green hydrogen from the energy produced by solar panels that potentially could be transported and used to produce energy from the A.B. Brown peaking units located next to the Posey County Solar Project site. If there are future regulations that require reductions in CenterPoint's carbon or other emissions, solar projects owned and operated by the Company would count towards this reduction. It is uncertain if the same could be said of energy provided pursuant to a PPA. In addition, CenterPoint will maintain the interconnect rights to the transmission system greatly reducing the risk of costly grid upgrades associated with future replacement capacity and energy received from a PPA arrangement.

V. RETIREMENT OF F.B. CULLEY 2

Q. The 2019/2020 IRP calls for retirement of F.B. Culley 2 in 2023. Please explain the factors leading to the decision.

A. There are a number of factors that led to this decision. F.B. Culley 2 was placed in service

in 1966 and will be nearly 60 years old in 2023. F.B. Culley 2 is Petitioner's oldest, smallest (90MWs) and least efficient (12,500-13,000 BTU/kWh) coal unit. As a result, the unit only produces energy for customers or the MISO market when energy prices spike to a level that justifies MISO dispatching the unit for a 24-hour period. From 2015 through 2020, the average capacity factor was only 18 percent due to its high cost to produce energy.

Q. Are there other factors that support closing F.B. Culley 2?

A. Yes. Although the unit benefits from environmental controls for the removal of sulfur dioxide (SO_2) by the scrubber shared with F.B. Culley 3, F.B. Culley 2 is the only unit in Petitioner's fleet that is not controlled for nitrous oxide ("NOx") emissions with Selective Catalytic Reduction ("SCR") technology. At the time of the 2019/2020 IRP, it was determined that to comply with environmental regulations the unit would require approximately $45M in capital investment by the end of 2023. In addition, to continue operating and maintaining F.B. Culley 2 into the future, Petitioner would need to incur an additional annual expense of approximately $6.7M in capital and approximately $11M in O&M costs to ensure safe and reliable operations.

Q. Would any other capital investments be needed to continue to operate F.B. Culley 2 into the future?

A. Yes. Near term capital expense necessary to continue to operate F.B. Culley 2 beyond 2023 would involve replacing the primary superheat and upper slope tubes in the boiler due to tube leaks and performing a major inspection and overhaul of the turbine and generator. The unit currently is experiencing low pressure horizontal joint issues in the turbine. It would also receive a 25 percent share of the plant's Scrubber upgrades to comply with effluent limitation guidelines ("ELG"), a 25 percent share of the plant's Clean Water Act ("CWA") 316(b) compliance costs, and all cost associated with a Dry Bottom Ash conversion to comply with Coal Combustion Residuals ("CCR") rule. The Company does not believe it is prudent to make any material capital investment in F.B. Culley 2 because of its age. Consequently, a major failure of equipment at F.B. Culley 2 could lead Petitioner to permanently shut down this unit earlier than 2023. Simply put, the cost of the upgrades needed to continue running the unit make it unfeasible to continue operating F.B. Culley 2.

Q. Is it possible that F.B. Culley 2 could be upgraded in a cost-effective manner?

A. No. The 2019/2020 IRP modeling showed that it was not cost-effective to invest in the upgrades required to comply with environmental regulations and maintain safety and reliability on the smallest, oldest, and least efficient coal unit.

VI. EXIT OF JOA FOR WARRICK UNIT #4

Q. Please explain the long-term outlook of the JOA with Alcoa for Warrick Unit #4?

A. The long-term outlook for Warrick Unit #4 is uncertain. Alcoa made the decision to close the Warrick smelter in 2016 at the time of a corporate reorganization due to low import alumina prices. The prices later rebounded, and Alcoa restarted a portion of the Warrick smelter operation in 2018. The smelter requires significant quantities of electricity making Warrick Unit #4 an important part of the decision. Before reopening a portion of the smelter, Alcoa approached Petitioner regarding its interest in remaining in the current JOA. [redacted]

Q. Why was the JOA amended with a term ending [redacted]?

A. In the 2016 IRP, it was determined that [redacted], was the likely deadline for being able to remain committed under the JOA without investing capital dollars to comply with environmental regulations. That term also gave Petitioner the opportunity to maintain needed capacity to meet its MISO PRM while awaiting approval to transition the generation fleet away from coal. The extension was also good for the local economy as it helped justify Alcoa's decision to restart a portion of the smelter, which provided local jobs and tax base in southwest Indiana. Maintaining Warrick Unit #4 while minimizing financial exposure has provided Petitioner capacity and avoided reliance on capacity markets to meet the Company's PRM obligation.

Q. What were the primary conditions agreed upon by Petitioner and Alcoa in amending the JOA?

A. [redacted]

Q. What are the benefits of exiting the JOA for Petitioner and its customers as opposed to continuing forward?

A. [redacted]

Q. Why does CenterPoint believe Alcoa might exit the JOA?

A. Due to low alumina prices, Alcoa shut down the Warrick smelter in 2016 and approached CenterPoint to initiate discussions regarding the future of Warrick Unit #4. Alcoa later restarted a portion of the smelter in 2018. In October of 2019, Alcoa announced publicly that, due to slow economic growth and low aluminum prices damaging financial performance, it would sell up to $1 billion in assets. The Alcoa announcement indicated that over the next five years Alcoa would review asset sales and closure of facilities as well as curtailing production specifically mentioning the review of up to 1.5 million metric tons of smelting capacity and four million metric tons of alumina-refining capacity.

Q. Have operational difficulties also led to the decision to exit the JOA?

A. Yes. Warrick Unit #4 has been the worst performing unit in Petitioner's fleet over the 2016-2019 period with an annual Equivalent Forced Outage Rate of over 16 percent. Moreover, based on annual O&M cost per MWh of capacity, Warrick Unit #4 is the most expensive unit to operate among the CenterPoint coal units.

Q. Does exiting the JOA make the Posey County Solar Project necessary beyond simply to diversify the Company's generation resources?

A. Yes. Without Warrick Unit #4, Petitioner would have to purchase capacity from a potentially volatile capacity market. With the rapid closure of several coal plants by the end of 2023, there is the possibility that capacity will be in demand and sold at a high price in future years. In my opinion, the Posey County Solar Project as well as capacity purchased through PPAs are needed to fill this void.

VII. NEED FOR CAPACITY

Q. If CenterPoint retires F.B. Culley 2 and exits the JOA near the end of 2023, will it have adequate capacity to meet its MISO PRM?

A. No. Because CenterPoint cannot acquire or build enough new generation in time to replace these resources, it will need to turn to the market to purchase capacity. A market capacity purchase can be accomplished through bi-lateral purchases from other suppliers and/or through the annual MISO capacity auction. CenterPoint will continue to explore the capacity market to determine whether it is more cost effective for customers to continue operating Culley Unit 2 or Warrick Unit #4 to claim the capacity credits or purchase capacity while waiting for new generation resources to be secured.

Q. Will retiring F.B. Culley 2 and/or exiting the JOA near the end of 2023 create capacity issues?

A. Yes. Until the CPCNs associated with the Generation Transition Plan are approved, constructed and placed in service, there will be a capacity shortage that will need to be filled. If the relief sought in this proceeding is approved, the Posey County and Warrick County Solar Projects will be on-line in 2023 in time to provide replacement capacity for Warrick Unit #4 and a portion of F.B. Culley 2. There will still be a capacity shortfall through 2025 until replacement capacity for other coal unit retirements are placed in service

Q. Are there other options if capacity is unavailable or prices are too high?

A. Yes. If CenterPoint were to apply for and receive every allowable extension under the ELG Reconsideration Rule, and CWA Rule 316b requirements were not yet in place, F.B.

Culley 2 could operate through December 31, 2025, assuming an approximate $5M capital expenditure to construct a new Wastewater Treatment pond to comply with the plant's water discharge for total suspended solids, copper, pH, and mercury under its National Pollutant Discharge Elimination System discharge permit.

Q. Are there other risks with continuing to operate F.B. Culley 2 through 2025?

A. Yes. Given the age and condition of the unit, there could be several issues that require further capital investments and maintenance dollars to keep the unit safe and reliable for another two years. The unit has recently experienced tube failures in the boiler costing nearly $1M to repair as well as a packing leak that required another $250K to disassemble the turbine to properly make repairs. There also have been other balance of plant issues associated with F.B. Culley 2 in recent years. In addition, the turbine and generator will be overdue for a major inspection and overhaul at a cost of approximately $4M to ensure safe and reliable operation through 2025.

Q. How will CenterPoint determine if it should extend the life of F.B. Culley 2 or purchase capacity?

A. CenterPoint will review the cost and risks associated with continuing operation of the unit as compared to purchasing replacement capacity.

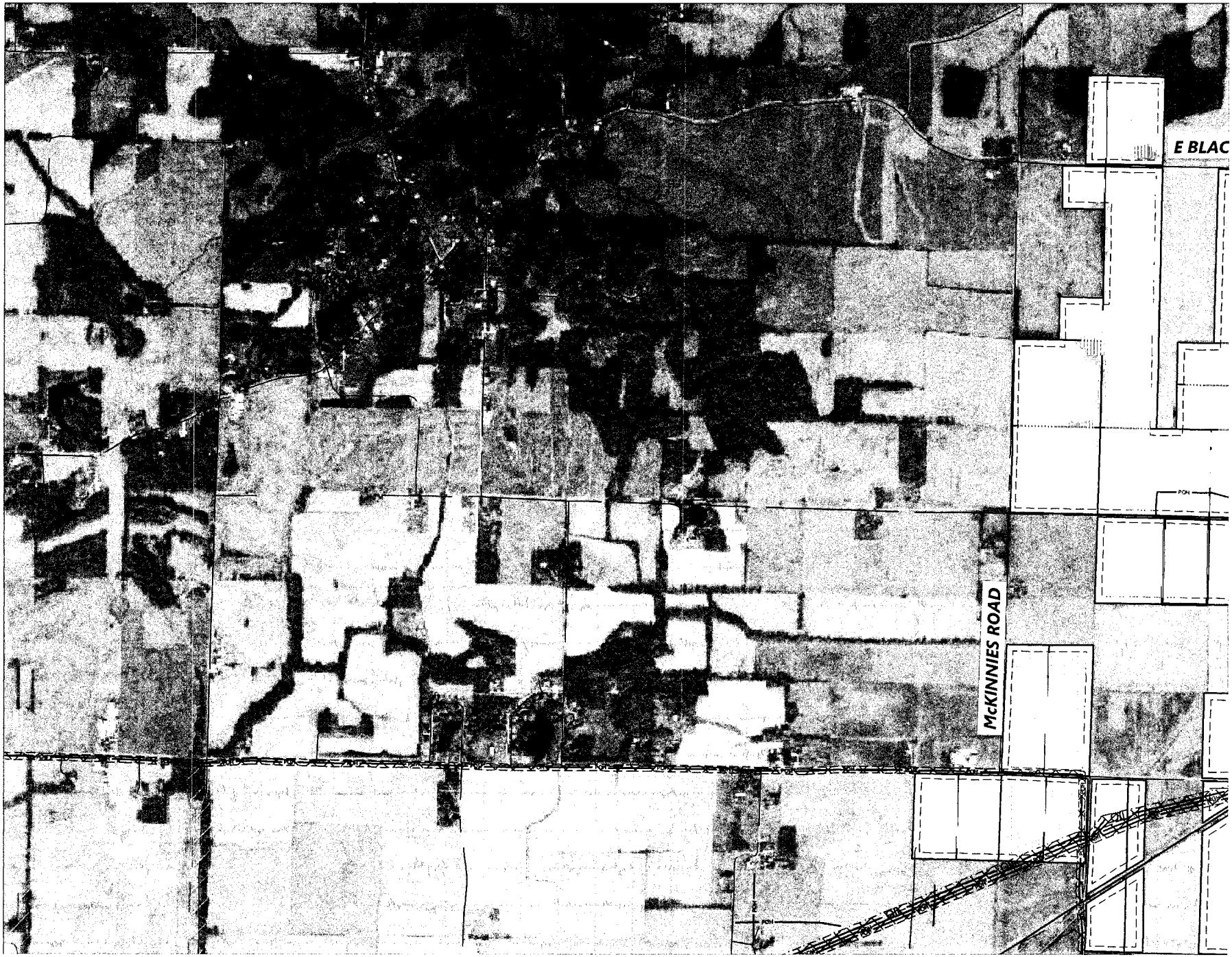
Q. Is extending the JOA with Alcoa an option?

A. While it technically is an option, extending the JOA [redacted]

VIII. CONCLUSION

Q. Does this conclude your direct testimony?

A. Yes, at the present time.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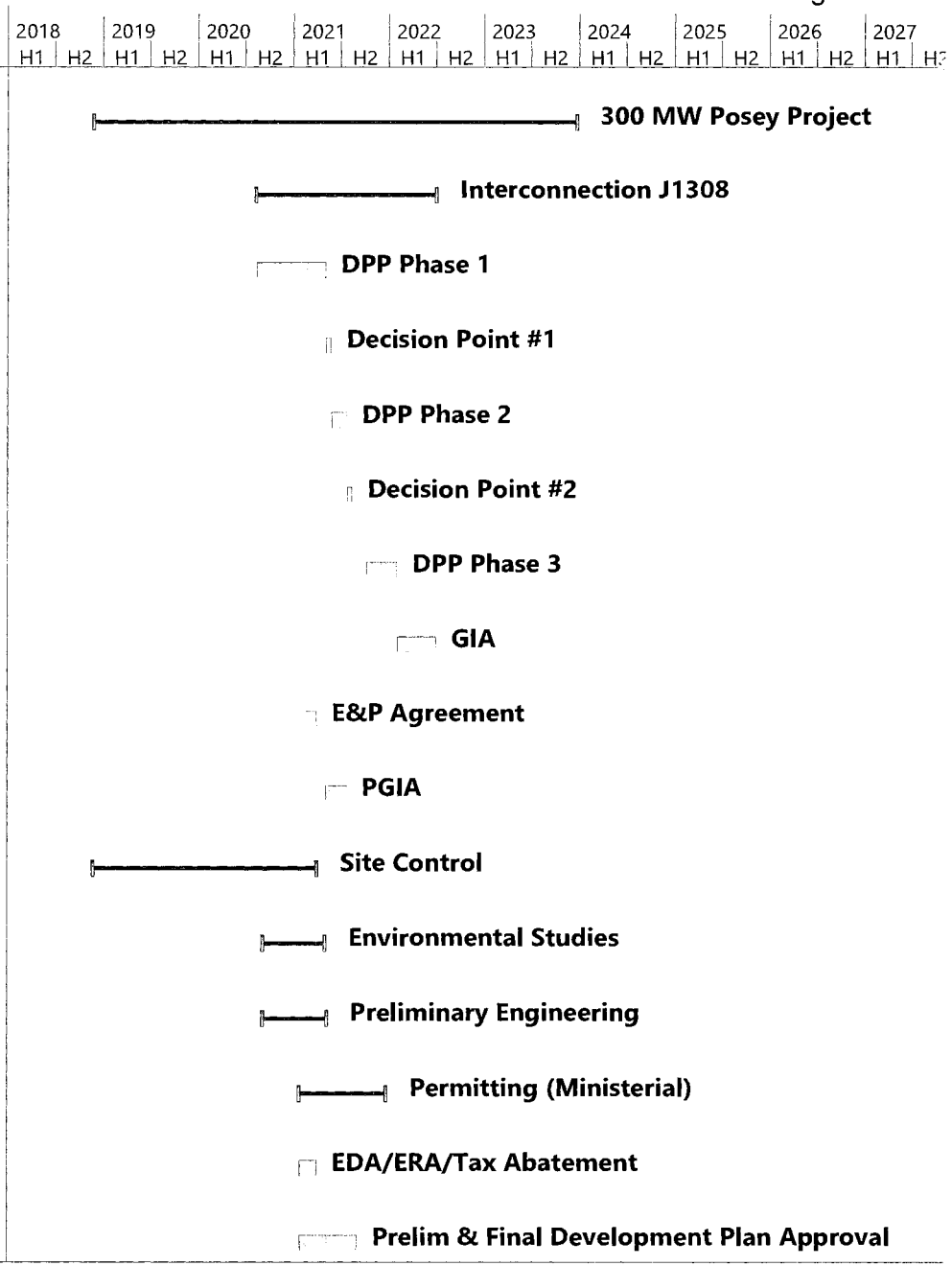
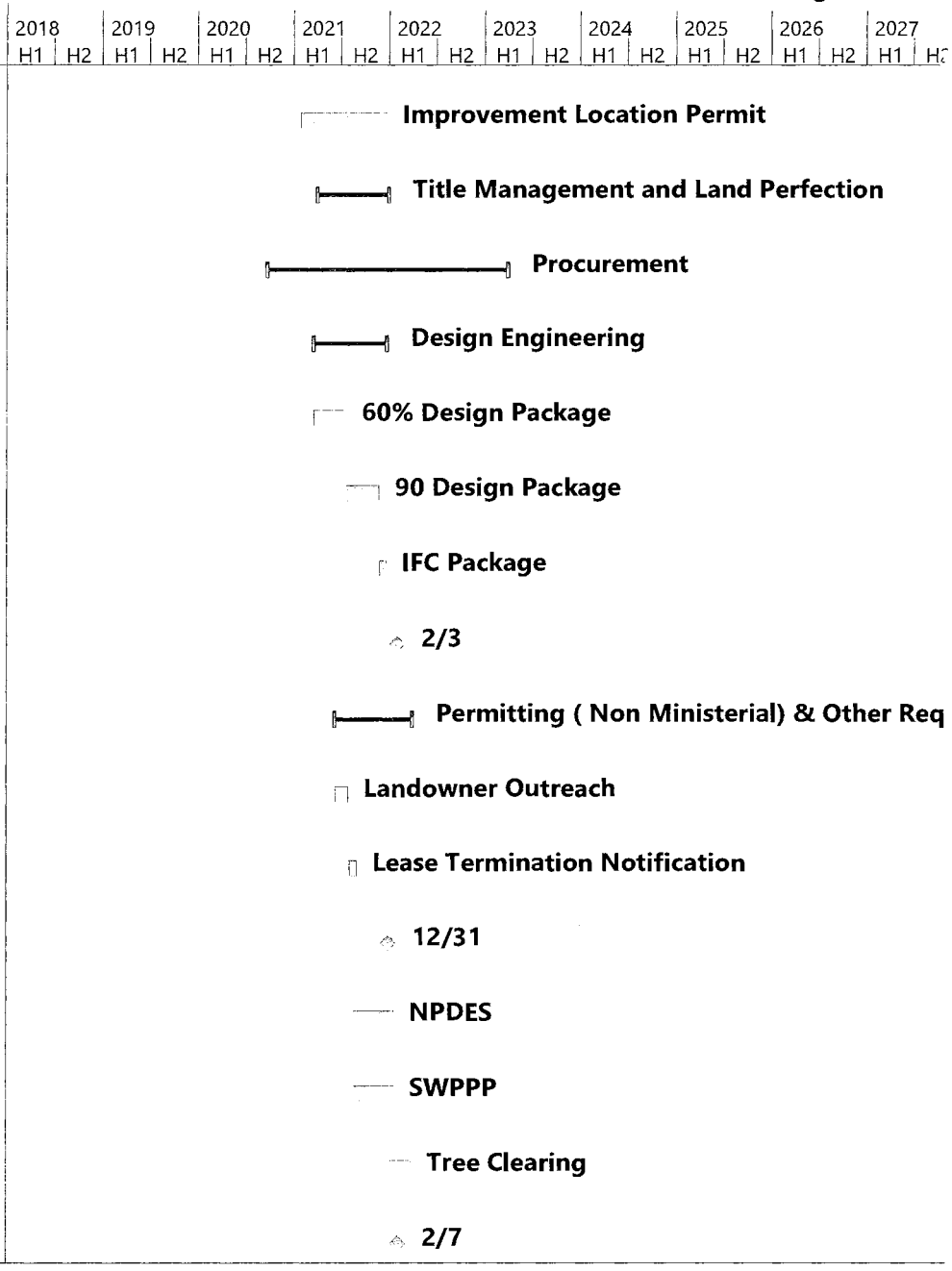
ID	Task Name	Duration	Start	Finish
1	**300 MW Posey Project**	**1325 days**	**Mon 11/26/18**	**Fri 12/22/23**
2	Interconnection J1308	**495 days**	**Mon 8/10/20**	Sat 7/2/22
3	DPP Phase 1	191 days	Mon 8/10/20	Mon 5/3/21
4	Decision Point #1	15 days	Tue 5/4/21	Mon 5/24/21
5	DPP Phase 2	60 edays	Mon 5/24/21	Fri 7/23/21
6	Decision Point #2	15 days	Mon 7/26/21	Fri 8/13/21
7	DPP Phase 3	118 edays	Wed 10/6/21	Tue 2/1/22
8	GIA	151 edays	Tue 2/1/22	Sat 7/2/22
9	E&P Agreement	2 mons	Thu 2/4/21	Wed 3/31/21
10	PGIA	59 days	Tue 5/4/21	Fri 7/23/21
11	Site Control	**614 days**	**Mon 11/26/18**	Thu 4/1/21
16	Environmental Studies	**171 days**	**Mon 9/7/20**	Mon 5/3/21
32	Preliminary Engineering	**176 days**	**Mon 9/7/20**	Mon 5/10/21
46	Permitting (Ministerial)	**240 days**	**Mon 1/25/21**	Fri 12/24/21
47	EDA/ERA/Tax Abatement	2.5 mons	Mon 1/25/21	Fri 4/2/21
48	Prelim & Final Development Plan	8 mons	Mon 1/25/21	Fri 9/3/21



ID	Task Name	Duration	Start	Finish
49	Improvement Location Permit	12 mons	Mon 1/25/21	Fri 12/24/21
50	Title Management and Land Perfection	**194.5 days**	**Fri 4/2/21**	Thu 12/30/21
55	Procurement	**658 days**	**Tue 9/22/20**	Thu 3/30/23
61	Design Engineering	**200 days**	**Thu 3/18/21**	Wed 12/22/21
62	60% Design Package	90 days	Thu 3/18/21	Wed 7/21/21
63	90 Design Package	90 days	Thu 7/22/21	Wed 11/24/21
64	IFC Package	1 mon	Thu 11/25/21	Wed 12/22/21
65	Financial Close - Construction Financing	**0 days**	**Thu 2/3/22**	Thu 2/3/22
66	**Permitting (Non Ministerial) & Other**	**213 days**	**Tue 6/8/21**	**Thu 3/31/22**
67	Landowner Outreach	39 days	Tue 6/8/21	Fri 7/30/21
68	Lease Termination Notification	23 days	Mon 8/2/21	Wed 9/1/21
69	Lease Termination Date	0 days	Fri 12/31/21	Fri 12/31/21
70	NPDES	112 days	Thu 8/19/21	Fri 1/21/22
71	SWPPP	112 days	Thu 8/19/21	Fri 1/21/22
72	Tree Clearing	64 days	Mon 1/3/22	Thu 3/31/22
73	FNTP	0 days	Mon 2/7/22	Mon 2/7/22



ID	Task Name	Duration	Start	Finish
74	Interconnection Facilities Engg, Procurement & Construction	**585 days**	**Wed 3/31/21**	Wed 6/28/23
84	Solar Plant Construction	**489 days**	**Tue 2/8/22**	Fri 12/22/23
85	Mobilization	60 days	Tue 2/8/22	Mon 5/2/22
86	Civil Work	290 days	Tue 2/22/22	Mon 4/3/23
87	Electrical Work	325 days	Tue 4/5/22	Mon 7/3/23
88	Comissioning	90 days	Tue 5/9/23	Mon 9/11/23
89	Major Equipment Delivered	314 days	Tue 4/5/22	Fri 6/16/23
90	Major Equipment Installed	336 days	Tue 5/3/22	Tue 8/15/23
91	Mechanical Completion	0 days	Fri 9/1/23	Fri 9/1/23
92	Project Synchronization	0 days	Fri 9/15/23	Fri 9/15/23
93	Performance Testing	10 days	Tue 9/12/23	Mon 9/25/23
94	Substantial Completion	0 days	Mon 10/2/23	Mon 10/2/23
95	Final Completion	60 days	Mon 10/2/23	Fri 12/22/23