SOUTHERN INDIANA GAS AND ELECTRIC COMPANY
D/B/A VECTREN ENERGY DELIVERY OF INDIANA, INC.
(VECTREN SOUTH)

I.U.R.C. CAUSE NO. 44909

DIRECT TESTIMONY
OF
WAYNE D. GAMES
VICE-PRESIDENT POWER SUPPLY

ON

TECHNICAL DESIGN, COST ESTIMATES, CONTRACTING STRATEGY AND CONSTRUCTION SCHEDULE, SOLAR AND BATTERY ENERGY STORAGE PROJECTS

SPONSORING PETITIONER'S EXHIBIT NO. 2 &
ATTACHMENTS WDG-1 THROUGH WDG-4

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 One Vectren Square, Evansville, Indiana 47708.

Q. What position do you hold with Petitioner Southern Indiana Gas and Electric Company d/b/a Vectren Energy Delivery of Indiana, Inc. ("Vectren South" or "the Company")?

A. I am Vice President – Power Supply.

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 over twenty five 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 Vectren 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 Vectren South's AB Brown generating station. I was promoted to Vice President of Power Supply in April of 2011.

Q. What are your present duties and responsibilities as Vectren South's Vice-President of Power Supply?

A. I am responsible for the overall budgeting, operation, maintenance, and personnel decisions for the power generation fleet of Vectren South. In addition, I have

responsibility for ensuring that the 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.

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

A. Yes, I have testified before this Commission in prior FAC proceedings under Cause No. 38708, Vectren South's Dense Pack filing in Cause No. 44067, and in Cause No. 44446.

II. PURPOSE

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

A. Vectren South is planning to install, own and operate solar generation in its service territory in three locations and a Battery Energy Storage System ("BESS") in two locations. My testimony describes the process utilized by Vectren South to install two utility scale solar generation and one 4 megawatt hour ("MWh") BESS facility and the cost of the installation. Vectren South witness Robert C. Sears will describe a small rooftop solar and battery installation for a site within the City of Evansville, Indiana (the "City") referred to as the Urban Living Research Center ("ULRC").

Q. Are you sponsoring any exhibits?

A. Yes. I am sponsoring the following exhibits:

- Petitioner's Exhibit No. 2, **Attachment WDG-1 (Confidential)**, which is a detailed map showing the location of the proposed facilities.
- Petitioner's Exhibit No. 2, **Attachment WDG-2 (Confidential)**, which is a copy of the detailed bids received for the US-41 Facility.

- Petitioner's Exhibit No. 2, **Attachment WDG-3 (Confidential)**, which is a cost estimate for the US-41 and Evansville Urban Facilities.
- Petitioner's Exhibit No. 2, **Attachment WDG-4 (Confidential)**, which is a construction schedule with key milestones.

Q. Were these exhibits prepared by you or under your direction?

A. Yes.

III. LOCATION OF THE FACILITIES

Q. Describe the locations that Vectren South intends to install solar generation.

A. Vectren South intends to install solar generation at three locations. First, Vectren South has an option on 60 acres of land located on the northeast corner of U.S. 41, and Volkman Road just south of Interstate 64 (the "US-41 or Highway 41 Facility") on which it intends to install 2.0 megawatt ("MW") alternating current ("MW_{ac}") of ground mounted utility scale solar generation and a 4 MWh BESS that has the ability to be programmed to discharge up to one MW per hour over a four hour period. Second, we are finalizing a lease agreement with the City to install a 2 MW_{ac} ground mounted solar facility on approximately 15 acres owned by the City (the "Evansville Urban Facility"). Each solar facility requires approximately 2.7 MW direct current ("MW_{dc}") to produce 2 MW_{ac} of solar energy. Finally, Vectren South plans to install up to a 300 kilowatt ("kW") of rooftop solar and 400 kilowatt hours ("kWhs") of distributed and shared battery storage at the ULRC. Witness Sears explains in more detail the approach for the ULRC. A map showing the location of these facilities in our service territory is attached to my testimony as Petitioner's Exhibit No. 2, Attachment WDG-1 (Confidential).

Q. What process did Vectren South utilize to select the US-41 Facility location?

A. Vectren South began by developing criteria for site selection within its service territory.

Site criteria for solar included:

- property that was easily accessible for construction;
- close proximity to the distribution substation;
- no concern with being blocked by future development that could limit output;
- topography that was relatively flat with good drainage and allowed panels to face southward for maximum sun exposure;
- limited flood plain exposure;
- minimal chance of environmental issues; and
- potential for expansion minimizing the cost of future solar development.

The Lochmueller Group ("Lochmueller") was contracted to perform a site selection search of available properties which would satisfy these criteria. Lochmueller presented approximately 9 potential properties to a Vectren South team who followed up with site visits to evaluate each. Once the US 41 site was chosen by the team, Vectren South began negotiations to obtain rights to the property.

Q. Are there any other characteristics that make this site attractive?

A. Yes. The site is in a rural setting that has seen economic development activity increase in recent years. This activity is expected to continue to increase in the near future due to its close proximity to Interstate 64. Placing the solar and BESS project in this location will support economic development along the Highway 41 corridor. The project is also bordered on the south side by Volkman Road which will shelter any solar panels on the south side of the property from being blocked by future development.

Q. Who is the Lochmueller Group?

A. Founded in 1980, the firm provides infrastructure planning, engineering design, environmental services, land acquisition, and survey work through offices in Evansville, Indianapolis, and Jeffersonville, Indiana; Chicago and Troy, Illinois; and St. Louis, Missouri.

Q. In what ways will the solar project and BESS support economic development?

A. Some companies have established goals to secure energy for their operations from renewable sources. Having the solar and battery projects in visible locations signals to prospective businesses that renewable energy is available in the area, removing potential obstacles to bringing new jobs and growth to the service area that often only occurs from businesses locating facilities within the City limits. Having this energy in the US 41 location could also potentially avoid future distribution and substation upgrades to serve new loads.

Q. Does Vectren South own the US-41 Facility location?

A. No. Vectren South has an option on this farm land which provides the right to purchase the land and a right of first refusal if another party offers to buy the ground. We have completed a phase 1 environmental site assessment and from an environmental perspective, determined this property is suitable for solar development and there is no need for a Phase 2 environmental site assessment.

Q. How large is the US 41 site and how much of it will be used for the solar project?

A. The site consists of 60 acres and is currently used for farming. The solar and BESS project will use approximately 15 acres or 25% of the site.

Q. Will the land cost for the entire site be included in the rate base associated with this solar project?

A. No. Vectren South will only include the acreage necessary for the solar facilities and BESS in rate base for this project. The remaining property acreage will be set aside for future solar expansion or other beneficial use.

Q. How did Vectren South choose the Evansville Urban Facility for a ground mounted utility scale solar project?

A. The Evansville Urban Facility was selected after discussions with the City regarding their

interest in renewable energy within the City limits and the desire to utilize the city property to further the advancement and deployment of renewable energy to benefit citizens of Evansville. The City's goals were compatible with Vectren South's goals for fuel diversity and the desire to add solar generation resources for our customers. Vectren South and the City agreed to work together to develop the proposed property. A technical review of the site was conducted by Vectren South to ensure the site was suitable for the solar project. Vectren South is currently finalizing discussions with the City regarding leasing approximately 15 acres.

Q. What makes the Evansville Urban site attractive to Vectren South for solar development?

A. The site fits all of the basic criteria for solar facilities described in my discussion of the US-41 Facility and is located within the city limits. The area has a mix of commercial and residential customers. As Vectren South intends to use these projects to learn more about solar and how to better serve our customers with renewable energy, this will provide Vectren South experience operating a solar array within the city with both a commercial and residential customer base and another in a more rural area with a more concentrated industrial load.

Q. Are these locations subject to change?

A. It is possible but unlikely that Vectren South will change the location of the US-41 or Evansville Urban Facilities. We currently have an option to purchase the land for the US-41 facility and as mentioned earlier the site assessment has not identified any obstacles to using the land for its intended purpose.

Vectren South is working to finalize a lease with the City for the Evansville Urban Facility. While Vectren South anticipates negotiations will be successful, a final agreement has not yet been reached with the City.

Q. Is finalization of the land location critical to the relief Vectren South is seeking in this proceeding?

A. No. Suitable land will be located for these facilities and Vectren South has several options. We engaged an engineering firm to help us locate suitable property, and they identified multiple possible locations. If an issue arises with any of the current sites that cannot be overcome, Vectren South has several other options.

IV. EQUIPMENT TECHNOLOGY

Q. What are the major components of a solar configuration?

A. Major components include the actual solar panels, ground mounted racking systems for mounting the panels, the inverter which transforms direct current into alternating current to be used to serve customers, transformers, electrical wiring and cabling, and communication systems. The solar farm will also need to have fencing for security and access roads to maneuver within the site for inspections and maintenance. The primary considerations when choosing a solar system are the types of panels and racking system.

Q. Has Vectren South evaluated different types of technology for these facilities?

A. Yes. Black & Veatch was hired to assist Vectren South in evaluating various technologies and making recommendations regarding the solar and battery projects. Several different types of solar panel technologies were evaluated. Poly-crystalline photo voltaic ("PV"), mono-crystalline PV, and thin film PV, were the primary options considered. The final decision came down to poly-crystalline PV or mono-crystalline PV due to a combination of price and performance. Table 1.1 summarizes the relevant efficiency comparison of these technologies:

Panel Type	Efficiency
Poly-Crystalline PV	17.0%
Mono-Crystalline PV	17.5%
Thin Film PV	14.3%

Q. Did Vectren South select a panel type?

A. Yes. Vectren South selected a mono-crystalline PV module for the following reasons:

- Monocrystalline solar panels have the highest efficiency rates since they are made out of the highest-grade crystal.
- Monocrystalline silicon solar panels are space-efficient. Since these solar panels yield the highest power outputs, they require the least amount of space compared to other types.
- Monocrystalline panels have a long lifespan. Most solar panel manufacturers provide a 25-year warranty on these panels.

Q. Are the racks on which the panels are mounted important?

A. Yes. Panels can either be secured in racks which are fixed or racks with motors that have the ability to tilt panels to track with the sun for maximum output. Tracking systems can be single axis pivoting panels in one direction only or dual axis pivoting panels in two different directions. Vectren South has chosen to install fixed panels for both solar projects.

Q. Why has Vectren South chosen to mount panels on fixed position racks instead of allowing them to track with the sun?

A. The single-axis tracking offers about 18% additional output for an approximate 25% cost adder and requires 30% more land to separate the panels in order to reduce any shading from adjacent rows of panels. Not only are the tracking systems more expensive to install on a per MWh system output basis, but they also require more inspection and maintenance expense. Tracking systems have a motor connected to linkage that pivots

several panels at the same time. More frequent inspections are required to ensure the linkage isn't bound and all motors are driving the panels as programed. The tracking panels also significantly increase the installation costs due to the necessary wiring and motor drives. The fixed mounted panel output can be optimized by facing the panels southward at an approximate 30 degree angle (depending on the topography of the land) and left to produce with little inspection and maintenance.

Q. What is the purpose of the inverter?

A. An inverter is necessary to convert direct current ("DC") power produced by a solar panel into alternating current ("AC") power. Electricity must be AC to deliver it to the electric grid. Inverters can be installed as a string of inverters or a central inverter with combiner boxes. String inverters are connected to rows of panels where they receive DC current, convert this to AC current and send it to the distribution system. A central inverter receives DC current from several combiner boxes connected to rows of panels and converts DC current from the entire solar array to AC current and sends the electricity to the distribution system. Vectren South has chosen a central inverter as there are fewer component connections, less space requirements and lower future maintenance cost.

Q. How did Vectren South approach selection of a BESS option for the US-41 Facility?

A. With assistance from Black & Veatch, Vectren South evaluated lithium ion, redox flow, lead acid, and sodium sulfur battery technologies. Lithium Ion was chosen for the BESS project.

Q. Why Lithium Ion for the BESS?

A. Lithium Ion was chosen based on life cycle, response time, round trip efficiency and commercial availability. Round trip efficiency is the amount of energy that can be discharged from a BESS relative to the amount of energy that went into the BESS during

charging. According to GTM Research, a US Energy Storage Monitor, lithium ion batteries dominate the energy storage market representing over 90% of the battery installations over the past couple of years.

Q. How will the BESS be used?

A. The BESS can be programmed to perform several functions such as providing frequency control and/or storing energy to support customer peaks. Vectren South will initially use this technology to reduce peak load by charging the BESS from the distribution system during the off peak hours when customer demand and energy prices are low. The batteries will then release the stored energy during the on-peak hours when demand and energy prices are at their highest. The BESS is also capable of providing renewable energy smoothing. Since the sun is an intermittent source, the BESS can be programmed to release energy when the sun goes behind cloud cover and the solar farm production is cut back thereby "smoothing" the facility's output. The Vectren South proposed BESS will hold up to four MWhs and can be programed to release this energy at various rates.

Q. Can you please explain the BESS' flexibility to discharge to the distribution system?

A. The BESS will hold up to 4 MWhs of energy and can be programmed to discharge at various rates up to a maximum of 1 MW per hour. The BESS can be programmed to discharge at lower rates. For example, it can discharge 500,000 kW over an 8 hour period or 250,000 kW over a 16 hour period or in various combinations to best assist in meeting customer demand.

Q. Why is Vectren South requesting a BESS to be a part of the renewable solar projects?

A. The BESS will allow Vectren South to learn how to operate and maintain this type of system and gain experience with the benefits it provides to customers. It will help to

reduce peak load and potentially avoid future generation and transmission or distribution upgrades. As the price of BESS's are reduced, Vectren South will be more familiar with this technology and how to employ it to better serve customers and meet environmental regulations.

Q. How does Vectren South intend to interconnect the AC power from the inverter to the distribution system?

A. This work will be completed by Vectren South electric line crews connecting service from the high side of the transformer to the distribution line. Additionally Vectren South's work scope will include substation relay modifications, line re-closure relaying and interface, communication interface and fiber optic installation.

V. CONTRACTOR SELECTION

Q. How does Vectren South intend to construct the solar facilities?

A. Vectren South has engaged contractors with experience in the installation of solar panels to construct the solar arrays on an Engineering, Procurement and Construction ("EPC") arrangement. There are several contractors who focus on installing solar facilities within the state of Indiana. Using Indiana based companies is important to the local and state economy. Partnering with contractors enables Vectren South to establish relationships and benefit from a solar contractor's experience in the design and installation process. For future solar installation, Vectren South may establish relationships with manufacturers and purchase panels, racking and inverters directly in order to reduce costs. We may continue with EPC arrangements or manage construction and installation activities with company resources.

Q. How did Vectren South select contractors for distribution of the RFP for the EPC contract for the Highway-41 facility?

A. Vectren South researched other installations within the state and discussed both positive and negative experiences with other Indiana utilities. Based on these conversations as well as conversations with national suppliers that solicited the company, Vectren South invited four companies with offices based in Indiana and three national solar suppliers to provide pricing for the Highway 41 project. Three of the Indiana companies responded along with the one national supplier.

Q. Has Vectren South received bids from contractors?

A. Yes. Attached to my testimony as Petitioner's Exhibit No. 2, Attachment WDG-2 (Confidential) is a summary of the bids received by Vectren South for the US 41 Facility.

Q. How were estimated costs gathered?

A. Vectren South with assistance from Black & Veatch created a Request for Proposal ("RFP") for the Highway 41 project and distributed it to six contractors requesting an EPC bid.

Q. What were some of the key requests Vectren South made of the contract bidders in the RFP that was distributed for the US 41 project?

A. The key components of the RFP included design and pricing for the following:

- 2 MW_{ac} fixed tilt solar power field
- 4 MWh BESS
- Specific equipment and design recommendations
- Supply, installation and testing of all supporting equipment including (but not limited to) combiner boxes, central inverter, circuit breakers, and transformers
- All wiring necessary to interconnect equipment
- Adequate security fencing with access for delivery trucks
- On site supervision at all times during construction
- Start-up support after construction

Q. How did Vectren South evaluate bids received from contractors for the US 41 project?

A. Bids were evaluated based on the following:

- Solar panels and equipment chosen
- Multi MW solar experience
- Partnership and Innovation
- Indiana installed projects
- BESS experience
- Supplier financial health
- Post installation local support
- Bid price

All the bidders selected similar types of solar panels and batteries but had various levels of experience. The financial health of the bidders was fairly equal. All bids offered similar post installation local support. Based on the similarity of the bidders on these other factors, bid price was the primary basis used to select a bidder. The rating matrix for the US 41 Facility is shown in Petitioner's Exhibit No. 2, Attachment WDG-2 (Confidential).

Q. Who was the low bidder for the US 41 project?

A. Inovateus Solar offered the lowest price estimate and ranked the highest on the rating matrix. Inovateus Solar is headquartered in South Bend Indiana and has been in business since 2003. They have installed over 200 MWs of solar across the United States and the Caribbean. Inovateus offers experienced design and engineering services as well as project management and construction services.

Q. Will Vectren South utilize the same contractor for the Evansville Urban and US-41 Facilities?

A. No. The City had been working with a local contractor to explore installing a solar field at the Evansville Urban site. The contractor has a great deal of time invested with the

City regarding the Evansville Urban Facility opportunity. Vectren South plans on utilizing this local contractor on the Evansville Urban Facility. The contractor has agreed to perform EPC work on a cost plus arrangement with a not to exceed price cap. This arrangement ensures that the Evansville Urban Facility PV project costs will be in line with the PV portion of the US 41 project. Using a local contractor will provide some experience working with a local vendor to compare against working with a larger more experienced vendor on these projects. While this local vendor has not worked with this large of a project in the past, Vectren South will provide adequate project oversight and anticipates it can work cooperatively with the vendor to complete this project in a quality and cost competitive manner.

VI. ESTIMATED COST

Q. Based on these bids, has Vectren South developed a cost estimate for the US-41 and Evansville Urban Facilities?

A. Yes. Vectren South estimated that the total cost of the US-41 Facility will be approximately $8.8 million which includes land purchase, owner's costs, interconnection to the distribution system, and internal overheads Vectren South witness J. Cas Swiz discusses these overheads in more detail. I have attached a breakdown of these costs as Petitioner's Exhibit No. 2, Attachment WDG-3 (Confidential) to my testimony.

The estimated cost of the Evansville Urban Facility is approximately $5.4 million which includes owner's costs, interconnection to the distribution system, and internal overheads. These cost estimates are also presented in Petitioner's Exhibit No. 2, Attachment WDG-3 (Confidential) to my testimony.

Q. Is this the final price for each project?

A. No. We have not yet signed an agreement with either EPC contractor. We have used

the low bid to provide cost estimates for each project, however, the commodity pricing for each project (solar panels, racking, inverters, and batteries) are the primary expenses for these projects and are based on today's pricing. This is a very competitive market-place and prices can change frequently based on supply and demand, import tariffs and how many suppliers can remain competitive and stay in business. In addition, labor prices will impact the final cost of the project. Because we will not order equipment or begin construction until Commission approval is granted, the Company will begin conversations with the winning bidders to establish a methodology for adjusting the EPC price based on changes to equipment and labor pricing between the time the bid was submitted and the project is approved to begin.

Q. How do Vectren South's current cost estimates compare with the recent Integrated Resource Plan ("IRP")?

A. The IRP does not address a 2 MW solar array but does provide a price estimate for a 3 MW utility scale solar array. The 3 MW cost estimate of $3,420/kW is all inclusive of purchasing and shipping equipment and material, land search and purchase, site development, permitting, fencing, security interconnection to the distribution system, labor, owners cost for project oversight and Vectren South project loadings for A&G, S&E and AFUDC.

The current cost estimates for a 2 MW solar array is approximately 15% lower, however, these are high level cost estimates based on current commodity and labor costs. Vectren South will work with bidders to adjust prices based on commodity and labor cost as well as final engineering once the project is approved and a work order is prepared and purchase order issued to the EPC contractor.

Q. How does Vectren South's 2 MW solar project estimate compare with larger solar projects?

A. As noted in our IRP, there is an economy of scale that can be expected with larger solar

projects. Witness Sears has included a copy of Vectren South's 2016 IRP as Petitioner's Exhibit No. 1, Attachment RCS-3. Figure 5.18 of the IRP demonstrates that the price per installed kW drops as a solar project increases in size. This is due to lower commodity pricing per installed kWac when purchasing and shipping higher volumes of material such as solar panels or racks. Further savings result from increased productivity and lower overall per kW project costs as project expenditures are spread across more installed kW for items such as one time mobilization and set up of construction equipment, time and labor involved in site preparation, layout of the project, cabling and wiring, fencing, access roads, combiner box and inverter installation and distribution interconnection. I have reproduced Figure 5.18 from our 2016 IRP below:

Operating Size and Estimated Costs	3MW Solar PV	6MW Solar PV	9MW Solar PV	50MW Solar PV	100MW Solar PV
Base Load Net Output in AC	3	6	9	50	100
Estimated Project Costs (2015$/kW)	$ 3,420	$ 2,700	$ 2,540	$ 2,260	$ 2,230

Q. Please explain the contingencies Vectren South has included.

A. Vectren South has included approximately $300,000 of contingency in each project for a total of $600,000. This represents approximately 4.3% of both projects. This includes dollars to cover any unexpected expenses discovered during the permitting, construction or interconnect phase of either project.

Q. Are the costs of interconnection included in the cost estimate?

A. Yes.

Q. What operation and maintenance ("O&M") costs does Vectren South anticipate incurring once the facilities are operating?

A. O&M cost are estimated to be approximately $80,000 annually for both the US 41 and Evansville urban projects and will include: maintaining the grass; ensuring all panels are accessible to be worked on if needed; periodic inspections of connections to panels and

combiner boxes; inverter inspections and maintenance; repairs to fencing; and replacement of panels as needed. O&M costs will likely increase over time as equipment ages. The O&M estimate for the ULRC is $6,000 annually.

Q. Are there any other annual O&M costs for either the US 41 site or the Evansville Urban site?

A. Yes. The Evansville Urban site will also require a lease payment for the property. This is currently being negotiated with the City.

VII. PROJECT COMPONENTS AND DESIGN

Q. Will Vectren South need to seek the Midcontinent Independent System Operator, Inc.'s ("MISO") approval to interconnect the US-41 or Evansville Urban Facilities?

A. No. MISO approval is only required for generation sources connected to the transmission system. These projects will be connected to the distribution system and considered a "behind the meter" generating source. Even though they won't be dispatched by MISO, they will play a role in reducing Vectren South's peak load and reduce the amount of energy needed from the market or other Vectren South generation sources.

Q. How will Vectren South interconnect the US-41 and Evansville Urban Facilities with its distribution network?

A. Vectren South crews will interconnect the energy to the distribution system to ensure this work is done safely and properly. The EPC contractors do not have a great deal of experience in this area and this is the type of work Vectren South line crews perform on a daily basis. Vectren South crews will install the underground cables, pad-mount transformers, metering, relaying, and switches required to connect the solar sites to the 12.47kV system. These crews will also install the fiber optic communications cable

between the substation and the solar site, as well as modifying the substation for the new protection and communication equipment. This will be done following Vectren South Standard Work practices and procedures, to ensure the work is done correctly and safely.

The US-41 Facility will be connected to Vectren South's Highway 41 Circuit, which is fed from the Azteca Substation. This is a 12.47kV circuit. A detailed engineering study for this interconnection will be performed by Vectren South to determine the specific settings and types of protection equipment required for the interconnection scheme, based on the particular electrical characteristics of this circuit. This system will include a transfer trip protection scheme and associated equipment as part of the anti-islanding criteria for the solar facility. This material includes new substation relays, substation remote terminal units, programmable line re-closers, and relaying equipment at the solar generator connection point. As part of the protection package, fiber optic communications cables will be installed from the solar facility back to the interconnecting substation, which is approximately 2.5 miles from the site. The fiber communications are necessary to have instantaneous power tripping capabilities, and will be installed on the existing Vectren South Highway 41 Circuit poles. Telemetering and supervisory control and data acquisition ("SCADA") communications equipment will also be installed from the solar facility back to Vectren South's Distribution Systems Operations center to allow monitoring of status and energy output of the solar generator, as well as to initiate disconnect capabilities if required for safety or maintenance purposes. The purpose of this equipment is to ensure that Vectren South's customers receive clean, safe and reliable power.

For the Evansville Urban site, the solar facility will be interconnected to the existing 12.47kV Governor Circuit, fed from Vectren South's East Industrial Substation. This substation is approximately 2.3 miles from the solar site. As with the US-41 Facility, an engineering study will be performed to determine a precise protection scheme and

equipment package. Generally speaking, the protection scheme, telemetering/SCADA devices and interconnection equipment will be similar to the US-41 Facility.

VIII. CONSTRUCTION SCHEDULE

Q. When does Vectren South anticipate commencing construction of the US-41 and Evansville Urban Facilities?

A. Once Vectren South receives Commission approval to move forward, the contract will be awarded, equipment ordered and work will prepare to begin.

Q. What is the anticipated time required to construct the US-41 and Evansville Urban Facilities?

A. It's anticipated that once the project is approved by the Commission it will take approximately 6 months to receive all equipment and 3 months to complete installations and ensure all performance guarantees are met. A construction schedule with key milestones is included in Petitioner's Exhibit No. 2, Attachment WDG-4 (Confidential).

IX. CONCLUSION

Q. Does this conclude your testimony?

A. Yes, at the present time.

VERIFICATION

I, Wayne D. Games, Vice President of Power Supply for Southern Indiana Gas and Electric Company d/b/a Vectren Energy Delivery of Indiana, Inc., under penalty of perjury, affirm that the foregoing representations are true and correct to the best of my knowledge, information and belief.

SOUTHERN INDIANA GAS AND ELECTRIC COMPANY D/B/A VECTREN ENERGY DELIVERY OF INDIANA, INC.

By: Wayne D. Games

Wayne D. Games
Vice President, Power Supply

Dated: February 22, 2017

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