

EXHIBIT NO. _____

BEFORE
THE PUBLIC UTILITIES COMMISSION OF OHIO

In the Matter of the Application Seeking)	
Approval of Ohio Power Company's)	
Proposal to Enter Into Renewable Energy)	Case No. 18-1392-EL-RDR
Purchase Agreements for Inclusion in the)	
Renewable Generation Rider)	
 In the Matter of the Application of Ohio)	 Case No. 18-1393-EL-ATA
Power Company to Amend its Tariffs)	

DIRECT TESTIMONY OF
JOSEPH A. KARRASCH
ON BEHALF OF
OHIO POWER COMPANY

Filed: September 27, 2018

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JOSEPH A. KARRASCH

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BEFORE
THE PUBLIC UTILITIES COMMISSION OF OHIO
DIRECT TESTIMONY OF
JOSEPH A. KARRASCH
ON BEHALF OF
OHIO POWER COMPANY

1 **PERSONAL DATA**

2 **Q. PLEASE STATE YOUR NAME AND BUSINESS ADDRESS.**

3 A. My name is Joseph A. Karrasch. My business address is 1 Riverside Plaza, Columbus,
4 Ohio 43215.

5 **Q. BY WHOM ARE YOU EMPLOYED AND WHAT IS YOUR POSITION?**

6 A. I am employed by American Electric Power Service Corporation (AEPSC), a wholly
7 owned subsidiary of American Electric Power Company, Inc. (AEP), as Asset
8 Investments Manager.

9 **Q. WHAT IS YOUR EDUCATIONAL BACKGROUND AND PROFESSIONAL**
10 **EXPERIENCE?**

11 A. I earned a Bachelor of Science degree in Mechanical Engineering from West Virginia
12 University and a Master of Business Administration from Ohio University. I have 32
13 years of electric utility experience with AEP. I spent the first 22 years of my career with
14 AEP working in several of the power generation facilities owned by AEP's operating
15 companies. During my career in generation I held a variety of positions, including
16 Performance Engineer, Maintenance Superintendent, Energy Production Manager, and
17 General Plant Manager. In addition, as General Plant Manager of a new gas fired simple
18 cycle plant, I was involved in the facility's construction activities and led the operations
19 team through start-up and commissioning. In 2008, I accepted a position with AEPSC in
20 my current role as Asset Investments Manager working in the area of renewable energy.

1 **Q. WHAT ARE YOUR RESPONSIBILITIES AS ASSET INVESTMENTS**
2 **MANAGER FOR AEPSC?**

3 A. As Asset Investments Manager, I am responsible for managing AEP's and its regulated
4 subsidiaries' portfolio of 2,840 MW of Renewable Energy Purchase Agreements
5 (REPAs). I have also managed numerous Request for Proposals (RFPs) for the output
6 from renewable energy resources and have been involved in the development and review
7 of renewable energy projects in their early stages of development. I have also been
8 involved in the evaluation of numerous electric generating asset acquisition opportunities.
9 My primary responsibility during the evaluation of acquisition opportunities is leading a
10 team of subject matter experts in due diligence activities. The due diligence activities
11 include a review of such things as plant performance, environmental programs,
12 maintenance programs, facility upgrades, transmission system reliability, plant staffing,
13 and facility budgets.

14 **Q. HAVE YOU PREVIOUSLY TESTIFIED BEFORE ANY REGULATORY**
15 **COMMISSIONS?**

16 A. Yes. I have testified and provided testimony on behalf of Appalachian Power Company
17 before the Public Service Commission of West Virginia and the Virginia State
18 Corporation Commission. I have provided testimony on behalf of Indiana Michigan
19 Power Company before the Michigan Public Service and testified and provided testimony
20 before the Indiana Utility Regulatory Commissions. Finally, I have testified and
21 provided testimony on behalf of Kentucky Power Company before the Kentucky Public
22 Service Commission.

1 **Q. ARE YOU SPONSORING ANY EXHIBITS WITH YOUR TESTIMONY?**

2 A. Yes, I am sponsoring the following exhibits:

- 3 • Exhibit JAK-1: Willowbrook Solar REPA Summary
- 4 • Exhibit JAK-2: Highland Solar REPA Summary

5 **PURPOSE OF TESTIMONY**

6 **Q. WHAT IS THE PURPOSE OF YOUR TESTIMONY?**

7 A. The purpose of my testimony is to provide an overview of the two REPAs (Willowbrook
8 Solar and Highland Solar) executed by Ohio Power Company (Company) as a result of
9 the solar RFP discussed by Company witness Dan Bradley from Navigant Consulting.

10 **PROPOSED SOLAR PROJECTS**

11 **Q. PLEASE DESCRIBE THE SOLAR PROJECTS THAT ARE PROPOSED IN THIS**
12 **FILING.**

13 A. In this filing, the Company is proposing two projects totaling approximately 400 MW of
14 renewable solar resources consisting of the following:

- 15 • Willowbrook solar REPA (100 MW, Highland County, Ohio)
- 16 • Highland solar REPA (300 MW, Highland County, Ohio)

17 **Q. HOW DID THE COMPANY CHOOSE THESE PROJECTS?**

18 A. As described in detail in Company witness Bradley's testimony, the Company selected
19 these projects through a competitive solar RFP process.

20 **Q. PLEASE DESCRIBE THE GENERAL TERMS OF THE REPAs.**

21 A. The REPAs are long-term (20-year) contracts for the Renewable Energy Products
22 produced or associated with the renewable energy resource. The Renewable Energy
23 Products include 1) energy, 2) capacity, and 3) the beneficial environmental interests –

1 including the renewable energy certificates (RECs). Under each of the REPAs, the
2 Company will pay the seller for the Renewable Energy Products delivered at the point of
3 delivery with PJM Interconnection LLC (PJM). The Contract Rate is a fixed, non-
4 escalating price (\$/MWh) for the each REPA's entire 20-year term.

5 **Q. IS THERE A SEPARATE CAPACITY PAYMENT IN ADDITION TO THE**
6 **CONTRACT RATE FOR DELIVERED RENEWABLE ENERGY?**

7 A. No, there is no separate capacity payment or any other fixed fee. The Company pays for
8 the Renewable Energy Products delivered to the point of delivery with PJM.

9 **Q. DO THE REPAs CONTAIN ANY CONDITIONS PRECEDENT TO THEIR**
10 **EFFECTIVENES?**

11 A. Yes. The REPAs are subject to the Company receiving regulatory approval. If
12 regulatory approvals are not received within the periods identified in the REPAs, the
13 Company will not move forward with the REPAs (i.e., the REPAs would be terminated).

14 **Q. PLEASE PROVIDE AN OVERVIEW OF THE WILLOWBROOK SOLAR**
15 **FACILITY.**

16 A. On September 27, 2018, the Company executed a 100 MW nameplate capacity solar
17 REPA with Willowbrook Solar I, LLC from the planned 100 MW Willowbrook I Solar
18 Facility being developed by affiliates of MAP Royalty, Inc. (MAP) and Open Road
19 Renewables, LLC (Open Road), which is slated for construction in Highland County,
20 Ohio. The facility will interconnect to AEP Ohio Transmission Company, Inc.'s
21 transmission system via the Hillsboro-Wildcat 138 kV substation – which is a part of the
22 PJM system. The facility's preliminary design consists of approximately 300,000 solar
23 modules, each capable of producing 420 watts. Willowbrook Solar I, LLC filed an

1 application with the Ohio Power Siting Board (OPSB) on September 17, 2018 for the
2 project. MAP has 25 years of experience managing more than \$2 billion of investor
3 capital through a unique and consistent resource-driven development strategy that serves
4 endowment, foundation, and individual investors. Per information provided by MAP and
5 Open Road, MAP and its partners have participated in the development of over 10,000
6 MW of operating wind and solar energy projects in the United States. In addition, over
7 the last five years, Open Road's principals and MAP jointly participated in the
8 development of projects totaling nearly 1,500 MW currently operating or under
9 construction, including the 150 MW Great Bay Solar project in Maryland as well as a
10 suite of five co-located solar projects in Kern County, California totaling 95 MW.

11 **Q. PLEASE PROVIDE AN OVERVIEW OF THE HIGHLAND SOLAR FACILITY.**

12 A. On September 25, 2018, the Company executed a 300 MW nameplate capacity solar
13 REPA with Hecate Energy Highland LLC (Hecate Highland) from the planned 300 MW
14 Highland Solar Facility being developed by Hecate Energy LLC (Hecate), which is slated
15 for construction in Highland County, Ohio. The facility is located in the Company's
16 service territory and will interconnect to the Dayton Power and Light Company's
17 transmission network, which is a part of the PJM system, via a new 345 kV switchyard
18 that will tap into the Stuart – Clinton 345 kV line. The facility's preliminary design
19 consists of approximately 1.1 million solar modules, each capable of producing 350
20 watts. Hecate Highland plans to make the necessary applications with the OPSB in
21 October 2018 for the project. Hecate Highland is a subsidiary of Hecate. Hecate is a
22 developer of solar power plants, natural gas-fired power plants, wind power plants, and
23 energy storage solutions. Founded in 2012, Hecate is headquartered in Chicago, Illinois

1 and has offices in Nashville, Tennessee; Darien Connecticut; Los Angeles, California;
2 and Columbus, Ohio. Per information provided by Hecate, it has entered into REPAs or
3 is in final negotiations for REPAs totaling over 410 MW of solar power. Approximately
4 150 MW of those awards have reached their commercial operation dates and another 110
5 MW are currently under construction.

6 **Q. DOES THIS CONCLUDE YOUR DIRECT TESTIMONY?**

7 A. Yes, it does.

OHIO POWER COMPANY
RENEWABLE ENERGY
PURCHASE AGREEMENT ("REPA")
WITH
WILLOWBROOK SOLAR I, LLC
SUMMARY TERM SHEET

Willowbrook Solar 1, LLC entered into an agreement with Ohio Power Company (the "REPA") for the aggregate 100 MW_{AC} nameplate output of the solar photovoltaic electric generating facility (the "Facility") to be constructed in Highland County, Ohio. The terms, conditions and pricing provisions of the REPA are summarized below.

This Summary Term Sheet is qualified in its entirety by reference to, and in no way alters, the actual terms and conditions of the REPA. Except as otherwise indicated by the context, capitalized terms used in this Summary Term Sheet have the meanings set forth in the REPA.

Seller. Willowbrook Solar I, LLC

Purchaser. Ohio Power Company.

Location. The Facility shall be located on the Site in Highland County, Ohio, and shall be identified as Willowbrook Facility.

Facility Description. After Notice to Proceed (NTP) is issued, seller shall endeavor to construct, own, operate, and maintain the Facility, which shall consist of approximately 300,000 solar modules manufactured by an Acceptable Solar Manufacturer and associated equipment. The Facility Capacity shall not exceed 100 MW_{AC}.

Condition Precedent. The effectiveness of the REPA is conditioned upon Ohio Power Company obtaining a Final Non-Appealable Order from the PUCO that (i) approves the rates, terms and conditions of the REPA without modification, (ii) authorizes Ohio Power Company to enter into the REPA, (iii) authorizes Ohio Power Company to permanently recover all costs associated with this REPA (including Imputed Debt Equivalency Costs) through Ohio retail rates, (iv) is satisfactory to Ohio Power Company in all respects in its sole discretion, and (v) has become final and non-appealable. Purchaser has the right to terminate the REPA without liability to Seller in the event there is no Final Non-Appealable Order.

Term. Subject to the Condition Precedent, the REPA shall remain in full force and effect until the end of the twentieth (20th) Contract Year following the Commercial Operation Date.

Renewable Energy Products. Collectively, the Renewable Energy and Ancillary Services produced by the Facility and all of the associated Capacity, Renewable Energy Credits (RECs) and other Beneficial Environmental Interests.

Sale and Purchase. Beginning on the Commercial Operation Date (COD), Seller shall generate the Renewable Energy Products from the Facility, deliver the energy to the Point of Delivery, and sell to Purchaser, and Purchaser shall purchase and pay for the Renewable Energy Products at the Contract

Rate. All Renewable Energy Products delivered prior to the COD shall be referred to as Test Energy and paid for at the rate of 80% of the Contract Rate.

Contact Rate. The Contract Rate for the Renewable Energy Products is set forth in Exhibit C of the REPA.

Economic Curtailment. Purchaser shall have the right to economically curtail the output of the Facility. In such an event, the Seller shall be compensated by the Purchaser in accordance with the REPA.

Reliability Curtailment – Purchaser shall not be obligated to compensate the Seller in the event of any Reliability Curtailment order by the Transmission Provider, the Interconnection Provider, or as otherwise provided in the REPA.

Termination Rights of Seller Prior to Commencement of Delivery Period. Seller shall have (B) the right to terminate this REPA in the event that: (i) the new network upgrade cost estimate established pursuant to the Final Sag Study exceeds a threshold (\$) as detailed in the REPA, exclusive of costs for attachment facilities, non-direct connection upgrades and other Interconnection Facilities.

Termination Rights of Purchasers Prior to Commencement of Delivery Period. Purchaser may, on not less than thirty (30) Days' notice to Seller and the Facility Financing Representative, if any, terminate this REPA if: (i) the Partial Commercial Operation Date or Commercial Operation Date has not been achieved by specific target dates or (ii) if subsequent to the Purchaser receiving a Final Non-Appealable Order, the Seller has not issued a notice to proceed with the full scope of work under the BOP Construction Contract and the Equipment Supply Contract ("Notice to Proceed Default" or "NTP Default"). Other Purchaser Termination Rights exist that are customary for transactions of this type.

Self-Help Remedy (Step-In Rights). In the event of a NTP Default, Purchaser shall have the right, in its sole discretion, to elect to return the Security Fund to Seller (and forego its remedy of damages), in exchange for Seller's transfer of the Project Assets to an Affiliate of Purchaser. If the Purchaser does exercises the Self-Help Remedy option, the REPA will remain in full force and effective.

Operation. Seller agrees that, notwithstanding anything herein to the contrary, Seller will not curtail or otherwise reduce deliveries of Renewable Energy Products in order to sell such Renewable Energy Products to other purchasers.

Delivery. Seller shall be responsible for all interconnection, electric losses, transmission and ancillary service arrangements and costs required to deliver the Renewable Energy from the Facility to Purchaser at the Point of Delivery. Purchaser shall be responsible for all electric losses, transmission and ancillary service arrangements and costs required to receive the Renewable Energy at the Point of Delivery and deliver such Energy to points beyond the Point of Delivery.

Beneficial Environmental Interest. The Parties acknowledge that future or existing legislation or regulation may create value in the ownership, use or allocation of the Beneficial Environmental Interests of the Facility. Purchaser shall own or be entitled to claim all Beneficial Environmental Interests to the extent they may exist during the Term.

Taxes and Tax Credits. Seller shall pay or cause to be paid (and shall indemnify and hold Purchaser harmless from and against) all sales, use, excise, ad valorem, transfer and other similar taxes that are imposed by any taxing authority on or with respect to the Facility or the sale of Renewable Energy

Products incurred prior to the delivery of Renewable Energy Products to the Point of Delivery. Purchaser shall pay or cause to be paid (and shall indemnify and hold Seller harmless from and against) all Taxes on or with respect to the sale of Renewable Energy Products incurred upon and after the delivery of Renewable Energy Products to the Point of Delivery (other than ad valorem, franchise, income, or commercial activity taxes, and transactional taxes or fees imposed by law on Seller that are related to the sale of Renewable Energy Products and are, therefore, the responsibility of Seller).

Remedies for Default. Customary for transactions of this type including a termination right in the event a Default remains uncured beyond the applicable period(s).

Seller Security Fund. Seller will provide a Security Fund as credit support for damages due upon Seller's failure to achieve the Partial COD by the Commercial Operation Milestone, damages due upon Seller's failure to achieve a minimum Guaranteed Availability during an applicable period or damages resulting from a Seller Event of Default.

Governing Law. The interpretation and performance of this REPA and each of its provisions shall be governed and construed in accordance with the laws of the State of New York, without regard to its conflicts of laws provisions.

Other customary provisions are included in the REPA.

The contents of REPA are otherwise confidential

OHIO POWER COMPANY
RENEWABLE ENERGY
PURCHASE AGREEMENT ("REPA")
WITH
HECATE ENERGY HIGHLAND LLC
SUMMARY TERM SHEET

Hecate Energy Highland LLC entered into an agreement with Ohio Power Company (the "REPA") for the aggregate 300 MW_{AC} nameplate output of the solar photovoltaic electric generating facility (the "Facility") to be constructed in Highland County, Ohio. The terms, conditions and pricing provisions of the REPA are summarized below.

This Summary Term Sheet is qualified in its entirety by reference to, and in no way alters, the actual terms and conditions of the REPA. Except as otherwise indicated by the context, capitalized terms used in this Summary Term Sheet have the meanings set forth in the REPA.

Seller. Hecate Energy Highland LLC

Purchaser. Ohio Power Company.

Location. The Facility shall be located on in Highland County, Ohio, and shall be identified as the Hecate Energy Highland Facility.

Facility Description. After Notice to Proceed (NTP) is issued, seller shall endeavor to construct, own, operate, and maintain the Facility, which shall consist of approximately 1.1 million solar modules manufactured by an Acceptable Solar Manufacturer and associated equipment. The Capacity shall not exceed 300 MW_{AC}.

Condition Precedent. The effectiveness of the REPA is conditioned upon Ohio Power Company obtaining a Final Non-Appealable Order from the PUCO that (i) approves the rates, terms and conditions of the REPA without modification, (ii) authorizes Ohio Power Company to enter into the REPA, (iii) authorizes Ohio Power Company to permanently recover all costs associated with this REPA (including Imputed Debt Equivalency Costs) through Ohio retail rates, (iv) is satisfactory to Ohio Power Company in all respects in its sole discretion, and (v) has become final and non-appealable. Purchaser has the right to terminate the REPA without liability to Seller in the event there is no Final Non-Appealable Order.

Term. Subject to the Condition Precedent, the REPA shall remain in full force and effect until the end of the twentieth (20th) Contract Year following the Commercial Operation Date.

Renewable Energy Products. Collectively, the Renewable Energy and Ancillary Services produced by the Facility and all of the associated Capacity, Renewable Energy Credits (RECs) and other Beneficial Environmental Interests.

Sale and Purchase. Beginning on the Commercial Operation Date (COD), Seller shall generate the Renewable Energy Products from the Facility, deliver the energy to the Point of Delivery, and sell to Purchaser, and Purchaser shall purchase and pay for the Renewable Energy Products at the Contract

Rate. All Renewable Energy Products delivered prior to the COD shall be referred to as Test Energy and paid for at the rate of 80% of the Contract Rate.

Contact Rate. The Contract Rate for the Renewable Energy Products is set forth in Exhibit C of the REPA. Provisions for a reduction in the Contract Rate for the twelve (12) month period following the Jobs Commitment Year are included Exhibit C in the event that the Seller does not achieve specific number of Full-Time Jobs targets during the first five Contract Years (See Jobs Commitment).

Economic Curtailment. Purchaser shall have the right to economically curtail the output of the Facility. In such an event, the Seller shall be compensated by the Purchaser in accordance with the REPA.

Reliability Curtailment. Purchaser shall not be obligated to compensate the Seller in the event of any Reliability Curtailment order by the Transmission Provider, the Interconnection Provider, or as otherwise provided in the REPA.

Termination Rights of Seller Prior to Commencement of Delivery Period. None.

Termination Rights of Purchaser Prior to Commencement of Delivery Period. Purchaser may, on not less than thirty (30) Days' notice to Seller and the Facility Financing Representative, if any, terminate this REPA if: (i) the Partial Commercial Operation Date or Commercial Operation Date has not been achieved by specific target dates or (ii) if subsequent to the Purchaser receiving a Final Non-Appealable Order, the Seller has not issued a notice to proceed with the full scope of work under the BOP Construction Contract and the Equipment Supply Contract ("Notice to Proceed Default" or "NTP Default"). Other Purchaser Termination Rights exist that are customary for transactions of this type.

Self-Help Remedy (Step-In Rights). In the event of a NTP Default, Purchaser shall have the right, in its sole discretion, to elect to return the Security Fund to Seller (and forego its remedy of damages), in exchange for Seller's transfer of the Project Assets to an Affiliate of Purchaser. If the Purchaser does exercises the Self-Help Remedy option, the REPA will remain in full force and effective.

Jobs Commitment. As part of the consideration for this REPA, Seller has agreed to establish and maintain a certain minimum number of Full-Time Jobs during each Jobs Commitment Year (each of five (5) one-year periods, with the first such period commencing on the Commercial Operation Date and subsequent periods commencing on the first four (4) anniversaries thereof). In the event Seller fails to establish and maintain the Jobs Commitment during each Jobs Commitment Year, the Contract Rate payable during the twelve (12) month period following such Jobs Commitment Year shall be reduced. Such reduction in the Contract Rate shall be Seller's sole and exclusive liability for its failure to create Full-Time Jobs during each Jobs Commitment Year.

A Full-Time Job means (a) is located within the boundaries of the Appalachian Ohio Counties; (b) involves either (i) the manufacture of solar trackers or inverters, or (ii) work at a new operations and maintenance facility serving solar power projects; (c) has an initial hire date that is after the date on which Purchaser submits its initial filing to the PUCO seeking a Final Non-Appealable Order; (d) is full-time (i.e., provides no less than thirty-five (35) hours of work per week (excluding vacations and holidays) and includes fringe benefits); and (e) is subject to Ohio payroll tax withholding.

Operation. Seller agrees that, notwithstanding anything herein to the contrary, Seller will not curtail or otherwise reduce deliveries of Renewable Energy Products in order to sell such Renewable Energy Products to other purchasers.

Delivery. Seller shall be responsible for all interconnection, electric losses, transmission and ancillary service arrangements and costs required to deliver the Renewable Energy from the Facility to Purchaser at the Point of Delivery. Purchaser shall be responsible for all electric losses, transmission and ancillary service arrangements and costs required to receive the Renewable Energy at the Point of Delivery and deliver such Energy to points beyond the Point of Delivery.

Beneficial Environmental Interest. The Parties acknowledge that future or existing legislation or regulation may create value in the ownership, use or allocation of the Beneficial Environmental Interests of the Facility. Purchaser shall own or be entitled to claim all Beneficial Environmental Interests to the extent they may exist during the Term.

Taxes and Tax Credits. Seller shall pay or cause to be paid (and shall indemnify and hold Purchaser harmless from and against) all sales, use, excise, ad valorem, transfer and other similar taxes that are imposed by any taxing authority on or with respect to the Facility or the sale of Renewable Energy Products incurred prior to the delivery of Renewable Energy Products to the Point of Delivery. Purchaser shall pay or cause to be paid (and shall indemnify and hold Seller harmless from and against) all Taxes on or with respect to the sale of Renewable Energy Products incurred upon and after the delivery of Renewable Energy Products to the Point of Delivery (other than ad valorem, franchise, income, or commercial activity taxes, and transactional taxes or fees imposed by law on Seller that are related to the sale of Renewable Energy Products and are, therefore, the responsibility of Seller).

Remedies for Default. Purchaser has termination right in the event a Default remains uncured beyond the applicable period(s) and self-help remedy (Step-In Rights).

Seller Security Fund. Seller will provide a Security Fund as credit support for damages due upon Seller's failure to achieve the Partial COD by the Commercial Operation Milestone, damages due upon Seller's failure to achieve a minimum Guaranteed Availability during an applicable period or damages resulting from a Seller Event of Default.

Governing Law. The interpretation and performance of this REPA and each of its provisions shall be governed and construed in accordance with the laws of the State of New York, without regard to its conflicts of laws provisions.

Other customary provisions are included in the REPA.

The contents of REPA are otherwise confidential

CERTIFICATE OF SERVICE

I hereby certify that a service copy of the foregoing was sent by, or on behalf of, the undersigned counsel to the following parties of record this 27th day of September, 2018, via electronic transmission.

/s/ Steven T. Nourse

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This foregoing document was electronically filed with the Public Utilities

Commission of Ohio Docketing Information System on

9/27/2018 4:14:29 PM

in

Case No(s). 18-1392-EL-RDR, 18-1393-EL-ATA

Summary: Testimony of Joseph A. Karrasch electronically filed by Mr. Steven T Nourse on behalf of Ohio Power Company