

Clearview Solar I, LLC

Clearview Solar

Exhibit D

Feasibility Reports

Case No. 20-1362-EL-BGN



**Generation Interconnection
Feasibility Study Report
for
Queue Project AE2-206
EAST SIDNEY-QUINCY 138 KV
41.58 MW Capacity / 99 MW Energy**

July, 2019

1 Preface

The intent of the feasibility study is to determine a plan, with ballpark cost and construction time estimates, to connect the subject generation to the PJM network at a location specified by the Interconnection Customer. The Interconnection Customer may request the interconnection of generation as a capacity resource or as an energy-only resource. As a requirement for interconnection, the Interconnection Customer may be responsible for the cost of constructing: (1) Direct Connections, which are new facilities and/or facilities upgrades needed to connect the generator to the PJM network, and (2) Network Upgrades, which are facility additions, or upgrades to existing facilities, that are needed to maintain the reliability of the PJM system.

In some instances a generator interconnection may not be responsible for 100% of the identified network upgrade cost because other transmission network uses, e.g. another generation interconnection, may also contribute to the need for the same network reinforcement. Cost allocation rules for network upgrades can be found in PJM Manual 14A, Attachment B. The possibility of sharing the reinforcement costs with other projects may be identified in the feasibility study, but the actual allocation will be deferred until the impact study is performed.

The Interconnection Customer seeking to interconnect a wind or solar generation facility shall maintain meteorological data facilities as well as provide that meteorological data which is required per Schedule H to the Interconnection Service Agreement and Section 8 of Manual 14D.

PJM utilizes manufacturer models to ensure the performance of turbines is properly captured during the simulations performed for stability verification and, where applicable, for compliance with low voltage ride through requirements. Turbine manufacturers provide such models to their customers. The list of manufacturer models PJM has already validated is contained in Attachment B of Manual 14G. Manufacturer models may be updated from time to time, for various reasons such as to reflect changes to the control systems or to more accurately represent the capabilities turbines and controls which are currently available in the field. Additionally, as new turbine models are developed, turbine manufacturers provide such new models which must be used in the conduct of these studies. PJM needs adequate time to evaluate the new models in order to reduce delays to the System Impact Study process timeline for the Interconnection Customer as well as other Interconnection Customers in the study group. Therefore, PJM will require that any Interconnection Customer with a new manufacturer model must supply that model to PJM, along with a \$10,000 fully refundable deposit, no later than three (3) months prior to the starting date of the System Impact Study (See Section 4.3 for starting dates) for the Interconnection Request which shall specify the use of the new model. The Interconnection Customer will be required to submit a completed dynamic model study request form (Attachment B-1 of Manual 14G) in order to document the request for the study.

The Feasibility Study estimates do not include the feasibility, cost, or time required to obtain property rights and permits for construction of the required facilities. The project developer is responsible for the right of way, real estate, and construction permit issues. For properties currently owned by Transmission Owners, the costs may be included in the study.

2 General

The Interconnection Customer (IC) has proposed a Solar generating facility located in Champaign County, Ohio. The installed facilities will have a total capability of 99 MW with 41.58 MW of this output being recognized by PJM as Capacity. The proposed in-service date for this project is November 30, 2021. This study does not imply a TO commitment to this in-service date.

Queue Number	AE2-206
Project Name	EAST SIDNEY-QUINCY 138 KV
State	OHIO
County	Champaign
Transmission Owner	Dayton
MFO	99
MWE	99
MWC	41.58
Fuel	Solar
Basecase Study Year	2022

2.1 Point of Interconnection

The AE2-206 project will interconnect with the Dayton Power & Light Company transmission system via a new 138 kV three-breaker ring bus switchyard that will tap the East Sidney-Quincy 138 kV Line. The Point of Interconnection (POI) will be the 138kV takeoff structure leaving the new three breaker ring bus switchyard. The Interconnection Customer will own the generator lead line conductor terminating onto the structure.

See Attachment 1 for a one line of the physical interconnection point.

2.2 Cost Summary

The AE2-206 project will be responsible for the following costs:

Description	Total Cost
Attachment Facilities	\$0
Direct Connection Network Upgrade	\$3,700,000
Non Direct Connection Network Upgrades	\$150,000
Total Costs	\$3,850,000

In addition, the AE2-206 project may be responsible for a contribution to the following costs

Description	Total Cost
System Upgrades	\$7,000,000

Cost allocations for these upgrades will be provided in the System Impact Study Report.

3 Attachment Facilities

This report assumes that the Interconnection Customer will construct and own the attachment line from its generating facility into the proposed Point of Interconnection as depicted on the one line diagram in Attachment 1. The IC will also be responsible for the fiber/OPGW that Dayton requires on the generator line for the communication assisted trip scheme.

The metering may be classified as an Attachment Facility in future study reports.

Description	Total Cost
Attachment Facility	\$0
Total Attachment Facility Costs	\$0

The total preliminary cost estimate for the Attachment work is given in the table below. These costs do not include CIAC Tax Gross-up.

4 Direct Connection Cost Estimate

The direct connection cost estimate for the AE2-206 project is approximately \$3,700,000. The substation direct connection work for this project includes the construction of a 138 kV three breaker ring bus switchyard which will be tapped off the East Sidney-Quincy 138kV line. There will also be 138 kV transmission line construction required to accommodate the new switchyard. The 138 kV generator lead line will be constructed by the developer and will be terminated onto the 138kV takeoff structure leaving the new three breaker ring bus switchyard. The new 138kV breakers will be equipped with the necessary communication systems to facilitate remote supervisory control of the breaker and status monitoring. Dayton will install the line relaying, communications, and interconnection metering to accommodate the interconnection of the AE2-206 generator

The total preliminary cost estimate for the Direct Connection work is given in the table below. These costs do not include CIAC Tax Gross-up.

Description	Total Cost
Install a new 138 kV three breaker ring bus switchyard to interconnect the AE2-206 project. This will include the installation of all physical structures, P&C equipment, communications equipment, metering equipment, and associated facilities.	\$3,200,000
Transmission Line Tie-In work to accommodate new AE2-206 Interconnection Switchyard.	\$500,000
Total Direct Connection Facility Costs	\$3,700,000

5 Non-Direct Connection Cost Estimate

The substation non-direct connection cost estimate for the AE2-206 project is approximately \$150,000. Remote end relaying will need to be evaluated for settings changes at Shelby and Logan Substations to facilitate the interconnection of the new generation.

The total preliminary cost estimate for the Non-Direct Connection work is given in the table below. These costs do not include CIAC Tax Gross-up.

Description	Total Cost
Protection System changes at Shelby Substation	\$75,000
Protection System changes at Logan Substation	\$75,000
Total Non-Direct Connection Facility Costs	\$150,000

6 Schedule

Based on the extent of the Dayton primary Direct Connection and Non-Direct Connection upgrades required to support the AE2-206 generation project, it is expected to take a minimum of **18 months** from the date of a fully executed Interconnection Construction Service Agreement to complete the installation subject to market conditions and vendor lead times. This includes the requirement for the Interconnection Customer to make a preliminary payment to Dayton which funds the first three months of engineering design that is related to the construction of the Non-Direct Connection facilities. It assumes that there will be no environmental or permitting issues to implement the Non-Direct Connection upgrades for this project and that all system outages will be allowed when requested.

7 Transmission Owner Analysis

Dayton identified the following violation on their lower voltage system:

Id	FROM BUS#	FROM BUS	FROM BUS AREA	TO BUS#	TO BUS	TO BUS AREA	CKT ID	kV	CONT DESCRIPTION
L1	253041	09LOGAN	DAY	253119	09BELFON	DAY	1	69.0	Loss of Blue Jacket to Kirby 138 kV line
L2	253042	09LOGAN	DAY	253041	09LOGAN	DAY	1	138.0 / 69.0	Loss of Blue Jacket to Kirby 138 kV line

8 Interconnection Customer Requirements

8.1 Dayton Interconnection Requirements

The Dayton Power and Light Company (DP&L) has prepared this Facilities Connection Requirements document to ensure compliance with North American Electric Reliability Council (NERC) Reliability Standards and applicable Regional Reliability Organization, sub regional, Power Pool, and individual Transmission Owner planning criteria and facility connection requirements in compliance to NERC Standard FAC-001-2. These connection requirements apply to all generation facilities, transmission facilities, and end-users connecting to the DP&L transmission system. Detailed information outlining DP&L interconnection requirements can be reviewed utilizing the following link:

<https://www.pjm.com/~media/planning/plan-standards/private-dayton/dayton-facilities-connection-requirements.ashx>

8.2 Dayton Notes

The AE2-206 generator may be required to curtail for various N-1 contingencies to avoid N-1-1 loading issues. Revenue Metering and SCADA Requirements

8.3 PJM Requirements

The Interconnection Customer will be required to install equipment necessary to provide Revenue Metering (KWH, KVARH) and real time data (KW, KVAR) for IC's generating Resource. See PJM Manuals M-01 and M-14D, and PJM Tariff Section 8 of Attachment O.

8.4 Dayton Power and Light Company Requirements

The Interconnection Customer will be required to comply with all Dayton Revenue Metering Requirements for Generation Interconnection Customers as outlined in the link below. The Revenue Metering Requirements may be found within the Dayton Power & Light Co. "Requirements for the Connection of Facilities to the Dayton Power & Light Co. Transmission System" document located at the following link:

<http://www.pjm.com/~media/planning/plan-standards/private-dayton/dayton-facilities-connection-requirements.ashx>

<http://www.pjm.com/planning/design-engineering/to-tech-standards.aspx>

9 OPTION 1: Network Impacts

The Queue Project AE2-206 was evaluated as a 99.0 MW (Capacity 41.6 MW) injection tapping the East Sidney to Quincy 138kV line in the Dayton area. Project AE2-206 was evaluated for compliance with applicable reliability planning criteria (PJM, NERC, NERC Regional Reliability Councils, and Transmission Owners). Project AE2-206 was studied with a commercial probability of 0.53. Potential network impacts were as follows:

Summer Peak Load Flow

10 Generation Deliverability

(Single or N-1 contingencies for the Capacity portion only of the interconnection)

None

11 Multiple Facility Contingency

(Double Circuit Tower Line, Fault with a Stuck Breaker, and Bus Fault contingencies for the full energy output)

None

12 Contribution to Previously Identified Overloads

(This project contributes to the following contingency overloads, i.e. "Network Impacts", identified for earlier generation or transmission interconnection projects in the PJM Queue)

None

13 Potential Congestion due to Local Energy Deliverability

PJM also studied the delivery of the energy portion of this interconnection request. Any problems identified below are likely to result in operational restrictions to the project under study. The developer can proceed with network upgrades to eliminate the operational restriction at their discretion by submitting a Merchant Transmission Interconnection request.

Note: Only the most severely overloaded conditions are listed below. There is no guarantee of full delivery of energy for this project by fixing only the conditions listed in this section. With a Transmission Interconnection Request, a subsequent analysis will be performed which shall study all overload conditions associated with the overloaded element(s) identified.

None

14 System Reinforcements

ID	Index	Facility	Upgrade Description	Cost
L1	See TO Analysis	09LOGAN 69.0 kV - 09BELFON 69.0 kV Ckt 1	Reinforcement ID, r190015 : Re-conductor 138.0 kV line from Logan to Bellefontaine with 795 ACSR. Project Type : FACILITY Cost : \$4,500,000 Time Estimate : 18 Months	\$4,500,000
L2	See TO Analysis	09LOGAN 138.0 kV - 09LOGAN 69.0 kV Ckt 1	Reinforcement ID, r190016 : Replace Logan 138/69kV transformer with 250 MVA transformer. Project Type : FACILITY Cost : \$2,500,000 Time Estimate : 24 Months	\$2,500,000
			TOTAL COST	\$7,000,000

15 Flow Gate Details

The following appendices contain additional information about each flowgate presented in the body of the report. For each appendix, a description of the flowgate and its contingency was included for convenience. However, the intent of the appendix section is to provide more information on which projects/generators have contributions to the flowgate in question. Although this information is not used "as is" for cost allocation purposes, it can be used to gage other generators impact. It should be noted the generator contributions presented in the appendices sections are full contributions, whereas in the body of the report, those contributions take into consideration the commercial probability of each project.

Affected Systems

16 Affected Systems

16.1 LG&E

LG&E Impacts to be determined during later study phases (as applicable).

16.2 MISO

MISO Impacts to be determined during later study phases (as applicable).

16.3 TVA

TVA Impacts to be determined during later study phases (as applicable).

16.4 Duke Energy Progress

Duke Energy Progress Impacts to be determined during later study phases (as applicable).

16.5 NYISO

NYISO Impacts to be determined during later study phases (as applicable).

Short Circuit

17 Short Circuit

The following Breakers are over duty

None.

18 OPTION 2: Network Impacts

The Queue Project AE2-206 was evaluated as a 99.0 MW (Capacity 41.6 MW) injection at the Quincy 138kV substation in the Dayton area. Project AE2-206 was evaluated for compliance with applicable reliability planning criteria (PJM, NERC, NERC Regional Reliability Councils, and Transmission Owners). Project AE2-206 was studied with a commercial probability of 0.53. Potential network impacts were as follows:

Summer Peak Load Flow

19 Generation Deliverability

(Single or N-1 contingencies for the Capacity portion only of the interconnection)

None

20 Multiple Facility Contingency

(Double Circuit Tower Line, Fault with a Stuck Breaker, and Bus Fault contingencies for the full energy output)

None

21 Contribution to Previously Identified Overloads

(This project contributes to the following contingency overloads, i.e. "Network Impacts", identified for earlier generation or transmission interconnection projects in the PJM Queue)

None

22 Potential Congestion due to Local Energy Deliverability

PJM also studied the delivery of the energy portion of this interconnection request. Any problems identified below are likely to result in operational restrictions to the project under study. The developer can proceed with network upgrades to eliminate the operational restriction at their discretion by submitting a Merchant Transmission Interconnection request.

Note: Only the most severely overloaded conditions are listed below. There is no guarantee of full delivery of energy for this project by fixing only the conditions listed in this section. With a Transmission Interconnection Request, a subsequent analysis will be performed which shall study all overload conditions associated with the overloaded element(s) identified.

None

Affected Systems

23 Affected Systems

23.1 LG&E

LG&E Impacts to be determined during later study phases (as applicable).

23.2 MISO

MISO Impacts to be determined during later study phases (as applicable).

23.3 TVA

TVA Impacts to be determined during later study phases (as applicable).

23.4 Duke Energy Progress

Duke Energy Progress Impacts to be determined during later study phases (as applicable).

23.5 NYISO

NYISO Impacts to be determined during later study phases (as applicable).

Short Circuit

24 Short Circuit

The following Breakers are over duty

None.

25 Transmission Owner Analysis

Dayton identified the following violation on their lower voltage system:

Id	FROM BUS#	FROM BUS	FROM BUS AREA	TO BUS#	TO BUS	TO BUS AREA	CKT ID	kV	CONT DESCRIPTION
L1	253041	09LOGAN	DAY	253119	09BELFON	DAY	1	69.0	Loss of Blue Jacket to Kirby 138 kV line
L2	253042	09LOGAN	DAY	253041	09LOGAN	DAY	1	138.0 / 69.0	Loss of Blue Jacket to Kirby 138 kV line



**Generation Interconnection
Feasibility Study Report
for
Queue Project AF1-078
EAST SIDNEY-QUINCY 138 KV
30.4 MW Capacity / 80 MW Energy**

January 2020

Table of Contents

1	Preface.....	4
2	General.....	5
2.1	Point of Interconnection	6
2.2	Cost Summary.....	6
3	Transmission Owner Scope of Work.....	8
4	Attachment Facilities	8
5	Direct Connection Cost Estimate.....	9
6	Non-Direct Connection Cost Estimate.....	9
7	Schedule.....	10
8	Transmission Owner Analysis.....	11
	Power Flow Analysis.....	11
	Short Circuit Analysis	11
	Stability Analysis	11
9	Interconnection Customer Requirements.....	11
10	Revenue Metering and SCADA Requirements	13
10.1	PJM Requirements	13
10.2	Dayton Requirements	13
11	Network Impacts.....	14
12	Generation Deliverability	16
13	Multiple Facility Contingency	16
14	Contribution to Previously Identified Overloads	16
15	Potential Congestion due to Local Energy Deliverability.....	16
16	System Reinforcements.....	17
17	Affected Systems	18
17.1	LG&E.....	18
17.2	MISO	18
17.3	TVA.....	18
17.4	Duke Energy Progress.....	18
17.5	NYISO	18
18	Short Circuit.....	18

1 Preface

The intent of the feasibility study is to determine a plan, with ballpark cost and construction time estimates, to connect the subject generation to the PJM network at a location specified by the Interconnection Customer. The Interconnection Customer may request the interconnection of generation as a capacity resource or as an energy-only resource. As a requirement for interconnection, the Interconnection Customer may be responsible for the cost of constructing: (1) Direct Connections, which are new facilities and/or facilities upgrades needed to connect the generator to the PJM network, and (2) Network Upgrades, which are facility additions, or upgrades to existing facilities, that are needed to maintain the reliability of the PJM system.

In some instances a generator interconnection may not be responsible for 100% of the identified network upgrade cost because other transmission network uses, e.g. another generation interconnection, may also contribute to the need for the same network reinforcement. Cost allocation rules for network upgrades can be found in PJM Manual 14A, Attachment B. The possibility of sharing the reinforcement costs with other projects may be identified in the feasibility study, but the actual allocation will be deferred until the impact study is performed.

The Interconnection Customer seeking to interconnect a wind or solar generation facility shall maintain meteorological data facilities as well as provide that meteorological data which is required per Schedule H to the Interconnection Service Agreement and Section 8 of Manual 14D.

An Interconnection Customer with a proposed new Customer Facility that has a Maximum Facility Output equal to or greater than 100 MW shall install and maintain, at its expense, phasor measurement units (PMUs). See Section 8.5.3 of Appendix 2 to the Interconnection Service Agreement as well as section 4.3 of PJM Manual 14D for additional information.

The Feasibility Study estimates do not include the feasibility, cost, or time required to obtain property rights and permits for construction of the required facilities. The project developer is responsible for the right of way, real estate, and construction permit issues. For properties currently owned by Transmission Owners, the costs may be included in the study.

2 General

The Interconnection Customer (IC), has proposed a solar generating facility located at 40.266347 latitude and - 84.009411 longitude in Champaign County, Ohio. The installed facilities will have a capability of 80 MW with 30.4 of new request MW of this output being recognized by PJM as capacity. Note that this project is an increase to the Interconnection Customer's AE2-206 "East Sidney-Quincy 138kV" project, which will share the same property and connection point. The conduct of light load analysis as required under the PJM planning process is not performed during the Generation Interconnection Feasibility Study phase of the PJM study process. Additional reinforcement requirements for this Interconnection Request may be defined during the conduct of the light load analysis which shall be performed following execution of the System Impact Study agreement. The proposed in-service date for this project is **November 30, 2021**. **This study does not imply The Dayton Power and Light Company (Dayton) commitment to this in-service date.**

Queue Number	AF1-078
Project Name	EAST SIDNEY-QUINCY 138 KV
State	Ohio
County	Champaign
Transmission Owner	Dayton
MFO	179
MWE	80
MWC	30.4
Fuel	Solar
Basecase Study Year	2023

2.1 Point of Interconnection

The AF1-078 “East Sidney-Quincy 138 kV” uprate project will interconnect behind the same Point of Interconnection (POI) as the AE2-206 “East Sidney-Quincy 138 kV”. The AE2-206 and AF1-078 projects will interconnect with The Dayton Power & Light Company transmission system via a new 138 kV three-breaker ring bus switchyard that will tap the East Sidney-Quincy 138 kV Line. The Point of Interconnection (POI) will be the 138kV takeoff structure leaving the new three breaker ring bus switchyard. Dayton will own the takeoff structure and all attachment hardware. The Interconnection Customer will own the generator lead line conductor terminating onto the structure. The new interconnection substation be located approximately 2.5 miles from Quincy Substation. This is the primary Point of Interconnection (POI) chosen by the IC. The IC will be responsible for acquiring all easements, properties, and permits that may be required to construct both the new interconnection substation and the associated attachment facilities.

Attachment 1 shows a one-line diagram of the proposed primary direct connection of the (AF1-078) generation project to The Dayton Power & Light transmission system. Attachment 2 provides the proposed location for the point of interconnection. IC will be responsible for constructing all of the facilities on its side of the POI including the attachment line.

2.2 Cost Summary

The AE2-206 “East Sidney-Quincy 138 kV” project is responsible for the interconnection facilities to the Dayton Power and Light system. AF1-078 “East Sidney-Quincy 138 kV” will share the same interconnection facilities.

Should the AE2-206 project elect not to move forward, the AF1-078 project would assume the complete responsibility of the interconnection facilities.

The AF1-078 project will be responsible for the following costs:

Description	Total Cost
Attachment Facilities	\$15,000
Direct Connection Network Upgrade	\$0
Non Direct Connection Network Upgrades	\$30,000
Total Costs	\$45,000

In addition, the AF1-078 project may be responsible for a contribution to the following costs

Description	Total Cost
System Upgrades	\$7,000,000 (PJM to update)

Cost allocations for these upgrades will be provided in the System Impact Study Report.

The required Attachment Facilities, Direct Connection and Non-Direct Connection work for the interconnection of the AF1-078 generation project to the Dayton Transmission System is detailed in the

following sections. The associated one-line with the generation project attachment facilities and primary direct and non-direct connection are shown in Attachment 1.

Note that the Dayton findings were made from a conceptual review of this project. A more detailed review of the connection facilities and their cost will be identified in a future study phase. Further note that the cost estimate data contained in this document should be considered high level estimates since it was produced without a detailed engineering review. The applicant will be responsible for the actual cost of construction. Dayton herein reserves the right to return to any issues in this document and, upon appropriate justification, request additional monies to complete any reinforcements to the transmission systems.

3 Transmission Owner Scope of Work

The AF1-078 project will use the same interconnection facilities as the AE2-206 project, so the only Transmission Owner work associated with this project is to provide engineering oversight and make remote relay setting changes at the A2-206 interconnection substation and the Shelby and Logan substations.

Should the AE2-206 project elect not to move forward, the AF1-078 project would assume the responsibility of the interconnection facilities. This would include the installation of a new 138kV three breaker ring bus, any transmission line work, and any associated system upgrades.

4 Attachment Facilities

This report assumes that the Interconnection Customer will construct and own the attachment line from its generating facility into the proposed Point of Interconnection as depicted on the one-line diagram in Attachment 1. The IC will also be responsible for the fiber/OPGW that Dayton requires on the generator line for the communication assisted trip scheme. The costs included below are for the necessary protection system review and any subsequent field changes needed to coordinate with IC attachment facilities.

The metering may be classified as an Attachment Facility in future study reports. If separate metering for the AF1-078 project will be required, it will need to be installed on the generator side of the interconnection since there will be a single generator lead line for both the A2-206 and AF1-078 projects.

The total preliminary cost estimate for the Attachment work is given in the table below. These costs do not include CIAC Tax Gross-up.

Description	Total Cost
Engineering review and commissioning.	\$15,000
Total Attachment Facility Costs	\$15,000

5 Direct Connection Cost Estimate

The AE2-206 project will be responsible for the connection facilities, therefore, there is no Direct Connection scope of work required for this project.

Should the AE2-206 project elect not to move forward, the AF1-078 project would assume the responsibility of the interconnection facilities.

6 Non-Direct Connection Cost Estimate

The total Non-Direct Connection cost estimate for the AF1-078 project is approximately \$30,000.

Remote relay setting changes will need to be made at the Shelby and Logan Substations to facilitate the interconnection of the new generation.

Should the AE2-206 project elect not to move forward, the Non-Direct Connection costs for AF1-078 would increase to account for the remote end relay changes that were associated with AE2-206.

The total preliminary cost estimate for the Non-Direct Connection work is given in the table below. These costs do not include CIAC Tax Gross-up.

Description	Total Cost
Shelby 138 kV Substation - protection system settings changes	\$15,000
Logan 138 kV Substation - protection system settings changes	\$15,000
Total Non-Direct Connection Facility Costs	\$30,000

7 Schedule

Based on the extent of the Dayton primary Attachment Facilities and Non-Direct Connection work required to support the AF1-078 generation project, it is expected to take a minimum of **twelve (12) months** from the date of a fully executed Interconnection Construction Service Agreement to complete the installation. This includes the requirement for the IC to make a preliminary payment to Dayton which funds the Non-Direct Connection work and the first three months of engineering design that is related to the construction of the Attachment Facilities. It further assumes that the IC will provide all rights-of-way, permits, easements, etc. that will be needed. A further assumption is that there will be no environmental issues with any of the new properties associated with this project, that there will be no delays in acquiring the necessary permits for implementing the defined Attachment Facilities and Non-Direct Connection work, and that all system outages will be allowed when requested.

8 Transmission Owner Analysis

Power Flow Analysis

PJM performed a power flow analysis of the transmission system using a 2023 summer peak load flow model and the results were verified by Dayton. Additionally, Dayton performed an analysis of its underlying transmission <100 kV system. At the Primary POI, the [QUEUE] project contributes to overloads on the Dayton transmission system as shown in the “Network Impacts” section of the report. The estimated cost of system reinforcements necessary to mitigate these overloads are also provided.

Dayton identified the following violation on their lower voltage system:

Id	From Bus Number	From Bus Name	From Bus Area	To Bus Number	To Bus Name	To Bus Area	CKT ID	kV	CONT DESCRIPTION
	253041	09LOGAN	DAY	253119	09BELFON	DAY	1	69.0	Loss of Shelby to AE2-206
	253042	09LOGAN	DAY	253041	09LOGAN	DAY	1	138.0/69.0	Loss of Shelby to AE2-206

Short Circuit Analysis

PJM performed a short circuit analysis and the results were verified by Dayton. The connection of [QUEUE] project to the system does not result in any newly overdutied circuit breakers on the Dayton transmission system and does not have a significant fault current contribution to existing overdutied circuit breakers.

Stability Analysis

PJM will complete a dynamic stability analysis, if necessary, as part of the System Impact Study. The results of this analysis will be reviewed by Dayton. Should stability concerns be identified in PJM’s study, Dayton will develop appropriate system reinforcement(s) and included the estimated cost of any reinforcement(s) in Dayton’s System Impact Study report.

9 Interconnection Customer Requirements

Requirement from the PJM Open Access Transmission Tariff:

1. An Interconnection Customer entering the New Services Queue on or after October 1, 2012 with a proposed new Customer Facility that has a Maximum Facility Output equal to or greater than 100 MW shall install and maintain, at its expense, phasor measurement units (PMUs). See Section 8.5.3 of Appendix 2 to the Interconnection Service Agreement as well as section 4.3 of PJM Manual 14D for additional information.

2. The Interconnection Customer may be required to install and/or pay for metering as necessary to properly track real time output of the facility as well as installing metering which shall be used for billing purposes. See Section 8 of Appendix 2 to the Interconnection Service Agreement as well as Section 4 of PJM Manual 14D for additional information.

System Protection

The IC must design its Customer Facilities in accordance with all applicable standards, including the standards in Dayton's "Requirements for the connection of Facilities to the Dayton Power & Light company Transmission System" document located at: <https://www.pjm.com/planning/design-engineering/to-tech-standards/private-dayton.aspx>. Preliminary Protection requirements will be provided as part of the Facilities Study. Detailed Protection Requirements will be provided once the project enters the construction phase.

Compliance Issues and Interconnection Customer Requirements

The Dayton Power and Light Company (DP&L) has prepared this Facilities Connection Requirements document to ensure compliance with North American Electric Reliability Council (NERC) Reliability Standards and applicable Regional Reliability Organization, sub regional, Power Pool, and individual Transmission Owner planning criteria and facility connection requirements in compliance to NERC Standard FAC-001-2. These connection requirements apply to all generation facilities, transmission facilities, and end-users connecting to the DP&L transmission system. Detailed information outlining DP&L interconnection requirements can be reviewed utilizing the following link:

<https://www.pjm.com/~media/planning/plan-standards/private-dayton/dayton-facilities-connection-requirements.ashx>

Power Factor Requirements

The IC shall design its non-synchronous Customer Facility with the ability to maintain a power factor of at least 0.95 leading (absorbing VARs) to 0.95 lagging (supplying VARs) measured at the high-side of the facility substation transformer(s) connected to the Dayton transmission system.

10 Revenue Metering and SCADA Requirements

10.1 PJM Requirements

The Interconnection Customer will be required to install equipment necessary to provide Revenue Metering (KWH, KVARH) and real time data (KW, KVAR) for IC's generating Resource. See PJM Manuals M-01 and M-14D, and PJM Tariff Section 8 of Attachment O.

10.2 Dayton Requirements

The Interconnection Customer will be required to comply with all Dayton Revenue Metering Requirements for Generation Interconnection Customers as outlined in the link below. The Revenue Metering Requirements may be found within the Dayton Power & Light Co. "Requirements for the Connection of Facilities to the Dayton Power & Light Co. Transmission System" document located at the following link:

<http://www.pjm.com/~media/planning/plan-standards/private-dayton/dayton-facilities-connection-requirements.ashx>

<http://www.pjm.com/planning/design-engineering/to-tech-standards.aspx>

11 Network Impacts

The Queue Project AF1-078 was evaluated as a 80.0 MW (Capacity 30.4 MW) injection as an uprate to AE2-206 tapping the East Sidney to Quincy 138 kV line in the Dayton area. Project AF1-078 was evaluated for compliance with applicable reliability planning criteria (PJM, NERC, NERC Regional Reliability Councils, and Transmission Owners). Project AF1-078 was studied with a commercial probability of 0.53. Potential network impacts were as follows:

Summer Peak Load Flow

12 Generation Deliverability

(Single or N-1 contingencies for the Capacity portion only of the interconnection)

None

13 Multiple Facility Contingency

(Double Circuit Tower Line, Fault with a Stuck Breaker, and Bus Fault contingencies for the full energy output)

None

14 Contribution to Previously Identified Overloads

(This project contributes to the following contingency overloads, i.e. "Network Impacts", identified for earlier generation or transmission interconnection projects in the PJM Queue)

None

15 Potential Congestion due to Local Energy Deliverability

PJM also studied the delivery of the energy portion of this interconnection request. Any problems identified below are likely to result in operational restrictions to the project under study. The developer can proceed with network upgrades to eliminate the operational restriction at their discretion by submitting a Merchant Transmission Interconnection request.

Note: Only the most severely overloaded conditions are listed below. There is no guarantee of full delivery of energy for this project by fixing only the conditions listed in this section. With a Transmission Interconnection Request, a subsequent analysis will be performed which shall study all overload conditions associated with the overloaded element(s) identified.

None

16 System Reinforcements

ID	Index	Facility	Upgrade Description	Cost
AF1-078-L1	N/A	Logan - Bellefontaine 69kV Line	DAYr190032 : Reconductor Logan-Bellefontaine 69kV line with 795 ACSR Project Type : FAC Cost : \$4,500,000 Time Estimate : 18.0 Months	\$4,500,000
AF1-078-L2	N/A	Logan 138/69kV XFMR	WP-AF1-F-0011 : Replace Logan 138/69kV transformer with 250 MVA transformer Project Type : FAC Cost : \$2,500,000 Time Estimate : 24.0 Months	\$2,500,000
			TOTAL COST	\$7,000,000

17 Affected Systems

17.1 LG&E

LG&E Impacts to be determined during later study phases (as applicable).

17.2 MISO

MISO Impacts to be determined during later study phases (as applicable).

17.3 TVA

TVA Impacts to be determined during later study phases (as applicable).

17.4 Duke Energy Progress

Duke Energy Progress Impacts to be determined during later study phases (as applicable).

17.5 NYISO

NYISO Impacts to be determined during later study phases (as applicable).

18 Short Circuit

No overdutied breakers were identified.

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Summary: Application - Part 6 of 31 Ex. D Feasibility Study Reports electronically filed by Christine M.T. Pirik on behalf of Clearview Solar I, LLC