



**Generation Interconnection  
Feasibility Study Report  
for  
Queue Project AG1-323  
BLUE JACKET 138 KV  
40 MW Capacity / 40 MW Energy**

January 2021

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## 1 Introduction

This Feasibility Study has been prepared in accordance with the PJM Open Access Transmission Tariff, 36.2, as well as the Feasibility Study Agreement between the Interconnection Customer (IC), and PJM Interconnection, LLC (PJM), Transmission Provider (TP). The Interconnected Transmission Owner (ITO) is Dayton.

## 2 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.

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.

### 3 General

The Interconnection Customer (IC), has proposed a Solar; Storage generating facility located in Logan County, Ohio. The installed facilities will have a total capability of 40 MW with 40 MW of this output being recognized by PJM as Capacity.

The proposed in-service date for this project is September 01, 2023. This study does not imply a TO commitment to this in-service date.

<b>Queue Number</b>	<b>AG1-323</b>
<b>Project Name</b>	BLUE JACKET 138 KV
<b>State</b>	Ohio
<b>County</b>	Logan
<b>Transmission Owner</b>	Dayton
<b>MFO</b>	40
<b>MWE</b>	40
<b>MWC</b>	40
<b>Fuel</b>	Solar; Storage
<b>Basecase Study Year</b>	2024

Any new service customers who can feasibly be commercially operable prior to June 1st of the basecase study year are required to request interim deliverability analysis.

## 4 Point of Interconnection

AG1-323 will interconnect with the Dayton transmission system along one of the following Points of Interconnection:

Primary POI: Blue Jacket 138 kV substation.

The AG1-323 queue project will interconnect with the Dayton Power & Light transmission system via a direct connection through a gen-tie line to the existing Blue Jacket 138kV substation. The existing three-breaker ring bus configuration at the Blue Jacket 138kV substation will be upgraded to a four-breaker ring bus configuration. It should be noted that the second 69/138 kV transformer and the existing three-breaker 138kV ring (shown in black in Attachment-1) at Blue Jacket is dependent on expansions planned as part of the AE1-092 and AF1-270 queue positions.

The Point of Interconnection (POI) will be the 138 kV takeoff structure leaving the upgraded four-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 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 connection of the (AG1-323) 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 the facilities on its side of the POI including the attachment line.

Secondary POI: Blue Jacket 69 kV substation.

## 5 Cost Summary

The AG1-323 project will be responsible for the following costs:

Description	Total Cost
<b>Total Physical Interconnection Costs</b>	\$1,490,000
<b>Total System Network Upgrade Costs</b>	\$0
<b>Total Costs</b>	<b>\$1,490,000</b>

This cost excludes a Federal Income Tax Gross Up charges. This tax may or may not be charged based on whether this project meets the eligibility requirements of IRS Notice 2016-36, 2016-25 I.R.B. (6/20/2016). If at a future date it is determined that the Federal Income Tax Gross charge is required, the Transmission Owner shall be reimbursed by the Interconnection Customer for such taxes.

Cost allocations for any System Upgrades will be provided in the System Impact Study Report.

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.

## 6 Transmission Owner Scope of Work

The AG1-323 will interconnect with the Dayton Power and Light Company transmission system via a new 138kV four-breaker ring bus switchyard at the Blue Jacket 138kV substation. The Transmission Owner scope of work associated with this project is to build direct and non-direct connection facilities, along with relaying, metering, RTU, SCADA and other miscellaneous supporting equipment, provide engineering oversight and any remote work required at other adjacent substations due to this interconnection.

The total physical interconnection costs is given in the table below:

### 6.1 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.

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
None	\$0
<b>Total Attachment Facility Costs</b>	<b>\$0</b>

### 6.2 Direct Connection Cost Estimate

The substation direct connection work for this project includes the addition of one breaker to the existing 138kV three-breaker ring bus switchyard, at the Blue Jacket 138kV substation. There will also be 138kV transmission line construction work required to accommodate the new switchyard. The 138kV IC generator lead line will be constructed by the developer and will be terminated onto the 138kV takeoff structure leaving the new four-breaker ring bus switchyard. The new substation will be equipped with the necessary communication systems to facilitate remote supervisory control of the breakers and status monitoring. Dayton will install the line relaying, communications, and interconnection metering to accommodate the interconnection of the AG1-323 generating facility.

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
Engineering review and commissioning.	\$15,000

<b>Description</b>	<b>Total Cost</b>
Install one new 138kV breaker position to the existing three breaker ring at the Blue Jacket 138kV substation to interconnect the AG1-323 project. This will include the installation of all physical structures, P&C equipment, communications equipment, metering equipment, and associated facilities.	\$1,300,000
138 kV transmission line tie-In work to accommodate new AG1-323 Interconnection Switchyard	\$100,000
<b>Total Direct Connection Facility Costs</b>	<b>\$1,415,000</b>

### 6.3 Non-Direct Connection Cost Estimate

The scope of the non-direct connection work at the new 138 kV Blue Jacket substation involves the protection system changes at the Blue jacket 138kV switchyard along with remote end changes at Kirby (FE) and Blue Jacket 69kV substation.

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.

<b>Description</b>	<b>Total Cost</b>
Blue Jacket 138kV Substation - protection system settings changes and remote end changes at Kirby (FE) and Blue Jacket 69kV.	\$75,000
<b>Total Non-Direct Connection Facility Costs</b>	<b>\$75,000</b>

## 7 Schedule

Based on the extent of the Dayton primary Attachment Facilities and Non-Direct Connection work required to support the AG1-323 generation project, it is expected to take a minimum of **twenty four (24) 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

BRANCH	CONTINGENCY	MVAFLOW	AMPFLOW	RATE RATE1/ RATE2	% FLOW AFTER	% FLOW BEFORE	COMMENTS
253077 09STUART 345.00 250167 08DEO_STUART138 .00 1	BASE CASE	326.69	326.69	250.00	130.68	130.61	The overloaded transformer is owned by Duke. Duke to propose reinforcement project(s).
253099 09ATLNNTA 69.000 253100 09ATLNNTA 345.00 1	BASE CASE	296.28	296.28	250.00	118.51	118.51	Reinforcement Project, r190012 will add a second 250MVA, 345/69kV transformer at Atlanta. AE2-319 is currently responsible for r190012.
253311 AC1- 085 MAIN345.00 3WINDTR AC1-085 M WND 1 1	BASE CASE	223.11	223.11	150.00	148.74	148.72	IC equipment. PJM to confirm/update ratings.
253311 AC1- 085 MAIN345.00 3WINDTR AC1-085 MAIN WND 1 1	BASE CASE	223.11	223.11	150.00	148.74	148.72	IC equipment. PJM to confirm/update ratings.
253320 AC1- 085 COL234.500 3WINDTR AC1-085 M WND 2 1	BASE CASE	212.07	212.07	150.00	141.38	141.37	IC equipment. PJM to confirm/update ratings.
253321 AC1- 085 COL134.500 3WINDTR AC1-085 MAIN WND 2 1	BASE CASE	212.07	212.07	150.00	141.38	141.37	IC equipment. PJM to confirm/update ratings.
253322 AC1- 069 MAIN69.000 3WINDTR AC1-069 MAIN WND 1 1	BASE CASE	49.68	49.68	36.00	138.00	138.00	IC equipment. PJM to confirm/update ratings.
253324 AC1- 069 COL 34.500 3WINDTR AC1-069 MAIN WND 2 1	BASE CASE	49.65	49.65	36.00	137.92	137.92	IC equipment. PJM to confirm/update ratings.

253330 AC1-068 MAIN69.000 3WNDTR AC1-068 MAIN WND 1 1	BASE CASE	49.68	49.68	36.00	138.00	138.00	IC equipment. PJM to confirm/update ratings.
<b>BRANCH</b>	<b>CONTINGENCY</b>	<b>MVAFLOW</b>	<b>AMPFLOW</b>	<b>RATE RATE1/ RATE2</b>	<b>% FLOW AFTER</b>	<b>% FLOW BEFORE</b>	<b>COMMENTS</b>
253332 AC1-068 COL 34.500 3WNDTR AC1-068 MAIN WND 2 1	BASE CASE	49.65	49.65	36.00	137.92	137.92	IC equipment. PJM to confirm/update ratings.
253346 AC2-067 MAIN69.000 3WNDTR AC2-067 MAIN WND 1 1	BASE CASE	58.21	58.21	45.00	129.35	129.35	IC equipment. PJM to confirm/update ratings.
253347 AC2-067 COL134.500 3WNDTR AC2-067 MAIN WND 2 1	BASE CASE	57.32	57.32	45.00	127.38	127.38	IC equipment. PJM to confirm/update ratings.
253348 AC2-067 COL234.500 253349 AC2-067 C 0.3850 1	BASE CASE	-57.53	57.53	52.80	108.96	108.96	IC equipment. PJM to confirm/update ratings.
938700 AE1-092 TAP 138.00 964650 AG1-328 TAP 138.00 1	BASE CASE	247.61	245.16	218.00	112.46	102.18	AG1-328 is in ATSI territory. ATSI to propose reinforcement projects.
938701 AE1-092 GSU 138.00 3WNDTR AE1-092 GSU WND 1 1	BASE CASE	225.46	225.46	153.00	147.36	147.28	IC equipment. PJM to confirm/update ratings.
938702 AE1-092 COL234.500 3WNDTR AE1-092 GSU WND 2 1	BASE CASE	229.24	229.24	153.00	149.83	149.13	IC equipment. PJM to confirm/update ratings.
964650 AG1-328 TAP 138.00 238861 02KIRBY 138.00 1	BASE CASE	246.15	245.11	218.00	112.43	102.15	AG1-328 is in ATSI territory. ATSI to propose reinforcement projects.
253089 09WMILTN 138.00 957850 AF2-079 TAP 138.00 1	DAY_6602_HU TCHINGS_CRY STAL_69KV	-171.14	165.06	165.00	100.03	100.00	Existing overload caused by AG1-207. Supplemental Project # S1846 (Greenville Transformer) will raise the line rating to 200/220MVA
253089 09WMILTN 138.00 957850 AF2-079 TAP 138.00 1	DAY_6611_HU TCHINGS_CRO WN_69KV	-171.40	165.31	165.00	100.19	100.15	Supplemental Project # S1846 (Greenville Transformer) will raise the line rating to 200/220MVA
253089 09WMILTN 138.00 957850 AF2-079 TAP 138.00 1	DAY_6625_CO VINGTON_MIN STER, ROSSBURG_69 KV	-174.33	168.12	165.00	101.89	101.89	Same comment as above.
253089 09WMILTN 138.00 957850 AF2-079 TAP 138.00 1	DAY_6644_CO VINGTON_GRE ENVILLE_69K V	-203.87	196.66	165.00	119.19	119.20	Same comment as above.

253089 09WMILTN 138.00 957850 AF2-079 TAP 138.00 1	DAY 6656 GA RAGE RD_WEST MANCHESTER_ 69KV	-177.56	171.25	165.00	103.79	103.75	Same comment as above.
253089 09WMILTN 138.00 957850 AF2-079 TAP 138.00 1	DAY 6661 TR EATY_ROSSBU RG_69KV	-209.43	201.98	165.00	122.41	122.38	Same comment as above.
<b>BRANCH</b>	<b>CONTINGENCY</b>	<b>MVAFLOW</b>	<b>AMPFLOW</b>	<b>RATE RATE1/ RATE2</b>	<b>% FLOW AFTER</b>	<b>% FLOW BEFORE</b>	<b>COMMENTS</b>
253089 09WMILTN 138.00 957850 AF2-079 TAP 138.00 1	DAY 6916 CR OWN_BROOKVI LLE_69KV	-182.23	175.76	165.00	106.52	106.48	Same comment as above.
253089 09WMILTN 138.00 957850 AF2-079 TAP 138.00 1	DAY 6932 TR EATY GREENV ILLE_69KV	-215.79	208.10	165.00	126.12	126.09	Same comment as above.
253089 09WMILTN 138.00 957850 AF2-079 TAP 138.00 1	DAY 6937 FO RT RECOVERY RO SSBURG_69KV	-183.07	176.57	165.00	107.01	106.95	Same comment as above.
253025 09GIVENS 138.00 253085 09URBANA 138.00 1	DAY DARBY 1 38KV TO AG1-249 138KV	224.62	220.30	220.00	100.13	100.14	Existing overload initially caused by AG1-249. Reinforcement project # r190014 will replace the current wave trap with a 1200A wave trap making the new rating at 221/272. The projected cost of this reinforcement is approximately \$100,000. Currently, the cost responsibility lies with AG1-249. If AG1-249 decides to not move forward the cost responsibility for the upgrade will be with AG1-323.
253085 09URBANA 138.00 239278 02BRDVIE 138.00 1	DAY_DARBY_1 38KV TO AG1-249 138KV	283.69	278.35	272.00	102.34	102.04	Existing overload initially caused by AG1-249. Reinforcement project # r190015 will reconductor the transmission line from Urbana to Broadview with 1351 AAC. The new line rating after the project would be 272/314. The projected cost of this reinforcement is approximately \$3,750,000. Currently, the cost responsibility lies with AG1-249. If AG1-249 decides to not move forward, the cost responsibility for the upgrade will be with AG1-323.

253021 09DARBY 138.00 963960 AG1-249 TAP 138.00 1	DAY URBANA FB_D KV	-249.63	244.50	220.00	111.14	110.51	Existing overload initially caused by AG1-249. Reinforcement project # r190014 will replace the current wave trap with a 1200A wave trap making the new rating at 221/272. The projected cost of this reinforcement is approximately \$100,000. Currently, the cost responsibility lies with AG1-249. If AG1-249 decides to not move forward, the cost responsibility for the upgrade will be with AG1-323.
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### 8.1 Transmission Owner Analysis: Non-Converged Contingencies

CONTINGENCY	EVENTS	CONVERGED	CONVERGENCE STATE	MVAWORST	MVATOTAL
DAY_34551_ATLANTA_ADKINS_345KV	<p>OPEN LINE FROM BUS 253100 [09ATLNTA 345.00] TO BUS 944520 [AF1-117 TAP 345.00] CKT 1</p> <p>OPEN LINE FROM BUS 253100 [09ATLNTA 345.00] TO BUS 245769 [05ADKINS 345.00] CKT 1</p> <p>OPEN LINE FROM BUS 253100 [09ATLNTA 345.00] TO BUS 253099 [09ATLNTA 69.000] CKT 1</p>	FALSE	Blown up	897.9636	12980.4482
DAY_ATLANTA_FB_BB KV	<p>OPEN LINE FROM BUS 253100 [09ATLNTA 345.00] TO BUS 944520 [AF1-117 TAP 345.00] CKT 1</p> <p>OPEN LINE FROM BUS 253100 [09ATLNTA 345.00] TO BUS 245769 [05ADKINS 345.00] CKT 1</p> <p>OPEN LINE FROM BUS 253100 [09ATLNTA 345.00] TO BUS 253099 [09ATLNTA 69.000] CKT 1</p>	FALSE	Blown up	897.9636	12980.4482

#### 8.1.1 Transmission Owner Analysis: Non-Converged Contingencies Comments

To solve non-convergence issues identified in this report, Queue Project AE2-319 will require an expansion of the Atlanta 345kV Substation which will include looping in and out AEP's Biers Run-Bixby 345kV line.

Reinforcement Project, r190012 (\$5,000,000) will add a second 250MVA, 345/69kV transformer at Atlanta and reinforcement project r190013 (\$54,798,000) will upgrade the Atlanta 345kV switchyard to a breaker and a half configuration interconnecting AE2-319, AE2-320, existing 345kV line to Adkins, existing 345kV line to Stuart, a new 345kV tie to Biers Run(AEP), and a new 345kV tie to AE2-149 tap between Biers Run and Bixby. This will provide more outlets to balance the influx of new generation in the area. If AE2-319 decides to not move forward, subsequent queue projects may be responsible for the upgrades.

## 9 Interconnection Customer Requirements

It is understood that the Interconnection Customer (IC) is responsible for all costs associated with this interconnection. The costs above are reimbursable to the Transmission Owner. The cost of the IC's generating plant and the costs for the line connecting the generating plant to the Point of Interconnection are not included in this report; these are assumed to be the IC's responsibility.

The Generation Interconnection Agreement does not in or by itself establish a requirement for the Transmission Owner to provide power for consumption at the developer's facilities. A separate agreement may be reached with the local utility that provides service in the area to ensure that infrastructure is in place to meet this demand and proper metering equipment is installed. It is the responsibility of the developer to contact the local service provider to determine if a local service agreement is required.

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.

### 9.1 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.

### 9.2 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>

### 9.3 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 Meteorological Data Reporting Requirements

The solar generation facility shall provide the Transmission Provider with site-specific meteorological data including:

- Back Panel temperature (Fahrenheit) - (Required for plants with Maximum Facility Output of 3 MW or higher)
- Irradiance (Watts/meter<sup>2</sup>) - (Required for plants with Maximum Facility Output of 3 MW or higher)
- Ambient air temperature (Fahrenheit) - (Accepted, not required)
- Wind speed (meters/second) - (Accepted, not required)
- Wind direction (decimal degrees from true north) - (Accepted, not required)

### 10.3 Interconnected Transmission Owner Requirements

The IC will be required to comply with all Interconnected Transmission Owner's revenue metering requirements for generation interconnection customers located at the following link:

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

## **11 Summer Peak - Load Flow Analysis - Primary POI**

The Queue Project AG1-323 was evaluated as a 40.0 MW (Capacity 40.0 MW) injection at the Blue Jacket 138 kV substation in the Dayton area. Project AG1-323 was evaluated for compliance with applicable reliability planning criteria (PJM, NERC, NERC Regional Reliability Councils, and Transmission Owners). Project AG1-323 was studied with a commercial probability of 53.0 %. Potential network impacts were as follows:

### 11.1 Generation Deliverability

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

None

### 11.2 Multiple Facility Contingency

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

None

### 11.3 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

### 11.4 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.

ID	FROM BUS#	FROM BUS	kV	FROM BUS AREA	TO BUS#	TO BUS	kV	TO BUS AREA	CK T ID	CONT NAME	Type	Rating MVA	PRE PROJE CT LOADIN G %	POST PROJE CT LOADIN G %	AC/D C	MW IMPAC T
167935619	238861	02KIRBY	138.0	ATSI	238640	02CRIS S	138.0	ATSI	1	DAY_P1_BLUE JACKET_138_BL UE JACKET_69_BK_7	operatio n	179.0	124.36	137.03	DC	22.68
167935621	238861	02KIRBY	138.0	ATSI	238640	02CRIS S	138.0	ATSI	1	Base Case	operatio n	152.0	116.45	124.91	DC	12.86
169686653	938700	AE1-092 TAP	138.0	DAY	964650	AG1-328 TAP	138.0	DAY	1	DAY_P1_BLUE JACKET_138_BL UE JACKET_69_BK_7	operatio n	269.0	101.45	116.32	DC	40.0
169686655	938700	AE1-092 TAP	138.0	DAY	964650	AG1-328 TAP	138.0	DAY	1	Base Case	operatio n	218.0	92.18	102.49	DC	22.47
164521114	964650	AG1-328 TAP	138.0	DAY	238861	02KIRBY	138.0	ATSI	1	DAY_P1_BLUE JACKET_138_BL UE JACKET_69_BK_7	operatio n	269.0	101.38	116.25	DC	40.0

ID	FROM BUS#	FROM BUS	kV	FROM BUS AREA	TO BUS#	TO BUS	kV	TO BUS AREA	CKT ID	CONT NAME	Type	Rating MVA	PRE PROJECTIONS LOADIN G%	POST PROJECTIONS LOADIN G%	AC DC	MW IMPACT
164521117	964650	AG1-328 TAP	138.0	DAY	238861	02KIRBY	138.0	ATSI	1	Base Case	operation	218.0	92.09	102.4	DC	22.47

## 11.5 System Reinforcements - Summer Peak Load Flow - Primary POI

None.

## 11.6 Contingency Descriptions - Primary POI

Contingency Name	Contingency Definition
Base Case	
DAY_P1_BLUE JACKET_138_BLUE JACKET_69_BK_7	CONTINGENCY 'DAY_P1_BLUE JACKET_138_BLUE JACKET_69_BK_7' OPEN BRANCH FROM BUS 253009 TO BUS 253101 CKT 1 DECREASE BUS 253009 SHUNT BY 50 PERCENT END

## 12 Short Circuit Analysis - Primary POI

The following Breakers are overdutied:

None.

### **13 Summer Peak - Load Flow Analysis - Secondary POI**

The Queue Project AG1-323 was evaluated as a 40.0 MW (Capacity 40.0 MW) injection at the Blue Jacket 69 kV substation in the Dayton area. Project AG1-323 was evaluated for compliance with applicable reliability planning criteria (PJM, NERC, NERC Regional Reliability Councils, and Transmission Owners). Project AG1-323 was studied with a commercial probability of 53.0 %. Potential network impacts were as follows:

### 13.1 Generation Deliverability

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

None

### 13.2 Multiple Facility Contingency

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

None

### 13.3 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

### 13.4 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.

ID	FROM BUS#	FROM BUS	kV	FROM BUS AREA	TO BUS#	TO BUS	kV	TO BUS AREA	CKT ID	CONT NAME	Type	Rating MVA	PRE PROJECT LOADING %	POST PROJECT LOADING %	AC/DC	MW IMPACT
1679356 21	2388 61	02KIR BY	138. 0	ATSI	2386 40	02CRI SS	138. 0	ATSI	1	Base Case	operati on	152. 0	116.45	122.99	DC	9.93
1768783 12	9387 00	AE1- 092 TAP	138. 0	DAY	2388 61	02KIR BY	138. 0	ATSI	1	DAY_P1_6648_BELLEFONTAI NE_BLUE JACKET_69KV	operati on	269. 0	96.4	106.28	DC	26.58
1768783 13	9387 00	AE1- 092 TAP	138. 0	DAY	2388 61	02KIR BY	138. 0	ATSI	1	Base Case	operati on	218. 0	92.09	100.0	DC	17.23

### 13.5 Contingency Descriptions - Secondary POI

Contingency Name	Contingency Definition
Base Case	
DAY_P1_6648_BELLEFONTAINE_BLUE JACKET_69KV	CONTINGENCY 'DAY_P1_6648_BELLEFONTAINE_BLUE JACKET_69KV' DISCONNECT BUS 253118 DISCONNECT BUS 253148 DISCONNECT BUS 253008 DISCONNECT BUS 253156 DECREASE BUS 253009 LOAD BY 2.4 MW DECREASE BUS 253158 LOAD BY 6.3 MW END

## **14 Affected Systems**

### **14.1 MISO**

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

### **14.2 LG&E**

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