Generation Interconnection

Feasibility Study Report

for

Queue Project AG1-503

OAK GREEN 115 KV

16 MW Capacity / 20 MW Energy

October 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 Dominion.

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.

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.

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.

3 General

The Interconnection Customer (IC), has proposed an uprate to a proposed Storage generating facility located in Orange County, Pennsylvania. This project is an increase to the Interconnection Customer's AG2-502 project, which will share the same point of interconnection. The AG1-503 queue position is a 20 MW uprate (16 MW Capacity uprate) to the previous project. The total installed facilities will have a capability of 100 MW with 80 MW of this output being recognized by PJM as Capacity. The proposed in-service date for this uprate project is June 30, 2023. This study does not imply a TO commitment to this in-service date

Queue Number	**AG1-503**
Project Name	OAK GREEN 115 KV
State	Virginia
County	Orange
Transmission Owner	Dominion
MFO	100
MWE	20
MWC	16
Fuel	Solar
Basecase Study Year	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

4.1 Primary Point of Interconnection

AG1-503 "Oak Green 115 kV" will interconnect with the Dominion transmission system as an uprate to AG1-502, sharing the POI and Attachment Facilities.

The IC is responsible for securing right-of-way, permits, and constructing the proposed attachment line from the generating facility site to the Point of Interconnection. The IC may not install any facilities on Dominion's right-of-way without first obtaining the necessary approval from Dominion Energy.

Costs provided are contingent on the AG1-502 project being built. Should the AG1-502 project withdraw from the Interconnection Queue, the AG1-503 project will assume the Attachment, Direct Connection, and Non-Direct Connection costs identified in the AG1-502 study report for connection to the Dominion system.

Attachment 1 shows a one-line diagram of the proposed interconnection facilities.

4.2 Secondary Point of Interconnection

The IC requested that a secondary POI be reviewed for network impacts.

The secondary POI for AG1-503 is a new tap on the Mitchell DP-Oak Green 115 kV line.

This report does not provide costs for the interconnection of the secondary POI.The secondary POI was analyzed for network impacts. Network impact results are shown in the Summer Peak - Load Flow Analysis – Secondary Point of Interconnection section of this report.

5 Cost Summary

The AG1-503 project will be responsible for the following costs:

Description	Total Cost
Total Physical Interconnection Costs	$ 0
Allocation towards System Network Upgrade Costs (PJM Identified - Summer Peak)*	$ 20,516,400[1]
Total Costs	$ 20,516,400

[1] This project currently causes and/or contributes to overloads of the Transmission System (see Summer Peak Load Flow Analysis section below) and therefore has potential to have cost allocation for the system reinforcements listed in the report. This will be re-evaluated in the System Impact phase. The results may vary with queue customers withdrawing from the queue and other generators deactivating over time. If a customer is the first to cause the need for a project (causes loading to exceed 100% of rating), then the customer is responsible. If a customer contributes to a facility that is already overloaded by a prior queue, then they may receive cost allocation.

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.

6 Transmission Owner Scope of Work

The required Attachment Facilities, Direct Connection and Non-Direct Connection work for the interconnection of AG1-503 to the Dominion Transmission System is detailed in the following sections. The associated one-line showing the generation project attachment facilities and primary direct and non-direct connection is shown in Attachment 1.

Note that the ITO 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. ITO 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.

AG1-503 "Oak Green 115 kV" will interconnect with the Dominion transmission system as an uprate to AG1-502, sharing the POI and Attachment Facilities.

As AG1-503 is sharing the POI and Attachment Facilities with AG1-502, there are no associated interconnection costs for this project. Should the AG1-502 project withdraw from the Interconnection Queue,the AG1-503 project will assume the Attachment, Direct Connection, and Non-Direct Connection costs identified in the AG1-502 study report for connection to the Dominion system.

Remote Terminal Work: During the Facilities Study, ITO's System Protection Engineering Department will review transmission line protection as well as anti-islanding required to accommodate the new generation and interconnection substation. System Protection Engineering will determine the minimal acceptable protection requirements to reliably interconnect the proposed generating facility with the transmission system. The review is based on maintaining system reliability by reviewing ITO's protection requirements with the known transmission system configuration which includes generating facilities in the area. This review may determine that transmission line protection and communication upgrades are required at remote substations.

7 Schedule

The estimated schedule for the Attachment Facilities, Direct Connection and Non-Direct Connection work is identified in the "Transmission Owner Scope of Work" section of this report.

The estimated schedule for the required Network Impact Reinforcements is identified in the "System Reinforcements" section of this report.

These schedules will be more cleary identified in future study phases.

If the customer is ultimately responsible for network upgrades, then the schedule for those upgrades will be refined in future study phases. The customer would need to wait for those upgrades to be completed prior to commercial operation unless determined deliverable by an interim deliverability study. The elapsed time to complete any network upgrades is provided in the System Reinforcements table of this report.

8 Transmission Owner Analysis

Dominion assessed the impact of the proposed AG1-503 for compliance with NERC Reliability Criteria on the Dominion Transmission System. The system was assessed using the summer 2024 AG1 case provided to Dominion by PJM.

When performing a generation analysis, Dominion's main analysis includes load flow study results following a single contingency event for both normal and stressed system conditions. Dominion Criteria considers a transmission facility overloaded if it exceeds 94% of its emergency rating under normal and stressed system conditions. A full listing of Dominion's Planning Criteria and interconnection requirements can be found in the Company's Facility Connection Requirements which are publicly available at: http://www.dominionenergy.com.

The results of these studies evaluate the system under a limited set of operating conditions and do not guarantee the full delivery of the capacity and associated energy of this proposed generation facility under all operating conditions. NERC Planning and Operating Reliability Criteria allow for the re-dispatch of generating units to resolve projected and actual deficiencies in real time and planning studies. Specifically, in Planning Studies, NERC Planning Event 3 and 6 Contingency Conditions (Loss of generator, transmission circuit, transformer, shunt device, or Single Pole of a DC line followed by the loss of a generator, transmission circuit, transformer, shunt device or single pole of a DC line) allow for re-dispatch of generating units to resolve potential reliability deficiencies. For Dominion Planning Criteria the re-dispatch of generating units for these contingency conditions is allowed as long as the projected loading does not exceed 100% of a facility Load Dump Rating.

8.1 Power Flow Analysis

PJM performed a power flow analysis of the transmission system using a 2024 summer peak load flow model and the results were verified by Dominion. Additionally, Dominion performed an analysis of its transmission system and no further deficiencies were identified.

9 Interconnection Customer Requirements

9.1 System Protection

The IC must design its Customer Facilities in accordance with all applicable standards, including the standards in Dominion's "Dominion Energy Electric Transmission Generator Interconnection Requirements" documented in Dominion's Facility Interconnection Requirements "Exhibit C" located at: https://www.dominionenergy.com/company/moving-energy/electric-transmission-access. 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 proposed Customer Facilities must be designed in accordance with Dominion's "Dominion's Facility Interconnection Requirements" document located at: https://www.dominionenergy.com/company/moving-energy/electric-transmission-access. In particular, the IC is responsible for the following:

1. The purchase and installation of a fully rated protection device (circuit breaker, circuit switcher, fuse) to protect the IC's GSU transformer(s).
2. The purchase and installation of the minimum required Dominion generation interconnection relaying and control facilities as described in the System Protection section noted above. This includes over/under voltage protection, over/under frequency protection, and zero sequence voltage protection relays.
3. The purchase and installation of supervisory control and data acquisition ("SCADA") equipment to provide information in a compatible format to the Dominion Transmission System Control Center.
4. Compliance with the Dominion and PJM generator power factor and voltage control requirements.

The GSU(s) associated with the IC queue request shall meet the grounding requirements as noted in Dominion's "Dominion's Facility Interconnection Requirements" document located at: https://www.dominionenergy.com/company/moving-energy/electric-transmission-access.

The IC will also be required to meet all PJM, SERC, and NERC reliability criteria and operating procedures for standards compliance. For example, the IC will need to properly locate and report the over and under voltage and over and under frequency system protection elements for its units as well as the submission of the generator model and protection data required to satisfy the PJM and SERC audits. Failure to comply with these requirements may result in a disconnection of service if the violation is found to compromise the reliability of the Dominion system.

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 Dominion 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/meter2) - (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 AG1-503 was evaluated as a 20.0 MW (Capacity 16.00 MW) injection as an uprate to AG1-502 which is a direct connection to the Oak Green 115 kV substation in the Dominion area. Project AG1-503 was evaluated for compliance with applicable reliability planning criteria (PJM, NERC, NERC Regional Reliability Councils, and Transmission Owners). Project AG1-503 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)

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
1	314232	6NO ANNA	230.0	DVP	961810	AG1-023 TAP	230.0	DVP	1	DVP_P1-2: LN 2199	single	749.2	99.98	100.28	AC	2.31
2	314232	6NO ANNA	230.0	DVP	961810	AG1-023 TAP	230.0	DVP	1	3147586GORDNVL 230 939220 AE1-153 TAP 230 1	single	749.2	99.98	100.28	AC	2.31

11.2 Multiple Facility Contingency

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

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
167000628	314764	3LOCST G	115.0	DVP	926000	AC1-076 TAP	115.0	DVP	1	DVP_P7-1: LN 70-2199-B	tower	260.0	98.76	102.51	AC	11.26
174118322	314778	3PAY TAP	115.0	DVP	314755	3SPOTSYL	115.0	DVP	1	DVP_P4-2: 2T70	breaker	260.0	99.7	103.86	AC	10.98
167000694	314815	3OAK GRE	115.0	DVP	313703	3UNIONVILLE	115.0	DVP	1	DVP_P7-1: LN 2-2199-A	tower	301.0	96.94	100.19	AC	11.26

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)

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
167000578	313703	3UNIONVILLE	115.0	DVP	314764	3LOCST G	115.0	DVP	1	DVP_P7-1: LN 2-2199-A	tower	235.0	120.88	125.03	AC	11.26

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
167000579	313703	3UNIONVILLE	115.0	DVP	314764	3LOCST G	115.0	DVP	1	DVP_P7-1: LN 70-2199-B	tower	235.0	109.74	113.88	AC	11.26
173927860	313703	3UNIONVILLE	115.0	DVP	314764	3LOCST G	115.0	DVP	1	DVP_P4-2: 2T70	breaker	235.0	103.05	107.65	AC	10.98
167000559	314761	3PINE GLADE	115.0	DVP	314778	3PAY TAP	115.0	DVP	1	DVP_P7-1: LN 2-2199-A	tower	260.0	133.0	137.28	AC	11.26
173168223	314761	3PINE GLADE	115.0	DVP	314778	3PAY TAP	115.0	DVP	1	DVP_P7-1: LN 70-2199-B	tower	260.0	122.94	127.21	AC	11.26
173927797	314761	3PINE GLADE	115.0	DVP	314778	3PAY TAP	115.0	DVP	1	DVP_P4-2: 2T70	breaker	260.0	117.28	121.45	AC	10.98
167000627	314764	3LOCST G	115.0	DVP	926000	AC1-076 TAP	115.0	DVP	1	DVP_P7-1: LN 2-2199-A	tower	260.0	108.83	112.59	AC	11.26
167000602	314778	3PAY TAP	115.0	DVP	314755	3SPOTSYL	115.0	DVP	1	DVP_P7-1: LN 2-2199-A	tower	260.0	115.4	119.67	AC	11.26
167000603	314778	3PAY TAP	115.0	DVP	314755	3SPOTSYL	115.0	DVP	1	DVP_P7-1: LN 70-2199-B	tower	260.0	105.35	109.61	AC	11.26
167000557	926000	AC1-076 TAP	115.0	DVP	314761	3PINE GLADE	115.0	DVP	1	DVP_P7-1: LN 2-2199-A	tower	260.0	133.0	137.28	AC	11.26
173168228	926000	AC1-076 TAP	115.0	DVP	314761	3PINE GLADE	115.0	DVP	1	DVP_P7-1: LN 70-2199-B	tower	260.0	122.94	127.21	AC	11.26
173927796	926000	AC1-076 TAP	115.0	DVP	314761	3PINE GLADE	115.0	DVP	1	DVP_P4-2: 2T70	breaker	260.0	117.28	121.45	AC	10.98

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	CKT ID	CONT NAME	Type	Rating MVA	PRE PROJECT LOADING %	POST PROJECT LOADING %	AC|DC	MW IMPACT
168560385	313703	3UNIONVILLE	115.0	DVP	314764	3LOCST G	115.0	DVP	1	DVP_P1-2: LN 2-A	operation	191.8	125.83	131.47	AC	10.98
169489100	314761	3PINE GLADE	115.0	DVP	314778	3PAY TAP	115.0	DVP	1	DVP_P1-2: LN 2-A	operation	212.4	143.13	148.23	AC	10.98
169489230	314764	3LOCST G	115.0	DVP	926000	AC1-076 TAP	115.0	DVP	1	DVP_P1-2: LN 2-A	operation	212.4	113.06	118.16	AC	10.98
169489204	314778	3PAY TAP	115.0	DVP	314755	3SPOTSYL	115.0	DVP	1	DVP_P1-2: LN 2-A	operation	212.4	121.61	126.7	AC	10.98
169489245	314815	3OAK GRE	115.0	DVP	313703	3UNIONVILLE	115.0	DVP	1	DVP_P1-2: LN 2-A	operation	224.7	110.82	115.65	AC	10.98
169789376	926000	AC1-076 TAP	115.0	DVP	314761	3PINE GLADE	115.0	DVP	1	DVP_P1-2: LN 2-A	operation	212.4	143.13	148.23	AC	10.98
3	926000	AC1-076 TAP	115.0	DVP	314761	3PINE GLADE	115.0	DVP	1	DVP_P1-2: LN 255-E	operation	212.4	135.05	138.93	AC	8.37
4	314761	3PINE GLADE	115.0	DVP	314778	3PAY TAP	115.0	DVP	1	DVP_P1-2: LN 255-E	operation	212.4	135.05	138.93	AC	8.37
5	314815	3OAK GRE	115.0	DVP	314769	3ORANGE	115.0	DVP	1	DVP_P1-2: LN 255-E	operation	224.7	103.69	105.14	AC	6.39
6	314815	3OAK GRE	115.0	DVP	314769	3ORANGE	115.0	DVP	1	DVP_P1-2: LN 255-D-1	operation	224.7	100.01	101.46	AC	6.39

11.5 System Reinforcements

ID	Idx	Facility	Upgrade Description	Cost
174118322,167000603,167000602	2	3PAY TAP 115.0 kV - 3SPOTSYL 115.0 kV Ckt 1	DVP n6375 (345) : Rebuild 2.83 miles of 115 kV Line 153 from Paytes Tap to Spotsylvania with 768 ACSS. Project Type : FAC Cost : $3,679,000 Time Estimate : 30-36 months	$3,679,000
167000579,167000578,173927860	4	3UNIONVILLE 115.0 kV - 3LOCST G 115.0 kV Ckt 1	DVP Dom-261 (345) : Reconductor 5.0 miles of 115 kV line 153 from Unionville to Locust Grove with 768.2 ACSS 250 C. Project Type : FAC Cost : $3,000,000 Time Estimate : 30-36 months	$3,000,000
173927932,167000628,167000627	1	3LOCST G 115.0 kV - AC1-076 TAP 115.0 kV Ckt 1	DVP dom-368 (345) : Reconductor 0.7 miles of 115 kV Line 153 from Locust Grove to AC1-076 Tap with 768.2 ACSS 250 C. Replace Line switch at Locust Grove terminal. Project Type : FAC Cost : $420,000 Time Estimate : 30-36 months	$420,000
167000557,173927796,173168228	6	AC1-076 TAP 115.0 kV - 3PINE GLADE 115.0 kV Ckt 1	DVP dom-385 (345) : Reconductor 0.004 miles of 115 kV Line 153 from AC1-076 Tap to Pine Glade with 768.2 ACSS 250 C. Project Type : FAC Cost : $2,400 Time Estimate : 30-36 months	$2,400
167000694	3	3OAK GRE 115.0 kV - 3UNIONVILLE 115.0 kV Ckt 1	DVP dom-376 (345) : Reconductor 0.65 miles of 115 kV Line 153 from Oak Green to Unionville with 768.2 ACSS 250 C. Project Type : FAC Cost : $390,000 Time Estimate : 30-36 months	$390,000
173168223,173927797,167000559	5	3PINE GLADE 115.0 kV - 3PAY TAP 115.0 kV Ckt 1	DVP dom-367 (345) : Reconductor 3.2 miles of 115 kV Line 153 from Pine Glade to Paytes Tap with 768.2 ACSS 250 C. Project Type : FAC Cost : $1,920,000 Time Estimate : 30-36 months	$1,920,000

ID	Idx	Facility	Upgrade Description	Cost
1,2	Available Upon Request	**AG1-023 TAP 230 kV - 6NO ANNA 230 kV Ckt 1**	**DVP** **dom-410 (345) : Rebuild 7.3 miles of 230 kV Line 255 from AG1-023 Tap to North Anna with 2-795 ACSR 150 C. Replace Wave Trap at North Anna terminal.** **Project Type : FAC** **Cost : $11,150,000** **Time Estimate : 30-36 months**	$11,150,000
			TOTAL COST	**$20,516,400**

Note : For customers with System Reinforcements listed: If your present cost allocation to a System Reinforcement indicates $0, then please be aware that as changes to the interconnection process occur, such as prior queued projects withdrawing from the queue, reducing in size, etc, the cost responsibilities can change and a cost allocation may be assigned to your project. In addition, although your present cost allocation to a System Reinforcement is presently $0, your project may need this system reinforcement completed to be deliverable to the PJM system. If your project comes into service prior to completion of the system reinforcement, an interim deliverability study for your project will be required.

11.6 Flow Gate Details

The following indices contain additional information about each facility presented in the body of the report. For each index, a description of the flowgate and its contingency was included for convenience. The intent of the indices is to provide more details on which projects/generators have contributions to the flowgate in question. All New Service Queue Requests, through the end of the Queue under study, that are contributors to a flowgate will be listed in the indices. Please note that there may be contributors that are subsequently queued after the queue under study that are not listed in the indices. Although this information is not used "as is" for cost allocation purposes, it can be used to gage the impact of other projects/generators. It should be noted the project/generator MW contributions presented in the body of the report are Full MW Impact contributions which are also noted in the indices column named "Full MW Impact", whereas the loading percentages reported in the body of the report, take into consideration the PJM Generator Deliverability Test rules such as commercial probability of each project as well as the ramping impact of "Adder" contributions. The MW Impact found and used in the analysis is shown in the indices column named "Gendeliv MW Impact".

11.6.1 Index 1

ID	FROM BUS#	FROM BUS	FROM BUS AREA	TO BUS#	TO BUS	TO BUS AREA	CKT ID	CONT NAME	Type	Rating MVA	PRE PROJECT LOADING %	POST PROJECT LOADING %	AC|DC	MW IMPACT
167000627	314764	3LOCST G	DVP	926000	AC1-076 TAP	DVP	1	DVP_P7-1: LN 2-2199-A	tower	260.0	108.83	112.59	AC	11.26

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
925671	**AC1-043 C (Suspended)**	**21.4**	**80|50**	**21.4**
925672	**AC1-043 E (Suspended)**	**34.92**	**80|50**	**34.92**
926001	AC1-076 C	-6.04	Adder	-7.11
926481	**AC1-120 C O1 (Suspended)**	**22.3**	**80|50**	**22.3**
926482	**AC1-120 E O1 (Suspended)**	**11.49**	**80|50**	**11.49**
926501	**AC1-121 C O1 (Suspended)**	**7.66**	**80|50**	**7.66**
926502	**AC1-121 E O1 (Suspended)**	**3.6**	**80|50**	**3.6**
934861	AD1-115 C	10.7	80|50	10.7
934862	AD1-115 E	17.46	80|50	17.46
941381	AE2-134	-4.16	Adder	-4.89
964282	AG1-289 BAT	14.95	80|50	14.95
965971	AG1-466 C	2.64	80|50	2.64
965972	AG1-466 E	1.76	80|50	1.76
965981	AG1-467 C	1.71	80|50	1.71
965982	AG1-467 E	1.14	80|50	1.14
966001	AG1-469 C	1.43	80|50	1.43
966002	AG1-469 E	0.95	80|50	0.95
966331	AG1-502 C	27.04	80|50	27.04
966332	AG1-502 E	18.02	80|50	18.02
966341	AG1-503 C	6.76	80|50	6.76
966342	AG1-503 E	4.51	80|50	4.51
966501	AG1-519 C	0.9	Adder	1.06
966502	AG1-519 E	0.6	Adder	0.71
LTFEXP_AA2-074	LTFEXP_AA2-074->LTFIMP_AA2-074	0.0961	Confirmed LTF	0.0961
LTFEXP_CBM-S1	LTFEXP_CBM-S1->LTFIMP_CBM-S1	0.0704	LTF/CBM	0.0704
LTFEXP_CBM-S2	LTFEXP_CBM-S2->LTFIMP_CBM-S2	2.2779	LTF/CBM	2.2779
LTFEXP_CBM-W1	LTFEXP_CBM-W1->LTFIMP_CBM-W1	1.9316	LTF/CBM	1.9316
LTFEXP_CBM-W2	LTFEXP_CBM-W2->LTFIMP_CBM-W2	1.5476	LTF/CBM	1.5476
LTFEXP_CPLE	LTFEXP_CPLE->LTFIMP_CPLE	0.1447	Confirmed LTF	0.1447
LTFEXP_G-007	LTFEXP_G-007->LTFIMP_G-007	0.2577	LTF/CMTX NF	0.2577

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
LTFEXP_LAGN	LTFEXP_LAGN->LTFIMP_LAGN	0.3234	Confirmed LTF	0.3234
LTFEXP_LGE-0012019	LTFEXP_LGE-0012019->LTFIMP_LGE-0012019	0.0119	Confirmed LTF	0.0119
LTFEXP_LGEE	LTFEXP_LGEE->LTFIMP_LGEE	0.0992	Confirmed LTF	0.0992
LTFEXP_MEC	LTFEXP_MEC->LTFIMP_MEC	0.2472	Confirmed LTF	0.2472
LTFEXP_NY	LTFEXP_NY->LTFIMP_NY	0.114	Confirmed LTF	0.114
LTFEXP_O-066	LTFEXP_O-066->LTFIMP_O-066	1.6367	LTF/CMTX NF	1.6367
LTFEXP_SIGE	LTFEXP_SIGE->LTFIMP_SIGE	0.0166	Confirmed LTF	0.0166
LTFEXP_TVA	LTFEXP_TVA->LTFIMP_TVA	0.2679	Confirmed LTF	0.2679
LTFEXP_WEC	LTFEXP_WEC->LTFIMP_WEC	0.0459	Confirmed LTF	0.0459

11.6.2 Index 2

ID	FROM BUS#	FROM BUS	FROM BUS AREA	TO BUS#	TO BUS	TO BUS AREA	CKT ID	CONT NAME	Type	Rating MVA	PRE PROJECT LOADING %	POST PROJECT LOADING %	AC|DC	MW IMPACT
167000602	314778	3PAY TAP	DVP	314755	3SPOTSYL	DVP	1	DVP_P7-1: LN 2-2199-A	tower	260.0	115.4	119.67	AC	11.26

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
925671	**AC1-043 C (Suspended)**	**21.4**	**80|50**	**21.4**
925672	**AC1-043 E (Suspended)**	**34.92**	**80|50**	**34.92**
926001	AC1-076 C	16.69	80|50	16.69
926002	AC1-076 E	27.14	80|50	27.14
926481	**AC1-120 C O1 (Suspended)**	**22.3**	**80|50**	**22.3**
926482	**AC1-120 E O1 (Suspended)**	**11.49**	**80|50**	**11.49**
926501	**AC1-121 C O1 (Suspended)**	**7.66**	**80|50**	**7.66**
926502	**AC1-121 E O1 (Suspended)**	**3.6**	**80|50**	**3.6**
934861	AD1-115 C	10.7	80|50	10.7
934862	AD1-115 E	17.46	80|50	17.46
941381	AE2-134	11.5	80|50	11.5
964282	AG1-289 BAT	14.95	80|50	14.95
965971	AG1-466 C	2.64	80|50	2.64
965972	AG1-466 E	1.76	80|50	1.76
965981	AG1-467 C	1.71	80|50	1.71
965982	AG1-467 E	1.14	80|50	1.14
966001	AG1-469 C	1.43	80|50	1.43
966002	AG1-469 E	0.95	80|50	0.95
966331	AG1-502 C	27.04	80|50	27.04
966332	AG1-502 E	18.02	80|50	18.02
966341	AG1-503 C	6.76	80|50	6.76
966342	AG1-503 E	4.51	80|50	4.51
966501	AG1-519 C	0.9	Adder	1.06
966502	AG1-519 E	0.6	Adder	0.71
LTFEXP_AA2-074	LTFEXP_AA2-074->LTFIMP_AA2-074	0.0961	Confirmed LTF	0.0961
LTFEXP_CBM-S1	LTFEXP_CBM-S1->LTFIMP_CBM-S1	0.0704	LTF/CBM	0.0704
LTFEXP_CBM-S2	LTFEXP_CBM-S2->LTFIMP_CBM-S2	2.2779	LTF/CBM	2.2779
LTFEXP_CBM-W1	LTFEXP_CBM-W1->LTFIMP_CBM-W1	1.9316	LTF/CBM	1.9316
LTFEXP_CBM-W2	LTFEXP_CBM-W2->LTFIMP_CBM-W2	1.5476	LTF/CBM	1.5476
LTFEXP_CPLE	LTFEXP_CPLE->LTFIMP_CPLE	0.1447	Confirmed LTF	0.1447
LTFEXP_G-007	LTFEXP_G-007->LTFIMP_G-007	0.2577	LTF/CMTX NF	0.2577

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
LTFEXP_LAGN	LTFEXP_LAGN->LTFIMP_LAGN	0.3234	Confirmed LTF	0.3234
LTFEXP_LGE-0012019	LTFEXP_LGE-0012019->LTFIMP_LGE-0012019	0.0119	Confirmed LTF	0.0119
LTFEXP_LGEE	LTFEXP_LGEE->LTFIMP_LGEE	0.0992	Confirmed LTF	0.0992
LTFEXP_MEC	LTFEXP_MEC->LTFIMP_MEC	0.2472	Confirmed LTF	0.2472
LTFEXP_NY	LTFEXP_NY->LTFIMP_NY	0.114	Confirmed LTF	0.114
LTFEXP_O-066	LTFEXP_O-066->LTFIMP_O-066	1.6367	LTF/CMTX NF	1.6367
LTFEXP_SIGE	LTFEXP_SIGE->LTFIMP_SIGE	0.0166	Confirmed LTF	0.0166
LTFEXP_TVA	LTFEXP_TVA->LTFIMP_TVA	0.2679	Confirmed LTF	0.2679
LTFEXP_WEC	LTFEXP_WEC->LTFIMP_WEC	0.0459	Confirmed LTF	0.0459

11.6.3 Index 3

ID	FROM BUS#	FROM BUS	FROM BUS AREA	TO BUS#	TO BUS	TO BUS AREA	CKT ID	CONT NAME	Type	Rating MVA	PRE PROJECT LOADING %	POST PROJECT LOADING %	AC|DC	MW IMPACT
167000694	314815	3OAK GRE	DVP	313703	3UNIONVILLE	DVP	1	DVP_P7-1: LN 2-2199-A	tower	301.0	96.94	100.19	AC	11.26

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
925671	**AC1-043 C (Suspended)**	**21.4**	**80|50**	**21.4**
925672	**AC1-043 E (Suspended)**	**34.92**	**80|50**	**34.92**
926001	AC1-076 C	-6.04	Adder	-7.11
926481	**AC1-120 C O1 (Suspended)**	**22.3**	**80|50**	**22.3**
926482	**AC1-120 E O1 (Suspended)**	**11.49**	**80|50**	**11.49**
926501	**AC1-121 C O1 (Suspended)**	**7.66**	**80|50**	**7.66**
926502	**AC1-121 E O1 (Suspended)**	**3.6**	**80|50**	**3.6**
934861	AD1-115 C	10.7	80|50	10.7
934862	AD1-115 E	17.46	80|50	17.46
941381	AE2-134	-4.16	Adder	-4.89
964282	AG1-289 BAT	14.95	80|50	14.95
965971	AG1-466 C	2.64	80|50	2.64
965972	AG1-466 E	1.76	80|50	1.76
965981	AG1-467 C	1.71	80|50	1.71
965982	AG1-467 E	1.14	80|50	1.14
966001	AG1-469 C	1.43	80|50	1.43
966002	AG1-469 E	0.95	80|50	0.95
966331	AG1-502 C	27.04	80|50	27.04
966332	AG1-502 E	18.02	80|50	18.02
966341	AG1-503 C	6.76	80|50	6.76
966342	AG1-503 E	4.51	80|50	4.51
966501	AG1-519 C	0.9	Adder	1.06
966502	AG1-519 E	0.6	Adder	0.71
LTFEXP_AA2-074	LTFEXP_AA2-074->LTFIMP_AA2-074	0.0961	Confirmed LTF	0.0961
LTFEXP_CBM-S1	LTFEXP_CBM-S1->LTFIMP_CBM-S1	0.0704	LTF/CBM	0.0704
LTFEXP_CBM-S2	LTFEXP_CBM-S2->LTFIMP_CBM-S2	2.2779	LTF/CBM	2.2779
LTFEXP_CBM-W1	LTFEXP_CBM-W1->LTFIMP_CBM-W1	1.9316	LTF/CBM	1.9316
LTFEXP_CBM-W2	LTFEXP_CBM-W2->LTFIMP_CBM-W2	1.5476	LTF/CBM	1.5476
LTFEXP_CPLE	LTFEXP_CPLE->LTFIMP_CPLE	0.1447	Confirmed LTF	0.1447
LTFEXP_G-007	LTFEXP_G-007->LTFIMP_G-007	0.2577	LTF/CMTX NF	0.2577

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
LTFEXP_LAGN	LTFEXP_LAGN->LTFIMP_LAGN	0.3234	Confirmed LTF	0.3234
LTFEXP_LGE-0012019	LTFEXP_LGE-0012019->LTFIMP_LGE-0012019	0.0119	Confirmed LTF	0.0119
LTFEXP_LGEE	LTFEXP_LGEE->LTFIMP_LGEE	0.0992	Confirmed LTF	0.0992
LTFEXP_MEC	LTFEXP_MEC->LTFIMP_MEC	0.2472	Confirmed LTF	0.2472
LTFEXP_NY	LTFEXP_NY->LTFIMP_NY	0.114	Confirmed LTF	0.114
LTFEXP_O-066	LTFEXP_O-066->LTFIMP_O-066	1.6367	LTF/CMTX NF	1.6367
LTFEXP_SIGE	LTFEXP_SIGE->LTFIMP_SIGE	0.0166	Confirmed LTF	0.0166
LTFEXP_TVA	LTFEXP_TVA->LTFIMP_TVA	0.2679	Confirmed LTF	0.2679
LTFEXP_WEC	LTFEXP_WEC->LTFIMP_WEC	0.0459	Confirmed LTF	0.0459

11.6.4 Index 4

ID	FROM BUS#	FROM BUS	FROM BUS AREA	TO BUS#	TO BUS	TO BUS AREA	CKT ID	CONT NAME	Type	Rating MVA	PRE PROJECT LOADING %	POST PROJECT LOADING %	AC|DC	MW IMPACT
167000578	313703	3UNIONVILLE	DVP	314764	3LOCST G	DVP	1	DVP_P7-1: LN 2-2199-A	tower	235.0	120.88	125.03	AC	11.26

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
925671	**AC1-043 C (Suspended)**	**21.4**	**80|50**	**21.4**
925672	**AC1-043 E (Suspended)**	**34.92**	**80|50**	**34.92**
926001	AC1-076 C	-6.04	Adder	-7.11
926481	**AC1-120 C O1 (Suspended)**	**22.3**	**80|50**	**22.3**
926482	**AC1-120 E O1 (Suspended)**	**11.49**	**80|50**	**11.49**
926501	**AC1-121 C O1 (Suspended)**	**7.66**	**80|50**	**7.66**
926502	**AC1-121 E O1 (Suspended)**	**3.6**	**80|50**	**3.6**
934861	AD1-115 C	10.7	80|50	10.7
934862	AD1-115 E	17.46	80|50	17.46
941381	AE2-134	-4.16	Adder	-4.89
964282	AG1-289 BAT	14.95	80|50	14.95
965971	AG1-466 C	2.64	80|50	2.64
965972	AG1-466 E	1.76	80|50	1.76
965981	AG1-467 C	1.71	80|50	1.71
965982	AG1-467 E	1.14	80|50	1.14
966001	AG1-469 C	1.43	80|50	1.43
966002	AG1-469 E	0.95	80|50	0.95
966331	AG1-502 C	27.04	80|50	27.04
966332	AG1-502 E	18.02	80|50	18.02
966341	AG1-503 C	6.76	80|50	6.76
966342	AG1-503 E	4.51	80|50	4.51
966501	AG1-519 C	0.9	Adder	1.06
966502	AG1-519 E	0.6	Adder	0.71
LTFEXP_AA2-074	LTFEXP_AA2-074->LTFIMP_AA2-074	0.0961	Confirmed LTF	0.0961
LTFEXP_CBM-S1	LTFEXP_CBM-S1->LTFIMP_CBM-S1	0.0704	LTF/CBM	0.0704
LTFEXP_CBM-S2	LTFEXP_CBM-S2->LTFIMP_CBM-S2	2.2779	LTF/CBM	2.2779
LTFEXP_CBM-W1	LTFEXP_CBM-W1->LTFIMP_CBM-W1	1.9316	LTF/CBM	1.9316
LTFEXP_CBM-W2	LTFEXP_CBM-W2->LTFIMP_CBM-W2	1.5476	LTF/CBM	1.5476
LTFEXP_CPLE	LTFEXP_CPLE->LTFIMP_CPLE	0.1447	Confirmed LTF	0.1447
LTFEXP_G-007	LTFEXP_G-007->LTFIMP_G-007	0.2577	LTF/CMTX NF	0.2577

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
LTFEXP_LAGN	LTFEXP_LAGN->LTFIMP_LAGN	0.3234	Confirmed LTF	0.3234
LTFEXP_LGE-0012019	LTFEXP_LGE-0012019->LTFIMP_LGE-0012019	0.0119	Confirmed LTF	0.0119
LTFEXP_LGEE	LTFEXP_LGEE->LTFIMP_LGEE	0.0992	Confirmed LTF	0.0992
LTFEXP_MEC	LTFEXP_MEC->LTFIMP_MEC	0.2472	Confirmed LTF	0.2472
LTFEXP_NY	LTFEXP_NY->LTFIMP_NY	0.114	Confirmed LTF	0.114
LTFEXP_O-066	LTFEXP_O-066->LTFIMP_O-066	1.6367	LTF/CMTX NF	1.6367
LTFEXP_SIGE	LTFEXP_SIGE->LTFIMP_SIGE	0.0166	Confirmed LTF	0.0166
LTFEXP_TVA	LTFEXP_TVA->LTFIMP_TVA	0.2679	Confirmed LTF	0.2679
LTFEXP_WEC	LTFEXP_WEC->LTFIMP_WEC	0.0459	Confirmed LTF	0.0459

11.6.5 Index 5

ID	FROM BUS#	FROM BUS	FROM BUS AREA	TO BUS#	TO BUS	TO BUS AREA	CKT ID	CONT NAME	Type	Rating MVA	PRE PROJECT LOADING %	POST PROJECT LOADING %	AC|DC	MW IMPACT
167000559	314761	3PINE GLADE	DVP	314778	3PAY TAP	DVP	1	DVP_P7-1: LN 2-2199-A	tower	260.0	133.0	137.28	AC	11.26

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
925671	**AC1-043 C (Suspended)**	**21.4**	**80|50**	**21.4**
925672	**AC1-043 E (Suspended)**	**34.92**	**80|50**	**34.92**
926001	AC1-076 C	16.69	80|50	16.69
926002	AC1-076 E	27.14	80|50	27.14
926481	**AC1-120 C O1 (Suspended)**	**22.3**	**80|50**	**22.3**
926482	**AC1-120 E O1 (Suspended)**	**11.49**	**80|50**	**11.49**
926501	**AC1-121 C O1 (Suspended)**	**7.66**	**80|50**	**7.66**
926502	**AC1-121 E O1 (Suspended)**	**3.6**	**80|50**	**3.6**
934861	AD1-115 C	10.7	80|50	10.7
934862	AD1-115 E	17.46	80|50	17.46
941381	AE2-134	11.5	80|50	11.5
964282	AG1-289 BAT	14.95	80|50	14.95
965971	AG1-466 C	2.64	80|50	2.64
965972	AG1-466 E	1.76	80|50	1.76
965981	AG1-467 C	1.71	80|50	1.71
965982	AG1-467 E	1.14	80|50	1.14
966001	AG1-469 C	1.43	80|50	1.43
966002	AG1-469 E	0.95	80|50	0.95
966331	AG1-502 C	27.04	80|50	27.04
966332	AG1-502 E	18.02	80|50	18.02
966341	AG1-503 C	6.76	80|50	6.76
966342	AG1-503 E	4.51	80|50	4.51
966501	AG1-519 C	0.9	Adder	1.06
966502	AG1-519 E	0.6	Adder	0.71
LTFEXP_AA2-074	LTFEXP_AA2-074->LTFIMP_AA2-074	0.0961	Confirmed LTF	0.0961
LTFEXP_CBM-S1	LTFEXP_CBM-S1->LTFIMP_CBM-S1	0.0704	LTF/CBM	0.0704
LTFEXP_CBM-S2	LTFEXP_CBM-S2->LTFIMP_CBM-S2	2.2779	LTF/CBM	2.2779
LTFEXP_CBM-W1	LTFEXP_CBM-W1->LTFIMP_CBM-W1	1.9316	LTF/CBM	1.9316
LTFEXP_CBM-W2	LTFEXP_CBM-W2->LTFIMP_CBM-W2	1.5476	LTF/CBM	1.5476
LTFEXP_CPLE	LTFEXP_CPLE->LTFIMP_CPLE	0.1447	Confirmed LTF	0.1447
LTFEXP_G-007	LTFEXP_G-007->LTFIMP_G-007	0.2577	LTF/CMTX NF	0.2577

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
LTFEXP_LAGN	LTFEXP_LAGN->LTFIMP_LAGN	0.3234	Confirmed LTF	0.3234
LTFEXP_LGE-0012019	LTFEXP_LGE-0012019->LTFIMP_LGE-0012019	0.0119	Confirmed LTF	0.0119
LTFEXP_LGEE	LTFEXP_LGEE->LTFIMP_LGEE	0.0992	Confirmed LTF	0.0992
LTFEXP_MEC	LTFEXP_MEC->LTFIMP_MEC	0.2472	Confirmed LTF	0.2472
LTFEXP_NY	LTFEXP_NY->LTFIMP_NY	0.114	Confirmed LTF	0.114
LTFEXP_O-066	LTFEXP_O-066->LTFIMP_O-066	1.6367	LTF/CMTX NF	1.6367
LTFEXP_SIGE	LTFEXP_SIGE->LTFIMP_SIGE	0.0166	Confirmed LTF	0.0166
LTFEXP_TVA	LTFEXP_TVA->LTFIMP_TVA	0.2679	Confirmed LTF	0.2679
LTFEXP_WEC	LTFEXP_WEC->LTFIMP_WEC	0.0459	Confirmed LTF	0.0459

11.6.6 Index 6

ID	FROM BUS#	FROM BUS	FROM BUS AREA	TO BUS#	TO BUS	TO BUS AREA	CKT ID	CONT NAME	Type	Rating MVA	PRE PROJECT LOADING %	POST PROJECT LOADING %	AC|DC	MW IMPACT
167000557	926000	AC1-076 TAP	DVP	314761	3PINE GLADE	DVP	1	DVP_P7-1: LN 2-2199-A	tower	260.0	133.0	137.28	AC	11.26

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
925671	**AC1-043 C (Suspended)**	**21.4**	**80|50**	**21.4**
925672	**AC1-043 E (Suspended)**	**34.92**	**80|50**	**34.92**
926001	AC1-076 C	16.69	80|50	16.69
926002	AC1-076 E	27.14	80|50	27.14
926481	**AC1-120 C O1 (Suspended)**	**22.3**	**80|50**	**22.3**
926482	**AC1-120 E O1 (Suspended)**	**11.49**	**80|50**	**11.49**
926501	**AC1-121 C O1 (Suspended)**	**7.66**	**80|50**	**7.66**
926502	**AC1-121 E O1 (Suspended)**	**3.6**	**80|50**	**3.6**
934861	AD1-115 C	10.7	80|50	10.7
934862	AD1-115 E	17.46	80|50	17.46
941381	AE2-134	11.5	80|50	11.5
964282	AG1-289 BAT	14.95	80|50	14.95
965971	AG1-466 C	2.64	80|50	2.64
965972	AG1-466 E	1.76	80|50	1.76
965981	AG1-467 C	1.71	80|50	1.71
965982	AG1-467 E	1.14	80|50	1.14
966001	AG1-469 C	1.43	80|50	1.43
966002	AG1-469 E	0.95	80|50	0.95
966331	AG1-502 C	27.04	80|50	27.04
966332	AG1-502 E	18.02	80|50	18.02
966341	AG1-503 C	6.76	80|50	6.76
966342	AG1-503 E	4.51	80|50	4.51
966501	AG1-519 C	0.9	Adder	1.06
966502	AG1-519 E	0.6	Adder	0.71
LTFEXP_AA2-074	LTFEXP_AA2-074->LTFIMP_AA2-074	0.0961	Confirmed LTF	0.0961
LTFEXP_CBM-S1	LTFEXP_CBM-S1->LTFIMP_CBM-S1	0.0704	LTF/CBM	0.0704
LTFEXP_CBM-S2	LTFEXP_CBM-S2->LTFIMP_CBM-S2	2.2779	LTF/CBM	2.2779
LTFEXP_CBM-W1	LTFEXP_CBM-W1->LTFIMP_CBM-W1	1.9316	LTF/CBM	1.9316
LTFEXP_CBM-W2	LTFEXP_CBM-W2->LTFIMP_CBM-W2	1.5476	LTF/CBM	1.5476
LTFEXP_CPLE	LTFEXP_CPLE->LTFIMP_CPLE	0.1447	Confirmed LTF	0.1447
LTFEXP_G-007	LTFEXP_G-007->LTFIMP_G-007	0.2577	LTF/CMTX NF	0.2577

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
LTFEXP_LAGN	LTFEXP_LAGN->LTFIMP_LAGN	0.3234	Confirmed LTF	0.3234
LTFEXP_LGE-0012019	LTFEXP_LGE-0012019->LTFIMP_LGE-0012019	0.0119	Confirmed LTF	0.0119
LTFEXP_LGEE	LTFEXP_LGEE->LTFIMP_LGEE	0.0992	Confirmed LTF	0.0992
LTFEXP_MEC	LTFEXP_MEC->LTFIMP_MEC	0.2472	Confirmed LTF	0.2472
LTFEXP_NY	LTFEXP_NY->LTFIMP_NY	0.114	Confirmed LTF	0.114
LTFEXP_O-066	LTFEXP_O-066->LTFIMP_O-066	1.6367	LTF/CMTX NF	1.6367
LTFEXP_SIGE	LTFEXP_SIGE->LTFIMP_SIGE	0.0166	Confirmed LTF	0.0166
LTFEXP_TVA	LTFEXP_TVA->LTFIMP_TVA	0.2679	Confirmed LTF	0.2679
LTFEXP_WEC	LTFEXP_WEC->LTFIMP_WEC	0.0459	Confirmed LTF	0.0459

11.7 Queue Dependencies

The Queue Projects below are listed in one or more indices for the overloads identified in your report. These projects contribute to the loading of the overloaded facilities identified in your report. The percent overload of a facility and cost allocation you may have towards a particular reinforcement could vary depending on the action of these earlier projects. The status of each project at the time of the analysis is presented in the table. This list may change as earlier projects withdraw or modify their requests.

Queue Number	Project Name	Status
AA2-074	CPLE-PJM	Confirmed
AC1-043	Mountain Run-Mitchell 115 kV	Suspended
AC1-076	Locust Grove-Paytes 115kV	Engineering and Procurement
AC1-120	Mitchell-Mountain Run 115kV	Suspended
AC1-121	Mitchell-Mountain Run 115kV	Suspended
AD1-115	Mountain Run-Mitchell 115 kV	Active
AE2-134	Locust Grove-Paytes 115 kV	Engineering and Procurement
AG1-289	Lake of the Woods DP-Wilderness DP 115 kV	Active
AG1-466	Orange 34.5 kV	Active
AG1-467	Somerset 34.5 kV	Active
AG1-469	Gordonsville 34.5 kV	Active
AG1-502	Oak Green 115 kV	Active
AG1-503	Oak Green 115 kV	Active
AG1-519	Cash's Corner 230 kV	Active

11.8 Contingency Descriptions

Contingency Name	Contingency Definition
DVP_P1-2: LN 2199	CONTINGENCY 'DVP_P1-2: LN 2199' OPEN BRANCH FROM BUS 313897 TO BUS 939220 CKT 1 /* 6LUCKYHILL 230.00 - AE1-153 TAP 230.00 OPEN BRANCH FROM BUS 314758 TO BUS 939220 CKT 1 /* 6GORDNVL 230.00 - AE1-153 TAP 230.00 OPEN BUS 939220 /* ISLAND: AE1-153 TAP 230.00 OPEN BUS 939221 /* ISLAND: AE1-153 MAIN230.00 OPEN BUS 939222 /* ISLAND: AE1-153 COL134.500 OPEN BUS 939223 /* ISLAND: AE1-153 COL234.500 OPEN BUS 939224 /* ISLAND: AE1-153 TER 13.800 OPEN BUS 939225 /* ISLAND: AE1-153 C 0.6300 OPEN BUS 939226 /* ISLAND: AE1-153 E 0.6300 END
314758 6GORDNVL 230 939220 AE1-153 TAP 230 1	contingency '314758 6GORDNVL 230 939220 AE1-153 TAP 230 1 ' open branch from bus 314758 to bus 939220 ckt 1 end

12 Summer Peak - Load Flow Analysis - Secondary POI

The Queue Project AG1-503 was evaluated as a 20.0 MW injection (Capacity 16.00 MW) as an uprate to AG1-502 which is a tap at the Mitchell DP - Oak Green 115 kV line in the Dominion area. Project AG1-503 was evaluated for compliance with applicable reliability planning criteria (PJM, NERC, NERC Regional Reliability Councils, and Transmission Owners). Project AG1-503 was studied with a commercial probability of 53.0 %. Potential network impacts were as follows:

12.1 Generation Deliverability

(Single or N-1 contingencies)

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
7	314232	6NO ANNA	230.0	DVP	961810	AG1-023 TAP	230.0	DVP	1	DVP_P1-2: LN 2199	single	749.2	99.97	100.26	AC	2.28
8	314232	6NO ANNA	230.0	DVP	961810	AG1-023 TAP	230.0	DVP	1	314758 6GORDNVL 230 939220 AE1-153 TAP 230 1	single	749.2	99.96	100.26	AC	2.28

12.2 Multiple Facility Contingency

(Double Circuit Tower Line, Fault with a Stuck Breaker, and Bus Fault contingencies)

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
9	314764	3LOCST G	115.0	DVP	926000	AC1-076 TAP	115.0	DVP	1	DVP_P7-1: LN 70-2199-B	tower	260.0	98.77	102.52	AC	11.26
10	314778	3PAY TAP	115.0	DVP	314755	3SPOTSYL	115.0	DVP	1	DVP_P4-2: 2T70	breaker	260.0	99.7	103.86	AC	10.98
11	314815	3OAK GRE	115.0	DVP	313703	3UNIONVILLE	115.0	DVP	1	DVP_P7-1: LN 2-2199-A	tower	301.0	96.94	100.19	AC	11.26

12.3 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)

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
12	313703	3UNIONVILLE	115.0	DVP	314764	3LOCST G	115.0	DVP	1	DVP_P7-1: LN 2-2199-A	tower	235.0	120.89	125.04	AC	11.26
13	313703	3UNIONVILLE	115.0	DVP	314764	3LOCST G	115.0	DVP	1	DVP_P7-1: LN 70-2199-B	tower	235.0	109.74	113.89	AC	11.26
14	313703	3UNIONVILLE	115.0	DVP	314764	3LOCST G	115.0	DVP	1	DVP_P4-2: 2T70	breaker	235.0	103.05	107.66	AC	10.98

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
15	314761	3PINE GLADE	115.0	DVP	314778	3PAY TAP	115.0	DVP	1	DVP_P7-1: LN 2-2199-A	tower	260.0	133.0	137.28	AC	11.26
16	314761	3PINE GLADE	115.0	DVP	314778	3PAY TAP	115.0	DVP	1	DVP_P7-1: LN 70-2199-B	tower	260.0	122.94	127.21	AC	11.26
17	314761	3PINE GLADE	115.0	DVP	314778	3PAY TAP	115.0	DVP	1	DVP_P4-2: 2T70	breaker	260.0	117.28	121.45	AC	10.98
18	314764	3LOCST G	115.0	DVP	926000	AC1-076 TAP	115.0	DVP	1	DVP_P7-1: LN 2-2199-A	tower	260.0	108.84	112.59	AC	11.26
19	314778	3PAY TAP	115.0	DVP	314755	3SPOTSYL	115.0	DVP	1	DVP_P7-1: LN 2-2199-A	tower	260.0	115.42	119.69	AC	11.26
20	314778	3PAY TAP	115.0	DVP	314755	3SPOTSYL	115.0	DVP	1	DVP_P7-1: LN 70-2199-B	tower	260.0	105.35	109.62	AC	11.26
21	926000	AC1-076 TAP	115.0	DVP	314761	3PINE GLADE	115.0	DVP	1	DVP_P7-1: LN 2-2199-A	tower	260.0	133.0	137.28	AC	11.26
22	926000	AC1-076 TAP	115.0	DVP	314761	3PINE GLADE	115.0	DVP	1	DVP_P7-1: LN 70-2199-B	tower	260.0	122.94	127.21	AC	11.26
23	926000	AC1-076 TAP	115.0	DVP	314761	3PINE GLADE	115.0	DVP	1	DVP_P4-2: 2T70	breaker	260.0	117.28	121.45	AC	10.98

12.4 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
24	313703	3UNIONVILLE	115.0	DVP	314764	3LOCST G	115.0	DVP	1	DVP_P1-2: LN 2-A	operation	191.8	125.84	131.48	AC	10.98
25	314761	3PINE GLADE	115.0	DVP	314778	3PAY TAP	115.0	DVP	1	DVP_P1-2: LN 2-A	operation	212.4	143.13	148.23	AC	10.98
26	314764	3LOCST G	115.0	DVP	926000	AC1-076 TAP	115.0	DVP	1	DVP_P1-2: LN 2-A	operation	212.4	113.07	118.17	AC	10.98

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
27	314778	3PAY TAP	115.0	DVP	314755	3SPOTSYL	115.0	DVP	1	DVP_P1-2: LN 2-A	operation	212.4	121.62	126.71	AC	10.98
28	314815	3OAK GRE	115.0	DVP	313703	3UNIONVILLE	115.0	DVP	1	DVP_P1-2: LN 2-A	operation	224.7	110.83	115.66	AC	10.98
29	314815	3OAK GRE	115.0	DVP	314769	3ORANGE	115.0	DVP	1	DVP_P1-2: LN 255-E	operation	224.7	103.63	105.09	AC	6.33
30	314815	3OAK GRE	115.0	DVP	314769	3ORANGE	115.0	DVP	1	DVP_P1-2: LN 255-D-1	operation	224.7	99.95	101.39	AC	6.33
31	314815	3OAK GRE	115.0	DVP	966330	AG1-502 TAP	115.0	DVP	1	DVP_P1-2: LN 255-D-1	operation	217.1	137.47	146.46	AC	20.00
32	926000	AC1-076 TAP	115.0	DVP	314761	3PINE GLADE	115.0	DVP	1	DVP_P1-2: LN 2-A	operation	212.4	143.13	148.23	AC	10.98

13 Short Circuit Analysis

The following Breakers are overdutied:

None.

13.1 System Reinforcements - Short Circuit

None.

14 Affected Systems

None.

15 Attachment 1: One Line Diagram