Generation Interconnection

Feasibility Study Report

for

Queue Project AG1-529

FARMVIEW 138 KV

48.9 MW Capacity / 75 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 DPL.

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 generating facility located in Sussex County, Delaware. The installed facilities will have a total capability of 75 MW with 48.9 MW of this output being recognized by PJM as Capacity. The proposed in-service date for this project is December 31, 2023. This study does not imply a TO commitment to this in-service date.

Queue Number	**AG1-529**
Project Name	FARMVIEW 138 KV
State	Delaware
County	Sussex
Transmission Owner	DPL
MFO	75
MWE	75
MWC	48.9
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

AG1-529 will interconnect with the DPL system via a new 138kV terminal position at the Farmview Substation.

5 Cost Summary

The AG1-529 project will be responsible for the following costs:

Description	Total Cost
Total Physical Interconnection Costs	$4,250,000
Total System Network Upgrade Costs	$246,468,315
Total Costs	$250,718,315

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 88-129. 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

Relocate breaker 133 to install a new 138kV breaker and terminal position at the Farmview Substation

Major Equipment:

- One (1) 3000A 138 kV circuit breaker
- Three (3) 3000A 138 kV disconnect switches
- Associated Bus work
- Three Relay Panels
- FL & BU Bus relays
- Two (2) breaker control relays

Estimated Cost: $4,250,000

Estimate Assumptions:

- Any additional land required will be provided by IC and is not included in the cost estimate
- Site prep to be performed by IC if additional land required
- Existing control house can accommodate necessary relaying equipment.

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

Description	Total Cost
Total Physical Interconnection Costs	$4,250,000

7 Schedule

Design, procurement and construction of the new terminal position will take approximately 24-30 months from the date of execution of an ISA

8 Transmission Owner Analysis

None

9 Interconnection Customer Requirements

9.1 Required Relaying and Communications

Front line and back-up line protection will be required. One relay panel for each new terminal will be required for front line and back-up protection

A breaker control relay on a breaker control panel will be required for the control and operation of each new 230 kV circuit breaker

9.2 Interconnection Customer Scope of Direct Connection Work

The IC is responsible for all design and construction related to activities on their side of the Point of Interconnection. Site preparation, including grading and an access road, as necessary, is assumed to be by the IC. Route selection, line design, and right-of-way acquisition of the direct connect facilities is not included in this report and is the responsibility of the IC. Protective relaying and metering design and installation must comply with DPL's applicable standards. The IC is also required to provide revenue metering and real-time telemetering data to PJM in conformance with the requirements contained in PJM Manuals M-01 and M-14 and the PJM Tariff.

9.3 DPL Interconnection Customer Scope of Direct Connection Work Requirements

DPL requires that an IC circuit breaker is located within 500 feet of the DPL substation to facilitate the relay protection scheme between DPL and the IC at the Point of Interconnection (POI).

9.4 Special Operating Requirements

1. DPL will require the capability to remotely disconnect the generator from the grid by communication from its System Operations facility. Such disconnection may be facilitated by a generator breaker, or other method depending upon the specific circumstances and the evaluation by DPL.

2. DPL reserves the right to charge the Interconnection Customer operation and maintenance expenses to maintain the Interconnection Customer attachment facilities, including metering and telecommunications facilities, owned by DPL.

3. Interconnection Customer shall design its non-synchronous generation facility with the ability to maintain a power factor between 0.95 leading and 0.95 lagging measured at the generator terminals.

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:

- Temperature (degrees Fahrenheit)
- Atmospheric pressure (hectopascals)
- Irradiance
- Forced outage data

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/

Metering requirements are as follows:

A three phase 138 kV revenue metering point will need to be established within the Interconnection Customer Facilities at the Point of Interconnection. The Interconnection Customer will purchase and install all metering instrument transformers as well as construct a metering structure per the DPL's specifications. The secondary wiring connections at the instrument transformers will be completed by the Interconnection Customer and inspected by DPL, while the connections at the metering enclosure will be completed by the DPL. The metering control cable and meter cabinets will be supplied by the DPL and installed by the Interconnection Customer. The Interconnection Customer will install conduit for the control cable between the instrument transformers and the metering enclosure. The location of the metering enclosure will be determined during

construction. The Interconnection Customer will provide 120V power to the meter cabinet. The DPL will provide, program, install, and own the primary & backup solid state multi-function meters for the new metering position.

Each meter will be equipped with load profile, telemetry, and DNP outputs. The Interconnection Customer will be provided with one-meter DNP output for each meter. DPL will supply a wireless modem for MV90 interrogation. In the event that a wireless modem is unable to reliably communicate, the IC will be required to make provisions for a POTS (Plain Old Telephone Service) line or equivalent technology approved by DPL within approximately three feet of the DPL metering position to facilitate remote interrogation and data collection. It is the Interconnection Customer's responsibility to send the data that PJM and DPL require directly to PJM. The Interconnection Customer will grant permission for PJM to send DPL the following telemetry that the Interconnection Customer sends to PJM: real time MW, MVAR, volts, amperes, generator status, and interval MWH and MVARH.

DPL's revenue meters will be the official meters and must be the source for reporting generation output to PJM. The Interconnection Customer is responsible for installing telemetry equipment necessary to obtain the revenue meter data and submitting the data to PJM.

11 Summer Peak - Load Flow Analysis

The Queue Project AG1-529 was evaluated as a 75.0 MW (Capacity 48.9 MW) injection in the DPL area. Project AG1-529 was evaluated for compliance with applicable reliability planning criteria (PJM, NERC, NERC Regional Reliability Councils, and Transmission Owners). Project AG1-529 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)

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
165450096	231003	KEEN_230	230.0	DP&L	231002	HARMONY	230.0	DP&L	2	DPL_P7_1_DBL_3NC	tower	804.0	107.82	108.29	DC	8.35
165168139	232003	CARTANZA	230.0	DP&L	232013	SILVER RUN	230.0	PJM	1	DPL_P7_1_DBL_1NCB_FSA	tower	790.0	190.64	192.05	DC	24.85
168040908	232003	CARTANZA	230.0	DP&L	232013	SILVER RUN	230.0	PJM	1	Base Case	single	650.0	100.89	102.56	DC	11.13
168040875	232004	MILF_230	230.0	DP&L	232000	STEELE	230.0	DP&L	1	CKT 23032B	single	550.0	101.45	104.56	DC	17.53
165168194	232012	HOPE CREEK	230.0	PJM	200029	HOPE CRK	500.0	PSE&G	1	DPL_P7_1_DBL_4NC	tower	1117.0	146.43	149.65	DC	36.17
166855949	232100	CHURCH	138.0	DP&L	232107	TOWNSEND	138.0	DP&L	1	DPL_P7_1_DBL_1NCB_FSA	tower	348.0	198.93	200.55	DC	12.97
166855959	232106	MIDLTNTP	138.0	DP&L	232104	MT PLSNT	138.0	DP&L	1	DPL_P7_1_DBL_1NCB_FSA	tower	348.0	179.21	180.83	DC	12.97
166855944	232107	TOWNSEND	138.0	DP&L	232106	MIDLTNTP	138.0	DP&L	1	DPL_P7_1_DBL_1NCB_FSA	tower	348.0	204.67	206.29	DC	12.97

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
167764939	200051	ROCKSPGS	500.0	PJM	200065	PCHBTM2S	500.0	PECO	1	JC-P1-2-JCC-500-003	operation	2905.0	140.82	141.42	DC	37.98

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
168040953	231000	CLAY_230	230.0	DP&L	214235	LINWOOD 84	230.0	PECO	1	PECO_P1-2_220-85/* $ DELCO $ 220-85 $ LC	operation	804.0	156.69	157.32	DC	11.01
168040957	231000	CLAY_230	230.0	DP&L	214235	LINWOOD 84	230.0	PECO	1	Base Case	operation	650.0	110.16	110.62	DC	6.57
168040964	231001	EDGEMR 5	230.0	DP&L	214236	LINWOOD 85	230.0	PECO	1	PECO_P1-2_220-84	operation	804.0	153.89	154.49	DC	10.65
168040984	231001	EDGEMR 5	230.0	DP&L	231000	CLAY_230	230.0	DP&L	1	PECO_P1-2_220-85/* $ DELCO $ 220-85 $ LC	operation	804.0	151.23	151.79	DC	9.79
168041174	231002	HARMONY	230.0	DP&L	231001	EDGEMR 5	230.0	DP&L	1	PECO_P1-2_5014/* $ CHESCO $ PECO_P1-2_5014 $ L	operation	924.0	118.48	119.27	DC	16.48
168041267	231003	KEEN_230	230.0	DP&L	231002	HARMONY	230.0	DP&L	2	PECO_P1-2_5014/* $ CHESCO $ PECO_P1-2_5014 $ L	operation	804.0	104.04	104.63	DC	10.64
168041141	231124	GLASGOW	138.0	DP&L	231130	CECIL138	138.0	DP&L	1	PECO_P1-2_5014/* $ CHESCO $ PECO_P1-2_5014 $ L	operation	378.0	124.35	125.14	DC	6.83
168041035	232000	STEELE	230.0	DP&L	231003	KEEN_230	230.0	DP&L	1	DPL_P1_2_AB2-037 KEENEY	operation	552.0	139.66	140.91	DC	15.45
168041197	232000	STEELE	230.0	DP&L	923960	AB2-037 TAP	230.0	DP&L	2	DPL_P1_2_CKT 23001	operation	727.0	114.56	115.69	DC	18.42
168040889	232002	CEDAR CK	230.0	DP&L	232013	SILVER RUN	230.0	PJM	1	CKT 23032B	operation	678.0	183.51	188.06	DC	35.35
168040891	232002	CEDAR CK	230.0	DP&L	232013	SILVER RUN	230.0	PJM	1	Base Case	operation	550.0	140.89	142.63	DC	26.63
168040904	232003	CARTANZA	230.0	DP&L	232013	SILVER RUN	230.0	PJM	1	DPL_P1_2_CKT 23031	operation	790.0	177.66	180.52	DC	22.75
168040905	232003	CARTANZA	230.0	DP&L	232013	SILVER RUN	230.0	PJM	1	Base Case	operation	650.0	177.22	179.83	DC	17.07
168040872	232004	MILF_230	230.0	DP&L	232000	STEELE	230.0	DP&L	1	CKT 23032B	operation	550.0	205.62	210.51	DC	26.88
168040874	232004	MILF_230	230.0	DP&L	232000	STEELE	230.0	DP&L	1	Base Case	operation	550.0	135.48	139.16	DC	20.27
168040969	232004	MILF_230	230.0	DP&L	232002	CEDAR CK	230.0	DP&L	1	CKT 23032B	operation	738.0	152.99	154.31	DC	21.88
168040971	232004	MILF_230	230.0	DP&L	232002	CEDAR CK	230.0	DP&L	1	Base Case	operation	650.0	100.51	101.54	DC	14.97
167765057	232012	HOPE CREEK	230.0	PJM	200029	HOPE CRK	500.0	PSE&G	1	PJM500_PS_P1-2_5015	operation	1117.0	118.87	120.12	DC	18.92
168041044	232013	SILVER RUN	230.0	PJM	231004	RL_230	230.0	DP&L	1	PJM500_PS_P1-2_HOPE-SILVER	operation	678.0	135.87	138.94	DC	20.93
168041167	232013	SILVER RUN	230.0	PJM	231004	RL_230	230.0	DP&L	2	PJM500_PS_P1-2_HOPE-SILVER	operation	790.0	117.04	119.67	DC	20.96
168041025	232100	CHURCH	138.0	DP&L	232107	TOWNSEND	138.0	DP&L	1	DPL_P1_2_AB2-037 KEENEY	operation	348.0	142.41	143.43	DC	8.87
168041026	232100	CHURCH	138.0	DP&L	232107	TOWNSEND	138.0	DP&L	1	Base Case	operation	280.0	138.63	139.69	DC	6.6
168041133	232106	MIDLTNTP	138.0	DP&L	232104	MT PLSNT	138.0	DP&L	1	DPL_P1_2_AB2-037 KEENEY	operation	348.0	125.35	126.38	DC	8.87
168041135	232106	MIDLTNTP	138.0	DP&L	232104	MT PLSNT	138.0	DP&L	1	Base Case	operation	273.0	120.33	121.42	DC	6.6
168040975	232107	TOWNSEND	138.0	DP&L	232106	MIDLTNTP	138.0	DP&L	1	Base Case	operation	273.0	152.78	153.87	DC	6.6
168040976	232107	TOWNSEND	138.0	DP&L	232106	MIDLTNTP	138.0	DP&L	1	DPL_P1_2_AB2-037 KEENEY	operation	348.0	150.81	151.84	DC	8.87

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
168041286	232109	CLAYTN_D	138.0	DP&L	232108	CEDAR138	138.0	DP&L	1	CKT 23032B	operation	296.0	97.77	102.33	DC	13.47
168041265	232112	FELTON	138.0	DP&L	232110	CHESWOLD	138.0	DP&L	1	DPL_P1_2_CKT 23031	operation	242.0	98.91	105.0	DC	14.85
168041207	232114	SHARNGTN	138.0	DP&L	232112	FELTON	138.0	DP&L	1	DPL_P1_2_CKT 23031	operation	242.0	107.63	113.72	DC	14.85
169803966	923960	AB2-037 TAP	230.0	DP&L	231003	KEEN_230	230.0	DP&L	2	DPL_P1_2_CKT 23001	operation	727.0	128.22	129.35	DC	18.42
169803968	923960	AB2-037 TAP	230.0	DP&L	231003	KEEN_230	230.0	DP&L	2	Base Case	operation	650.0	108.31	109.26	DC	13.79
168041152	962380	AG1-087 TAP	230.0	DP&L	232003	CARTANZA	230.0	DP&L	1	CKT 23030B	operation	804.0	119.79	123.32	DC	28.92

11.5 System Reinforcements - Summer Peak Load Flow - Primary POI

ID	Idx	Facility	Upgrade Description	Cost
165168194	4	HOPE CREEK 230.0 kV - HOPE CRK 500.0 kV Ckt 1	Facility owned by LS Power (2342) : This facility is owned by LS Power. LS Power, will not evaluate this violation until the impact study phase. Project Type : FAC Cost : $0 Time Estimate : Months r_PS_I025a_HC230500 (2391) : Upgrade Hope Creek 500/230kVkV transformer terminal equipment to achieve a SER of 1748 MVA Project Type : FAC Cost : $1,608,315 Time Estimate : 15.0 Months	$1,608,315
168040875	3	MILF_230 230.0 kV - STEELE 230.0 kV Ckt 1	dt23076r0001 (1327) : Rebuild Milford to Steele 230kV line (~23.5mi) with new poles, insulators, foundations, conductor and OPGW Project Type : FAC Cost : $54,000,000 Time Estimate : 48-60 Months	$54,000,000
168040908,165168139	2	CARTANZA 230.0 kV - SILVER RUN 230.0 kV Ckt 1	dt23032r0001 (1256) : Rebuild Cartanza - Silver Run 230 kV line Project Type : FAC Cost : $65,000,000 Time Estimate : 48-60 Months dt23032r0002 (1257) : Rebuild Cartanza - Silver Run 230 kV line Project Type : FAC Cost : $67,000,000 Time Estimate : 48-60 Months ds23032r0001 (1258) : Upgrade terminal equipment at Cartanza Substation (upgrade 3000A Breakers and CTs to 4000A) Project Type : FAC Cost : $1,000,000 Time Estimate : 12-18 Months ds23032r0002 (1316) : Upgrade relaying at Cartanza Project Type : FAC Cost : $300,000 Time Estimate : 12.0 Months	$133,300,000
165450096	1	KEEN_230 230.0 kV - HARMONY 230.0 kV Ckt 2	dt23010r0001 (1319) : Rebuild Harmony - Keeney 230kV line. Rebuild will include installation of new poles, foundations, insulators, and conductor (Bundled 1590 ACSR). Project Type : FAC Cost : $14,000,000 Time Estimate : 36-48 Months	$14,000,000

ID	Idx	Facility	Upgrade Description	Cost
166855944	7	TOWNSEND 138.0 kV - MIDLTNTP 138.0 kV Ckt 1	ds13808r0001 (1250) : Upgrade disconnect switch at Middletown Tap Project Type : FAC Cost : $100,000 Time Estimate : 12.0 Months ds13808r0003 (1311) : Upgrade terminal equipment at Townsend Substation Project Type : FAC Cost : $300,000 Time Estimate : 12.0 Months dt13808r0005 (1312) : Rebuild the 13808-1 line from Townsend - Middletown Tap with new poles, conductor, foundations, insulators, and OPGW. Terminal equipment at Townsend would also need to be upgraded Project Type : FAC Cost : $8,250,000 Time Estimate : 36-48 Months	$8,650,000
166855949	5	CHURCH 138.0 kV - TOWNSEND 138.0 kV Ckt 1	ds13833r0001 (1270) : To mitigate the (DP&L) CHURCH to TOWNSEND 138 kV line (from bus 232100 to bus 232107 ckt 1) overload will require substation reinforcements at Church Substation. Project Type : FAC Cost : $500,000 Time Estimate : 24-36 Months ds13833r0002 (1271) : To mitigate the (DP&L) CHURCH to TOWNSEND 138 kV line (from bus 232100 to bus 232107 ckt 1) overload will require substation reinforcements (on top of ds13833r001) at Church Substation. Project Type : FAC Cost : $200,000 Time Estimate : 24.0 Months ds13833r0003 (1272) : To mitigate the (DP&L) CHURCH to TOWNSEND 138 kV line (from bus 232100 to bus 232107 ckt 1) overload will require substation reinforcements (on top of ds13833r001, ds13833r002) at Church Substation. Project Type : FAC Cost : $100,000 Time Estimate : 12-18 Months dt13833r0001 (1273) : To mitigate the (DP&L) CHURCH to TOWNSEND 138 kV line (from bus 232100 to bus 232107 ckt 1) overload will require a rebuild of the 13833 Church to Townsend 138 kV Line along with substation reinforcements (on top of ds13833r001, ds13833r002, ds13833r003) at Church and Townsend Substations Project Type : FAC Cost : $26,000,000 Time Estimate : 48-60 Months	$26,800,000

ID	Idx	Facility	Upgrade Description	Cost
166855959	6	MIDLTNTP 138.0 kV - MT PLSNT 138.0 kV Ckt 1	ds13808r0001 (1250) : Upgrade disconnect switch at Middletown Tap Project Type : FAC Cost : $100,000 Time Estimate : 12.0 Months ds13808r0002 (1251) : Upgrade circuit breaker and associated Current Transformers and Switches from 2000A to 3000A at Mt. Pleasant Substation Project Type : FAC Cost : $400,000 Time Estimate : 12.0 Months dt13808r0003 (1292) : To mitigate the (DPL) Mt. Pleasant - Middletown Tap 138 kV line (from bus 232104 to 232106) overload is will require increasing the emergency rating of the line by rebuilding the line with new poles, conductor, foundations, insulators and OPGW. In addition, terminal upgrades will be required at Mt. Pleasant Project Type : FAC Cost : $7,500,000 Time Estimate : 36-48 Months ds13808r0004 (1317) : Upgrade line disconnect switch at Mt. Pleasant Substation Project Type : FAC Cost : $110,000 Time Estimate : 12.0 Months	$8,110,000
			TOTAL COST	**$246,468,315**

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
165450096	231003	KEEN_230	DP&L	231002	HARMONY	DP&L	2	DPL_P7_1_DBL_3NC	tower	804.0	107.82	108.29	DC	8.35

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
232404	W1-003 C	0.2490	50/50	0.2490
232405	W1-003 E	1.4646	50/50	1.4646
232406	W1-004 C	0.2490	50/50	0.2490
232407	W1-004 E	1.4646	50/50	1.4646
232408	W1-005 C	0.2490	50/50	0.2490
232409	W1-005 E	1.4646	50/50	1.4646
232410	W1-006 C	0.2490	50/50	0.2490
232411	W1-006 E	1.4646	50/50	1.4646
232412	X1-032 E	0.4744	50/50	0.4744
232417	X3-008 C	0.1423	50/50	0.1423
232418	X3-008 E	1.4713	50/50	1.4713
232423	X3-066 E	0.2275	Adder	0.27
232425	Y1-079 E	0.5518	Adder	0.65
232426	Y1-080 FULL	0.0241	50/50	0.0241
232427	Y1-080 E	0.2508	50/50	0.2508
232428	Y3-058 C	0.1065	50/50	0.1065
232429	Y3-058 E	0.7222	50/50	0.7222
232433	Z2-076 E	0.1976	Adder	0.23
232435	Z2-077 E	0.1976	Adder	0.23
232851	DUP-SFR1	0.9665	Adder	1.14
232907	VN8	2.9541	50/50	2.9541
232912	OH NUG1	0.6749	50/50	0.6749
232914	OH NUG3	0.6749	50/50	0.6749
232915	OH NUG4	0.6749	50/50	0.6749
232916	OH NUG5	0.6749	50/50	0.6749
232919	VN10	0.2174	50/50	0.2174
232922	**MR3 (Deactivation : 01/06/2021)**	**9.0246**	**Adder**	**10.62**
232926	CRISFLD1	0.1873	50/50	0.1873
233912	AB1-137 E	0.1763	Adder	0.21
233916	AB1-141 E	0.4540	Adder	0.53
233919	AB1-142 E	0.4540	Adder	0.53
233923	AA1-102 C	1.0675	50/50	1.0675
917082	CHERRYDALE E	1.2446	Adder	1.46
918835	AA1-102 E	11.0400	50/50	11.0400
919831	**AA2-069 (Suspended)**	**39.9029**	**Adder**	**46.94**
923921	AB2-032 C	0.9801	Adder	1.15
923922	AB2-032 E	0.4612	Adder	0.54
923951	AB2-036 C	3.1908	Adder	3.75
923952	AB2-036 E	5.2204	Adder	6.14
923961	AB2-037 C	10.5823	50/50	10.5823
923962	AB2-037 E	17.2876	50/50	17.2876
924681	AB2-120 C	3.8124	Adder	4.49

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
924682	AB2-120 E	6.2202	Adder	7.32
924781	AB2-130 C O1	3.1812	Adder	3.74
924782	AB2-130 E O1	5.1904	Adder	6.11
924801	AB2-133 C O1	1.6665	Adder	1.96
924802	AB2-133 E O1	2.1136	Adder	2.49
924821	AB2-135 C	2.1427	Adder	2.52
924822	AB2-135 E	2.4437	Adder	2.87
924831	AB2-136 C	2.9532	50/50	2.9532
924832	AB2-136 E	3.1318	50/50	3.1318
924971	AB2-153 C	0.5477	Adder	0.64
924972	AB2-153 E	0.8936	Adder	1.05
925151	AB2-172 C	2.2543	50/50	2.2543
925152	AB2-172 E	3.6781	50/50	3.6781
925261	AB2-180 C	1.6576	50/50	1.6576
925262	AB2-180 E	0.7104	50/50	0.7104
925271	AB2-185 C	1.2459	Adder	1.47
925272	AB2-185 E	0.5340	Adder	0.63
926131	AC1-091 C	0.6335	Adder	0.75
926132	AC1-091 E	1.0389	Adder	1.22
926141	AC1-092 C	0.6335	Adder	0.75
926142	AC1-092 E	1.0389	Adder	1.22
926151	AC1-093 C	0.5997	Adder	0.71
926152	AC1-093 E	0.9882	Adder	1.16
926161	AC1-094 C	0.5068	Adder	0.6
926162	AC1-094 E	0.8362	Adder	0.98
927031	AC1-190 C	4.1556	50/50	4.1556
927032	AC1-190 E	1.7810	50/50	1.7810
927191	AC1-213 C	0.3210	Adder	0.38
927192	AC1-213 E	0.2107	Adder	0.25
930201	AB1-056 C	6.2956	Adder	7.41
930202	AB1-056 E	17.9289	Adder	21.09
931261	AB1-176 C	0.1176	Adder	0.14
931262	AB1-176 E	0.1940	Adder	0.23
932161	AC2-023 C	3.1445	50/50	3.1445
932162	AC2-023 E	2.2901	50/50	2.2901
933631	AC2-185 C	1.2839	Adder	1.51
933632	AC2-185 E	2.0947	Adder	2.46
933641	AC2-186 C	1.7295	Adder	2.03
933642	AC2-186 E	2.8218	Adder	3.32
936453	AD2-059 BAT	0.4396	50/50	0.4396
936611	AD2-076 C O1	1.4206	Adder	1.67
936612	AD2-076 E O1	2.3179	Adder	2.73
938651	AE1-087 C	1.8984	50/50	1.8984
938652	AE1-087 E	0.4746	50/50	0.4746
938895	AE1-117 C	4.7018	Adder	5.53
938896	AE1-117 E	12.5381	Adder	14.75
939151	AE1-145	2.0065	Adder	2.36
941021	AE2-093 C	2.0087	50/50	2.0087
941022	AE2-093 E	3.2774	50/50	3.2774
941181	AE2-112 C	0.4929	Adder	0.58
941182	AE2-112 E	0.8042	Adder	0.95
942441	AE2-257 C	3.2308	Adder	3.8

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
942442	AE2-257 E	8.5176	Adder	10.02
943361	AF1-007 C	0.1857	Adder	0.22
943362	AF1-007 E	0.5279	Adder	0.62
943441	AF1-015 C	0.7569	50/50	0.7569
943442	AF1-015 E	1.0452	50/50	1.0452
943651	AF1-036 C	0.6409	Adder	0.75
943652	AF1-036 E	0.8850	Adder	1.04
945661	AF1-231 C	0.7629	Adder	0.9
945662	AF1-231 E	1.1443	Adder	1.35
945791	AF1-244	0.9497	50/50	0.9497
945931	AF1-258	0.3789	50/50	0.3789
945941	AF1-259	0.0623	Adder	0.07
957443	AF2-038 BAT	2.7182	50/50	2.7182
957611	AF2-055 C	3.5129	Adder	4.13
957612	AF2-055 E	1.5055	Adder	1.77
957661	AF2-060	0.9029	Adder	1.06
957671	AF2-061 O1	4.0130	Adder	4.72
959021	AF2-193 C	11.6333	Adder	13.69
959022	AF2-193 E	31.3805	Adder	36.92
959031	AF2-194 C	11.6333	Adder	13.69
959032	AF2-194 E	31.3805	Adder	36.92
959051	AF2-196 C	0.8811	Adder	1.04
959052	AF2-196 E	2.0560	Adder	2.42
959161	AF2-207 C O1	2.0162	Adder	2.37
959162	AF2-207 E O1	3.0243	Adder	3.56
959571	AF2-248 C	0.3404	Adder	0.4
959572	AF2-248 E	0.3805	Adder	0.45
959581	AF2-249 C	0.0601	Adder	0.07
959582	AF2-249 E	0.2403	Adder	0.28
959591	AF2-250 C	0.1101	Adder	0.13
959592	AF2-250 E	0.0851	Adder	0.1
960221	AF2-313 C	0.9895	Adder	1.16
960222	AF2-313 E	0.5610	Adder	0.66
960341	AF2-325 C	0.4995	50/50	0.4995
960342	AF2-325 E	0.6898	50/50	0.6898
960671	AF2-358 C O1	7.1712	50/50	7.1712
960672	AF2-358 E O1	4.7808	50/50	4.7808
960871	AF2-378 C	0.1321	50/50	0.1321
960872	AF2-378 E	0.1833	50/50	0.1833
960881	AF2-379 C	0.1947	50/50	0.1947
960882	AF2-379 E	0.2682	50/50	0.2682
960941	AF2-385 C	4.7805	Adder	5.62
960942	AF2-385 E	2.7203	Adder	3.2
960961	AF2-387 C O1	6.5441	Adder	7.7
960962	AF2-387 E O1	3.2819	Adder	3.86
961181	AF2-409 O1	12.2380	50/50	12.2380
962161	AG1-061 C O1	3.4705	Adder	7.7
962162	AG1-061 E O1	2.3137	Adder	5.14
962261	AG1-072	2.6039	Adder	5.78
962302	AG1-079 E	0.0616	Adder	0.14
962381	AG1-087 C O1	6.0187	Adder	13.36
962382	AG1-087 E O1	16.2354	Adder	36.04

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
963001	AG1-149	0.3561	50/50	0.3561
963011	AG1-150	2.1269	Adder	4.72
964551	AG1-318 C	0.0156	Adder	0.03
964552	AG1-318 E	0.0364	Adder	0.08
964962	AG1-360 E	1.0377	50/50	1.0377
965321	AG1-397 C	0.2215	Adder	0.49
965322	AG1-397 E	0.3056	Adder	0.68
965611	AG1-429 C O1	1.8757	Adder	4.16
965612	AG1-429 E O1	1.2501	Adder	2.77
965821	AG1-450	2.9863	50/50	2.9863
965921	AG1-461 C O1	1.0161	Adder	2.26
965922	AG1-461 E O1	0.5471	Adder	1.21
965951	AG1-464 C O1	0.9649	Adder	2.14
965952	AG1-464 E O1	1.4473	Adder	3.21
966281	AG1-497 C O1	3.9390	Adder	8.74
966282	AG1-497 E O1	1.6881	Adder	3.75
966601	AG1-529 C	2.4530	Adder	5.45
966602	AG1-529 E	1.3093	Adder	2.91
WEC	WEC	0.1647	Confirmed LTF	0.1647
LGEE	LGEE	0.3311	Confirmed LTF	0.3311
CPLE	CPLE	0.4068	Confirmed LTF	0.4068
CBM-W2	CBM-W2	4.8115	Confirmed LTF	4.8115
NY	NY	0.4966	Confirmed LTF	0.4966
TVA	TVA	0.7644	Confirmed LTF	0.7644
O-066	O-066	9.1528	Confirmed LTF	9.1528
SIGE	SIGE	0.1982	Confirmed LTF	0.1982
CBM-S2	CBM-S2	6.0552	Confirmed LTF	6.0552
CBM-S1	CBM-S1	0.2063	Confirmed LTF	0.2063
G-007	G-007	1.4269	Confirmed LTF	1.4269
MEC	MEC	0.8390	Confirmed LTF	0.8390
LAGN	LAGN	0.9538	Confirmed LTF	0.9538
CBM-W1	CBM-W1	7.2624	Confirmed LTF	7.2624

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
165168139	232003	CARTANZA	DP&L	232013	SILVER RUN	PJM	1	DPL_P7_1_DBL_1NCB_FSA	tower	790.0	190.64	192.05	DC	24.85

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
232405	W1-003 E	3.6565	Adder	4.3
232407	W1-004 E	3.6565	Adder	4.3
232409	W1-005 E	3.6565	Adder	4.3
232411	W1-006 E	3.6565	Adder	4.3
232412	X1-032 E	1.1745	Adder	1.38
232418	X3-008 E	3.3865	Adder	3.98
232423	X3-066 E	0.5827	Adder	0.69
232425	Y1-079 E	1.3965	Adder	1.64
232427	Y1-080 E	0.5881	Adder	0.69
232429	Y3-058 E	1.7612	Adder	2.07
232432	Z2-076 C	0.2217	50/50	0.2217
232433	Z2-076 E	0.7080	50/50	0.7080
232434	Z2-077 C	0.2217	50/50	0.2217
232435	Z2-077 E	0.7080	50/50	0.7080
232616	GEN FOOD	1.5837	50/50	1.5837
232851	DUP-SFR1	2.7717	Adder	3.26
232901	NORTHST	4.7928	50/50	4.7928
232904	IR4	23.2894	50/50	23.2894
232920	IR10	0.9005	50/50	0.9005
232922	**MR3 (Deactivation : 01/06/2021)**	**67.3618**	**50/50**	**67.3618**
233911	AB1-137 C	0.2346	50/50	0.2346
233912	AB1-137 E	0.6372	50/50	0.6372
233916	AB1-141 E	1.1818	Adder	1.39
233919	AB1-142 E	1.1818	Adder	1.39
233920	W3-032A-CTG1	20.1091	50/50	20.1091
233921	W3-032A-STG1	12.1072	50/50	12.1072
917082	CHERRYDALE E	3.6574	Adder	4.3
918835	AA1-102 E	27.2786	Adder	32.09
919831	**AA2-069 (Suspended)**	**297.8449**	**50/50**	**297.8449**
923921	AB2-032 C	2.5513	Adder	3.0
923922	AB2-032 E	1.2006	Adder	1.41
923951	AB2-036 C	8.0155	Adder	9.43
923952	AB2-036 E	13.1142	Adder	15.43
924681	AB2-120 C	13.1921	50/50	13.1921
924682	AB2-120 E	21.5239	50/50	21.5239
924781	AB2-130 C O1	9.1851	Adder	10.81
924782	AB2-130 E O1	14.9862	Adder	17.63
924801	AB2-133 C O1	4.3282	Adder	5.09
924802	AB2-133 E O1	5.4894	Adder	6.46
924821	AB2-135 C	5.3552	Adder	6.3
924822	AB2-135 E	6.1074	Adder	7.19

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
924831	AB2-136 C	6.8664	Adder	8.08
924832	AB2-136 E	7.2817	Adder	8.57
924971	AB2-153 C	1.4257	Adder	1.68
924972	AB2-153 E	2.3262	Adder	2.74
925151	AB2-172 C	5.1890	Adder	6.1
925152	AB2-172 E	8.4663	Adder	9.96
925261	AB2-180 C	4.0422	Adder	4.76
925262	AB2-180 E	1.7324	Adder	2.04
925271	AB2-185 C	3.1535	Adder	3.71
925272	AB2-185 E	1.3515	Adder	1.59
927031	AC1-190 C	9.5822	Adder	11.27
927032	AC1-190 E	4.1066	Adder	4.83
927191	AC1-213 C	0.9301	Adder	1.09
927192	AC1-213 E	0.6104	Adder	0.72
930201	AB1-056 C	23.0797	50/50	23.0797
930202	AB1-056 E	65.7269	50/50	65.7269
931261	AB1-176 C	0.3013	Adder	0.35
931262	AB1-176 E	0.4969	Adder	0.58
932161	AC2-023 C	7.6175	Adder	8.96
932162	AC2-023 E	5.5478	Adder	6.53
933641	AC2-186 C	4.6095	Adder	5.42
933642	AC2-186 E	7.5208	Adder	8.85
936611	AD2-076 C O1	3.6668	Adder	4.31
936612	AD2-076 E O1	5.9827	Adder	7.04
938651	AE1-087 C	4.3697	Adder	5.14
938652	AE1-087 E	1.0924	Adder	1.29
938895	AE1-117 C	16.9934	50/50	16.9934
938896	AE1-117 E	45.3158	50/50	45.3158
939151	AE1-145	5.9009	Adder	6.94
941021	AE2-093 C	4.2623	Adder	5.01
941022	AE2-093 E	6.9543	Adder	8.18
941181	AE2-112 C	1.2722	Adder	1.5
941182	AE2-112 E	2.0756	Adder	2.44
942441	AE2-257 C	11.6988	50/50	11.6988
942442	AE2-257 E	30.8424	50/50	30.8424
943361	AF1-007 C	0.6809	50/50	0.6809
943362	AF1-007 E	1.9353	50/50	1.9353
943441	AF1-015 C	1.6060	Adder	1.89
943442	AF1-015 E	2.2178	Adder	2.61
943651	AF1-036 C	1.6542	Adder	1.95
943652	AF1-036 E	2.2844	Adder	2.69
945661	AF1-231 C	2.2416	Adder	2.64
945662	AF1-231 E	3.3623	Adder	3.96
945791	AF1-244	2.3465	Adder	2.76
945931	AF1-258	0.9239	Adder	1.09
945941	AF1-259	0.1596	Adder	0.19
957611	AF2-055 C	10.3233	Adder	12.15
957612	AF2-055 E	4.4243	Adder	5.21
957661	AF2-060	2.6554	Adder	3.12
957671	AF2-061 O1	11.8017	Adder	13.88
959021	AF2-193 C	42.6472	50/50	42.6472
959022	AF2-193 E	115.0400	50/50	115.0400

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
959031	AF2-194 C	42.6472	50/50	42.6472
959032	AF2-194 E	115.0400	50/50	115.0400
959051	AF2-196 C	3.1906	50/50	3.1906
959052	AF2-196 E	7.4447	50/50	7.4447
959161	AF2-207 C O1	5.8168	Adder	6.84
959162	AF2-207 E O1	8.7252	Adder	10.26
959571	AF2-248 C	0.9837	Adder	1.16
959572	AF2-248 E	1.0994	Adder	1.29
959581	AF2-249 C	0.1736	Adder	0.2
959582	AF2-249 E	0.6944	Adder	0.82
959591	AF2-250 C	0.3182	Adder	0.37
959592	AF2-250 E	0.2459	Adder	0.29
960221	AF2-313 C	2.5342	Adder	2.98
960222	AF2-313 E	1.4367	Adder	1.69
960341	AF2-325 C	1.1572	Adder	1.36
960342	AF2-325 E	1.5980	Adder	1.88
960671	AF2-358 C O1	16.8371	Adder	19.81
960672	AF2-358 E O1	11.2248	Adder	13.21
960871	AF2-378 C	0.3066	Adder	0.36
960872	AF2-378 E	0.4254	Adder	0.5
960881	AF2-379 C	0.4787	Adder	0.56
960882	AF2-379 E	0.6597	Adder	0.78
960941	AF2-385 C	13.7919	Adder	16.23
960942	AF2-385 E	7.8481	Adder	9.23
960961	AF2-387 C O1	16.3042	Adder	19.18
960962	AF2-387 E O1	8.1766	Adder	9.62
961181	AF2-409 O1	28.5031	Adder	33.53
962161	AG1-061 C O1	9.8520	Adder	21.87
962162	AG1-061 E O1	6.5680	Adder	14.58
962261	AG1-072	6.4874	Adder	14.4
962302	AG1-079 E	0.1462	Adder	0.32
962381	AG1-087 C O1	49.5802	50/50	49.5802
962382	AG1-087 E O1	133.7414	50/50	133.7414
963001	AG1-149	0.4664	Adder	1.04
963011	AG1-150	13.8844	50/50	13.8844
964551	AG1-318 C	0.1061	50/50	0.1061
964552	AG1-318 E	0.2476	50/50	0.2476
964962	AG1-360 E	1.3617	Adder	3.02
965321	AG1-397 C	0.6508	Adder	1.44
965322	AG1-397 E	0.8978	Adder	1.99
965611	AG1-429 C O1	5.5120	Adder	12.24
965612	AG1-429 E O1	3.6736	Adder	8.15
965821	AG1-450	3.7104	Adder	8.24
965921	AG1-461 C O1	2.9786	Adder	6.61
965922	AG1-461 E O1	1.6038	Adder	3.56
965951	AG1-464 C O1	2.5716	Adder	5.71
965952	AG1-464 E O1	3.8575	Adder	8.56
966281	AG1-497 C O1	55.4744	50/50	55.4744
966282	AG1-497 E O1	23.7748	50/50	23.7748
966601	AG1-529 C	7.2988	Adder	16.2
966602	AG1-529 E	3.8957	Adder	8.65
CALDERWOOD	CALDERWOOD	0.1839	Confirmed LTF	0.1839

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
NY	NY	0.2229	Confirmed LTF	0.2229
PRAIRIE	PRAIRIE	0.9557	Confirmed LTF	0.9557
O-066	O-066	2.8199	Confirmed LTF	2.8199
SIGE	SIGE	0.0050	Confirmed LTF	0.0050
CHEOAH	CHEOAH	0.1852	Confirmed LTF	0.1852
COTTONWOOD	COTTONWOOD	0.7770	Confirmed LTF	0.7770
G-007	G-007	0.4536	Confirmed LTF	0.4536
HAMLET	HAMLET	0.2131	Confirmed LTF	0.2131
GIBSON	GIBSON	0.2026	Confirmed LTF	0.2026
BLUEG	BLUEG	0.6441	Confirmed LTF	0.6441
TRIMBLE	TRIMBLE	0.2065	Confirmed LTF	0.2065
CATAWBA	CATAWBA	0.1291	Confirmed LTF	0.1291

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
168040875	232004	MILF_230	DP&L	232000	STEELE	DP&L	1	CKT 23032B	single	550.0	101.45	104.56	DC	17.53

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
231940	T-011	0.1557	80/20	0.1557
232404	W1-003 C	0.4717	80/20	0.4717
232406	W1-004 C	0.4717	80/20	0.4717
232408	W1-005 C	0.4717	80/20	0.4717
232410	W1-006 C	0.4717	80/20	0.4717
232432	Z2-076 C	0.1953	80/20	0.1953
232434	Z2-077 C	0.1953	80/20	0.1953
232616	GEN FOOD	1.0243	80/20	1.0243
232901	NORTHST	3.0998	80/20	3.0998
232904	IR4	22.8105	80/20	22.8105
232905	BAYVIEW1	0.4436	80/20	0.4436
232912	OH NUG1	1.2838	80/20	1.2838
232913	OH NUG2	1.2667	80/20	1.2667
232914	OH NUG3	1.2838	80/20	1.2838
232915	OH NUG4	1.2838	80/20	1.2838
232916	OH NUG5	1.2838	80/20	1.2838
232917	OH NUG6	1.2781	80/20	1.2781
232918	OH NUG7	1.2753	80/20	1.2753
232920	IR10	0.8460	80/20	0.8460
232921	TASLEY2G	0.8541	80/20	0.8541
232922	MR3 (Deactivation : 01/06/2021)	43.5673	80/20	43.5673
233911	AB1-137 C	0.2178	80/20	0.2178
233920	W3-032A-CTG1	13.0059	80/20	13.0059
233921	W3-032A-STG1	7.8305	80/20	7.8305
917081	CHERRYDALE C	0.2697	80/20	0.2697
919831	AA2-069 (Suspended)	192.6356	80/20	192.6356
923921	AB2-032 C	-1.1533	Adder	-1.36
924681	AB2-120 C	8.6146	80/20	8.6146
924781	AB2-130 C O1	7.5482	80/20	7.5482
924971	AB2-153 C	-0.6445	Adder	-0.76
925261	AB2-180 C	2.1396	Adder	2.52
926131	AC1-091 C	0.9654	Adder	1.14
926141	AC1-092 C	0.9654	Adder	1.14
926151	AC1-093 C	0.9139	Adder	1.08
926161	AC1-094 C	0.7723	Adder	0.91
927191	AC1-213 C	0.5509	Adder	0.65
930201	AB1-056 C	22.6050	80/20	22.6050
932161	AC2-023 C	3.7101	Adder	4.36
933631	AC2-185 C	1.9566	Adder	2.3
933641	AC2-186 C	4.9962	80/20	4.9962
938896	AE1-117 E	42.0621	80/20	42.0621

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
939151	AE1-145	4.5308	80/20	4.5308
942441	AE2-257 C	10.9530	80/20	10.9530
943361	AF1-007 C	0.6669	80/20	0.6669
945661	AF1-231 C	1.7073	80/20	1.7073
945791	AF1-244	1.3657	Adder	1.61
945931	AF1-258	0.4891	Adder	0.58
945941	AF1-259	-0.0657	Adder	-0.08
957611	AF2-055 C	7.8722	80/20	7.8722
957661	AF2-060	2.0389	80/20	2.0389
957671	AF2-061 O1	9.0616	80/20	9.0616
959021	AF2-193 C	41.7702	80/20	41.7702
959031	AF2-194 C	41.7702	80/20	41.7702
959051	AF2-196 C	2.9872	80/20	2.9872
959161	AF2-207 C O1	3.5134	Adder	4.13
959571	AF2-248 C	0.5899	Adder	0.69
959581	AF2-249 C	0.1041	Adder	0.12
959591	AF2-250 C	0.1908	Adder	0.22
960671	AF2-358 C O1	4.6609	Adder	5.48
960881	AF2-379 C	0.2699	Adder	0.32
960941	AF2-385 C	9.8004	80/20	9.8004
962161	AG1-061 C O1	5.2783	Adder	11.72
962381	AG1-087 C O1	50.8285	80/20	50.8285
963001	AG1-149	0.2714	Adder	0.6
963011	AG1-150	9.0616	80/20	9.0616
964551	AG1-318 C	0.0978	80/20	0.0978
965321	AG1-397 C	0.9740	80/20	0.9740
965611	AG1-429 C O1	7.9307	80/20	7.9307
965921	AG1-461 C O1	5.0072	80/20	5.0072
965951	AG1-464 C O1	5.2592	80/20	5.2592
966281	AG1-497 C O1	35.8789	80/20	35.8789
966601	AG1-529 C	17.5267	80/20	17.5267
CALDERWOOD	CALDERWOOD	0.1337	Confirmed LTF	0.1337
NY	NY	0.0874	Confirmed LTF	0.0874
PRAIRIE	PRAIRIE	0.6922	Confirmed LTF	0.6922
CHEOAH	CHEOAH	0.1346	Confirmed LTF	0.1346
COTTONWOOD	COTTONWOOD	0.5649	Confirmed LTF	0.5649
HAMLET	HAMLET	0.1571	Confirmed LTF	0.1571
GIBSON	GIBSON	0.1463	Confirmed LTF	0.1463
BLUEG	BLUEG	0.4652	Confirmed LTF	0.4652
TRIMBLE	TRIMBLE	0.1491	Confirmed LTF	0.1491
CATAWBA	CATAWBA	0.0948	Confirmed LTF	0.0948

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
165168194	232012	HOPE CREEK	PJM	200029	HOPE CRK	PSE&G	1	DPL_P7_1_DBL_4NC	tower	1117.0	146.43	149.65	DC	36.17

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
232405	W1-003 E	4.3871	Adder	5.16
232407	W1-004 E	4.3871	Adder	5.16
232409	W1-005 E	4.3871	Adder	5.16
232411	W1-006 E	4.3871	Adder	5.16
232412	X1-032 E	1.3954	Adder	1.64
232418	X3-008 E	3.6945	Adder	4.35
232423	X3-066 E	0.6264	Adder	0.74
232425	Y1-079 E	1.3675	Adder	1.61
232427	Y1-080 E	0.6616	Adder	0.78
232429	Y3-058 E	2.0912	Adder	2.46
232433	Z2-076 E	0.7602	Adder	0.89
232435	Z2-077 E	0.7602	Adder	0.89
232616	GEN FOOD	1.4453	50/50	1.4453
232813	VAUGHN	0.2195	50/50	0.2195
232851	DUP-SFR1	3.8081	Adder	4.48
232899	W1-062	4.4526	50/50	4.4526
232900	DEMECSMY	4.3617	50/50	4.3617
232901	NORTHST	4.3739	50/50	4.3739
232922	**MR3 (Deactivation : 01/06/2021)**	**61.4734**	**50/50**	**61.4734**
233912	AB1-137 E	0.6898	Adder	0.81
233916	AB1-141 E	1.2494	Adder	1.47
233919	AB1-142 E	1.2494	Adder	1.47
233920	W3-032A-CTG1	18.3513	50/50	18.3513
233921	W3-032A-STG1	11.0488	50/50	11.0488
917082	CHERRYDALE E	4.3911	Adder	5.17
918835	AA1-102 E	32.3322	Adder	38.04
919831	**AA2-069 (Suspended)**	**271.8087**	**50/50**	**271.8087**
923921	AB2-032 C	2.6972	Adder	3.17
923922	AB2-032 E	1.2693	Adder	1.49
923951	AB2-036 C	7.6067	Adder	8.95
923952	AB2-036 E	12.4453	Adder	14.64
923961	AB2-037 C	16.3092	Adder	19.19
923962	AB2-037 E	26.6433	Adder	31.35
924681	AB2-120 C	13.4743	Adder	15.85
924682	AB2-120 E	21.9843	Adder	25.86
924781	AB2-130 C O1	11.7774	Adder	13.86
924782	AB2-130 E O1	19.2157	Adder	22.61
924801	AB2-133 C O1	5.1399	Adder	6.05
924802	AB2-133 E O1	6.5189	Adder	7.67
924821	AB2-135 C	7.6016	Adder	8.94
924822	AB2-135 E	8.6694	Adder	10.2

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
924831	AB2-136 C	7.6196	Adder	8.96
924832	AB2-136 E	8.0804	Adder	9.51
924971	AB2-153 C	1.5072	Adder	1.77
924972	AB2-153 E	2.4592	Adder	2.89
925151	AB2-172 C	5.6609	Adder	6.66
925152	AB2-172 E	9.2362	Adder	10.87
925261	AB2-180 C	4.7995	Adder	5.65
925262	AB2-180 E	2.0569	Adder	2.42
925271	AB2-185 C	3.0879	Adder	3.63
925272	AB2-185 E	1.3234	Adder	1.56
926131	AC1-091 C	4.7147	50/50	4.7147
926132	AC1-091 E	7.7320	50/50	7.7320
926141	AC1-092 C	4.7147	50/50	4.7147
926142	AC1-092 E	7.7320	50/50	7.7320
926151	AC1-093 C	4.4632	50/50	4.4632
926152	AC1-093 E	7.3549	50/50	7.3549
926161	AC1-094 C	3.7717	50/50	3.7717
926162	AC1-094 E	6.2233	50/50	6.2233
927031	AC1-190 C	10.4860	Adder	12.34
927032	AC1-190 E	4.4940	Adder	5.29
927191	AC1-213 C	1.1181	Adder	1.32
927192	AC1-213 E	0.7337	Adder	0.86
930201	AB1-056 C	24.9494	Adder	29.35
930202	AB1-056 E	71.0515	Adder	83.59
931261	AB1-176 C	0.3239	Adder	0.38
931262	AB1-176 E	0.5341	Adder	0.63
932161	AC2-023 C	8.9690	Adder	10.55
932162	AC2-023 E	6.5321	Adder	7.68
933631	AC2-185 C	9.5550	50/50	9.5550
933632	AC2-185 E	15.5898	50/50	15.5898
933641	AC2-186 C	9.0069	50/50	9.0069
933642	AC2-186 E	14.6955	50/50	14.6955
936611	AD2-076 C O1	3.7879	Adder	4.46
936612	AD2-076 E O1	6.1802	Adder	7.27
938651	AE1-087 C	4.7671	Adder	5.61
938652	AE1-087 E	1.1918	Adder	1.4
938895	AE1-117 C	18.3902	Adder	21.64
938896	AE1-117 E	49.0405	Adder	57.69
939151	AE1-145	7.0912	Adder	8.34
941021	AE2-093 C	3.9383	Adder	4.63
941022	AE2-093 E	6.4256	Adder	7.56
941181	AE2-112 C	1.3142	Adder	1.55
941182	AE2-112 E	2.1442	Adder	2.52
942441	AE2-257 C	12.6674	Adder	14.9
942442	AE2-257 E	33.3958	Adder	39.29
943361	AF1-007 C	0.7361	Adder	0.87
943362	AF1-007 E	2.0920	Adder	2.46
943441	AF1-015 C	1.4839	Adder	1.75
943442	AF1-015 E	2.0492	Adder	2.41
943651	AF1-036 C	1.7088	Adder	2.01
943652	AF1-036 E	2.3598	Adder	2.78
945661	AF1-231 C	2.6907	Adder	3.17

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
945662	AF1-231 E	4.0360	Adder	4.75
945791	AF1-244	2.7813	Adder	3.27
945931	AF1-258	1.0970	Adder	1.29
945941	AF1-259	0.1716	Adder	0.2
957611	AF2-055 C	12.3941	Adder	14.58
957612	AF2-055 E	5.3118	Adder	6.25
957661	AF2-060	3.1910	Adder	3.75
957671	AF2-061 O1	14.1824	Adder	16.69
959021	AF2-193 C	46.1021	Adder	54.24
959022	AF2-193 E	124.3596	Adder	146.31
959031	AF2-194 C	46.1021	Adder	54.24
959032	AF2-194 E	124.3596	Adder	146.31
959051	AF2-196 C	3.4547	Adder	4.06
959052	AF2-196 E	8.0611	Adder	9.48
959161	AF2-207 C O1	7.1013	Adder	8.35
959162	AF2-207 E O1	10.6520	Adder	12.53
959571	AF2-248 C	1.1941	Adder	1.4
959572	AF2-248 E	1.3345	Adder	1.57
959581	AF2-249 C	0.2107	Adder	0.25
959582	AF2-249 E	0.8429	Adder	0.99
959591	AF2-250 C	0.3863	Adder	0.45
959592	AF2-250 E	0.2985	Adder	0.35
960221	AF2-313 C	2.7242	Adder	3.2
960222	AF2-313 E	1.5444	Adder	1.82
960341	AF2-325 C	1.2765	Adder	1.5
960342	AF2-325 E	1.7627	Adder	2.07
960671	AF2-358 C O1	18.9909	Adder	22.34
960672	AF2-358 E O1	12.6606	Adder	14.89
960871	AF2-378 C	0.3393	Adder	0.4
960872	AF2-378 E	0.4708	Adder	0.55
960881	AF2-379 C	0.5677	Adder	0.67
960882	AF2-379 E	0.7823	Adder	0.92
960941	AF2-385 C	16.8375	Adder	19.81
960942	AF2-385 E	9.5812	Adder	11.27
960961	AF2-387 C O1	15.0900	Adder	17.75
960962	AF2-387 E O1	7.5676	Adder	8.9
961181	AF2-409 O1	31.1721	Adder	36.67
962161	AG1-061 C O1	12.0296	Adder	26.7
962162	AG1-061 E O1	8.0198	Adder	17.8
962261	AG1-072	6.0043	Adder	13.33
962302	AG1-079 E	0.2561	Adder	0.57
962381	AG1-087 C O1	58.9669	50/50	58.9669
962382	AG1-087 E O1	159.0619	50/50	159.0619
963001	AG1-149	0.5528	Adder	1.23
963011	AG1-150	7.5167	Adder	16.69
964551	AG1-318 C	0.0608	Adder	0.13
964552	AG1-318 E	0.1419	Adder	0.31
964962	AG1-360 E	1.6178	Adder	3.59
965321	AG1-397 C	0.7937	Adder	1.76
965322	AG1-397 E	1.0949	Adder	2.43
965611	AG1-429 C O1	6.6177	Adder	14.69
965612	AG1-429 E O1	4.4105	Adder	9.79

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
965821	AG1-450	4.1746	Adder	9.27
965921	AG1-461 C O1	3.8157	Adder	8.47
965922	AG1-461 E O1	2.0546	Adder	4.56
965951	AG1-464 C O1	9.4810	50/50	9.4810
965952	AG1-464 E O1	14.2215	50/50	14.2215
966281	AG1-497 C O1	50.6251	50/50	50.6251
966282	AG1-497 E O1	21.6965	50/50	21.6965
966601	AG1-529 C	23.5815	50/50	23.5815
966602	AG1-529 E	12.5865	50/50	12.5865
CALDERWOOD	CALDERWOOD	0.1402	Confirmed LTF	0.1402
NY	NY	0.5331	Confirmed LTF	0.5331
PRAIRIE	PRAIRIE	0.7491	Confirmed LTF	0.7491
O-066	O-066	8.5336	Confirmed LTF	8.5336
SIGE	SIGE	0.1025	Confirmed LTF	0.1025
CHEOAH	CHEOAH	0.1406	Confirmed LTF	0.1406
COTTONWOOD	COTTONWOOD	0.5985	Confirmed LTF	0.5985
G-007	G-007	1.5288	Confirmed LTF	1.5288
HAMLET	HAMLET	0.1542	Confirmed LTF	0.1542
GIBSON	GIBSON	0.1600	Confirmed LTF	0.1600
BLUEG	BLUEG	0.5086	Confirmed LTF	0.5086
TRIMBLE	TRIMBLE	0.1631	Confirmed LTF	0.1631
CATAWBA	CATAWBA	0.0952	Confirmed LTF	0.0952

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
166855949	232100	CHURCH	DP&L	232107	TOWNSEND	DP&L	1	DPL_P7_1_DBL_1NCB_FSA	tower	348.0	198.93	200.55	DC	12.97

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
232405	W1-003 E	2.1162	Adder	2.49
232407	W1-004 E	2.1162	Adder	2.49
232409	W1-005 E	2.1162	Adder	2.49
232411	W1-006 E	2.1162	Adder	2.49
232412	X1-032 E	0.6923	Adder	0.81
232417	X3-008 C	0.3001	50/50	0.3001
232418	X3-008 E	3.1031	50/50	3.1031
232422	X3-066 C	0.1518	50/50	0.1518
232423	X3-066 E	1.2321	50/50	1.2321
232424	Y1-079 C	0.2221	50/50	0.2221
232425	Y1-079 E	2.2972	50/50	2.2972
232426	Y1-080 FULL	0.0468	50/50	0.0468
232427	Y1-080 E	0.4865	50/50	0.4865
232428	Y3-058 C	0.1887	50/50	0.1887
232429	Y3-058 E	1.2800	50/50	1.2800
232433	Z2-076 E	0.3195	Adder	0.38
232435	Z2-077 E	0.3195	Adder	0.38
232813	VAUGHN	0.1051	50/50	0.1051
232851	DUP-SFR1	1.6269	Adder	1.91
232902	EASTMUNI	3.3846	50/50	3.3846
232907	VN8	5.4177	50/50	5.4177
232910	NRG_G1	1.6595	50/50	1.6595
232911	NRG_G2	1.6595	50/50	1.6595
232919	VN10	0.4103	50/50	0.4103
232922	**MR3 (Deactivation : 01/06/2021)**	**9.0454**	**Adder**	**10.64**
232926	CRISFLD1	0.3223	50/50	0.3223
233912	AB1-137 E	0.2813	Adder	0.33
233915	AB1-141 C	0.9820	50/50	0.9820
233916	AB1-141 E	2.9046	50/50	2.9046
233918	AB1-142 C	0.9820	50/50	0.9820
233919	AB1-142 E	2.9046	50/50	2.9046
233923	AA1-102 C	1.8373	50/50	1.8373
233931	AB2-179 C	-9.2465	Adder	-10.88
293670	O-025 C	0.1942	50/50	0.1942
917082	CHERRYDALE E	2.1143	Adder	2.49
918835	AA1-102 E	19.0008	50/50	19.0008
919831	**AA2-069 (Suspended)**	**39.9949**	**Adder**	**47.05**
923921	AB2-032 C	6.2703	50/50	6.2703
923922	AB2-032 E	2.9507	50/50	2.9507
923951	AB2-036 C	12.6635	50/50	12.6635
923952	AB2-036 E	20.7187	50/50	20.7187
924681	AB2-120 C	6.4703	Adder	7.61

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
924682	AB2-120 E	10.5569	Adder	12.42
924781	AB2-130 C O1	5.4550	Adder	6.42
924782	AB2-130 E O1	8.9003	Adder	10.47
924801	AB2-133 C O1	11.5421	50/50	11.5421
924802	AB2-133 E O1	14.6387	50/50	14.6387
924821	AB2-135 C	12.2976	50/50	12.2976
924822	AB2-135 E	14.0250	50/50	14.0250
924831	AB2-136 C	5.9562	50/50	5.9562
924832	AB2-136 E	6.3165	50/50	6.3165
924971	AB2-153 C	3.5040	50/50	3.5040
924972	AB2-153 E	5.7170	50/50	5.7170
925151	AB2-172 C	4.7548	50/50	4.7548
925152	AB2-172 E	7.7578	50/50	7.7578
925261	AB2-180 C	2.9378	50/50	2.9378
925262	AB2-180 E	1.2590	50/50	1.2590
925271	AB2-185 C	5.1871	50/50	5.1871
925272	AB2-185 E	2.2231	50/50	2.2231
926131	AC1-091 C	0.6418	Adder	0.76
926132	AC1-091 E	1.0526	Adder	1.24
926141	AC1-092 C	0.6418	Adder	0.76
926142	AC1-092 E	1.0526	Adder	1.24
926151	AC1-093 C	0.6076	Adder	0.71
926152	AC1-093 E	1.0013	Adder	1.18
926161	AC1-094 C	0.5135	Adder	0.6
926162	AC1-094 E	0.8472	Adder	1.0
927031	AC1-190 C	8.6961	50/50	8.6961
927032	AC1-190 E	3.7269	50/50	3.7269
927191	AC1-213 C	0.6564	50/50	0.6564
927192	AC1-213 E	0.4308	50/50	0.4308
930201	AB1-056 C	9.8959	Adder	11.64
930202	AB1-056 E	28.1818	Adder	33.16
931261	AB1-176 C	0.6372	50/50	0.6372
931262	AB1-176 E	1.0507	50/50	1.0507
932161	AC2-023 C	5.6437	50/50	5.6437
932162	AC2-023 E	4.1103	50/50	4.1103
933631	AC2-185 C	1.3008	Adder	1.53
933632	AC2-185 E	2.1223	Adder	2.5
933641	AC2-186 C	3.1389	Adder	3.69
933642	AC2-186 E	5.1214	Adder	6.03
936611	AD2-076 C O1	8.1710	50/50	8.1710
936612	AD2-076 E O1	13.3317	50/50	13.3317
938651	AE1-087 C	4.0040	50/50	4.0040
938652	AE1-087 E	1.0010	50/50	1.0010
938895	AE1-117 C	7.5027	Adder	8.83
938896	AE1-117 E	20.0072	Adder	23.54
939151	AE1-145	3.4061	Adder	4.01
941021	AE2-093 C	5.0565	50/50	5.0565
941022	AE2-093 E	8.2500	50/50	8.2500
941181	AE2-112 C	2.8348	50/50	2.8348
941182	AE2-112 E	4.6253	50/50	4.6253
942441	AE2-257 C	5.1449	Adder	6.05
942442	AE2-257 E	13.5639	Adder	15.96

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
943361	AF1-007 C	0.2920	Adder	0.34
943362	AF1-007 E	0.8298	Adder	0.98
943441	AF1-015 C	1.9052	50/50	1.9052
943442	AF1-015 E	2.6311	50/50	2.6311
943651	AF1-036 C	3.6862	50/50	3.6862
943652	AF1-036 E	5.0904	50/50	5.0904
945661	AF1-231 C	1.2961	Adder	1.52
945662	AF1-231 E	1.9442	Adder	2.29
945791	AF1-244	1.6345	50/50	1.6345
945931	AF1-258	0.6715	50/50	0.6715
945941	AF1-259	0.3376	50/50	0.3376
957611	AF2-055 C	5.9678	Adder	7.02
957612	AF2-055 E	2.5577	Adder	3.01
957661	AF2-060	1.5328	Adder	1.8
957671	AF2-061 O1	6.8122	Adder	8.01
959021	AF2-193 C	18.2859	Adder	21.51
959022	AF2-193 E	49.3258	Adder	58.03
959031	AF2-194 C	18.2859	Adder	21.51
959032	AF2-194 E	49.3258	Adder	58.03
959051	AF2-196 C	1.4032	Adder	1.65
959052	AF2-196 E	3.2740	Adder	3.85
959161	AF2-207 C O1	3.4920	Adder	4.11
959162	AF2-207 E O1	6.1623	50/50	6.1623
959571	AF2-248 C	0.6946	50/50	0.6946
959572	AF2-248 E	0.7763	50/50	0.7763
959581	AF2-249 C	0.1226	50/50	0.1226
959582	AF2-249 E	0.4903	50/50	0.4903
959591	AF2-250 C	0.2247	50/50	0.2247
959592	AF2-250 E	0.1736	50/50	0.1736
960221	AF2-313 C	5.3589	50/50	5.3589
960222	AF2-313 E	3.0381	50/50	3.0381
960341	AF2-325 C	1.0239	50/50	1.0239
960342	AF2-325 E	1.4139	50/50	1.4139
960671	AF2-358 C O1	13.8072	50/50	13.8072
960672	AF2-358 E O1	9.2048	50/50	9.2048
960871	AF2-378 C	0.2684	50/50	0.2684
960872	AF2-378 E	0.3724	50/50	0.3724
960881	AF2-379 C	0.3375	50/50	0.3375
960882	AF2-379 E	0.4650	50/50	0.4650
960941	AF2-385 C	9.7407	50/50	9.7407
960942	AF2-385 E	5.5428	50/50	5.5428
960961	AF2-387 C O1	21.7542	50/50	21.7542
960962	AF2-387 E O1	10.9098	50/50	10.9098
961181	AF2-409 O1	22.4440	50/50	22.4440
962161	AG1-061 C O1	13.7777	50/50	13.7777
962162	AG1-061 E O1	9.1851	50/50	9.1851
962261	AG1-072	16.3320	50/50	16.3320
962302	AG1-079 E	0.4867	50/50	0.4867
962381	AG1-087 C O1	8.5411	Adder	18.96
962382	AG1-087 E O1	23.0393	Adder	51.14
963001	AG1-149	0.6129	50/50	0.6129
963011	AG1-150	3.6105	Adder	8.01

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
964551	AG1-318 C	0.0249	Adder	0.06
964552	AG1-318 E	0.0581	Adder	0.13
964962	AG1-360 E	0.8026	Adder	1.78
965321	AG1-397 C	0.3777	Adder	0.84
965322	AG1-397 E	0.5210	Adder	1.16
965611	AG1-429 C O1	3.1865	Adder	7.07
965612	AG1-429 E O1	2.1237	Adder	4.71
965821	AG1-450	5.7923	50/50	5.7923
965921	AG1-461 C O1	1.7145	Adder	3.81
965922	AG1-461 E O1	0.9232	Adder	2.05
965951	AG1-464 C O1	1.7512	Adder	3.89
965952	AG1-464 E O1	2.6268	Adder	5.83
966281	AG1-497 C O1	3.9481	Adder	8.76
966282	AG1-497 E O1	1.6920	Adder	3.76
966601	AG1-529 C	3.8100	Adder	8.46
966602	AG1-529 E	2.0336	Adder	4.51
CALDERWOOD	CALDERWOOD	0.0924	Confirmed LTF	0.0924
NY	NY	0.0586	Confirmed LTF	0.0586
PRAIRIE	PRAIRIE	0.4779	Confirmed LTF	0.4779
O-066	O-066	0.4576	Confirmed LTF	0.4576
CHEOAH	CHEOAH	0.0931	Confirmed LTF	0.0931
COTTONWOOD	COTTONWOOD	0.3906	Confirmed LTF	0.3906
G-007	G-007	0.0378	Confirmed LTF	0.0378
HAMLET	HAMLET	0.1091	Confirmed LTF	0.1091
GIBSON	GIBSON	0.1010	Confirmed LTF	0.1010
BLUEG	BLUEG	0.3212	Confirmed LTF	0.3212
TRIMBLE	TRIMBLE	0.1030	Confirmed LTF	0.1030
CATAWBA	CATAWBA	0.0658	Confirmed LTF	0.0658

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
166855959	232106	MIDLTNTP	DP&L	232104	MT PLSNT	DP&L	1	DPL_P7_1_DBL_1NCB_FSA	tower	348.0	179.21	180.83	DC	12.97

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
232405	W1-003 E	2.1162	Adder	2.49
232407	W1-004 E	2.1162	Adder	2.49
232409	W1-005 E	2.1162	Adder	2.49
232411	W1-006 E	2.1162	Adder	2.49
232412	X1-032 E	0.6923	Adder	0.81
232417	X3-008 C	0.3001	50/50	0.3001
232418	X3-008 E	3.1031	50/50	3.1031
232422	X3-066 C	0.1518	50/50	0.1518
232423	X3-066 E	1.2321	50/50	1.2321
232424	Y1-079 C	0.2221	50/50	0.2221
232425	Y1-079 E	2.2972	50/50	2.2972
232426	Y1-080 FULL	0.0468	50/50	0.0468
232427	Y1-080 E	0.4865	50/50	0.4865
232428	Y3-058 C	0.1887	50/50	0.1887
232429	Y3-058 E	1.2800	50/50	1.2800
232433	Z2-076 E	0.3195	Adder	0.38
232435	Z2-077 E	0.3195	Adder	0.38
232813	VAUGHN	0.1051	50/50	0.1051
232851	DUP-SFR1	1.6269	Adder	1.91
232902	EASTMUNI	3.3846	50/50	3.3846
232907	VN8	5.4177	50/50	5.4177
232910	NRG_G1	1.6595	50/50	1.6595
232911	NRG_G2	1.6595	50/50	1.6595
232919	VN10	0.4103	50/50	0.4103
232922	**MR3 (Deactivation : 01/06/2021)**	**9.0454**	**Adder**	**10.64**
232926	CRISFLD1	0.3223	50/50	0.3223
233912	AB1-137 E	0.2813	Adder	0.33
233915	AB1-141 C	0.9820	50/50	0.9820
233916	AB1-141 E	2.9046	50/50	2.9046
233918	AB1-142 C	0.9820	50/50	0.9820
233919	AB1-142 E	2.9046	50/50	2.9046
233923	AA1-102 C	1.8373	50/50	1.8373
233931	AB2-179 C	27.1217	50/50	27.1217
293670	O-025 C	0.1942	50/50	0.1942
917082	CHERRYDALE E	2.1143	Adder	2.49
918835	AA1-102 E	19.0008	50/50	19.0008
919831	**AA2-069 (Suspended)**	**39.9949**	**Adder**	**47.05**
923921	AB2-032 C	6.2703	50/50	6.2703
923922	AB2-032 E	2.9507	50/50	2.9507
923951	AB2-036 C	12.6635	50/50	12.6635
923952	AB2-036 E	20.7187	50/50	20.7187

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
924681	AB2-120 C	6.4703	Adder	7.61
924682	AB2-120 E	10.5569	Adder	12.42
924781	AB2-130 C O1	5.4550	Adder	6.42
924782	AB2-130 E O1	8.9003	Adder	10.47
924801	AB2-133 C O1	11.5421	50/50	11.5421
924802	AB2-133 E O1	14.6387	50/50	14.6387
924821	AB2-135 C	12.2976	50/50	12.2976
924822	AB2-135 E	14.0250	50/50	14.0250
924831	AB2-136 C	5.9562	50/50	5.9562
924832	AB2-136 E	6.3165	50/50	6.3165
924971	AB2-153 C	3.5040	50/50	3.5040
924972	AB2-153 E	5.7170	50/50	5.7170
925151	AB2-172 C	4.7548	50/50	4.7548
925152	AB2-172 E	7.7578	50/50	7.7578
925254	AB2-179 E	8.8503	50/50	8.8503
925261	AB2-180 C	2.9378	50/50	2.9378
925262	AB2-180 E	1.2590	50/50	1.2590
925271	AB2-185 C	5.1871	50/50	5.1871
925272	AB2-185 E	2.2231	50/50	2.2231
927031	AC1-190 C	8.6961	50/50	8.6961
927032	AC1-190 E	3.7269	50/50	3.7269
927191	AC1-213 C	0.6564	50/50	0.6564
927192	AC1-213 E	0.4308	50/50	0.4308
930201	AB1-056 C	9.8959	Adder	11.64
930202	AB1-056 E	28.1818	Adder	33.16
931261	AB1-176 C	0.6372	50/50	0.6372
931262	AB1-176 E	1.0507	50/50	1.0507
932161	AC2-023 C	5.6437	50/50	5.6437
932162	AC2-023 E	4.1103	50/50	4.1103
933641	AC2-186 C	3.1389	Adder	3.69
933642	AC2-186 E	5.1214	Adder	6.03
936611	AD2-076 C O1	8.1710	50/50	8.1710
936612	AD2-076 E O1	13.3317	50/50	13.3317
938651	AE1-087 C	4.0040	50/50	4.0040
938652	AE1-087 E	1.0010	50/50	1.0010
938895	AE1-117 C	7.5027	Adder	8.83
938896	AE1-117 E	20.0072	Adder	23.54
939151	AE1-145	3.4061	Adder	4.01
941021	AE2-093 C	5.0565	50/50	5.0565
941022	AE2-093 E	8.2500	50/50	8.2500
941181	AE2-112 C	2.8348	50/50	2.8348
941182	AE2-112 E	4.6253	50/50	4.6253
942441	AE2-257 C	5.1449	Adder	6.05
942442	AE2-257 E	13.5639	Adder	15.96
943361	AF1-007 C	0.2920	Adder	0.34
943362	AF1-007 E	0.8298	Adder	0.98
943441	AF1-015 C	1.9052	50/50	1.9052
943442	AF1-015 E	2.6311	50/50	2.6311
943651	AF1-036 C	3.6862	50/50	3.6862
943652	AF1-036 E	5.0904	50/50	5.0904
945661	AF1-231 C	1.2961	Adder	1.52
945662	AF1-231 E	1.9442	Adder	2.29

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
945791	AF1-244	1.6345	50/50	1.6345
945931	AF1-258	0.6715	50/50	0.6715
945941	AF1-259	0.3376	50/50	0.3376
957611	AF2-055 C	5.9678	Adder	7.02
957612	AF2-055 E	2.5577	Adder	3.01
957661	AF2-060	1.5328	Adder	1.8
957671	AF2-061 O1	6.8122	Adder	8.01
959021	AF2-193 C	18.2859	Adder	21.51
959022	AF2-193 E	49.3258	Adder	58.03
959031	AF2-194 C	18.2859	Adder	21.51
959032	AF2-194 E	49.3258	Adder	58.03
959051	AF2-196 C	1.4032	Adder	1.65
959052	AF2-196 E	3.2740	Adder	3.85
959161	AF2-207 C O1	3.4920	Adder	4.11
959162	AF2-207 E O1	6.1623	50/50	6.1623
959571	AF2-248 C	0.6946	50/50	0.6946
959572	AF2-248 E	0.7763	50/50	0.7763
959581	AF2-249 C	0.1226	50/50	0.1226
959582	AF2-249 E	0.4903	50/50	0.4903
959591	AF2-250 C	0.2247	50/50	0.2247
959592	AF2-250 E	0.1736	50/50	0.1736
960221	AF2-313 C	5.3589	50/50	5.3589
960222	AF2-313 E	3.0381	50/50	3.0381
960341	AF2-325 C	1.0239	50/50	1.0239
960342	AF2-325 E	1.4139	50/50	1.4139
960671	AF2-358 C O1	13.8072	50/50	13.8072
960672	AF2-358 E O1	9.2048	50/50	9.2048
960871	AF2-378 C	0.2684	50/50	0.2684
960872	AF2-378 E	0.3724	50/50	0.3724
960881	AF2-379 C	0.3375	50/50	0.3375
960882	AF2-379 E	0.4650	50/50	0.4650
960941	AF2-385 C	9.7407	50/50	9.7407
960942	AF2-385 E	5.5428	50/50	5.5428
960961	AF2-387 C O1	21.7542	50/50	21.7542
960962	AF2-387 E O1	10.9098	50/50	10.9098
961181	AF2-409 O1	22.4440	50/50	22.4440
962161	AG1-061 C O1	13.7777	50/50	13.7777
962162	AG1-061 E O1	9.1851	50/50	9.1851
962261	AG1-072	16.3320	50/50	16.3320
962302	AG1-079 E	0.4867	50/50	0.4867
962381	AG1-087 C O1	8.5411	Adder	18.96
962382	AG1-087 E O1	23.0393	Adder	51.14
963001	AG1-149	0.6129	50/50	0.6129
963011	AG1-150	3.6105	Adder	8.01
964551	AG1-318 C	0.0249	Adder	0.06
964552	AG1-318 E	0.0581	Adder	0.13
964962	AG1-360 E	0.8026	Adder	1.78
965321	AG1-397 C	0.3777	Adder	0.84
965322	AG1-397 E	0.5210	Adder	1.16
965611	AG1-429 C O1	3.1865	Adder	7.07
965612	AG1-429 E O1	2.1237	Adder	4.71
965821	AG1-450	5.7923	50/50	5.7923

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
965921	AG1-461 C O1	1.7145	Adder	3.81
965922	AG1-461 E O1	0.9232	Adder	2.05
965951	AG1-464 C O1	1.7512	Adder	3.89
965952	AG1-464 E O1	2.6268	Adder	5.83
966281	AG1-497 C O1	3.9481	Adder	8.76
966282	AG1-497 E O1	1.6920	Adder	3.76
966601	AG1-529 C	3.8100	Adder	8.46
966602	AG1-529 E	2.0336	Adder	4.51
CALDERWOOD	CALDERWOOD	0.0924	Confirmed LTF	0.0924
NY	NY	0.0586	Confirmed LTF	0.0586
PRAIRIE	PRAIRIE	0.4779	Confirmed LTF	0.4779
O-066	O-066	0.4576	Confirmed LTF	0.4576
CHEOAH	CHEOAH	0.0931	Confirmed LTF	0.0931
COTTONWOOD	COTTONWOOD	0.3906	Confirmed LTF	0.3906
G-007	G-007	0.0378	Confirmed LTF	0.0378
HAMLET	HAMLET	0.1091	Confirmed LTF	0.1091
GIBSON	GIBSON	0.1010	Confirmed LTF	0.1010
BLUEG	BLUEG	0.3212	Confirmed LTF	0.3212
TRIMBLE	TRIMBLE	0.1030	Confirmed LTF	0.1030
CATAWBA	CATAWBA	0.0658	Confirmed LTF	0.0658

11.6.7 Index 7

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
166855944	232107	TOWNSEND	DP&L	232106	MIDLTNTP	DP&L	1	DPL_P7_1_DBL_1NCB_FSA	tower	348.0	204.67	206.29	DC	12.97

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
232405	W1-003 E	2.1162	Adder	2.49
232407	W1-004 E	2.1162	Adder	2.49
232409	W1-005 E	2.1162	Adder	2.49
232411	W1-006 E	2.1162	Adder	2.49
232412	X1-032 E	0.6923	Adder	0.81
232417	X3-008 C	0.3001	50/50	0.3001
232418	X3-008 E	3.1031	50/50	3.1031
232422	X3-066 C	0.1518	50/50	0.1518
232423	X3-066 E	1.2321	50/50	1.2321
232424	Y1-079 C	0.2221	50/50	0.2221
232425	Y1-079 E	2.2972	50/50	2.2972
232426	Y1-080 FULL	0.0468	50/50	0.0468
232427	Y1-080 E	0.4865	50/50	0.4865
232428	Y3-058 C	0.1887	50/50	0.1887
232429	Y3-058 E	1.2800	50/50	1.2800
232433	Z2-076 E	0.3195	Adder	0.38
232435	Z2-077 E	0.3195	Adder	0.38
232813	VAUGHN	0.1051	50/50	0.1051
232851	DUP-SFR1	1.6269	Adder	1.91
232902	EASTMUNI	3.3846	50/50	3.3846
232907	VN8	5.4177	50/50	5.4177
232910	NRG_G1	1.6595	50/50	1.6595
232911	NRG_G2	1.6595	50/50	1.6595
232919	VN10	0.4103	50/50	0.4103
232922	**MR3 (Deactivation : 01/06/2021)**	**9.0454**	**Adder**	**10.64**
232926	CRISFLD1	0.3223	50/50	0.3223
233912	AB1-137 E	0.2813	Adder	0.33
233915	AB1-141 C	0.9820	50/50	0.9820
233916	AB1-141 E	2.9046	50/50	2.9046
233918	AB1-142 C	0.9820	50/50	0.9820
233919	AB1-142 E	2.9046	50/50	2.9046
233923	AA1-102 C	1.8373	50/50	1.8373
233931	AB2-179 C	27.1217	50/50	27.1217
293670	O-025 C	0.1942	50/50	0.1942
917082	CHERRYDALE E	2.1143	Adder	2.49
918835	AA1-102 E	19.0008	50/50	19.0008
919831	**AA2-069 (Suspended)**	**39.9949**	**Adder**	**47.05**
923921	AB2-032 C	6.2703	50/50	6.2703
923922	AB2-032 E	2.9507	50/50	2.9507
923951	AB2-036 C	12.6635	50/50	12.6635
923952	AB2-036 E	20.7187	50/50	20.7187

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
924681	AB2-120 C	6.4703	Adder	7.61
924682	AB2-120 E	10.5569	Adder	12.42
924781	AB2-130 C O1	5.4550	Adder	6.42
924782	AB2-130 E O1	8.9003	Adder	10.47
924801	AB2-133 C O1	11.5421	50/50	11.5421
924802	AB2-133 E O1	14.6387	50/50	14.6387
924821	AB2-135 C	12.2976	50/50	12.2976
924822	AB2-135 E	14.0250	50/50	14.0250
924831	AB2-136 C	5.9562	50/50	5.9562
924832	AB2-136 E	6.3165	50/50	6.3165
924971	AB2-153 C	3.5040	50/50	3.5040
924972	AB2-153 E	5.7170	50/50	5.7170
925151	AB2-172 C	4.7548	50/50	4.7548
925152	AB2-172 E	7.7578	50/50	7.7578
925254	AB2-179 E	8.8503	50/50	8.8503
925261	AB2-180 C	2.9378	50/50	2.9378
925262	AB2-180 E	1.2590	50/50	1.2590
925271	AB2-185 C	5.1871	50/50	5.1871
925272	AB2-185 E	2.2231	50/50	2.2231
927031	AC1-190 C	8.6961	50/50	8.6961
927032	AC1-190 E	3.7269	50/50	3.7269
927191	AC1-213 C	0.6564	50/50	0.6564
927192	AC1-213 E	0.4308	50/50	0.4308
930201	AB1-056 C	9.8959	Adder	11.64
930202	AB1-056 E	28.1818	Adder	33.16
931261	AB1-176 C	0.6372	50/50	0.6372
931262	AB1-176 E	1.0507	50/50	1.0507
932161	AC2-023 C	5.6437	50/50	5.6437
932162	AC2-023 E	4.1103	50/50	4.1103
933641	AC2-186 C	3.1389	Adder	3.69
933642	AC2-186 E	5.1214	Adder	6.03
936611	AD2-076 C O1	8.1710	50/50	8.1710
936612	AD2-076 E O1	13.3317	50/50	13.3317
938651	AE1-087 C	4.0040	50/50	4.0040
938652	AE1-087 E	1.0010	50/50	1.0010
938895	AE1-117 C	7.5027	Adder	8.83
938896	AE1-117 E	20.0072	Adder	23.54
939151	AE1-145	3.4061	Adder	4.01
941021	AE2-093 C	5.0565	50/50	5.0565
941022	AE2-093 E	8.2500	50/50	8.2500
941181	AE2-112 C	2.8348	50/50	2.8348
941182	AE2-112 E	4.6253	50/50	4.6253
942441	AE2-257 C	5.1449	Adder	6.05
942442	AE2-257 E	13.5639	Adder	15.96
943361	AF1-007 C	0.2920	Adder	0.34
943362	AF1-007 E	0.8298	Adder	0.98
943441	AF1-015 C	1.9052	50/50	1.9052
943442	AF1-015 E	2.6311	50/50	2.6311
943651	AF1-036 C	3.6862	50/50	3.6862
943652	AF1-036 E	5.0904	50/50	5.0904
945661	AF1-231 C	1.2961	Adder	1.52
945662	AF1-231 E	1.9442	Adder	2.29

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
945791	AF1-244	1.6345	50/50	1.6345
945931	AF1-258	0.6715	50/50	0.6715
945941	AF1-259	0.3376	50/50	0.3376
957611	AF2-055 C	5.9678	Adder	7.02
957612	AF2-055 E	2.5577	Adder	3.01
957661	AF2-060	1.5328	Adder	1.8
957671	AF2-061 O1	6.8122	Adder	8.01
959021	AF2-193 C	18.2859	Adder	21.51
959022	AF2-193 E	49.3258	Adder	58.03
959031	AF2-194 C	18.2859	Adder	21.51
959032	AF2-194 E	49.3258	Adder	58.03
959051	AF2-196 C	1.4032	Adder	1.65
959052	AF2-196 E	3.2740	Adder	3.85
959161	AF2-207 C O1	3.4920	Adder	4.11
959162	AF2-207 E O1	6.1623	50/50	6.1623
959571	AF2-248 C	0.6946	50/50	0.6946
959572	AF2-248 E	0.7763	50/50	0.7763
959581	AF2-249 C	0.1226	50/50	0.1226
959582	AF2-249 E	0.4903	50/50	0.4903
959591	AF2-250 C	0.2247	50/50	0.2247
959592	AF2-250 E	0.1736	50/50	0.1736
960221	AF2-313 C	5.3589	50/50	5.3589
960222	AF2-313 E	3.0381	50/50	3.0381
960341	AF2-325 C	1.0239	50/50	1.0239
960342	AF2-325 E	1.4139	50/50	1.4139
960671	AF2-358 C O1	13.8072	50/50	13.8072
960672	AF2-358 E O1	9.2048	50/50	9.2048
960871	AF2-378 C	0.2684	50/50	0.2684
960872	AF2-378 E	0.3724	50/50	0.3724
960881	AF2-379 C	0.3375	50/50	0.3375
960882	AF2-379 E	0.4650	50/50	0.4650
960941	AF2-385 C	9.7407	50/50	9.7407
960942	AF2-385 E	5.5428	50/50	5.5428
960961	AF2-387 C O1	21.7542	50/50	21.7542
960962	AF2-387 E O1	10.9098	50/50	10.9098
961181	AF2-409 O1	22.4440	50/50	22.4440
962161	AG1-061 C O1	13.7777	50/50	13.7777
962162	AG1-061 E O1	9.1851	50/50	9.1851
962261	AG1-072	16.3320	50/50	16.3320
962302	AG1-079 E	0.4867	50/50	0.4867
962381	AG1-087 C O1	8.5411	Adder	18.96
962382	AG1-087 E O1	23.0393	Adder	51.14
963001	AG1-149	0.6129	50/50	0.6129
963011	AG1-150	3.6105	Adder	8.01
964551	AG1-318 C	0.0249	Adder	0.06
964552	AG1-318 E	0.0581	Adder	0.13
964962	AG1-360 E	0.8026	Adder	1.78
965321	AG1-397 C	0.3777	Adder	0.84
965322	AG1-397 E	0.5210	Adder	1.16
965611	AG1-429 C O1	3.1865	Adder	7.07
965612	AG1-429 E O1	2.1237	Adder	4.71
965821	AG1-450	5.7923	50/50	5.7923

Bus #	Bus	Gendeliv MW Impact	Type	Full MW Impact
965921	AG1-461 C O1	1.7145	Adder	3.81
965922	AG1-461 E O1	0.9232	Adder	2.05
965951	AG1-464 C O1	1.7512	Adder	3.89
965952	AG1-464 E O1	2.6268	Adder	5.83
966281	AG1-497 C O1	3.9481	Adder	8.76
966282	AG1-497 E O1	1.6920	Adder	3.76
966601	AG1-529 C	3.8100	Adder	8.46
966602	AG1-529 E	2.0336	Adder	4.51
CALDERWOOD	CALDERWOOD	0.0924	Confirmed LTF	0.0924
NY	NY	0.0586	Confirmed LTF	0.0586
PRAIRIE	PRAIRIE	0.4779	Confirmed LTF	0.4779
O-066	O-066	0.4576	Confirmed LTF	0.4576
CHEOAH	CHEOAH	0.0931	Confirmed LTF	0.0931
COTTONWOOD	COTTONWOOD	0.3906	Confirmed LTF	0.3906
G-007	G-007	0.0378	Confirmed LTF	0.0378
HAMLET	HAMLET	0.1091	Confirmed LTF	0.1091
GIBSON	GIBSON	0.1010	Confirmed LTF	0.1010
BLUEG	BLUEG	0.3212	Confirmed LTF	0.3212
TRIMBLE	TRIMBLE	0.1030	Confirmed LTF	0.1030
CATAWBA	CATAWBA	0.0658	Confirmed LTF	0.0658

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
AA1-102	Kings Creek-Loretto 138kV	Partially in Service - Under Construction
AA2-069	Cartanza 230kV	Suspended
AB1-056	Indian River 230kV I	Engineering and Procurement
AB1-137	Frankford 25kV	Engineering and Procurement
AB1-141	Church-Wye Mills 138 kV I	Engineering and Procurement
AB1-142	Church-Wye Mills 138 kV II	Engineering and Procurement
AB1-176	Price 25kV II	Active
AB2-032	Church-Wye Mills 138 kV	Engineering and Procurement
AB2-036	Church-Steele 138kV	Active
AB2-037	Keeney-Steele 230kV	Active
AB2-120	Piney Grove-New Church 138kV	Active
AB2-130	Laurel 69kV	Active
AB2-133	Chestertown-Church 69kV	Engineering and Procurement
AB2-135	Church-Kent 69kV	Active
AB2-136	West Cambridge-Vienna 69kV	Active
AB2-153	Church-Wye Mills 138 kV	Engineering and Procurement
AB2-172	Todd 69kV	Active
AB2-179	Townsend 138kV	Engineering and Procurement
AB2-180	Rockawalkin 69kV	Engineering and Procurement
AB2-185	Wye Mills 25kV	Active
AC1-091	Cedar Creek 138kV I	Active
AC1-092	Cedar Creek 138kV II	Active
AC1-093	Cedar Creek 138kV III	Active
AC1-094	Cedar Creek 138kV IV	Active
AC1-190	East New Market 69kV	Active
AC1-213	North Salisbury 25kV	Active
AC2-023	Hebron 69kV	Active
AC2-185	Cedar Creek 138kV II	Active
AC2-186	Harrington 25kV	Active
AD2-059	Chapel Street 138 kV	Active
AD2-076	Centreville 69 kV	Active
AE1-087	Todd 69 kV	Active
AE1-117	Bethany 138 kV	Active
AE1-145	Wallops Island 69 kV	Active
AE2-093	Easton-Steele 138 kV	Active
AE2-112	Carville 138 kV	Active
AE2-257	Cedar Neck 69 kV	Active
AF1-007	Indian River 230 kV I	Active
AF1-015	Easton-Steele 138 kV	Active

Queue Number	Project Name	Status
AF1-036	Carville 138 kV	Active
AF1-231	New Church 138 kV	Active
AF1-244	Kingston 12 kV	Active
AF1-258	Rockawalkin 69 kV	Engineering and Procurement
AF1-259	Price 25 kV	Engineering and Procurement
AF2-038	Printz 230 kV	Active
AF2-055	Plaintation Creek 69 kV	Active
AF2-060	Wattsville 12 kV	Active
AF2-061	Wattsville 69kV	Active
AF2-193	Indian River 230 kV I	Active
AF2-194	Indian River 230 kV II	Active
AF2-196	Cedar Neck 69 kV II	Active
AF2-207	Nelson 69 kV	Active
AF2-248	Edgewood 12 kV I	Active
AF2-249	Edgewood 12 kV II	Active
AF2-250	Edgewood 12 kV III	Active
AF2-313	Price 69 kV	Active
AF2-325	Jacktown 12 kV	Active
AF2-358	Airey-Vienna 69 kV	Active
AF2-378	Cambridge 12 kV	Active
AF2-379	Princess Anne 25 kV	Engineering and Procurement
AF2-385	Nelson 69 kV	Active
AF2-387	Hillsboro-Steele 138 kV	Active
AF2-409	Vienna 138 kV	Active
AG1-061	Laurel-Sharptown 69 kV	Active
AG1-072	Hillsboro-Steele 138 kV II	Active
AG1-079	New Meredith 69 kV	Active
AG1-087	Milford-Cartanza 230 kV	Active
AG1-149	Kingston 12 kV II	Active
AG1-150	Wattsville 69 kV II	Active
AG1-318	Ocean Bay 12 kV	Active
AG1-360	Costen 25 kV	Active
AG1-397	Walston 12 kV	Active
AG1-429	Tasley 69 kV	Active
AG1-450	Airey-Vienna 69 kV II	Active
AG1-461	Mumford 69 kV	Active
AG1-464	Harrington 69 kV	Active
AG1-497	Cartanza 230 kV	Active
AG1-529	Farmview 138 kV	Active
W1-003	Oak Hall	In Service
W1-004	Oak Hall	In Service
W1-005	Oak Hall	In Service
W1-006	Oak Hall	In Service
W1-062	Clayton 138kV	In Service
W3-032A	Cartanza 230kV	In Service
X1-032	Costen 25kV	In Service
X3-008	Todd 69kV	Under Construction
X3-066	Church Hill 69kV	In Service
Y1-079	Wye Mills 69kV	In Service
Y1-080	Dorchester 12kV	In Service
Y3-058	Rockawalkin 69kV	In Service
Z2-076	Worcester South 25kV	In Service

Queue Number	Project Name	Status
Z2-077	Worcester North 25kV	In Service

11.8 Contingency Descriptions

Contingency Name	Contingency Definition
PECO_P1-2_220-84	CONTINGENCY 'PECO_P1-2_220-84' /* $ DELCO $ 220-84 $ LB TRIP BRANCH FROM BUS 214235 TO BUS 231000 CKT 1 /* LINWOOD 230.00 CLAY_230 230.00 $ DELCO $ 220-84 $ L END
CKT 23030B	CONTINGENCY 'CKT 23030B' OPEN LINE FROM BUS 232002 TO BUS 232013 CIRCUIT 1 /CEDAR CREEK - SILVER RUN 230 END
DPL_P1_2_CKT 23031	CONTINGENCY 'DPL_P1_2_CKT 23031' OPEN LINE FROM BUS 232002 TO BUS 232004 CIRCUIT 1 /CEDAR CREEK - MILFORD 230 END
CKT 23032B	CONTINGENCY 'CKT 23032B' OPEN LINE FROM BUS 232013 TO BUS 232003 CIRCUIT 1 /SILVER RUN - CARTANZA 230 END
DPL_P7_1_DBL_4NC	CONTINGENCY 'DPL_P7_1_DBL_4NC' /* RED LION-SILVER RUN 230;RED LION-SILVER RUN 230 OPEN LINE FROM BUS 231004 TO BUS 232013 CKT 1 OPEN LINE FROM BUS 231004 TO BUS 232013 CKT 2 END
DPL_P1_2_AB2-037 KEENEY	CONTINGENCY 'DPL_P1_2_AB2-037 KEENEY' OPEN LINE FROM BUS 923960 TO BUS 231003 CIRCUIT 2 END
DPL_P1_2_CKT 23001	CONTINGENCY 'DPL_P1_2_CKT 23001' OPEN LINE FROM BUS 231003 TO BUS 232000 CIRCUIT 1 /#1 KEENEY EHV - STEELE 230 END
PECO_P1-2_220-85/* $ DELCO $ 220-85 $ LC	CONTINGENCY 'PECO_P1-2_220-85/* $ DELCO $ 220-85 $ LC' TRIP BRANCH FROM BUS 214236 TO BUS 231001 CKT 1 /* LINWOOD 230.00 EDGEMR5 230.00 $ DELCO $ 220-85 $ L END

Contingency Name	Contingency Definition
JC-P1-2-JCC-500-003	CONTINGENCY 'JC-P1-2-JCC-500-003' /* NEWFRDM - WINDSOR 500.00 LINE DISCONNECT BRANCH FROM BUS 200012 TO BUS 200028 CKT 1 /* NEWFRDM - WINDSOR 500.00 LINE END
DPL_P7_1_DBL_1NCB_FSA	CONTINGENCY 'DPL_P7_1_DBL_1NCB_FSA' /* #1 & #2 KEENEY-STEELE 230 OPEN LINE FROM BUS 231003 TO BUS 232000 CKT 1 OPEN LINE FROM BUS 231003 TO BUS 923960 CKT 2 OPEN LINE FROM BUS 232000 TO BUS 923960 CKT 2 DISCONNECT BUS 923961 DISCONNECT BUS 923962 END
DPL_P7_1_DBL_3NC	CONTINGENCY 'DPL_P7_1_DBL_3NC' /* HARMNY-KEENY 230;KEENY-CHRYSLR 230 OPEN LINE FROM BUS 231002 TO BUS 231003 CKT 1 OPEN LINE FROM BUS 231123 TO BUS 231115 CKT 1 END
Base Case	
PJM500_PS_P1-2_5015	CONTINGENCY 'PJM500_PS_P1-2_5015' /* HOPE CREEK TO RED LION TRIP LINE FROM BUS 200027 TO BUS 200029 CKT 1 /* HOPE CREEK TO RED LION END
PJM500_PS_P1-2_HOPE-SILVER	CONTINGENCY 'PJM500_PS_P1-2_HOPE-SILVER' /* HOPE CREEK TO SILVER RUN DISCONNECT BUS 232012 DISCONNECT BUS 232014 END
PECO_P1-2_5014/* $ CHESCO $ PECO_P1-2_5014 $ L	CONTINGENCY 'PECO_P1-2_5014/* $ CHESCO $ PECO_P1-2_5014 $ L' TRIP BRANCH FROM BUS 200065 TO BUS 200051 CKT 1 /* PCHBTM2S 500.00 ROCKSPGS 500.00 $ CHESCO $ PECO_P1-2_5014 $ L END

12 Short Circuit Analysis

The following Breakers are overdutied

Bus Number	Bus Name	BREAKER	Type	Capacity (Amps)	Duty Percentage Post Queue	Duty Percentage Pre Queue

12.1 System Reinforcements - Short Circuit

13 Affected Systems

None

14 Attachment 1: One Line Diagram