Generation Interconnection

Feasibility Study Report

for

Queue Project AE2-108

KINGS DOMINION DP 115KV

8.4 MW Capacity / 20 MW Energy

July, 2019

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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 Virginia Electric and Power Company (VEPCO).

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.

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

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The Interconnection Customer will be required to submit a completed dynamic model study request form (Attachment B-1 of Manual 14G) in order to document the request for the study.

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

3 General

The Interconnection Customer (IC), has proposed a Solar generating facility located in Hanover County, Virginia. The installed facilities will have a total capability of 20 MW with 8.4 MW of this output being recognized by PJM as Capacity. The proposed in-service date for this project is 03/31/2020. This study does not imply a TO commitment to this in-service date.

Queue Number	**AE2-108**
Project Name	KINGS DOMINION DP 115KV
Interconnection Customer	
State	Virginia
County	Hanover
Transmission Owner	Dominion
MFO	20
MWE	20
MWC	8.4
Fuel	Solar
Basecase Study Year	2022

3.1 Point of Interconnection

AE2-108 will interconnect within the Rappahannock Electric Co-op system which runs up to the Dominion's Kings Dominion 115 kV Delivery Point.

3.2 Cost Summary

The AE2-108 project will be responsible for the following costs:

Description	**Total Cost**
Attachment Facilities	$ N/A
Direct Connection Network Upgrade	$ N/A
Non Direct Connection Network Upgrades	$
Total Costs	$ 0

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In addition, the AE2-108 project may be responsible for a contribution to the following costs

Description	Total Cost
System Upgrades	**$11,661,000**

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

The Feasibility Study is used to make a preliminary determination of the type and scope of Attachment Facilities, Local Upgrades, and Network Upgrades that will be necessary to accommodate the Interconnection Request and to provide the Interconnection Customer a preliminary estimate of the time that will be required to construct any necessary facilities and upgrades and the Interconnection Customer's cost responsibility. The System Impact Study provides refined and comprehensive estimates of cost responsibility and construction lead times for new facilities and system upgrades. Facilities Studies will include, commensurate with the degree of engineering specificity as provided in the Facilities Study Agreement, good faith estimates of the cost, determined in accordance with Section 217 of the Tariff,

(a) to be charged to each affected New Service Customer for the Facilities and System Upgrades that are necessary to accommodate this queue project;

(b) the time required to complete detailed design and construction of the facilities and upgrades; and

(c) a description of any site-specific environmental issues or requirements that could reasonably be anticipated to affect the cost or time required to complete construction of such facilities and upgrades.

4 Transmission Owner Scope of Work

Dominion assessed the impact of the proposed Queue Project AE2-108 was evaluated as a 8.4 MW Capacity (20.0 MW energy) load reducer at the Kings Dominion 115kV substation in the Dominion Transmission System, for compliance with NERC Reliability Criteria on Dominion Transmission System. The system was assessed using the summer 2022 AE2 case provided to Dominion by PJM. When performing a generation analysis, Dominion's main analysis will be load flow study results under single contingency (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

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Studies NERC Category C Contingency Conditions (Bus Fault, Tower Line, N-1-1, and Stuck Breaker scenarios) 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.

Attachment facilities and local upgrades (if required) along with terms and conditions to interconnect AE2-108 will be specified in a separate two party Interconnection Agreement (IA) between Rappahannock Electric Co-op (REC) and the IC as this project is considered FERC non-jurisdictional per the PJM Open Access Transmission Tariff (OATT). The single line is shown below in Attachment 1.

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.

5 Non-Direct Connection Cost Estimate

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

Description	Total Cost
Rebuild 5.67 miles of 115 kV Line 73 from Four Rivers to Hanover	$7,371,000
Rebuild 3.3 miles of 115 kV Line 73 from Hanover to Elmont	$4,290,000
System Upgrades	**$11,661,000**

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.

6 Schedule

The schedule for the required Network Impact Reinforcements will be more clearly identified in future study phases. The estimate elapsed time to complete each of the required reinforcements is identified in the "System Reinforcements" section of the report.

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7 Transmission Owner Analysis

7.1 Power Flow Analysis

PJM performed a power flow analysis of the transmission system using a 2022 summer peak load flow model and the results were verified by Dominion. Additionally, Dominion performed an analysis of its transmission system. At the Primary POI, the AE2-108 project contributes to overloads on the Dominion transmission system as shown in the "Network Impact" section of the report. The estimated cost of system reinforcements necessary to mitigate these overloads is also provided.

7.2 Short Circuit Analysis

PJM performed a short circuit analysis and the results were verified by Dominion. The connection of AE2-108 project to the system does not result in any newly overdutied circuit breakers on the Dominion transmission system and does not have a significant fault current contribution to existing overdutied circuit breakers

7.3 Stability Analysis

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

8 Revenue Metering and SCADA Requirements

8.1 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.

8.1.1 Meteorological Data Reporting Requirement

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

8.2 Dominion Requirements

See Section 3.4.6 "Metering and Telecommunications" of Dominion's "Dominion's Facility Interconnection Requirements" document located at: https://www.dominionenergy.com/company/moving-energy/electric-transmission-access.

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9 Network Impacts

The Queue Project AE2-108 was evaluated as a 20.0 MW (Capacity 8.4 MW) injection at the Kings Dominion 115 kV substation in the Dominion area. Project AE2-108 was evaluated for compliance with applicable reliability planning criteria (PJM, NERC, NERC Regional Reliability Councils, and Transmission Owners). Project AE2-108 was studied with a commercial probability of 53%. Potential network impacts were as follows:

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Summer Peak Load Flow

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9.1 Generation Deliverability

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

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
1810425	314220	3FOURRIVERS	DVP	314221	3HANOVER	DVP	1	DVP_P1-2: LN 47	single	187.06	97.84	102.33	DC	8.39
1810431	314221	3HANOVER	DVP	314217	3ELMONT	DVP	1	DVP_P1-2: LN 47	single	187.06	97.73	102.22	DC	8.39

9.2 Multiple Facility Contingency

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

None

9.3 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	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
1808969	314220	3FOURRIVERS	DVP	314221	3HANOVER	DVP	1	DVP_P2-2: FREDERICK B1	bus	229.0	140.03	148.75	DC	19.98
1809271	314220	3FOURRIVERS	DVP	314221	3HANOVER	DVP	1	DVP_P4-5: FREDERI L742	breaker	229.0	140.03	148.75	DC	19.98
1809272	314220	3FOURRIVERS	DVP	314221	3HANOVER	DVP	1	DVP_P4-4: SC242	breaker	229.0	140.03	148.75	DC	19.98
1809273	314220	3FOURRIVERS	DVP	314221	3HANOVER	DVP	1	DVP_P4-2: 2942	breaker	229.0	140.03	148.75	DC	19.98
1808970	314221	3HANOVER	DVP	314217	3ELMONT	DVP	1	DVP_P2-2: FREDERICK B1	bus	229.0	139.98	148.71	DC	19.98
1809276	314221	3HANOVER	DVP	314217	3ELMONT	DVP	1	DVP_P4-5: FREDERI L742	breaker	229.0	139.98	148.71	DC	19.98
1809277	314221	3HANOVER	DVP	314217	3ELMONT	DVP	1	DVP_P4-2: 2942	breaker	229.0	139.94	148.67	DC	19.98
1809278	314221	3HANOVER	DVP	314217	3ELMONT	DVP	1	DVP_P4-4: SC242	breaker	229.0	139.98	148.71	DC	19.98

9.4 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

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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	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
1810626	314151	3SLABTWN	DVP	314136	3FREDBRG	DVP	1	DVP_P1-2: LN 73	operation	331.82	96.64	102.66	DC	19.98
1810599	314153	3WOODPCK	DVP	314151	3SLABTWN	DVP	1	DVP_P1-2: LN 73	operation	331.82	98.51	104.53	DC	19.98
1810420	314220	3FOURRIVERS	DVP	314221	3HANOVER	DVP	1	DVP_P1-2: LN 47	operation	187.06	114.71	125.39	DC	19.98
1810426	314221	3HANOVER	DVP	314217	3ELMONT	DVP	1	DVP_P1-2: LN 47	operation	187.06	114.6	125.28	DC	19.98

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9.5 System Reinforcements

ID	Index	Facility	Upgrade Description	Cost
1810425,1809272,1808969,1809273,1809271	1	3FOURRIVERS 115.0 kV - 3HANOVER 115.0 kV Ckt 1	dom-008 (64) : Rebuild 5.67 miles of 115 kV Line 73 from Four Rivers to Hanover with 768 ACSS. Project Type : FAC Cost : $7,371,000 Time Estimate : 30-36 Months	$7,371,000
1809276,1809277,1808970,1810431,1809278	2	3HANOVER 115.0 kV - 3ELMONT 115.0 kV Ckt 1	dom-009 (65) : Rebuild 3.3 miles of 115 kV Line 73 from Hanover to Elmont with 768 ACSS. Project Type : FAC Cost : $4,290,000 Time Estimate : 30-36 Months	$4,290,000
			TOTAL COST	$11,661,000

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9.6 Flow Gate Details

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

9.6.1 Contingency Descriptions

Contingency Name	Contingency Definition
DVP_P4-4: SC242	CONTINGENCY 'DVP_P4-4: SC242' /* FREDERICKSBURG 115 KV OPEN BRANCH FROM BUS 314076 TO BUS 314136 CKT 1 /* 3QUANTCO 115.00 - 3FREDBRG 115.00 OPEN BRANCH FROM BUS 314136 TO BUS 314151 CKT 1 /* 3FREDBRG 115.00 - 3SLABTWN 115.00 OPEN BRANCH FROM BUS 314136 TO BUS 314137 CKT 1 /* 3FREDBRG 115.00 - 6FREDBRG 230.00 OPEN BUS 314368 /* 3FREDB_1 115.00 KV END
DVP_P1-2: LN 73	CONTINGENCY 'DVP_P1-2: LN 73' OPEN BRANCH FROM BUS 314217 TO BUS 314221 CKT 1 /* 3ELMONT 115.00 - 3HANOVER 115.00 OPEN BRANCH FROM BUS 314220 TO BUS 314221 CKT 1 /* 3FOURRIVERS 115.00 - 3HANOVER 115.00 OPEN BRANCH FROM BUS 314221 TO BUS 314405 CKT 1 /* 3HANOVER 115.00 - 3HANOV_1 115.00 OPEN BUS 314221 /* ISLAND: 3HANOVER 115.00 OPEN BUS 314405 /* ISLAND: 3HANOV_1 115.00 END
DVP_P4-5: FREDERI L742	CONTINGENCY 'DVP_P4-5: FREDERI L742' /* FREDERICKSBURG 115 KV OPEN BRANCH FROM BUS 314076 TO BUS 314136 CKT 1 /* 3QUANTCO 115.00 - 3FREDBRG 115.00 OPEN BRANCH FROM BUS 314136 TO BUS 314151 CKT 1 /* 3FREDBRG 115.00 - 3SLABTWN 115.00 OPEN BRANCH FROM BUS 314136 TO BUS 314137 CKT 1 /* 3FREDBRG 115.00 - 6FREDBRG 230.00 OPEN BUS 314368 /* 3FREDB_1 115.00 KV OPEN BUS 314380 /* 6FREDB_1 230.00 KV END

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Contingency Name	Contingency Definition
DVP_P1-2: LN 47	CONTINGENCY 'DVP_P1-2: LN 47' OPEN BRANCH FROM BUS 314136 TO BUS 314151 CKT 1 /* 3FREDBRG 115.00 - 3SLABTWN 115.00 OPEN BRANCH FROM BUS 314151 TO BUS 314153 CKT 1 /* 3SLABTWN 115.00 - 3WOODPCK 115.00 OPEN BRANCH FROM BUS 314152 TO BUS 314153 CKT 1 /* 3S JOHNS 115.00 - 3WOODPCK 115.00 OPEN BRANCH FROM BUS 314152 TO BUS 314216 CKT 1 /* 3S JOHNS 115.00 - 3PINEWOOD 115.00 OPEN BUS 314151 /* ISLAND: 3SLABTWN 115.00 OPEN BUS 314152 /* ISLAND: 3S JOHNS 115.00 OPEN BUS 314153 /* ISLAND: 3WOODPCK 115.00 END
DVP_P2-2: FREDERICK B1	CONTINGENCY 'DVP_P2-2: FREDERICK B1' /* FREDERICKSBURG 115 KV OPEN BRANCH FROM BUS 314076 TO BUS 314136 CKT 1 /* 3QUANTCO 115.00 - 3FREDBRG 115.00 OPEN BRANCH FROM BUS 314136 TO BUS 314151 CKT 1 /* 3FREDBRG 115.00 - 3SLABTWN 115.00 OPEN BRANCH FROM BUS 314136 TO BUS 314137 CKT 1 /* 3FREDBRG 115.00 - 6FREDBRG 230.00 OPEN BUS 314368 /* 3FREDB_1 115.00 KV END
DVP_P4-2: 2942	CONTINGENCY 'DVP_P4-2: 2942' /* FREDERICKSBURG 115 KV OPEN BRANCH FROM BUS 314073 TO BUS 314076 CKT 1 /* 3POSSUM 115.00 - 3QUANTCO 115.00 OPEN BRANCH FROM BUS 314076 TO BUS 314136 CKT 1 /* 3QUANTCO 115.00 - 3FREDBRG 115.00 OPEN BUS 314076 /* ISLAND: 3QUANTCO 115.00 OPEN BRANCH FROM BUS 314136 TO BUS 314151 CKT 1 /* 3FREDBRG 115.00 - 3SLABTWN 115.00 OPEN BRANCH FROM BUS 314136 TO BUS 314137 CKT 1 /* 3FREDBRG 115.00 - 6FREDBRG 230.00 OPEN BUS 314368 /* 3FREDB_1 115.00 KV END

9.6.2 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
1809273	314220	3FOURRIVERS	DVP	314221	3HANOVER	DVP	1	DVP_P4-2: 2942	breaker	229.0	140.03	148.75	DC	19.98

Bus #	Bus	MW Impact
315050	1FOURRIVERG	20.31
934781	AD1-105 C	45.39
934782	AD1-105 E	31.54
939281	AE1-159 C O1	75.33
939282	AE1-159 E O1	44.56
941141	AE2-108 C	8.39
941142	AE2-108 E	11.59
941151	AE2-109 C	2.94
941152	AE2-109 E	4.06
BLUEG	BLUEG	0.46
CALDERWOOD	CALDERWOOD	0.05
CANNELTON	CANNELTON	0.03
CARR	CARR	0.03
CATAWBA	CATAWBA	0.03
CHEOAH	CHEOAH	0.05
CHILHOWEE	CHILHOWEE	0.02
COFFEEN	COFFEEN	0.05
COTTONWOOD	COTTONWOOD	0.19
DUCKCREEK	DUCKCREEK	0.11
EDWARDS	EDWARDS	0.05
ELMERSMITH	ELMERSMITH	0.05
FARMERCITY	FARMERCITY	0.03
G-007	G-007	0.1
GIBSON	GIBSON	0.02
HAMLET	HAMLET	0.05
NEWTON	NEWTON	0.13
O-066	O-066	0.62
PRAIRIE	PRAIRIE	0.24
RENSSELAER	RENSSELAER	0.03
SANTEETLA	SANTEETLA	0.01
SMITHLAND	SMITHLAND	0.02
TATANKA	TATANKA	0.06
TILTON	TILTON	0.06
TRIMBLE	TRIMBLE	0.05
TVA	TVA	0.16
UNIONPOWER	UNIONPOWER	0.07

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9.6.3 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
1809278	314221	3HANOVER	DVP	314217	3ELMONT	DVP	1	DVP_P4-4: SC242	breaker	229.0	139.98	148.71	DC	19.98

Bus #	Bus	MW Impact
315050	1FOURRIVERG	20.31
934781	AD1-105 C	45.39
934782	AD1-105 E	31.54
939281	AE1-159 C O1	75.33
939282	AE1-159 E O1	44.56
941141	AE2-108 C	8.39
941142	AE2-108 E	11.59
941151	AE2-109 C	2.94
941152	AE2-109 E	4.06
BLUEG	BLUEG	0.46
CALDERWOOD	CALDERWOOD	0.05
CANNELTON	CANNELTON	0.03
CARR	CARR	0.03
CATAWBA	CATAWBA	0.03
CHEOAH	CHEOAH	0.05
CHILHOWEE	CHILHOWEE	0.02
COFFEEN	COFFEEN	0.05
COTTONWOOD	COTTONWOOD	0.19
DUCKCREEK	DUCKCREEK	0.11
EDWARDS	EDWARDS	0.05
ELMERSMITH	ELMERSMITH	0.05
FARMERCITY	FARMERCITY	0.03
G-007	G-007	0.1
GIBSON	GIBSON	0.02
HAMLET	HAMLET	0.05
NEWTON	NEWTON	0.13
O-066	O-066	0.62
PRAIRIE	PRAIRIE	0.24
RENSSELAER	RENSSELAER	0.03
SANTEETLA	SANTEETLA	0.01
SMITHLAND	SMITHLAND	0.02
TATANKA	TATANKA	0.06
TILTON	TILTON	0.06
TRIMBLE	TRIMBLE	0.05
TVA	TVA	0.16
UNIONPOWER	UNIONPOWER	0.07

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Short Circuit

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10 Short Circuit

The following Breakers are overduty: None

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Affected Systems

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11 Affected Systems

11.1 LG&E

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

11.2 MISO

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

11.3 TVA

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

11.4 Duke Energy Progress

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

11.5 NYISO

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

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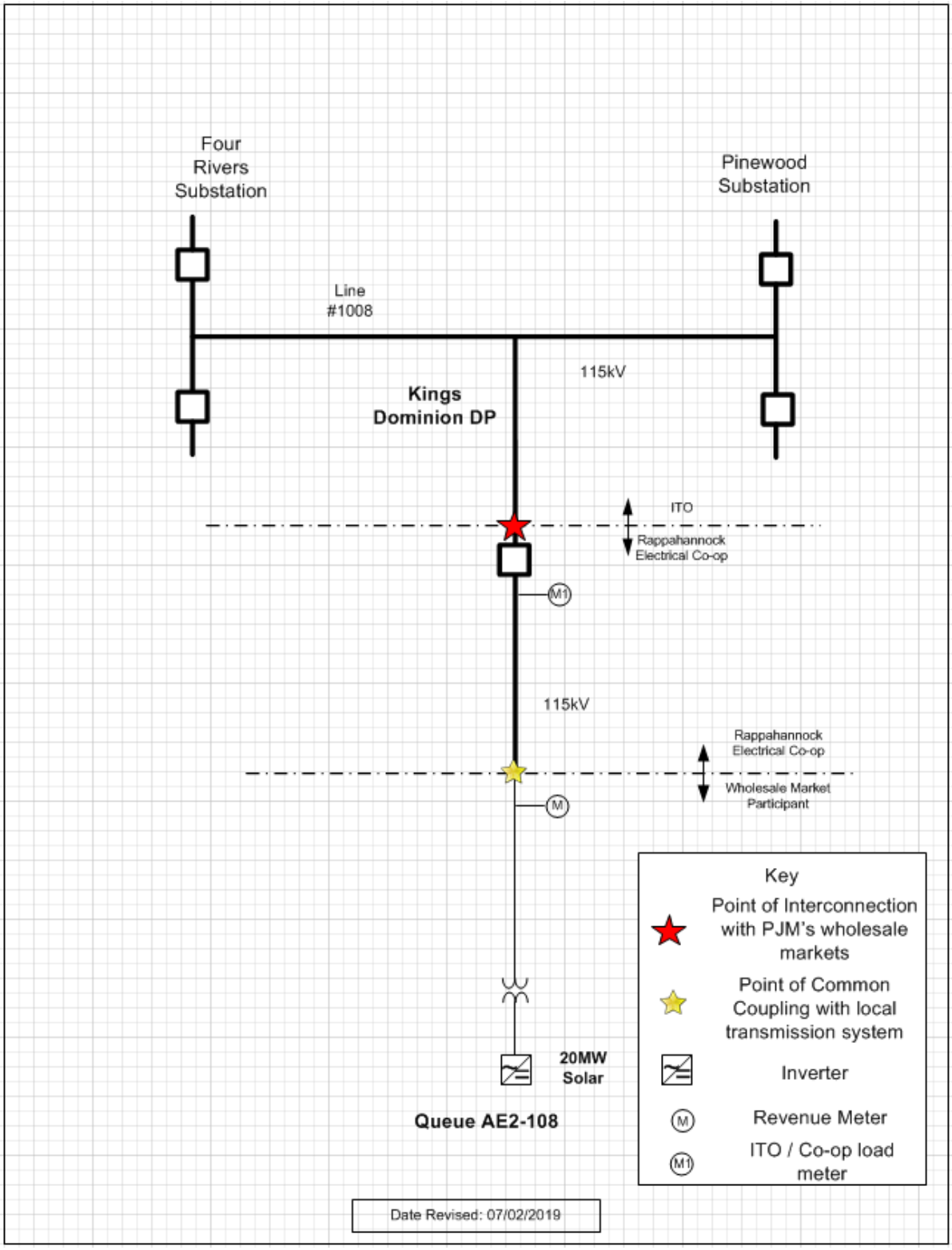
Attachment 1

System Configuration



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