Generation Interconnection Facilities Study Report

For

PJM Generation Interconnection Request Queue Positions AC1-048 & AC2-053

Germantown 115kV

July 2018

Queue #AC1-048 & AC2-053
Germantown 115 kV
Facilities Study Report

Description of the Project

Brookview Solar I, LLC, ("Interconnection Customer") has proposed adding additional facilities for Queue #AC1-048 (which will have a total capability of 35 MW with 13.3 MW of this output being recognized by PJM as capacity) to the Germantown 115 kV substation in Adams County, PA. These additional facilities are associated with Queue # AC2-053 and represents a 20 MW incremental increase **("**Uprate**")** to prior Queue request # AC1-048. AC2-053 will have a total capability of 20 MW with 7.6 MW of this Uprate output being recognized by PJM as capacity. The increased capability associated with this queue position AC2-053 is achieved through additional solar panels and associated equipment. The following table summarizes the MW contributions of each queue request to the Maximum Facility Output (MFO) and Capacity Interconnection Rights (CIR):

PJM Queue Position	Requested MW Energy	Requested MWs Capacity	MFO	CIRs
AC1-048	35.0	13.3	35.0	13.3
AC2-053	20.0	7.6	20.0	7.6
Total	55.0	20.9	55.0	20.9

The installed facilities will have total capability of 55.0 MW (MFO) with 20.9 MW of this output being recognized by PJM as Capacity Interconnection Rights (CIR).

This project is located in Adams County, Pennsylvania (Ref: Figure 3) in southern Pennsylvania near the border of Maryland. The generation facility will be located within the **Met-Ed (ME)** service territory, and the power will be injected into the **Mid-Atlantic Interstate Transmission, LLC (MAIT) 11**5 kV transmission system at the Germantown substation. Both ME and MAIT are subsidiaries of FirstEnergy (FE) (hereinafter referred to as "Transmission Owner").

AC1-048 and AC2-053 will interconnect with the MAIT transmission system by direct power injection into the Germantown Substation via an overhead 115 kV line that dead-ends inside the substation.

Schedule

Interconnection Customer requested commercial operation date (COD) for its generation facility on **December 31, 2020**. Transmission Owner proposes a schedule that matches Interconnection Customer's requested milestone schedule. This schedule assumes that a project construction kickoff meeting must occur **no later than March 1, 2019**, in order to meet the milestone schedule listed below:

Interconnection Customer's Requested Milestone Schedule:

05/31/2020 Initial Back-feed Date
12/31/2020 Project Commercial Operation Date

Direct and Non-Direct Network Upgrades Schedule: Transmission Owner proposes a **fourteen** (**14**) month schedule following a fully executed Interconnection Construction Service Agreement and Construction Kickoff Meeting in order to complete the engineering and construction associated with activities, as detailed in the sections below.

Scope of Interconnection Customer's Work

Interconnection Customer will construct photovoltaic facilities, generation step-up transformer (GSU), 115 kV 0.1 miles generator lead line, and connect to the Transmission Owner's existing 115 kV line terminal at Germantown substation.

Point of Interconnection (POI): the point where Interconnection Customer's 115 kV generator lead line terminates on the 115 kV dead-end structure in the Transmission Owner substation at Germantown Substation (Please turn to page 18 for Figure 2 – Point of Interconnection).

Interconnection Customer is required to own, install, and maintain a fully-rated, fault-interrupting circuit breaker on the high-side of each GSU transformer, revenue meter, interconnection metering instrument transformers and a main breaker on the collector bus, located in the generator substation yard.

Interconnection Customer will also purchase and install the minimum required FirstEnergy generation interconnection relaying and control facilities. This includes over/under voltage protection, over/under frequency protection, and zero sequence voltage protection relays. They will also purchase and install supervisory control and data acquisition (SCADA) equipment to provide information in a compatible format to the FirstEnergy Transmission System Control Center. Interconnection Customer will provide for establishment of dedicated communication circuits for SCADA report to the FirstEnergy Transmission System Control Center.

Project Scope

It is proposed the AC1-048/AC2-053 project to construct a new 115 kV line to a new terminal position which will be constructed by the Transmission Owner at Germantown substation. Interconnection Customer is responsible for constructing all the facilities on its side of the POI, as shown in the attached one-line diagram (Please turn to page 18 for Figure 2 – Point of Interconnection), including obtaining all property rights and required permits for installing 0.1-mile, 115 kV generator lead line from the generator site to the POI at Germantown substation.

Description of Facilities Work:

Facilities work to be constructed by Interconnection Customer:

1. Generator Lead Line – 0.1 miles from POI to Project Site

General Assumptions / Notes:

- Station Service – Transmission Owner requires a primary and a backup station power supply with automatic transfer. This consists of the following sources:
    - Primary: One (1) 115 kV power voltage transformer
    - Backup: Single-phase, 120/240V service from local distribution feeder
        - Station service will require the execution of a back-up service agreement to serve the customer load supplied when the units are out-of-service.
- Interconnection Customer will construct the proposed 115 kV lead line with Transmission Owner review for any clearance or right-of-way encroachment with existing Transmission Owner owned 115 kV, 138 kV and 13.2 kV facilities.
- For the proposed 115 kV lead line, Interconnection Customer shall provide Transmission Owner with transmission plan & profile or PLS-CADD drawings file prior to construction, and as-built drawings confirmed by as-built survey data post-construction for sag and tension of conductor.
- Additional costs will be incurred by the Interconnection Customer if final alignment or tension of 115 kV lead line causes encroachments, changes, or modifications to any existing Transmission Owner facilities.

Right-of-Way (ROW) Assumptions:

- Interconnection Customer will acquire all necessary line and access road right-of-way for generator 115 kV lead line.

Forestry/Vegetation Management Assumptions:

- The only vegetation clearing work on the project is associated with the generator 115 kV lead line and is the responsibility of the Interconnection Customer.
- Interconnection Customer is responsible for Erosion and Sediment Control (E&S) installation, access road construction and rehabilitation along the length of the generator 115 kV lead line.

Facilities work to be constructed by Transmission Owner:

1. Germantown Substation – Install/upgrade relays, controls, fiber and equipment for new terminal position

Install breaker, disconnect switches, relaying, buswork and foundations and other necessary equipment for new terminal position. Install/upgrade relaying and controls for a new 115 kV terminal position per the protection requirements. Please turn to page 13 for Attachment A – Detailed Protection Requirements, and to page 16 for Figure 1 – Relay Sketch. Cost includes project management, SCADA changes, and testing and commissioning.

Assumptions / Notes:

- Interconnection Customer will coordinate design and alignment of proposed AC1-048/AC2-053 115 kV generator lead line with Transmission Owner for review of any clearance, right-of-way or right-of-way encroachment with Transmission Owner owned facilities. The Interconnection Customer shall provide Transmission Owner with proposed transmission plan & profile drawings prior to construction and as-built drawings, confirmed by as-built survey data post-construction.
- Transmission Owner's preference is to limit interference and avoid transmission line crossings with new 115 kV terminal positions. As a minimum, Interconnection Customer facilities should not encroach within 100 feet of Transmission Owner centerline at blowout conditions. If Interconnection Customer's line design does not comply with this requirement Transmission Owner would need to review this area as a special exception.

Engineering Assumptions:

- No forestry work is anticipated.
- It is assumed that no existing structures will need to be removed.

Siting Assumptions:

- It is expected that the Erosion & Sedimentation Control Plan for the substation work will be the responsibility of the Transmission Owner.
- Assumes that project will receive local municipal approval with no public or municipal opposition. It assumes no property owner, governmental, or municipal opposition to the overall project.
- All substation work will occur within property currently owned and under FirstEnergy control.

Environmental Assumptions

- Environmental permits from PA will be required.
- Environmental studies may be required to develop E&S Control Plans and required measures. Costs include development and submittal of E&S Plan, periodic monitoring of E&S measures including post construction removal and rehabilitation.
- The Interconnection Customer will be responsible for all environmental surveys, permits, approvals and plans with federal, state, and/or local agencies.
- Interconnection Customer to provide all access rights, easements, ROW and permits necessary to complete the Project to the satisfaction of Transmission Owner. Environmental permitting shall encompass all federal, state and local requirements, consultations and agency coordination. Confirmation of meeting all permitting requirements shall be provided to Transmission Owner, prior to start of construction. Following construction and energization, confirmation of permit closeout shall be provided to the satisfaction of Transmission Owner, prior to transfer of ownership. If any of these elements are not included in the final agreement between Transmission owner and Interconnection Customer, twelve (12)-to-eighteen (18) months should be added to the Project schedule to secure necessary permits.
- Interconnection Customer is responsible for all property acquisition (including easements/rights-of-way (ROW)) for transmission, distribution and communication facilities needed for the generator interconnection.

Forestry/Vegetation Management Assumptions

- It is assumed that no additional vegetation clearing will be required.

2. Germantown Substation – Project Management Oversight, Testing, Commissioning, Meter and SCADA

The Interconnection Customer will work with FirstEnergy to contract with a FirstEnergy approved contractor for such work. They will also coordinate with FirstEnergy to receive approval and coordination of the work and outages. Costs include project management, SCADA changes, meter and testing and commissioning.

Install fiber interface at Germantown POI with Interconnection Customer's fiber for communication and operational relaying with Interconnection Customer's generator substation 115 kV breaker.

Total Estimated Costs of Transmission Owner Facilities for Direct and Non-Direct Network Upgrades:

The following cost break down summarizes the total estimated costs according to FERC criteria. The estimated costs are in 2018 dollars. The taxes are a CIAC (Contribution in Aid of Construction) Federal Income Tax Gross Up charge. This tax may or may not be charged based on whether or not this project meets the eligibility requirements of IRS Notice 88-129.

(a) Attachment Facilities: None.

(b) Direct Connection Network Upgrades: None.

(c) Non-Direct Network Upgrades:

PJM Network Upgrade #N5667 at Germantown Substation.

(c1) Install breaker, disconnect switches, CVT's and installation of relays/controls, and install fiber interface for new AC1-048 & AC2-053 fiber or OPGW. Fiber Work - Install in-sub fiber runs..... **$988,700**
[Tax: $ 410,300. Total Cost with Tax: $1,399,000]

(c2) Project Management, Commissioning, Meter, and SCADA. **$186,500**
[Tax: $ 410,300. Total Cost with Tax: $263,900]

(d) Direct Local Network Upgrades: None.

(e) Non-Direct Local Network Upgrades: None.

(f) Option to Build Upgrades: None.

Estimated Total Costs (a) to (f): ..... $ 1,175,200

Schedule:

A proposed **fourteen** (**14**) month schedule is estimated to complete the engineering, construction and the associated activities, from the date of a fully executed Interconnection Construction Service Agreement and Construction Kick-Off Meeting. This schedule assumes that all issues covered by the "Engineering, Siting, Environmental, and Forestry Issues" section of this document are resolved, and outages will occur as planned. Construction cannot begin until after all applicable permits and/or easements have been obtained.

Activity	Start Month	End Month
Preliminary Engineering	1	2
Detailed Engineering	3	6
Equipment Procurement - Delivery	6	8
Below Grade Construction	9	10
Above Grade Construction	10	14
Testing & Commissioning**	14	14

Generation Connection Requirements

The proposed interconnection facilities must be designed in accordance with the Transmission Owner's *Requirements for Transmission Connected Facilities* document located at either of the following links:

www.firstenergycorp.com/feconnect

www.pjm.com/planning/design-engineering/to-tech-standards.aspx

The following is an excerpt taken from Transmission Owner's *Requirements for Transmission Connected Facilities* document:

> *For all generation facilities, other than wind-powered and other non-synchronous generating facilities, the minimum requirement shall be the provision of a reactive power capability sufficient to maintain a composite power delivery at continuous rated power output at a power factor as defined in the table below. This requirement will be measured at either the POI or generator terminals as specified in the table below. These reactive requirements apply to both the initial installation as well as to any incremental change in unit MW capability. FirstEnergy will coordinate with the Connecting Party to identify the optimal generator step-up transformer tap to make such a capability available when demanded.*
>
> *For all wind-powered or other non-synchronous generating facilities the minimum requirement shall be the provision of a reactive power capability sufficient to maintain a composite power delivery at a power factor as defined in the table. This requirement will be measured at either the POI or generator's terminals as specified in the table below. These reactive requirements apply to both the initial installation as well as to any incremental change in unit MW capability. FirstEnergy will coordinate with the*

Connecting Party to identify the optimal generator step-up transformer tap to make such a capability available when needed.

For projects that entered PJM's New Service Queue on or after May 1, 2015, and before November 1, 2016, the power factor requirement will be as follows:

Generation Type	New / Increase	Size	Power Factor Requirement	Measurement Location
Synchronous	New	> 20 MW	0.95 leading to 0.90 lagging	Generator's Terminals
Synchronous	New	<= 20 MW	0.95 leading to 0.90 lagging	Point of Interconnection
Wind or Non-Synchronous	New	All	0.95 leading to 0.95 lagging	Generator's Terminals
Synchronous	Increase	> 20 MW	1.0 (unity) to 0.90 lagging	Generator's Terminals
Synchronous	Increase	<= 20 MW	1.0 (unity) to 0.90 lagging	Point of Interconnection
Wind or Non-Synchronous	Increase	All	0.95 leading to 0.95 lagging	Generator's Terminals

The above table is applicable to AC1-048.

For projects that entered PJM's New Service Queue after November 1, 2016, the power factor requirement will be as follows:

Generation Type	New / Increase	Size	Power Factor Requirement	Measurement Location
Synchronous	New	> 20 MW	0.95 leading to 0.90 lagging	Generator's Terminals
Synchronous	New	<= 20 MW	0.95 leading to 0.90 lagging	Point of Interconnection
Wind or Non-Synchronous	New	All	0.95 leading to 0.95 lagging	High Side of the Facility Substation Transformers
Synchronous	Increase	> 20 MW	1.0 (unity) to 0.90 lagging	Generator's Terminals
Synchronous	Increase	<= 20 MW	1.0 (unity) to 0.90 lagging	Point of Interconnection
Wind or Non-Synchronous	Increase	All	0.95 leading to 0.95 lagging	High Side of the Facility Substation Transformers

The above table is applicable to AC2-053.

Any different reactive power requirements that FirstEnergy and/or PJM determines to be appropriate for wind-powered or other non-synchronous generation facilities will be stated in the applicable interconnection agreement(s).

Induction generators and other generators with no inherent VAR (reactive power) control capability, or those that have a restricted VAR capability less than the defined requirements, must provide dynamic supplementary reactive support located at the generation facility with electrical characteristics equivalent to that provided by a similar-sized synchronous generator.

Design Requirements

Interconnection Customer is responsible for specifying appropriate equipment and facilities such that the parallel generation is compatible with Transmission Owner's Transmission System. Interconnection Customer is also responsible for meeting any applicable federal, state, and local codes.

Design Criteria

Facilities owned and operated by Transmission Owner shall comply with the applicable Transmission Owner technical requirements and standards posted on the PJM website per the PJM Tariff, and the following criteria. Where there are different requirements for the same criterion, the more restrictive shall apply. Interconnection Customer must abide by any PJM, RFC or NERC criteria imposed that is more restrictive than those of Transmission Owner.

General Design Requirements

• System phasing (counter clockwise)	1-2-3
• System frequency:	60 hertz
• Elevation, Meters Above Sea Level (AMSL):	Less than 1000 meters
• Isokeraunic level:	40
• Maximum ambient temperature:	40 degrees C
• Minimum ambient temperature:	-40 degrees C
• Maximum conductor operating temperature:	Contact Transmission Owner
• Wind loading (round shapes):	Per ASCE 10, per Fig. 250-2B depending on location Per ASCE 7-98, per Fig. 6-1 depending on location
• Ice loading – Substations (no wind):	25 mm
• Seismic zone:	Per ASCE Manual 113 Substation Structure Design Manual. Equipment qualification per IEEE 693-2005 and IEE 1527-2006 Per ASCE 7-98, per Fig. 9.4.1.1(a) and (b). Equipment qualification per IEEE 693-97

Voltage and Current Ratings

• Nominal phase-to-phase:	115 kV
• Maximum phase-to-phase:	121 kV
• Basic impulse level (BIL):	550 kV
• Maximum continuous current carrying capacity:	2000 A
• Design fault current:	40 kA
• Single contingency (breaker failure) clearing time:	30 cycles

Clearances and Spacing

• Recommended rigid bus center-to-center phase spacing:	84”
• Minimum phase-to-phase, metal-to-metal distance:	53”
• Recommended phase-to-ground:	45”
• Minimum phase-to-ground:	42”
• Low bus height above top of foundations (match existing):	15’-1”

- High bus height above top of foundations (match existing): 21'-1"
- Minimum vertical clearance from live parts to grade: 11'-7"
- Minimum horizontal clearance from live parts: 6'-1"
- Minimum conductor clearance above roads in switchyard: 20'-2"
- Minimum bottom of insulator to top of foundation: 8'-6"

Metering, SCADA and Communications

Interconnection Customer shall install, own, operate, test and maintain the necessary revenue metering equipment. Interconnection Customer shall provide Transmission Owner with dial-up communication to the revenue meter.

Transmission Owner's Revenue Metering Requirements may be found in the *Requirements for Transmission Connected Facilities* document located at the following links:

www.firstenergycorp.com/feconnect

www.pjm.com/planning/design-engineering/to-tech-standards.aspx

These requirements are in addition to any metering required by PJM.

Transmission Owner will provide the telecommunication circuits for the SCADA RTU and the telephone in the Transmission Owner interconnection substation at Germantown substation. Transmission Owner will obtain real-time, site-specific, generation data from PJM, via the required communication link from Interconnection Customer to PJM. Transmission Owner will work with PJM and Interconnection Customer to ensure the generation data provided to PJM meets Transmission Owner's requirements.

Communications for transmission line protection between Germantown substation and Interconnection Customer's generation (collector) substation, will be via fiber optics (see "Fiber-Optic Communication Channels" section below).

Fiber-Optic Communication Channels

Transmission Owner Responsibilities:
Transmission Owner will provide demark for fiber interface with Interconnection Customer fiber terminations at Germantown substation and fiber into existing control house.

Interconnection Customer Responsibilities:
Per the attached Protection Requirements (Please turn to page 13 for Attachment A – Detailed Protection Requirements, and to page 16 for Figure 1 – Relay Sketch). Interconnection Customer will design, provide, install, own and maintain a fiber-optic communications cable between Germantown substation and Interconnection Customer's AC1-048/AC2-053 generation (collector) substation. Two (2) fiber-optic channels are required for protection schemes to obtain high-speed tripping capability for any fault within the zone of protection. Two independent fiber optic communications channels are required between the FirstEnergy owned Germantown substation and the AC1-048/AC2-053 generation substation to be used for relay communications.

The primary and backup relay fiber-optic communication channels must be in separately-routed cable paths, and additional fiber-optic connection costs would apply. Interconnection Customer is responsible for obtaining and maintaining all associated Rights-of-Way (ROW), Easements, and Permits for its fiber-optic cable.

General Assumptions/Qualifiers

The accomplishment of the work on the Transmission Owner system to support the estimated costs and proposed schedule is dependent on the following:

- Obtaining the necessary line and substation outages. Transmission line and substation outages are typically not granted from June to September and are discouraged during extreme winter conditions.
- No equipment delivery delays.
- No extreme weather.
- No force majeure.
- Interconnection Customer will obtain all necessary permits.
- Interconnection Customer will develop all necessary access roads for project sites.

ATTACHMENTS

Attachment A

Detailed Protection Requirements (NOT to be used for Construction)
PJM Queue Position: AC1-048/AC2-053

Short Circuit Analysis

Short Circuit Values (Existing Conditions)

Fault values for the Germantown Substation location are:
Three phase = 9870.9 A
Single line to ground = 7546.7 A
Z1 = 1.25774 + j6.60772 Ω
Z0 = 3.08892 + j12.5791 Ω

Fault values are from the current PJM Short Circuit Case for the AC1-048 & AC2-053 generation project. The faults provided are bolted, symmetrical values for normal system conditions. Future increases in fault currents are possible and it is the customer's responsibility to upgrade their equipment and/or protective equipment coordination when necessary.

General Connection Requirements

All proposed generation interconnection points and load-serving delivery points must comply with the technical requirements detailed in the FirstEnergy "Requirements for Transmission Connected Facilities" document.

Relay Communications Channels

- Two independent fiber optic communications channels are required between the FirstEnergy owned Germantown substation and the AC1-048 Generation substation to be used for relay communications.

Generator 115 kV Substation Connection Requirements

Protection Requirements

Faults within any 115kV piece of equipment must be detected by two independent high-speed zones of protection. Bus protection shall consist of primary and backup current differential or a high-impedance voltage differential scheme. Transformer protection shall consist of a primary current differential scheme and a backup current scheme, preferably differential, utilizing separate current transformers and an independent transformer neutral overcurrent relay.

Backup protection shall be completely independent from the primary protection; including separate current transformers, potential transformer windings (where applicable) and DC control circuits.

A separate tripping path energizing separate breaker trip coils is required for primary and backup relaying.

A breaker failure relay (such as SEL-501 or SEL-352) shall be utilized on all 115 kV circuit breakers. Any protective relay trip of a 115kV breaker shall initiate the failure to trip scheme for that breaker. The re-trip feature for the BFT scheme shall be utilized and trip the 115kV circuit breaker. The 115kV breaker failure scheme shall operate a hand reset lockout relay which shall trip and block close all electrically adjacent circuit breakers. Tripping of the breakers shall be accomplished via the fiber optic cables and the tie line protective relays (DTT).

All primary relaying is required to be connected CTs on the inner bushing looking through the breaker in to the protected equipment. All backup relaying is required to be connected CTs on the outer bushing looking through the breaker in to the protected equipment. The protection should trip the associated breakers, initiate breaker failure-to-trip schemes and reclosing schemes where applicable.

The relaying system shall have a reliable source of DC power independent from the AC system or immune to AC system disturbance or loss (for example - DC battery and charger) to assure proper operation of the protection scheme.

All relays, relay schemes, and relay settings that include 115 kV voltages or currents or trip any 115 kV circuit breakers shall require the review and approval of FirstEnergy.

FirstEnergy will complete detailed relay coordination studies to identify off-site relay setting changes required due to this generation interconnection. This may result in additional individual relay replacements being required. These relay replacements will be done at the cost of the Interconnection Customer.

The customer is solely responsible for protecting its own equipment in such a manner that electrical faults or other disturbances on the FirstEnergy system do not damage its equipment.

AC1-048 & AC2-053 115kV Substation

Protection Requirements

The protection for the 115kV line from the AC1-048 &AC2-053 generation substation to Germantown substation shall consist of:

- SEL-411L with fiber optic interface (Primary)
- SEL-411L with fiber optic interface (Backup)
- DTT sent through primary and backup SEL-411L

Additionally, each breaker shall utilize a SEL-501 relay and associated lockout relay for breaker failure to trip protection.

A revenue metering installation is required for this installation. Requirements are outlined in FirstEnergy's "Requirements for Transmission Connected Facilities" document.

Operational metering is also required for this generation connection. These requirements are also outlined in FirstEnergy's "Requirements for Transmission Connected Facilities" document.

These requirements are in addition to any metering required by PJM.

Germantown 115 kV Substation

Protection Requirements

The protection for the 115kV line to the AC1-048 & AC2-053 generation substation shall consist of:

- SEL-411L with fiber optic interface (Primary)
- SEL-411L with fiber optic interface (Backup)
- DTT sent through primary and backup SEL-411L

Additionally, each breaker shall utilize a SEL-501 relay and associated lockout relay for breaker failure to trip protection. Intertie functionality will be included in the backup SEL-411L at Germantown due to the system configuration surrounding the substation.

A revenue metering installation is required for this installation. Requirements are outlined in FirstEnergy's "Requirements for Transmission Connected Facilities" document.

Operational metering is also required for this generation connection. These requirements are also outlined in FirstEnergy's "Requirements for Transmission Connected Facilities" document.

These requirements are in addition to any metering required by PJM.

FIGURE 1 (1 of 2)

Relay Sketch (Diagram does not represent a physical layout. Not to be used for construction)

PJM Queue Position: AC1-048/AC2-053

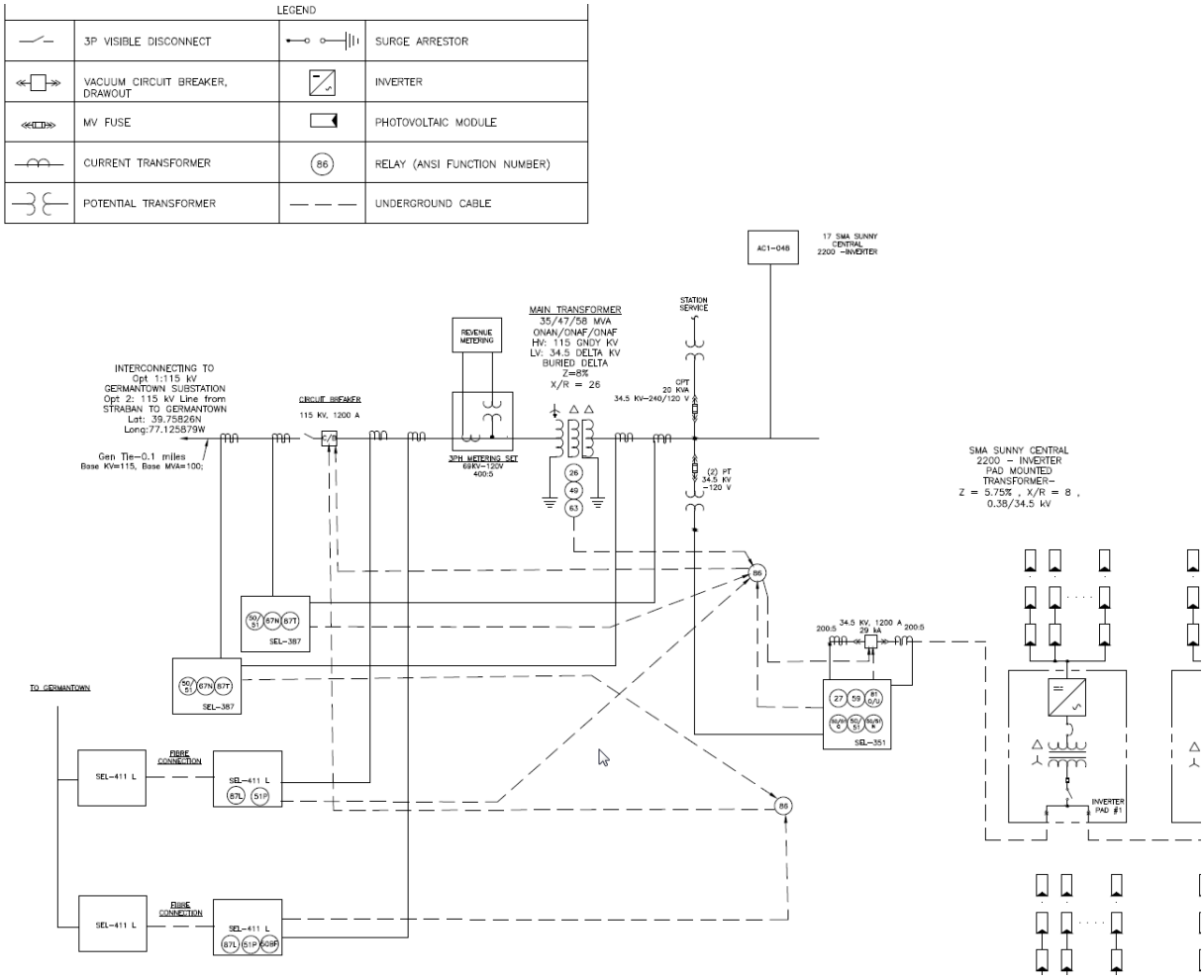

FIGURE 1 – Continued from previous page (2 of 2)

Relay Sketch

PJM Queue Position: AC1-048/AC2-053

NOTE: Diagram does not represent a physical layout. Not to be used for construction.

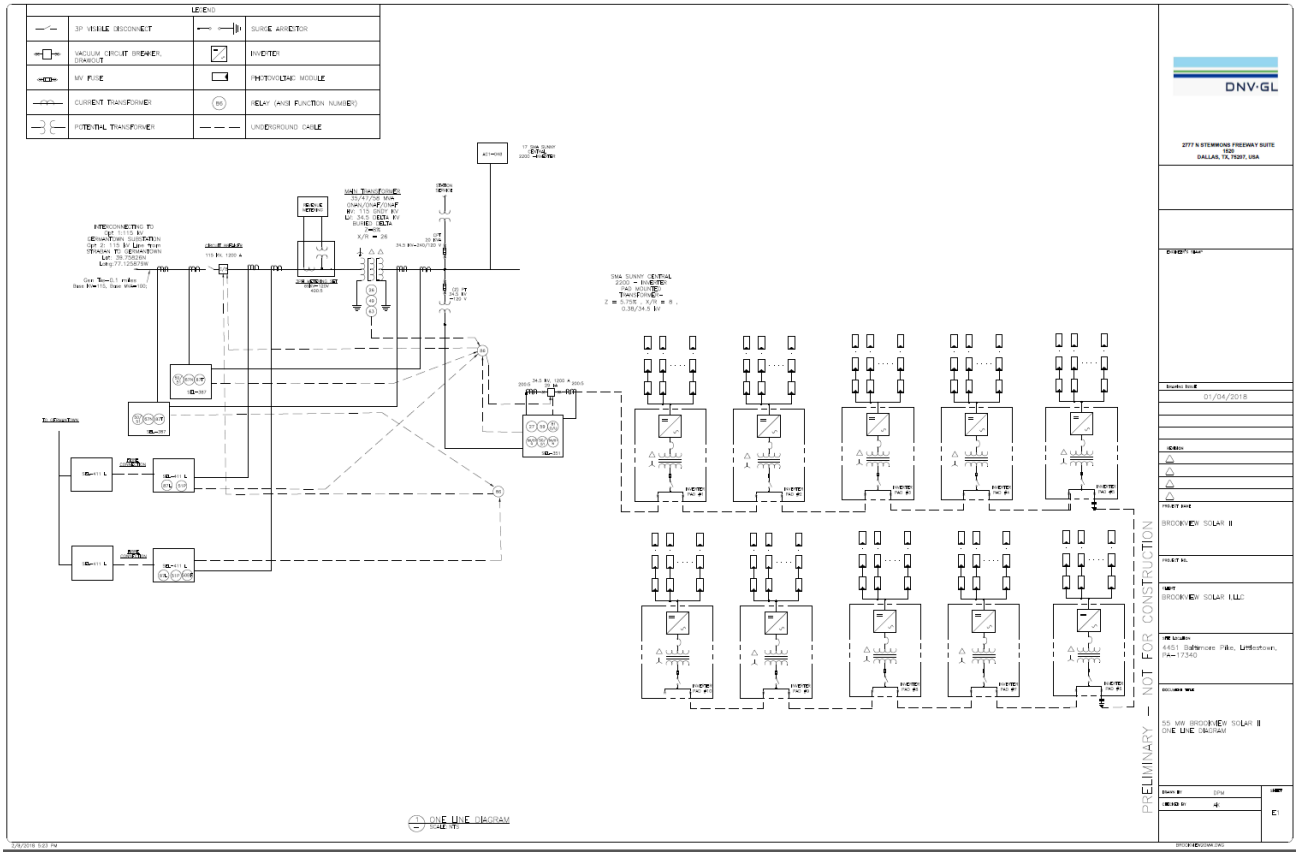

FIGURE 2

Point of Interconnection Diagram
PJM Queue Position: AC1-048/AC2-053

NOTE: Diagram does not represent a physical layout. Not to be used for construction.

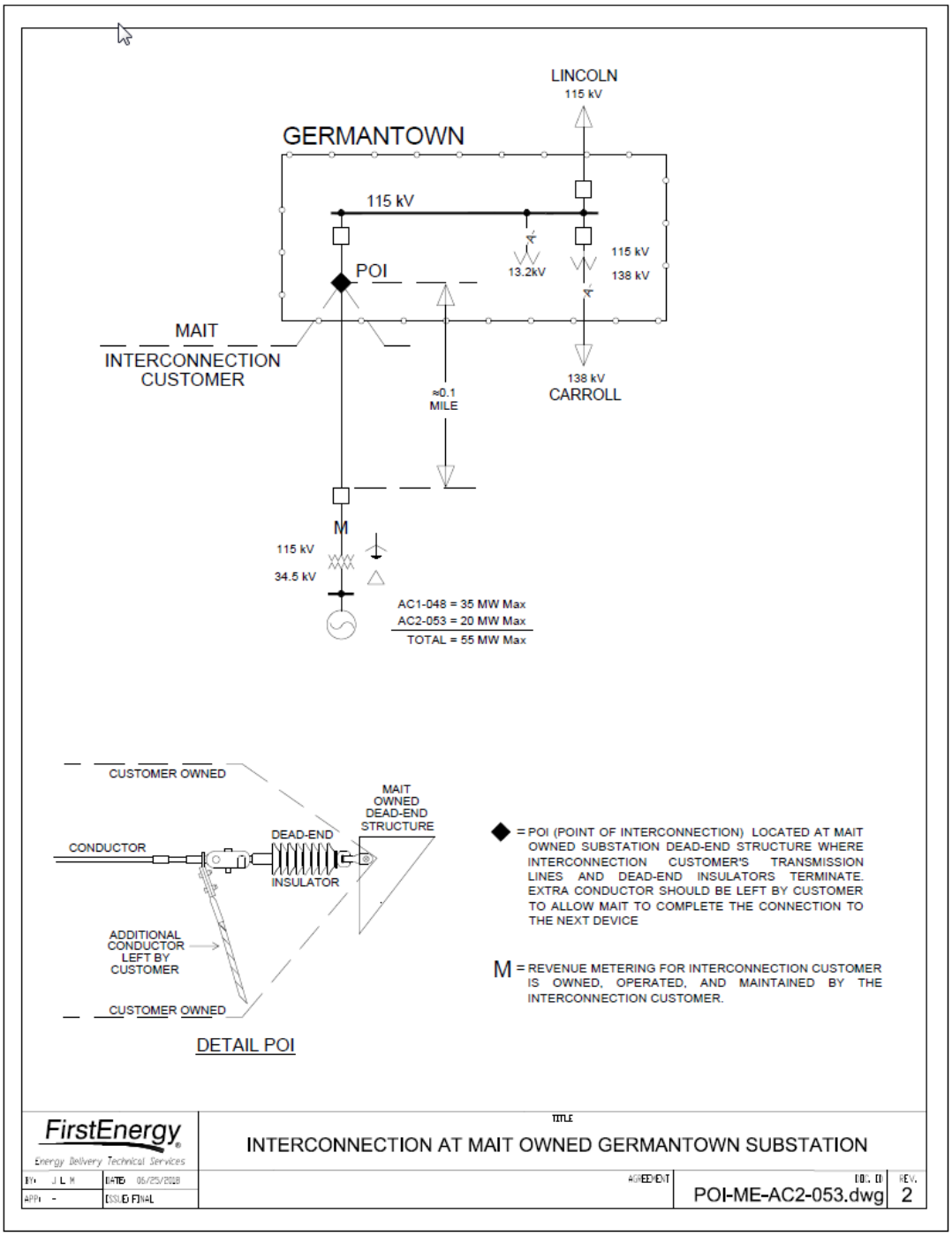

FIGURE 3 (1 of 2)

Project Location, as provided by Interconnection Customer
PJM Queue Position: AC1-048/AC2-053

FIGURE 3 – Continued from previous page (2 of 2)

Project Location, as provided by FirstEnergy
PJM Queue Position: AC1-048/AC2-053