GENERATION INTERCONNECTION FACILITY STUDY REPORT

Southern Maryland Electric Cooperative, Inc.

Hughesville, Maryland

PJM Generation Interconnection Request

Queue Position AF1-005

Charles County Solar I

“PISGAH 69 KV”

ISSUE DATE: JULY 2021

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Preface

Either a SMECO Interconnection Project Scoping Meeting or a PJM interconnection queue project "kick-off" conference call will determine if and how a project ***Interconnection Feasibility Study*** will begin. The Feasibility Study cost may be pre-paid as part of an associated SMECO interconnection application engineering review fee, be covered under separate payment as part of a SMECO Feasibility study agreement, or be covered under separate payment as part of a PJM Feasibility Study agreement.

The Interconnection Feasibility Study analysis and report is intended to identify potential adverse system impact(s) to the local utility and regional PJM electric systems that may result from a proposed interconnection project. The study typically includes a high-level area analysis related to power flow, equipment interrupting ratings; protective coordination, steady-state and short duration voltage profiles, and overall interconnection impact to the associated electric systems. This study provides a preliminary determination, high-level cost, approximate construction schedule, and scope-of-work regarding any apparent utility electric system upgrades or additions necessary to allow the proposed project to interconnect to the electric system in a safe and reliable manner.

An ***Interconnection Impact Study*** agreement form will be included as part of the Feasibility Study document. This form, along with any associated study fee, will be used to initiate an Interconnection Impact Study. The Interconnection Impact Study expands upon the findings identified within the Interconnection Feasibility Study and is intended to provide a more concrete solution and alternatives to address any adverse system impacts identified in the Feasibility study. This study takes a more in-depth look at the proposed project and provides a better refined scope-of-work, construction cost, and schedule than what may be provided in the Feasibility Study. Project specifics may dictate that the Impact Study also include a transient stability power flow analysis. Dependent on the proposed project specifics, apparent scope, perceived complexity of the proposed interconnection, and at SMECO's / PJM's discretion, the Interconnection Feasibility and Impact Studies may be combined into a single study document.

An ***Interconnection Facilities Study*** agreement form will be included as part of the Impact Study document. This form, along with any associated study fee, will be used to initiate an Interconnection Facilities Study. The Interconnection Facilities Study expands upon the findings identified within the Interconnection Impact Study. This study is intended to provide the most

comprehensive analysis of the proposed interconnection. The Facilities Study will finalize, to the extent possible, a detailed cost estimate, scope-of-work, and construction schedule to help the interconnection project owner make an informed decision regarding moving the proposed project into construction.

Neither the Feasibility, Impact, nor Facilities Study obligates the utility to interconnect its facilities to or to construct, upgrade, or operate any of its facilities with the proposed interconnection project. Such obligation will only occur in conjunction with a ratified Interconnection Operating Agreement (IOA). The IOA is used to facilitate moving the proposed interconnection project into construction and sets the utility and project owner construction and operating terms for the proposed project. The final Facilities Study information is included within the ratified IOA document.

The interconnection study documents are based, in part, on information provided by the Interconnection Customer via the Interconnection application documentation and any subsequent information obtained through associated Scoping Meeting or PJM conference call discussions. The utility may not have direct control over the accuracy of such information. The utility does not make any warranty, expressed or implied, whether arising by operation of law, course of performance or customer dealings, usage in the trade or profession, or otherwise including without limitation implied warranties of merchantability and fitness for a particular purpose with the regard to the accuracy, content, or conclusion of any referenced study document.

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I. Background

Energy Ventures IPP LLC, the interconnection customer (IC), is proposing a 29.54 MW d.c. / 24.5 MVA a.c. name plate solar generating facility to be located in Pisgah, Maryland. The proposed facility plant controller and inverter settings limit the maximum facility output to 20.0 MW with 9.9 MW assigned capacity interconnection rights. The facility proposes to interconnect to the Southern Maryland Electric Cooperative (SMECO) electric system.

SMECO studied the proposed project's POI local area impacts using the local SMECO 2019 model build seasonal year 2023 PSSE power flow model configured as indicated in Attachment One Figure One. PJM studied the broader regional area impacts using the PJM 2017 series RTEP model build summer 2022 case at 69 kV bus #227005 "HAWK 69".

The precursor AF1-005 "Pisgah 69 kV" Feasibility and System Impact Studies included the potential ramifications of the seperately proposed PJM Project AC2-101 Shugart solar farm. The Shugart project already had a ratified an Interconnection Agreement and was pending construction; however, the AC2-101 Shugart project officially withdrew from the PJM generation interconnection queue effective December 2, 2020. The AF1-005 Pisgah 69 KV Facility study requirements are updated to reflect this recent project status change.

The proposed IC project in-service date is July 30, 2021. The required PJM studies and proposed SMECO construction schedules provided in section VII do not support the proposed IC in-service date.

II. Point of Interconnection

The generating facility proposes to interconnect to the local electric system at SMECO's existing 69 kV line #6718 approximate structure #9 at GPS coordinates 38.52722243 latitude and -77.10632936 longitude.

The physical interconnection requires SMECO to construct a new 69 kV 3-terminal tap bus switching station to act as the defined point of interconnection (POI) between SMECO and the generating facility. A proposed interconnection block diagram, site plan, one-line, plan view, profile view, and functional relaying drawing set, indicating the point-of-interconnection (POI) and demarcation between SMECO and the IC, is provided in Attachment One.

III. Interconnection Customer Project Information

The proposed generating facility is interconnecting to the 69 kV SMECO electric system. The proposed facility consists of PV solar panels mounted to a 15 degree fixed tilt racking system with ten 2450 KVA rated DC-to–AC inverters. Major equipment information is as follows:

Solar Panels (76,720)	Hanwha 385 watt modules, 15-degree fixed tilt orientation
UL1741 Compliant Inverters (10)	Sunny Central 2500-EV
Distribution Transformers (5)	SMA Manufacturer, 4900 KVA, 3-winding, 34.5 kV wye : 550V delta : 550V delta, TBD % Z, X/R = TBD
Power Transformer (1)	TBD manufacturer, 16.5/22/27.5 MVA, 69 KV wye : 34.5 KV wye : 12.47 kV delta tertiary, Min % Z = 8.5%
Sectionalizing cabinet (x)	N/A
Breakers (2)	One at 69 kV, 600-amp and one at 34.5 kV, 1200-amp
Protection Relays (3)	Two at SEL-351 and one at SEL-387
CT / PT Combo metering unit (1)	69 kV, outdoor rated 500:5 CT ratio and 350:1 PT ratio
Gen Tie Line conductor	TBD size and type, length estimated to be ~3.4 miles based on developer's proposed concept line routing.

IC Reactive capacity: Calculated inverter reactive capacity based on 24.5 MVA inverter nameplate rating and 20 MW plant controller output setting is 14.15 MVar leading (absorbing) or lagging (supplying) at 81.6% power factor. There are no apparent provisions for any external station capacitor banks.

IC facilities Sequence of Operation not specified at this time, TBD.

IC engineering, permitting, and construction schedule not specified at this time, TBD.

IV. Analysis

In addition to building upon the findings identified in the precursor Feasibility and System Impact Studies, the Interconnection Facility Study also includes:

1. Adjacent circuit and substation contingency switching analysis,
2. A transient stability analysis (if necessary),
3. A more refined detailed scope of work, and
4. A more precise non-binding cost estimate for new or upgraded facilities required to interconnect the proposed project to the local area electric system in a safe and reliable manner.

SMECO utilizes a DNV-GL vendor software product called ***Synergi Electric*** to analyze potential generation impacts to the local area 15 kV electric system. A similar Siemens vendor product called ***PSS/E*** and Aspen vendor product called ***OneLiner*** are used to analyze potential generation impacts to the local area 69 kV and 230 kV electric system. PJM uses these same two products to evaluate potential generation impacts to the broader regional electric system.

These products create a study area circuit software model that includes the proposed project interconnection. In addition to traditional power flow and short circuit analysis, the model(s) may be used to determine the time-of-day impact of proposed intermittent generation (i.e. solar or battery ESS are two such examples) on the local electric system. Several different time-of-day model simulations may be systematically applied to determine what types of voltage and demand variations occur as random intermittent generator outputs change and how specific individual intermittent generators affect the local area electric system. The time-of-day model simulations consider: seasonal light and peak load conditions, hourly time-of-day impacts, generation output fluctuations, and the operational randomness of other pre-existing intermittent generation sources.

V. Results

Local Area Power Flow Analysis: SMECO evaluated local area power flow for summer, winter, and minimum light load seasonal conditions based on year 2023 area configuration and forecasted loads. Area PJM solar generation projects AC2-101 Shugart and AC2-120 Ripley are assumed to be in-service. Post analysis note: Project AC2-101 Shugart officially withdrew from PJM generation interconnection queue effective December 2, 2020.

The proposed AF1-005 Pisgah generation is assumed to use a volt-var control strategy to maintain the POI bus voltage at 1.0 per unit. Maximum assumed AF1-005 Pisgah generation reactive capacity is 7.6 MVar at 95% power factor based on the project's stated 24.5 MVA inverter nameplate rating.

No apparent adverse bus voltage or facility thermal loading conditions are evident on the SMECO electric system based on this analysis; however, notable findings include:

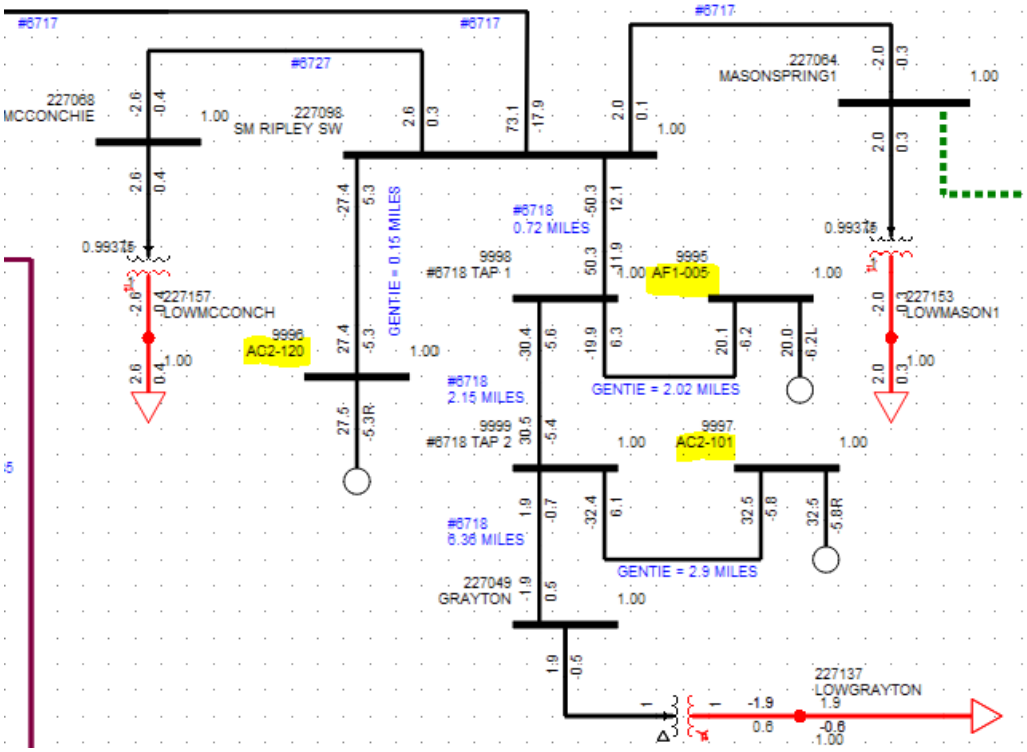
1. The proposed generation will increase loading on SMECO local area 69 kV line #6717 from 68.7% to 94.1% of its normal line rating during light load conditions. The referenced line section connects Ripley switching station bus #227098 to the Marshall's Corner tap GOAB switch bus #227097. This line section is 556.5 MCM ACSR Dove conductor rated at a nominal 80 MVA.

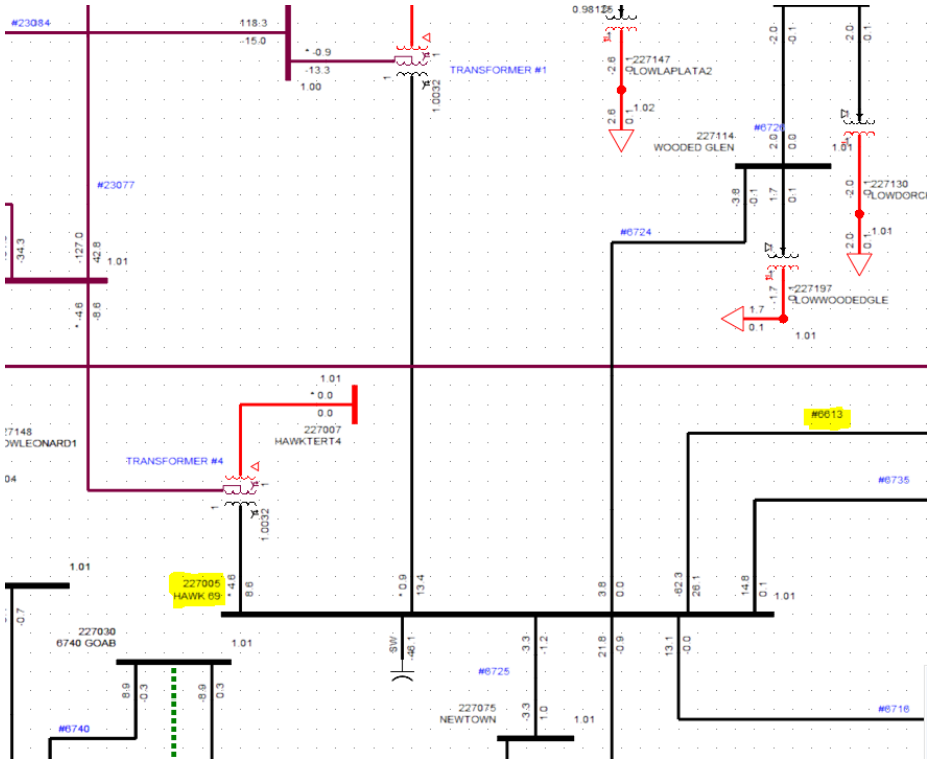
2. The proposed solar generation results in both bus #227005 Hawkins Gate 230 kV : 69 kV power transformers being nearly unloaded during light load daytime demand periods. This issue is further exasperated to where reverse power can flow back into the Pepco electric system when PJM interconnection queue project AF1-003 Willets Crossing is included.

3. One local SMECO area maintenance contingency switching operation takes 69 kV line #6717 out of service between bus #227097 Marshall's Corner GOAB and bus #227098 Ripley switching station. Local service is restored by closing the normal-open Mason Springs substation motor-operated switch #6717-346 between Mason Springs bus #227064 and Mason Springs bus #227065.

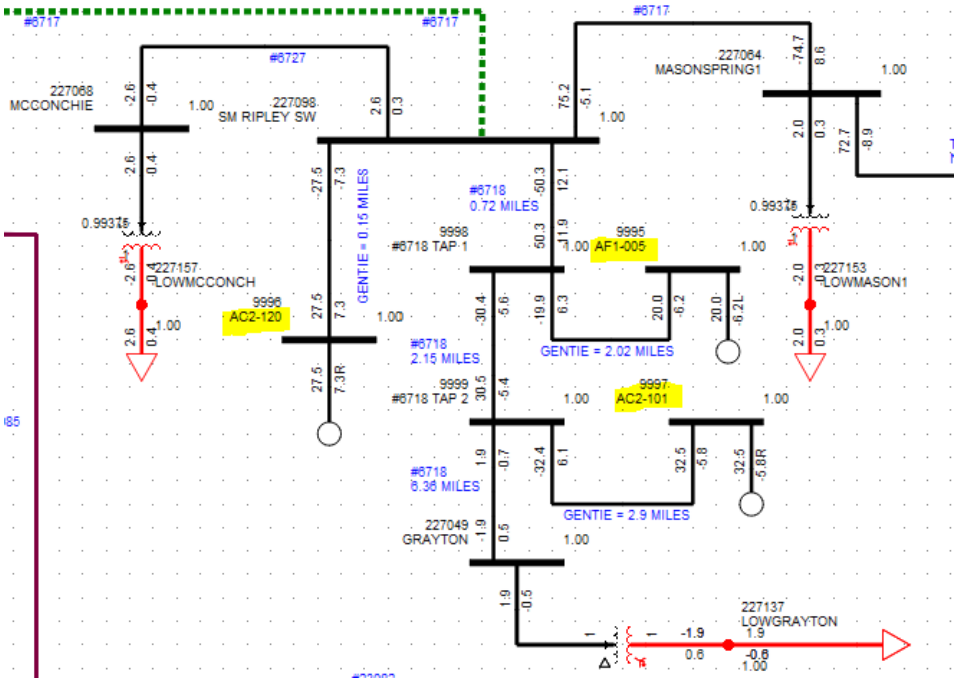
   The described maintenance switching contingency results in atypical reverse power flow from SMECO bus #227025 Farmington switching station into the interconnected Pepco 69 kV electric system via Pepco line #69131. Pepco line #69131 ties SMECO's Farmington switching station to Pepco bus #223999 Palmers Corner switching station. It is recommended that Pepco study the stated contingency condition to determine if there are any power flow or protection related impacts to the interconnected Pepco electric system. Refer to PJM Queue project #AF1-004 "DAVIS ROAD 69 KV" for similar reverse power flow findings at Farmington switching station.

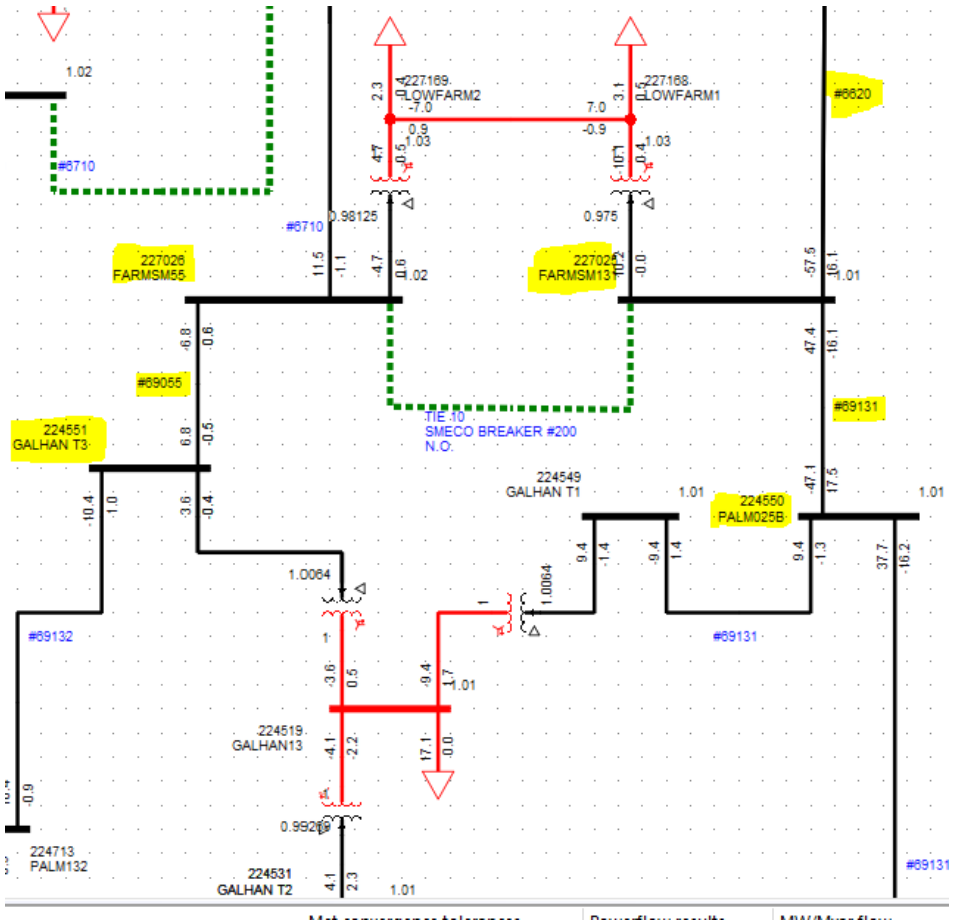
NORMAL LIGHT LOAD – ALL LOCAL AREA GENERATION IN SERVICE



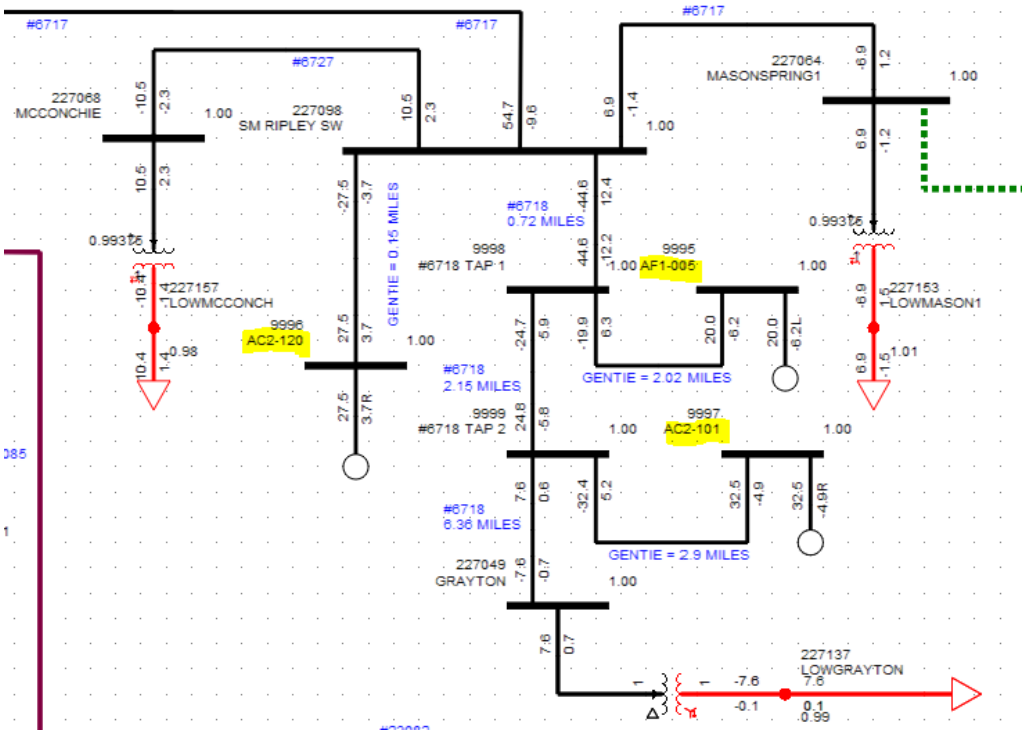


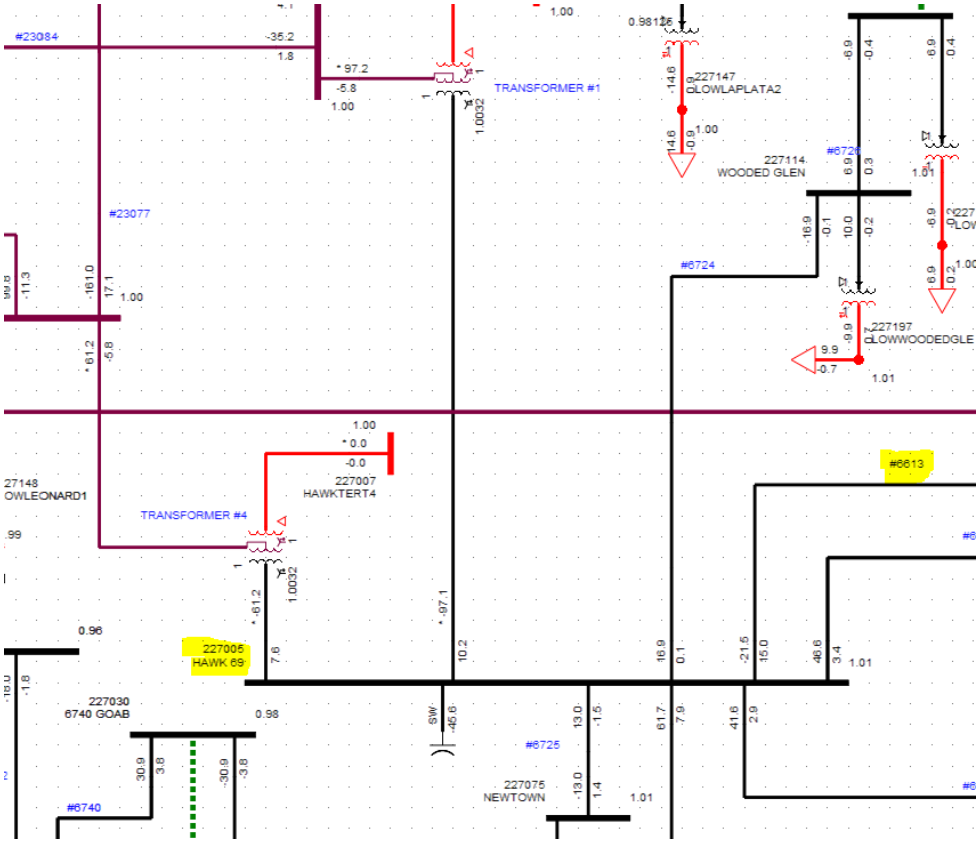
CONTINGENCY LIGHT LOAD – ALL LOCAL AREA GENERATION IN SERVICE



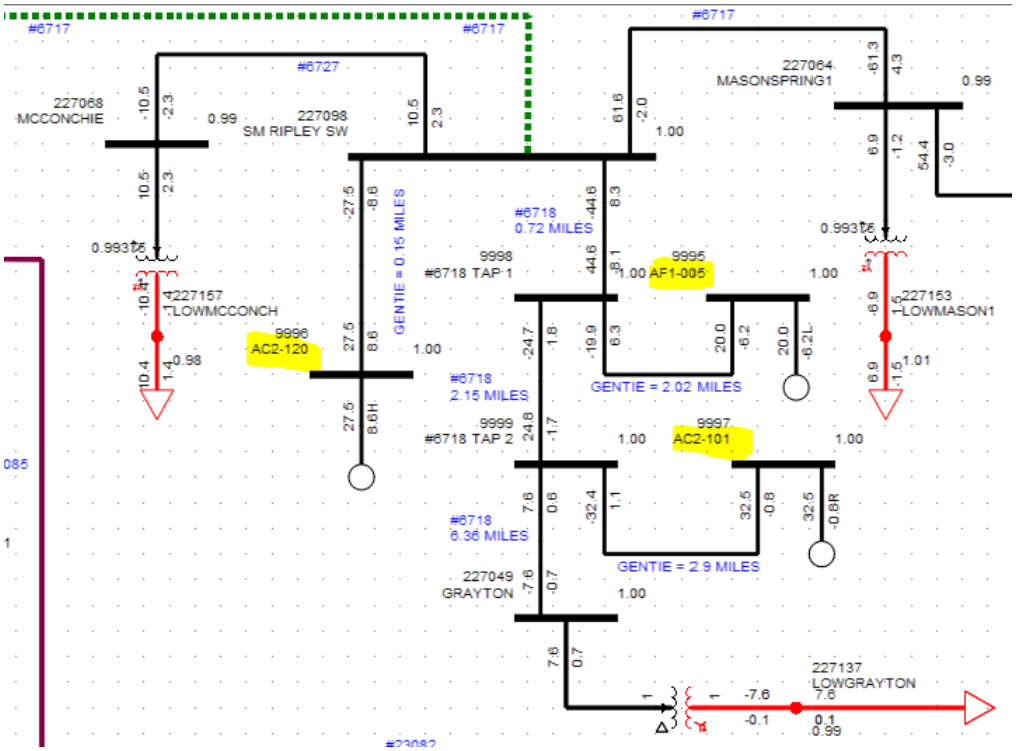


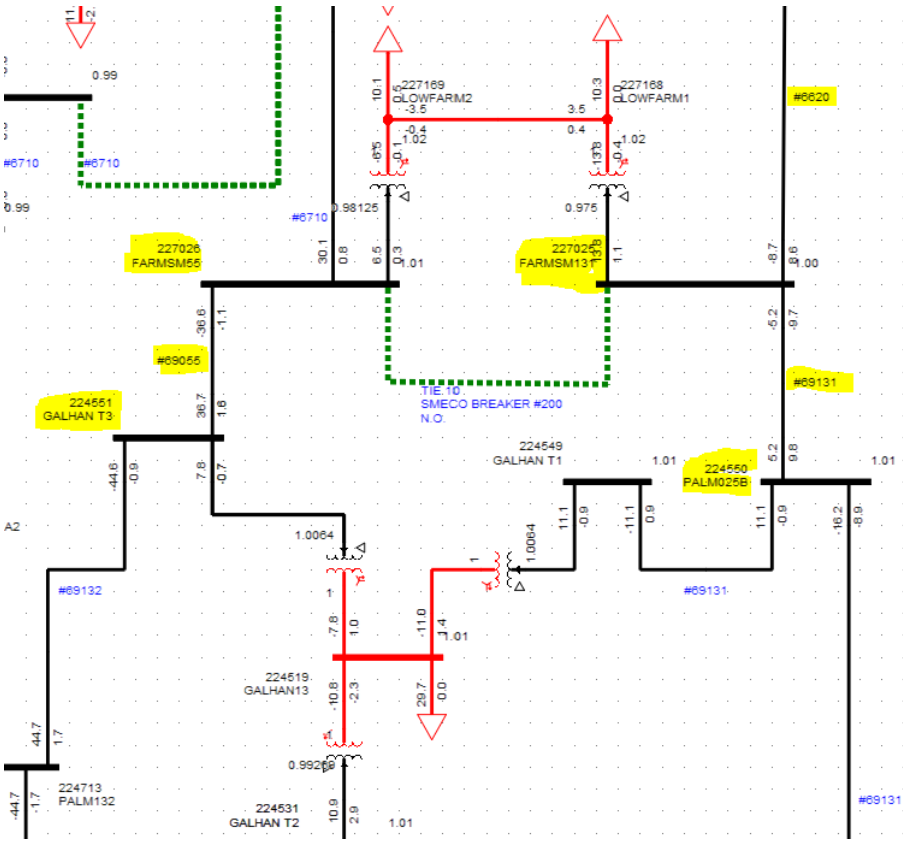
NORMAL PEAK WINTER LOAD – ALL LOCAL AREA GENERATION IN SERVICE



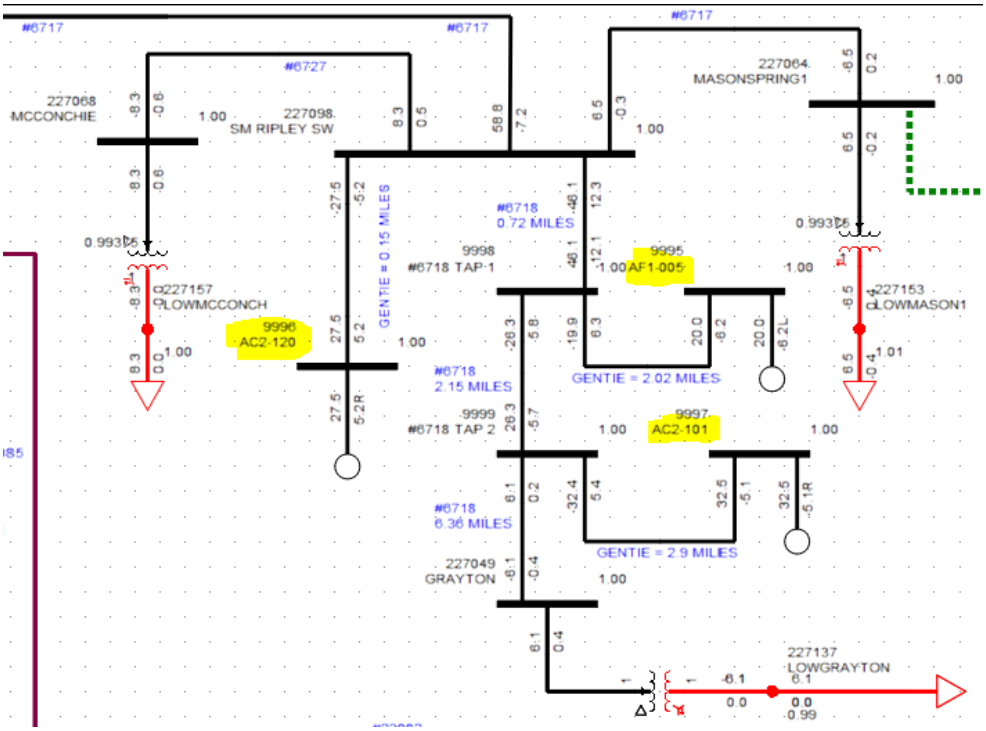


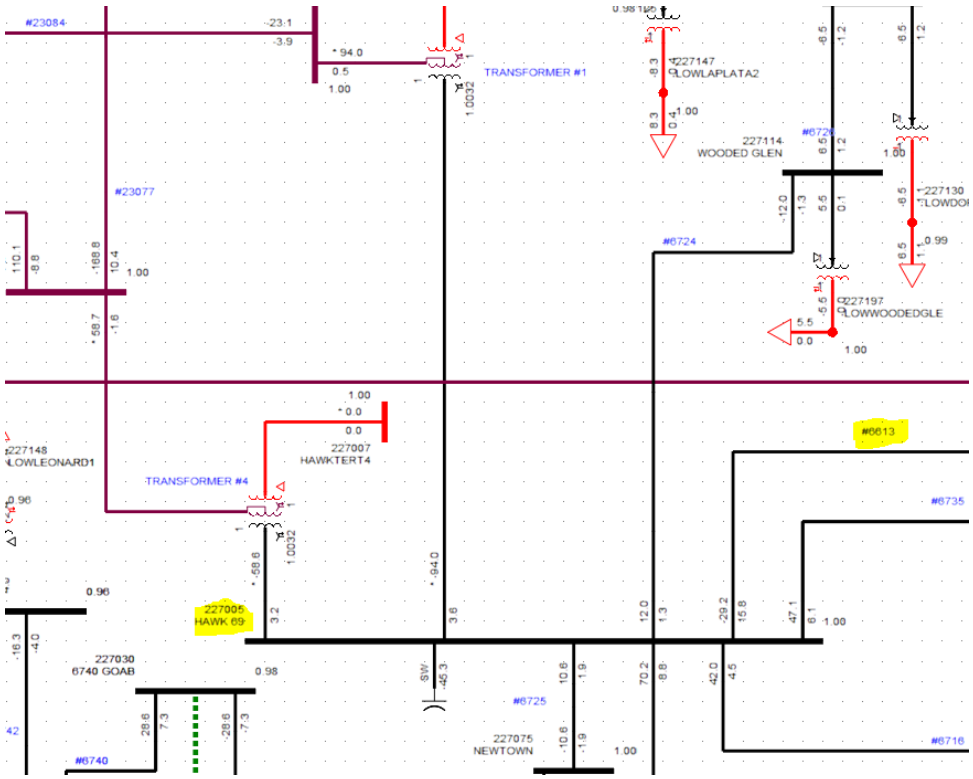
CONTINGENCY PEAK WINTER LOAD – ALL LOCAL AREA GENERATION IN SERVICE



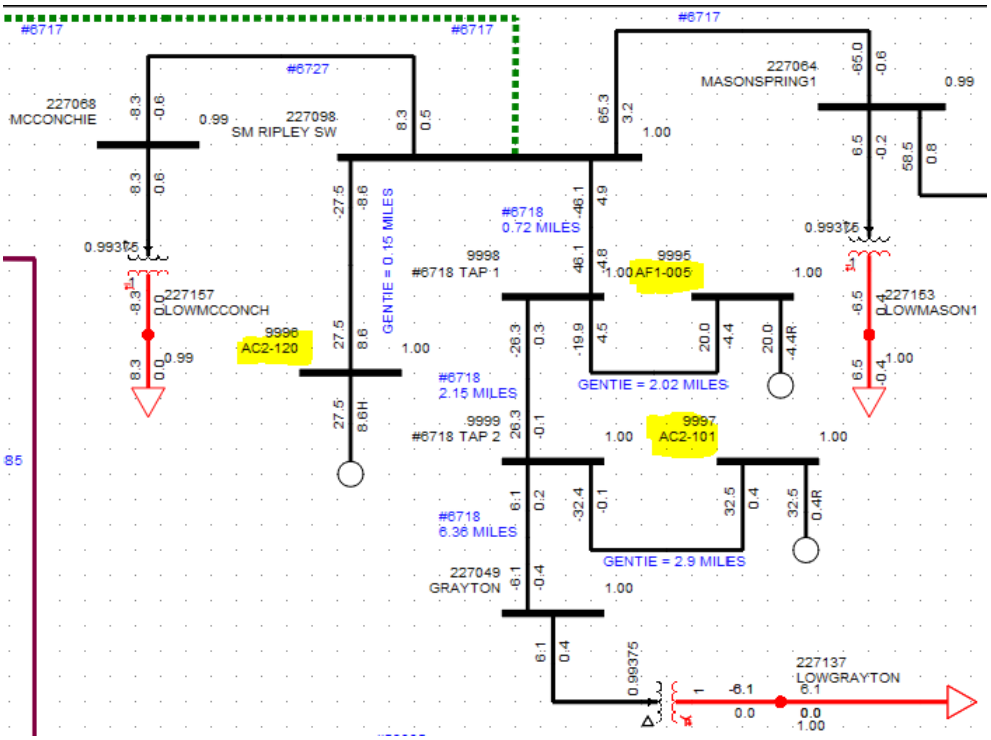


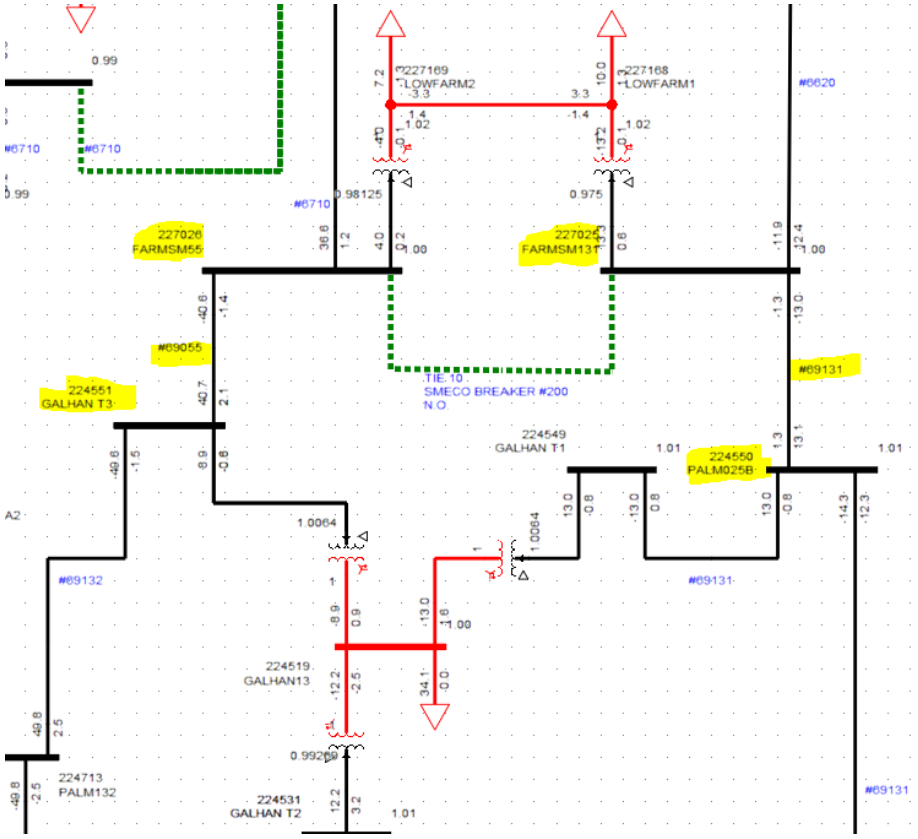
NORMAL PEAK SUMMER LOAD – ALL LOCAL AREA GENERATION IN SERVICE



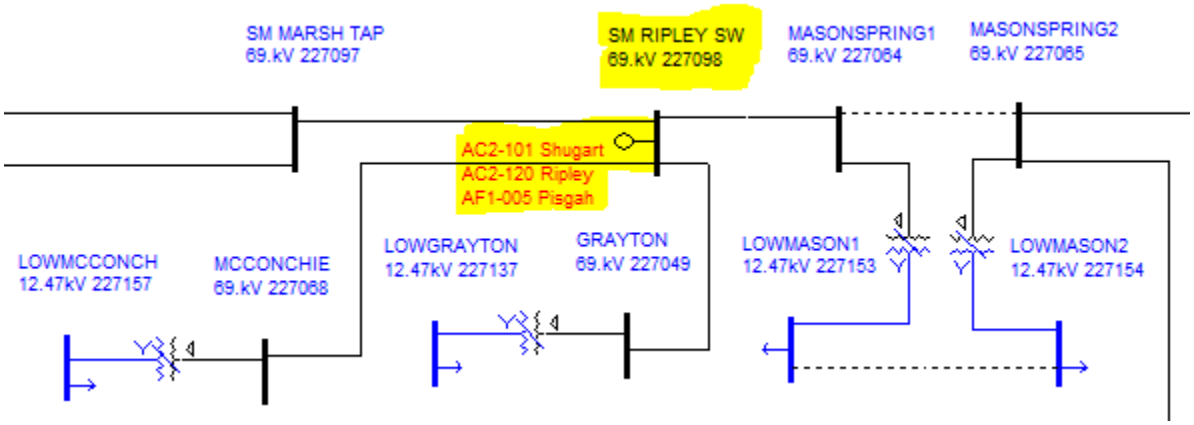


CONTINGENCY PEAK SUMER LOAD – ALL LOCAL AREA GENERATION IN SERVICE





Local Area Short-Circuit Analysis: SMECO evaluated local area fault current contributions based on the year 2023 local SMECO area configuration and the regional PJM 2019 series Aspen short-circuit model "PJMSC_2021_03142019" connected generation sources. No adverse fault current contribution issues are evident.



Description	Breaker Rating (A)	Existing *		Proposed	
		SLG (A)	TPH (A)	SLG (A)	TPH (A)
Ripley switching station 69 kV bus	31,000	2,822	4,361	2,848	4,440
Grayton substation 69 kV bus	31,000	1,542	2,680	1,550	2,717
Grayton substation 12.47 kV bus	16,000	3,700	3,419	3,712	3,433

* Existing conditions include the fault current contribution for PJM Queue project #AC2-101 Shugart and AC2-120 Ripley solar farms. Post analysis note: Project AC2-101 Shugart officially withdrew from PJM generation interconnection queue effective December 2, 2020.

VI. Scope of Work

The proposed POI and physical demarcation between SMECO and the IC is a SMECO owned and installed self-supporting dead-end structure within the confines of a new SMECO owned 69 kV 3-terminal tap bus switching station. The physical connection between the switching station and the POI dead-end structure is overhead line conductor jumpers.

The 69 kV 3-terminal tap bus switching station is a lattice box structure with two breakers, disconnect switches, bus work, revenue metering, and protective relaying / control circuits with associated communications in a climate controlled building. Additional land is required to physically permit and build the new SMECO switching station. The IC proposed SMECO switching station site is identified in Attachment One Figures One A and One B. The proposed site is listed as Parcel 44 and appears to be owned by WCL LLC. The IC is to confirm the proposed site is available for the intended switching station purpose and has direct immediate access to either Poorhouse or Ripley Roads.

A 69 kV line breaker current differential protective relaying scheme is not required at SMECO up- and down-stream 69 kV line #6718 Ripley switching station and Grayton substation terminal locations only because line #6718 is an otherwise radial circuit to a single downstream substation location. An area network loop is not feasible in this site-specific installation. Required high-speed fiber communications does not presently exist between the two terminal locations and is not being required as part of the proposed interconnection project.

SMECO Scope of Work Clarifications:

1. Cost estimate includes: a) site design and grading for SMECO owned facilities, b) existing 69 kV SMECO line modifications, and c) switching station site work including associated foundations, steel and equipment, bus work, control house, relays, construction, testing and commissioning.
2. Cost estimate does not include any associated new right-of-way, land acquisition, or real estate related costs. Associated permitting costs will be determined at a future date once the new switching station site location is finalized. Permitting costs are in addition to estimated project costs.
3. Existing 69 kV line #6718 will require a planned outage to cut the existing line over to the new switching station. SMECO will facilitate and coordinate necessary switching activities and temporarily transfer area load to other distribution circuits during this time.
4. SMECO will engineer, specify, permit, procure, construct, manage, and maintain all aspects of the proposed new switching station and all other associated facilities on its side of the POI.

5. SMECO is responsible for the OH conductor, equipment, and associated jumpers from the dead end structure to the switching station 69 kV bus.
6. Protective relaying and associated monitoring and control communications will be installed within a new SMECO switching station control building.

IC Scope of Work Clarifications:

1. The IC is responsible for installing and terminating the generation tap line on the dead end structure.

2. Due to the distance between the SMECO switching station and IC collector substation locations, the IC is required to install separate 69 kV line disconnect switches near the POI switching station dead end structure and at the IC collector substation.

3. The IC is responsible for all aspects of the new 69 kV generation tap line and collector substation facilities including but not limited to the isolation step-up transformer, substation protection, and associated solar distribution feeder circuits. All such facilities are subject to SMECO review and approval.

4. The IC is responsible for securing all permits, right-of-way easements, and any other associated real estate needs for the 69 kV generation tap line.

5. The IC is responsible for conveying suitable land to SMECO to accommodate the proposed SMECO switching station POI. A SMECO approved environmental assessment is to accompany the land conveyance prior to SMECO accepting the land conveyance and proceeding with the new switching station site work. Physical switching station site dimensions and actual location are subject to change dependent on future detailed engineering design specifications and permitting requirements. The conveyed land is to be adjoining with the existing SMECO 69 kV line easement area and have direct immediate dedicated access entrance from a main paved County or State road. Land separation by a State or County road is allowed assuming appropriate permitting permissions to cross the road with 69 kV SMECO facilities is obtainable.

6. Prior to preparing and ratifying an Interconnection Agreement for this project, the IC is to provide engineering documentation and drawings to SMECO depicting: a) a revised site plan including the proposed new SMECO owned switching station facility, IC collector substation site, and IC generation tap line, b) proof of proposed SMECO switching station POI site control or land ownership, c) a revised one-line diagram showing the complete 34.5 kV and 69 kV IC facilities and associated solar AC and DC layout d) any missing or modified preliminary manufacturer specification information for the major equipment identified in section III of this Facilities Study document, e) proposed sequence of operation description for the solar inverters including reactive power regulation capabilities, and f) available 69 kV generation tap line design and routing information.

7. The IC provided concept 69 kV Gen-Tie line routing, from the solar collecter substation site to the POI SMECO switching station, is along Mason Springs Road and Poorhouse Road. Existing SMECO local 12.47 kV OH and UG (minimal) electric facilities traverse this entire concept routing path.

   Potential conflict areas may exist between the proposed IC Gen-Tie line and existing SMECO 12.47 kV local distribution facilities. A separate cost and scope-of-work to

remidiate any Gen-Tie line routing conflict areas is in addition to work detailed within this Facility Study. The IC is to provide detailed CAD Gen-Tie line drawings and proof of County, State, or private landowner site control and approved road area permitting for SMECO review prior to constructing any Gen-Tie line facilities. SMECO's review will determine any conflict areas and provide a separate cost and scope-of-work to remediate any identified conflicts. IC is responsible for all associated conflict remediation costs.

8. Informational note: End-use customer (i.e. energy delivered from SMECO to the customer-owned facilities as measured at the POI) power factor shall be in accordance with the "Power Factor" language found in a future TBD SMECO Tariff Schedule. Generation customers (i.e. energy delivered from the customer-owned facilities to SMECO as measured at the POI) interconnected to the SMECO electric system will operate in accordance with applicable PJM Tariff reactive power requirements.

If not subject to PJM Tariff requirements, interconnected customer generation may be required to provide up to between a 0.90 leading (absorbing MVars) and a 0.90 lagging (supplying MVars) power factor capacity reactive power Var support as specified by SMECO. Inverter reactive power Var support is initiated via the Smart Inverter Volt – Var control mode. This control mode helps to regulate the POI voltage. SMECO will coordinate and confirm the desired reactive control mode for the IC generation facilities at a later date.

9. Informational note: Express written authorization from SMECO is required before any IC facilities are installed or associated improvements made within SMECO's existing property and line easement areas. SMECO access to its facilities and any associated easement areas must remain clear at all times. Storing or depositing equipment or materials within the SMECO property and easement areas is prohibited.

VII. Cost and Schedule

PJM AF1 Queue Report and Agreement Schedule	Start Date	End Date
Feasibility Study	November 1, 2019	January 31, 2020
System Impact Study	May 1, 2020	August 31, 2020
Facilities Study	October 1, 2020	March 31, 2021
Wholesale Market Participant Agreement (WMPA)	May 1, 2020	June 30, 2020
Interconnection Agreement (IA)	July 1, 2020	August 31, 2021

Project Schedule: The estimated project schedule is 24 months after receiving the signed interconnection agreement and initial milestone payment. Associated permit or developer delays can affect the proposed project schedule.

SMECO Project Schedule	Date
Permitting (12 month) and SMECO station site confirmation and acceptance	September 2021
Engineering Begins (6 month)	September 2021
Order Material (6 month)	March 2022
Land expansion deeded to SMECO	May 2022
Switching Station Site Grading (3 month)	September 2022
Physical Construction Begins (9 month)	January 2023
POI In Service	September 2023
Project Complete and Closeout	October 2023

Note: The estimated project schedule is 24 months after receiving the signed interconnection agreement, SMECO station site confirmation, and initial milestone payment. Associated permit delays can affect the proposed project schedule. SMECO will make all possible effort to comply with the listed construction schedule; however, SMECO is not liable for inadvertent schedule delays.

SMECO's estimated POI project cost is $3,000,000 and includes: engineering, project management, labor and materials, construction, and construction management. Associated permitting costs will be determined at a future date and are in addition to estimated project costs. Estimated material and labor costs include 20% contingency. The estimated project cost breakdown is:

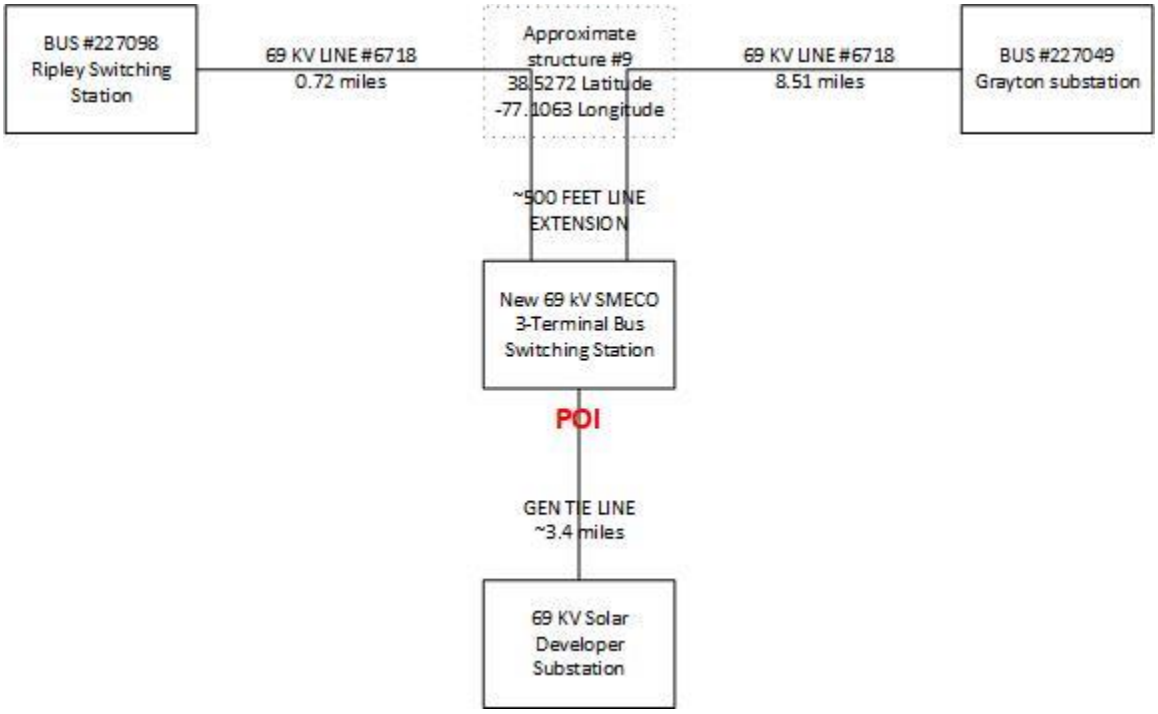
Engineering, Company Labor, and Overhead	$ 700,000
Material	$ 800,000
Construction	$ 1,500,000
Total	$ 3,000,000

VIII. Summary Findings

1. No adverse SMECO system 15 kV or 69 kV local area power flow issues are evident.
2. No adverse 15 kV or 69 kV local area bus voltage issues are evident.
3. No adverse 15 kV or 69 kV local area fault current contribution issues are evident.
4. No apparent baseline or supplemental projects are required to support the proposed generation interconnection project.
5. A local network project is required to support the proposed generation interconnection project. A preliminary scope-of-work, project schedule, and project cost is included within this report.
6. Prior to preparing and ratifying an Interconnection Agreement for this project, the IC is to provide additional and revised engineering documentation and drawings to SMECO as indicated within section VI of this Facilities Study report document.
7. Due to the multiple number of generation sources within the immediate project area it is recommended that PJM conduct a transient stability analysis for this project.
8. The IC is to confirm the proposed POI SMECO switching station site: a) is available for the intended purpose, b) has direct immediate access to either Ripley Road or Poorhouse Road, and c) the IC has proof of POI site control or land ownership.
9. The IC is to provide detailed CAD Gen-Tie line drawings and proof of County, State, or private landowner site control and approved road area permitting for SMECO review prior to constructing any Gen-Tie line facilities. SMECO's review will determine any conflict areas with existing SMECO 12.47 kV distribution facilities and provide a separate cost and scope-of-work to remediate any identified conflicts.
10. The PJM studies and proposed SMECO construction schedules do not support the proposed project July 30, 2021 in-service date.

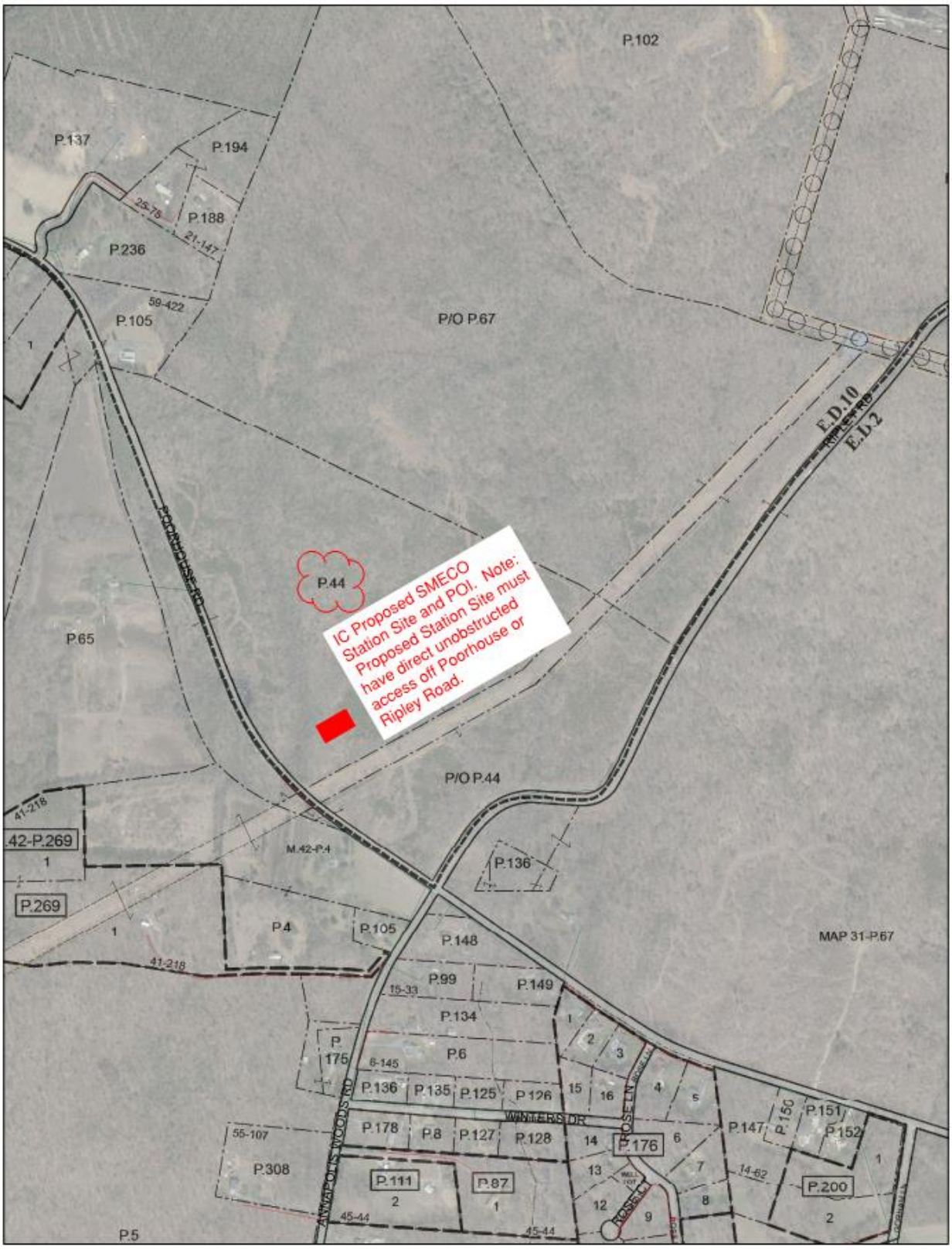
Attachment One

Figure One A – IC Proposed Point of Interconnection (POI) Block Diagram



Attachment One

Figure One B – IC Proposed POI County Tax Map



Attachment One

Figure One C – IC Proposed POI County Tax Map Real Property Data Sheet

Real Property Data Search (w1)

Search Result for CHARLES COUNTY

View Map | View GroundRent Redemption | View GroundRent Registration

Special Tax Recapture: AGRICULTURAL TRANSFER TAX

Account Identifier: **District -** 10 **Account Number -** 000815

Owner Information

Owner Name:	WCL LLC	**Use:**	AGRICULTURAL
		Principal Residence:	NO
Mailing Address:	1825 K ST NW STE 125 WASHINGTON DC 20006-1202	**Deed Reference:**	/04081/ 00461

Location & Structure Information

Premises Address:	**Legal Description:** 92.936 AC FMA RT 484

Map:	Grid:	Parcel:	Neighborhood:	Subdivision:	Section:	Block:	Lot:	Assessment Year:	Plat No:
0031	0020	0044	10010001.09	0000				2020	Plat Ref:

Town: None

Primary Structure Built	Above Grade Living Area	Finished Basement Area	Property Land Area	County Use
			92.9300 AC	

Stories	Basement	Type	Exterior	Quality	Full/Half Bath	Garage	Last Notice of Major Improvements
			/				

Value Information

	Base Value	Value	Phase-in Assessments	
		As of 01/01/2020	As of 07/01/2020	As of 07/01/2021
Land:	17,400	17,400		
Improvements	0	0		
Total:	17,400	17,400	17,400	17,400
Preferential Land:	17,400			17,400

Transfer Information

Seller: L L L BROTHERS ASSOCIATES	**Date:** 05/16/2003	**Price:** $703,250
Type: ARMS LENGTH MULTIPLE	**Deed1:** /04081/ 00461	**Deed2:**
Seller: BENJAMIN, HAROLD H & ISABEL H	**Date:** 12/02/1988	**Price:** $83,646
Type: ARMS LENGTH IMPROVED	**Deed1:** /01346/ 00364	**Deed2:**
Seller:	**Date:**	**Price:**
Type:	**Deed1:**	**Deed2:**

Exemption Information

Partial Exempt Assessments:	Class	07/01/2020	07/01/2021
County:	000	0.00	
State:	000	0.00	
Municipal:	000	0.00|0.00	0.00|0.00

Special Tax Recapture: AGRICULTURAL TRANSFER TAX

Homestead Application Information

Homestead Application Status: No Application

Homeowners' Tax Credit Application Information

Homeowners' Tax Credit Application Status: No Application **Date:**

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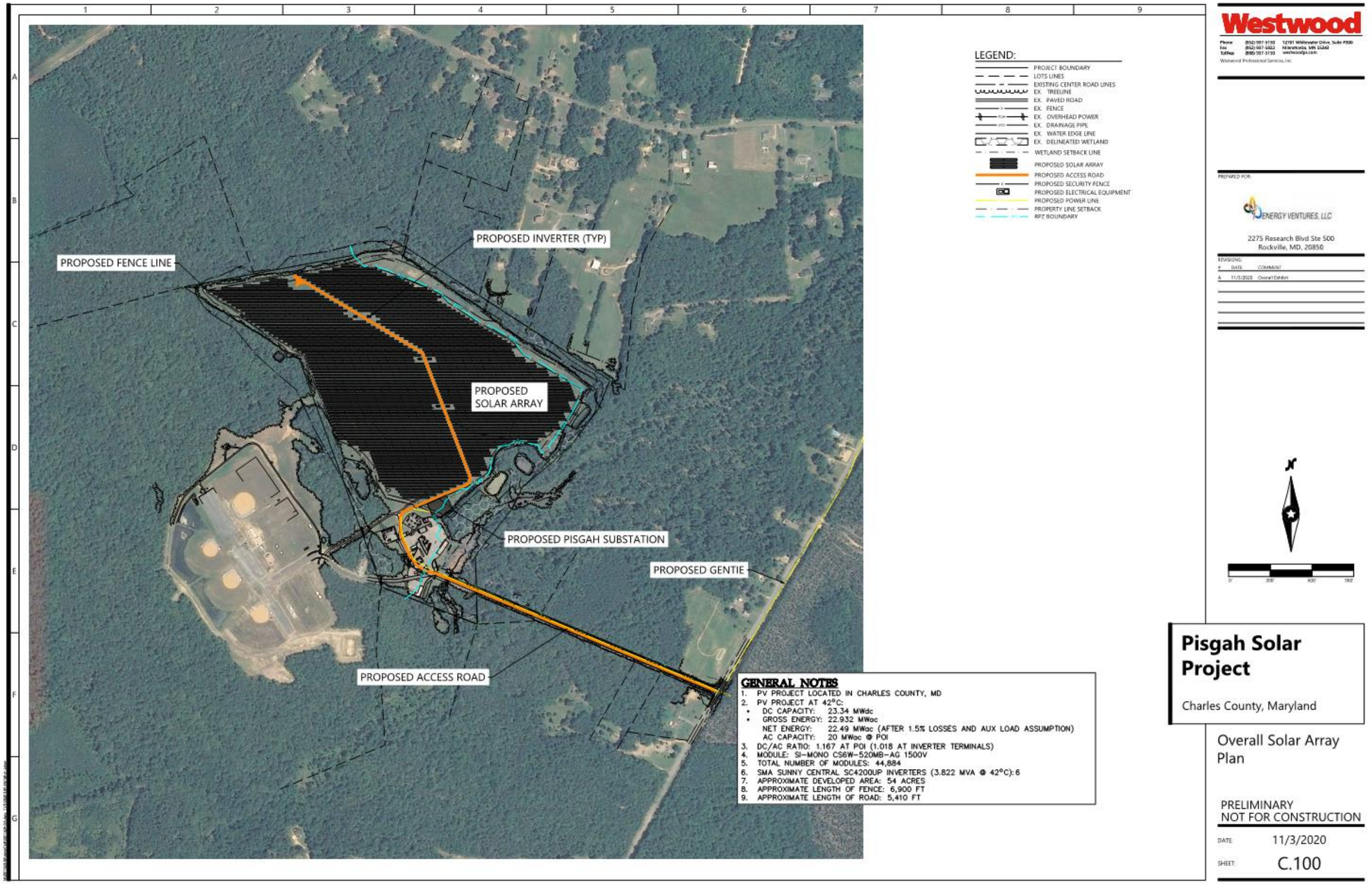
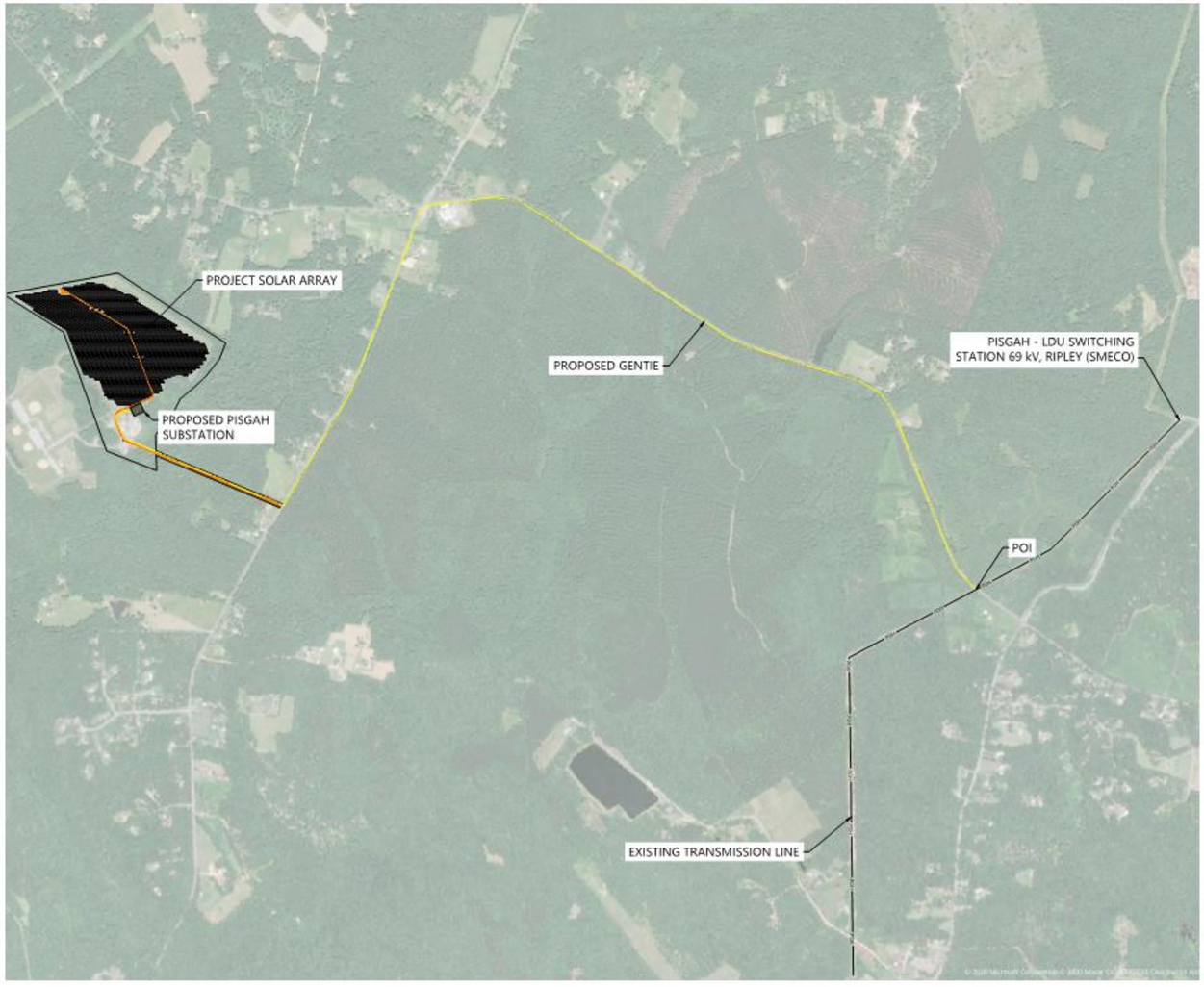
Attachment One

Figure Two A – Proposed IC Solar Farm Concept Plan



Attachment One

Figure Two B – Proposed IC Gen Tie Line Concept Routing



LEGEND:

- PROJECT BOUNDARY
- PROPOSED SOLAR ARRAY
- PROPOSED ACCESS ROAD
- PROPOSED ELECTRICAL EQUIPMENT
- PROPOSED POWER LINE

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Westwood Professional Services, Inc.

PREPARED FOR:

ENERGY VENTURES, LLC

2275 Research Blvd Ste 500
Rockville, MD, 20850

REVISIONS:

#	DATE	COMMENT
A	11/3/2020	Overall Exhibit

0' 800' 1600' 2400'

Pisgah Solar Project

Charles County, Maryland

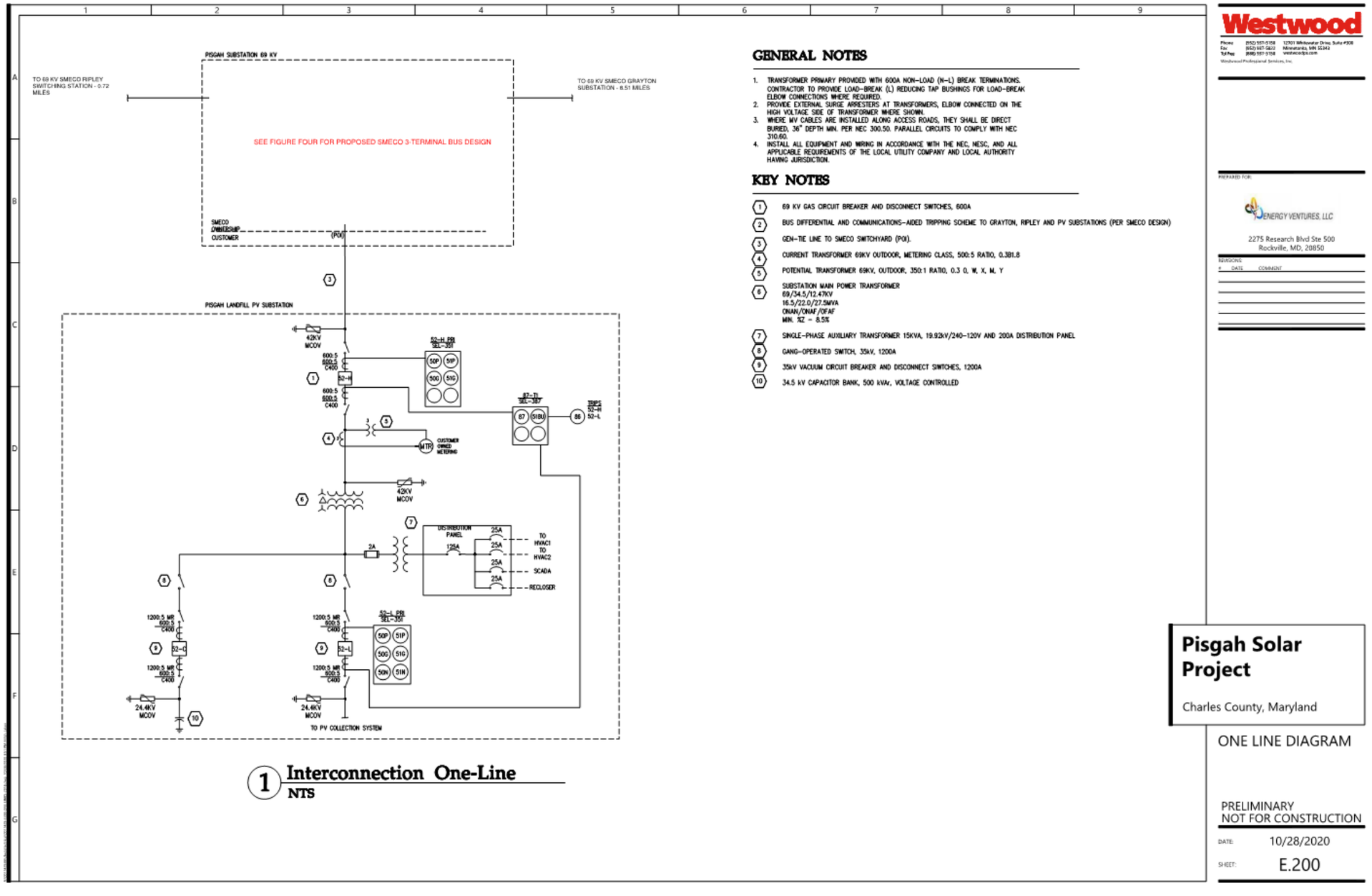
Overall POI Connection Plan

PRELIMINARY
NOT FOR CONSTRUCTION

DATE: 11/3/2020

SHEET: C.101

Figure Two C – Proposed IC Concept One-Line Diagram



1 **Interconnection One-Line**
NTS

GENERAL NOTES

1. TRANSFORMER PRIMARY PROVIDED WITH 600A NON-LOAD (N-L) BREAK TERMINATIONS. CONTRACTOR TO PROVIDE LOAD-BREAK (L) REDUCING TAP BUSHINGS FOR LOAD-BREAK ELBOW CONNECTIONS WHERE REQUIRED.
2. PROVIDE EXTERNAL SURGE ARRESTERS AT TRANSFORMERS, ELBOW CONNECTED ON THE HIGH VOLTAGE SIDE OF TRANSFORMER WHERE SHOWN.
3. WHERE MV CABLES ARE INSTALLED ALONG ACCESS ROADS, THEY SHALL BE DIRECT BURIED, 36" DEPTH MIN. PER NEC 300.50. PARALLEL CIRCUITS TO COMPLY WITH NEC 310.60.
4. INSTALL ALL EQUIPMENT AND WIRING IN ACCORDANCE WITH THE NEC, NESC, AND ALL APPLICABLE REQUIREMENTS OF THE LOCAL UTILITY COMPANY AND LOCAL AUTHORITY HAVING JURISDICTION.

KEY NOTES

1. 69 KV GAS CIRCUIT BREAKER AND DISCONNECT SWITCHES, 600A
2. BUS DIFFERENTIAL AND COMMUNICATIONS-AIDED TRIPPING SCHEME TO GRAYTON, RIPLEY AND PV SUBSTATIONS (PER SMECO DESIGN)
3. GEN-TIE LINE TO SMECO SWITCHYARD (POI).
4. CURRENT TRANSFORMER 69KV OUTDOOR, METERING CLASS, 500:5 RATIO, 0.3B1.8
5. POTENTIAL TRANSFORMER 69KV, OUTDOOR, 350:1 RATIO, 0.3 0, W, X, M, Y
6. SUBSTATION MAIN POWER TRANSFORMER
   69/34.5/12.47KV
   16.5/22.0/27.5MVA
   ONAN/ONAF/OFAF
   MIN. %Z = 8.5%
7. SINGLE-PHASE AUXILIARY TRANSFORMER 15KVA, 19.92kV/240-120V AND 200A DISTRIBUTION PANEL
8. GANG-OPERATED SWITCH, 35kV, 1200A
9. 35kV VACUUM CIRCUIT BREAKER AND DISCONNECT SWITCHES, 1200A
10. 34.5 kV CAPACITOR BANK, 500 kVAr, VOLTAGE CONTROLLED

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Rockville, MD, 20850

REVISIONS:
DATE COMMENT

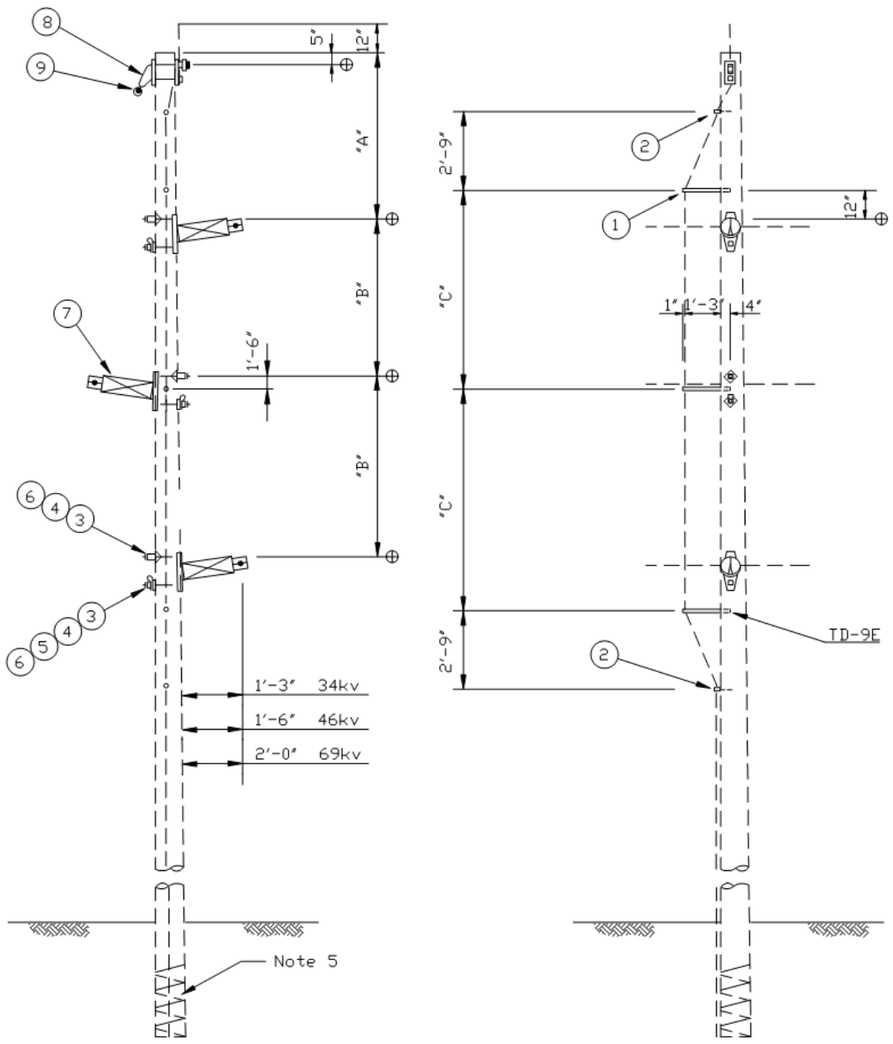
Pisgah Solar Project
Charles County, Maryland

ONE LINE DIAGRAM

PRELIMINARY
NOT FOR CONSTRUCTION

DATE: 10/28/2020
SHEET: E.200

Figure Two D – Typical IC Gen Tie Line Tangent Structure



LIST OF MATERIALS

DWG. REF.	QTY.	DESCRIPTION	ITEM	DET.	CODE No.
1	3	Rod, Fiberglass, 3/4" x 1'-8"			
3	2	Wireholder, w/ #22 wood screw	ar		
3	6	3/4" Bolt, Machine by req'd length	c		
4	6	Washer, Curved,4"sq x 1/4",13/16hole	d		
5	3	Washer, Spring, 13/16" hole	aw		
6	6	3/4" Locknut, MF Type	ek		
7	3	INSULATOR,HORIZONTAL POST,W/CLAMP	-	TM-3__	
8	1	OHGW SUPPORT ASSEMBLY	-	TM-6__	
9	1	OHGW ASSEMBLY, TANGENT	-	TM-4__	

NOTES:

1. Metal shims should be used to adjust post insulator when brackets are located on uneven pole surfaces.
2. Strength limitations of horizontal post:
   a. Maximum cantilever load — 2,800 lbs.
   b. Maximum tensile and compression (Loads a and b are simultaneous) — 5,000 lbs.
3. BLANK
   BLANK
4. BLANK
5. The following materials are to be specified on the plan and profile drawings and staking sheets: POLE, POLE GROUNDING ASSEMBLY, AND ANY ADDITIONAL GROUNDING OR FOUNDATION UNITS.

DIMENSIONS A, B & C

VOLTAGE	A	B	C
69 kv	6'-0"	5'-0"	6'-6"

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#	DATE	DESCRIPTION
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Solar Project

Charles County, Maryland

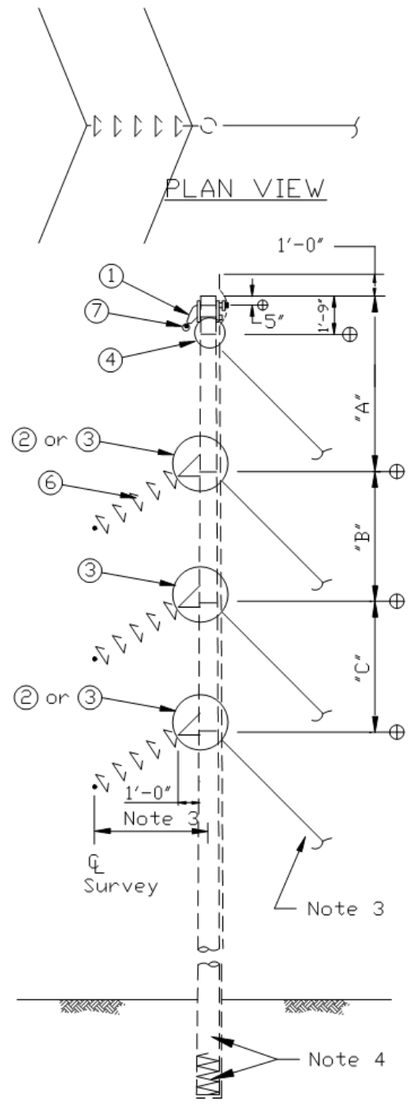
TYPICAL STRUCTURE
69kV - TANGENT HLP

Preliminary
Not For Construction

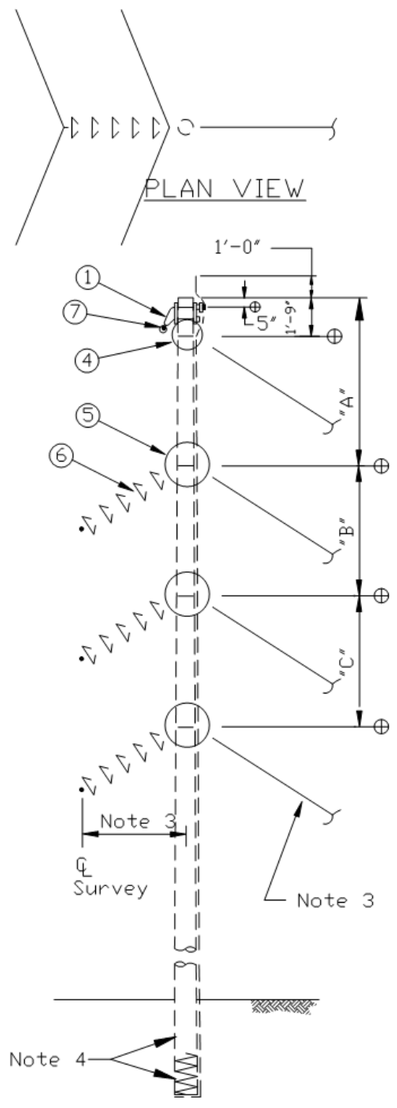
Date: 10/28/2020
Drawing No: E.1500

15XX – Typical Structures.dwg

Figure Two E – Typical IC Gen Tie Line Angle Structure



TS-3G
TS-3GA

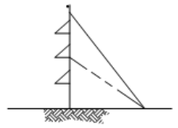


TS-4G

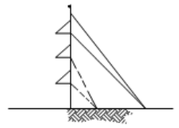
DWG. REF.	TS- 3G	3GA	4G		LIST OF MATERIALS DESCRIPTION	ITEM	DET.	CODE No.
1	1	1	1		OHGW Support Assembly, double bolt	-	TM-6B	
2	2	-	-		BRACKET ASSEMBLY, _____DUTY	-	TG-__	
3	1	3	-		BRACKET & GUY ATTACH., ____DUTY	-	TG-__	
4	1	1	1		GUY ATTACHMENT, ____DUTY	-	TG-__C	
5	-	-	3		GUY ATTACHMENT, ____DUTY	-	TG-__D	
6	3	3	3		INSULATOR ASSEMBLY, ANGLE	-	TM-__C	
7	1	1	1		OHGW ASSEMBLY, ANGLE	-	TM-4__	

NOTES:

1. Maximum line angle for TS-4G is 50 degrees.
2. BLANK
3. BLANK
   BLANK
4. The following materials are to be specified on plan and profile drawings and staking sheets: POLES, POLE GROUNDING ASSEMBLY, GUYING ASSEMBLIES, ANCHORS, AND ANY ADDITIONAL GROUNDING OR POLE FOUNDATION UNITS.



TS-3G



TS-3GA
TS-4G

DIMENSIONS A, B & C			
VOLTAGE	A	B	C
69 kV	7'-0"	7'-0"	7'-0"

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Charles County, Maryland

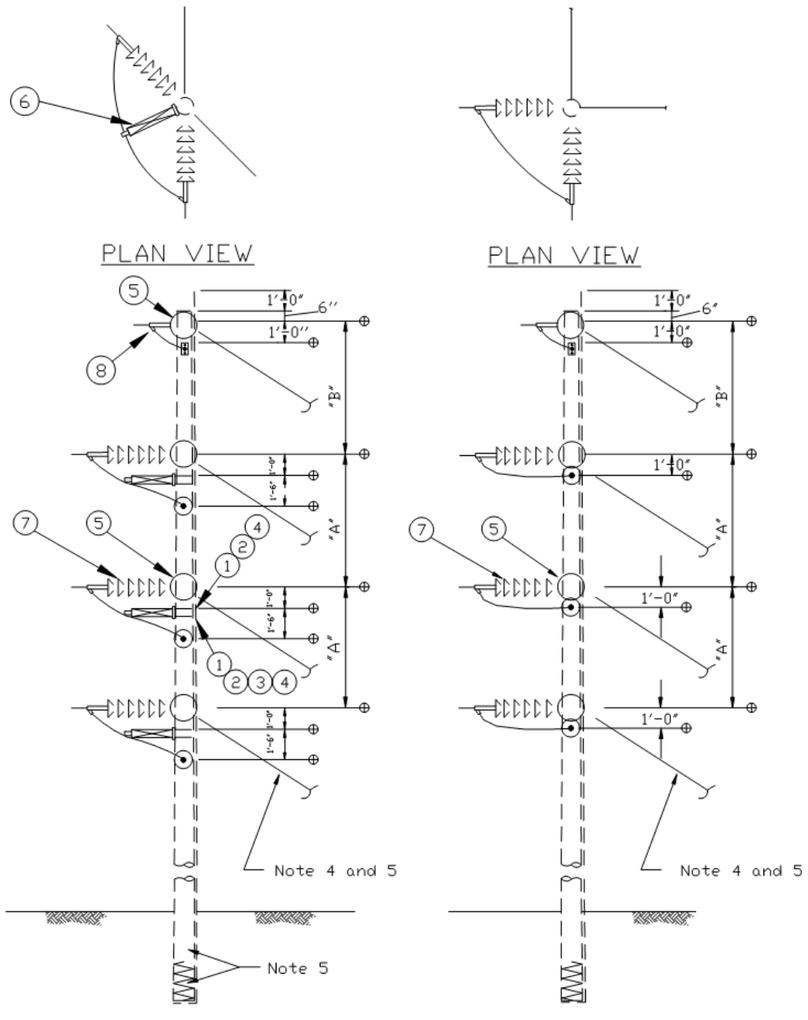
TYPICAL STRUCTURE
69kV - RUNNING ANGLE

Preliminary
Not For Construction

Date: 10/28/2020
Drawing No: E.1501

15XX – Typical Structures.dwg

Figure Two F – Typical IC Gen Tie Line Vertical Structure



	TS -		LIST OF MATERIALS			
DWG. REF.	5A	5	DESCRIPTION	ITEM	DET.	CODE No.
1	6	-	3/4" Bolt, Machine, by req'd length	c		
2	6	-	Washer, Curved,4"sq x1/4",13/16" hole	d		
3	3	-	Washer, Spring, 13/16" hole	aw		
4	6	-	3/4" Locknut, MF Type	ek		
5	8	8	GUY ATTACHMENT, ____ DUTY	-	TG-__D	
6	3	-	INSULATOR,HORIZONTAL POST, W/CLAMP	-	TM-3__	
7	6	6	INSULATOR ASSEMBLY, DEADEND	-	TM-___	
8	2	2	OHGW ASSEMBLY, DEADEND	-	TM-4__	

NOTES:

1. Metal shims should be used to adjust post insulators when brackets are located on uneven pole surfaces.
2. Minimum line angle for TS-5GA is 50 degrees. Maximum line angle for TS-5G is 90 degrees.
3. BLANK
4. BLANK
5. The following materials are to be specified on plan and profile drawings and staking sheets: POLES, POLE GROUNDING ASSEMBLY, GUYING ASSEMBLIES, ANCHORS, AND ANY ADDITIONAL GROUNDING OR POLE FOUNDATION UNITS.

DIMENSIONS A & B		
VOLTAGE	A	B
69 kV	7'-0"	7'-0"

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Solar Project

Charles County, Maryland

TYPICAL STRUCTURE
69kV - VERTICAL DE

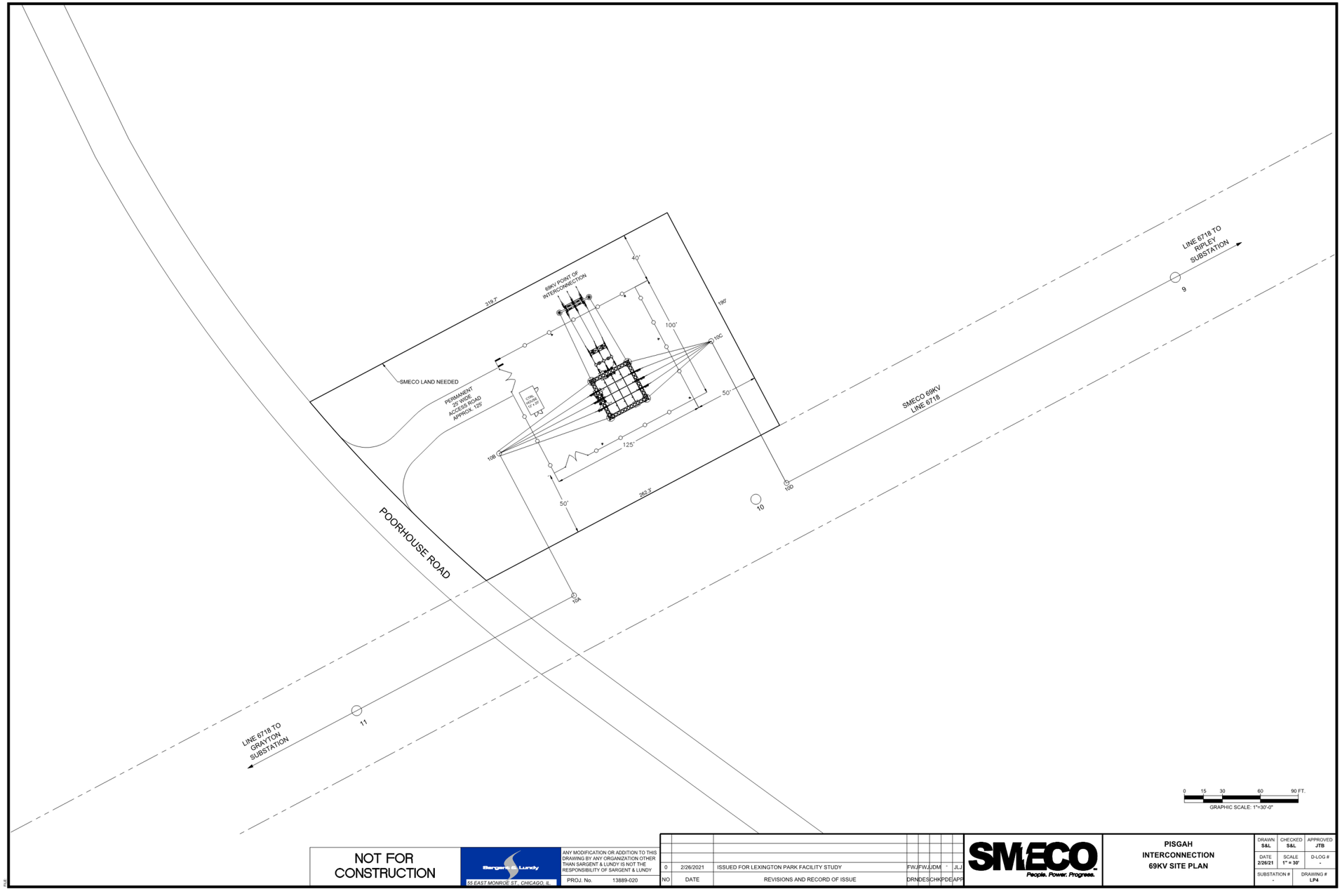
Preliminary
Not For Construction

Date 10/28/2020
Drawing No R.1502

15XX – Typical Structures.dwg

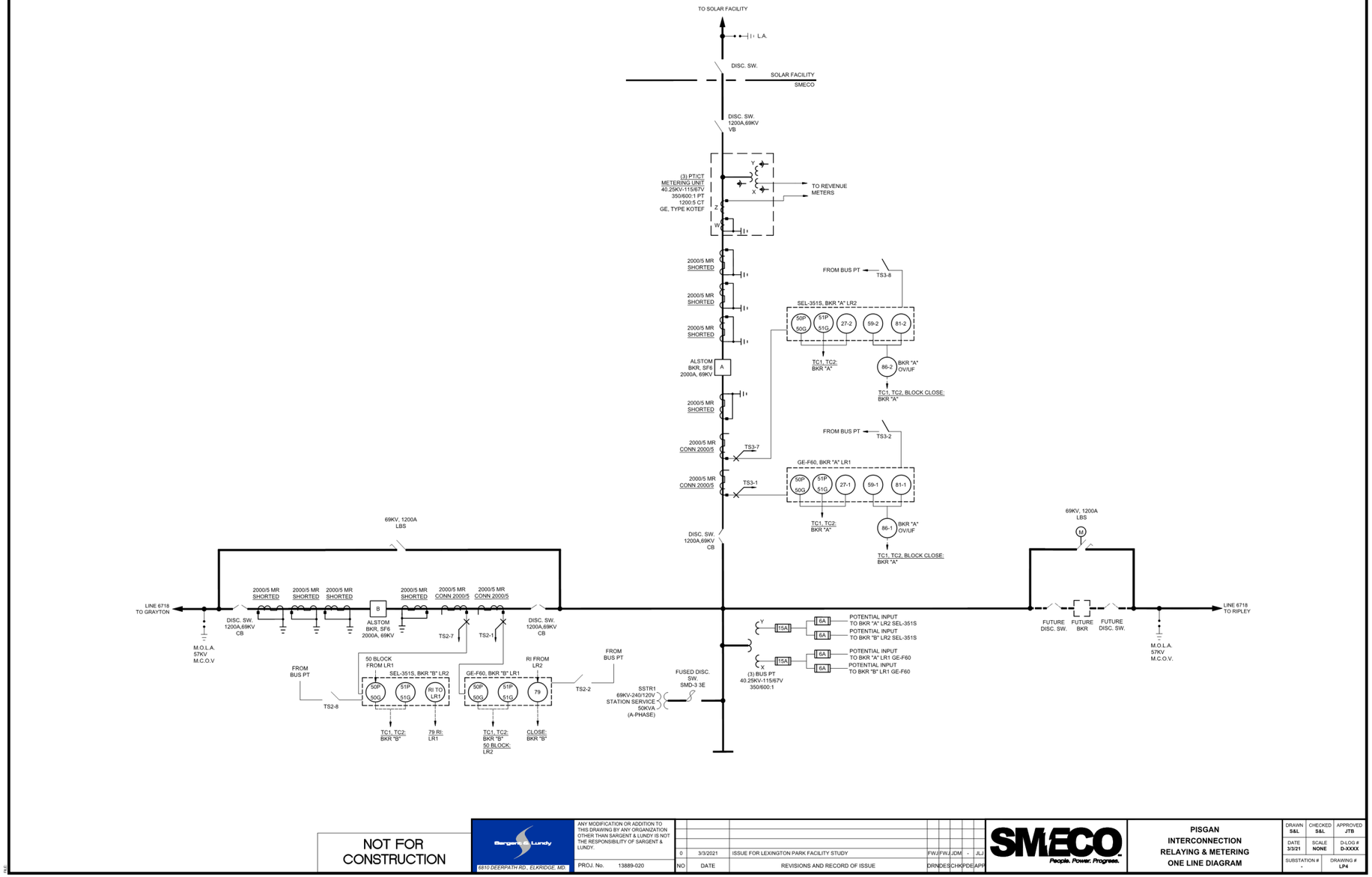
Attachment One

Figure Three – Proposed SMECO Site Plan



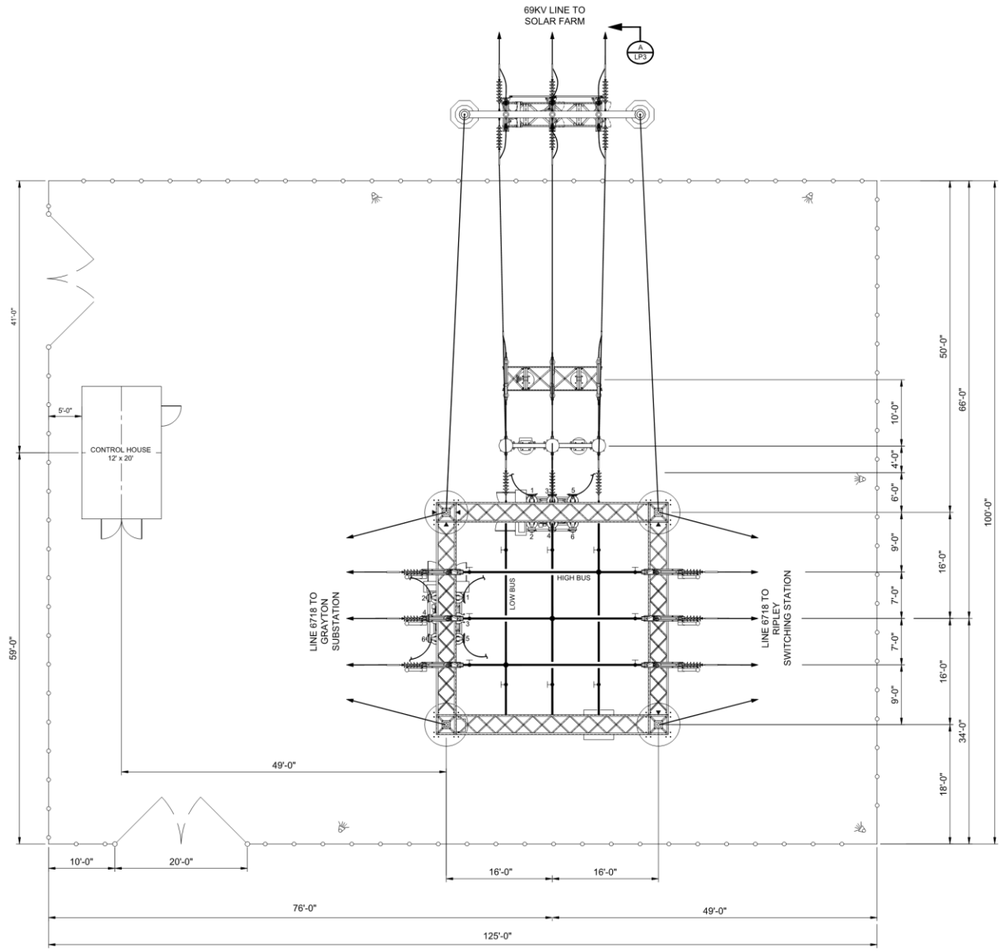
Attachment One

Figure Four – Proposed SMECO 3-Terminal Tap Switching Station One-Line Diagram



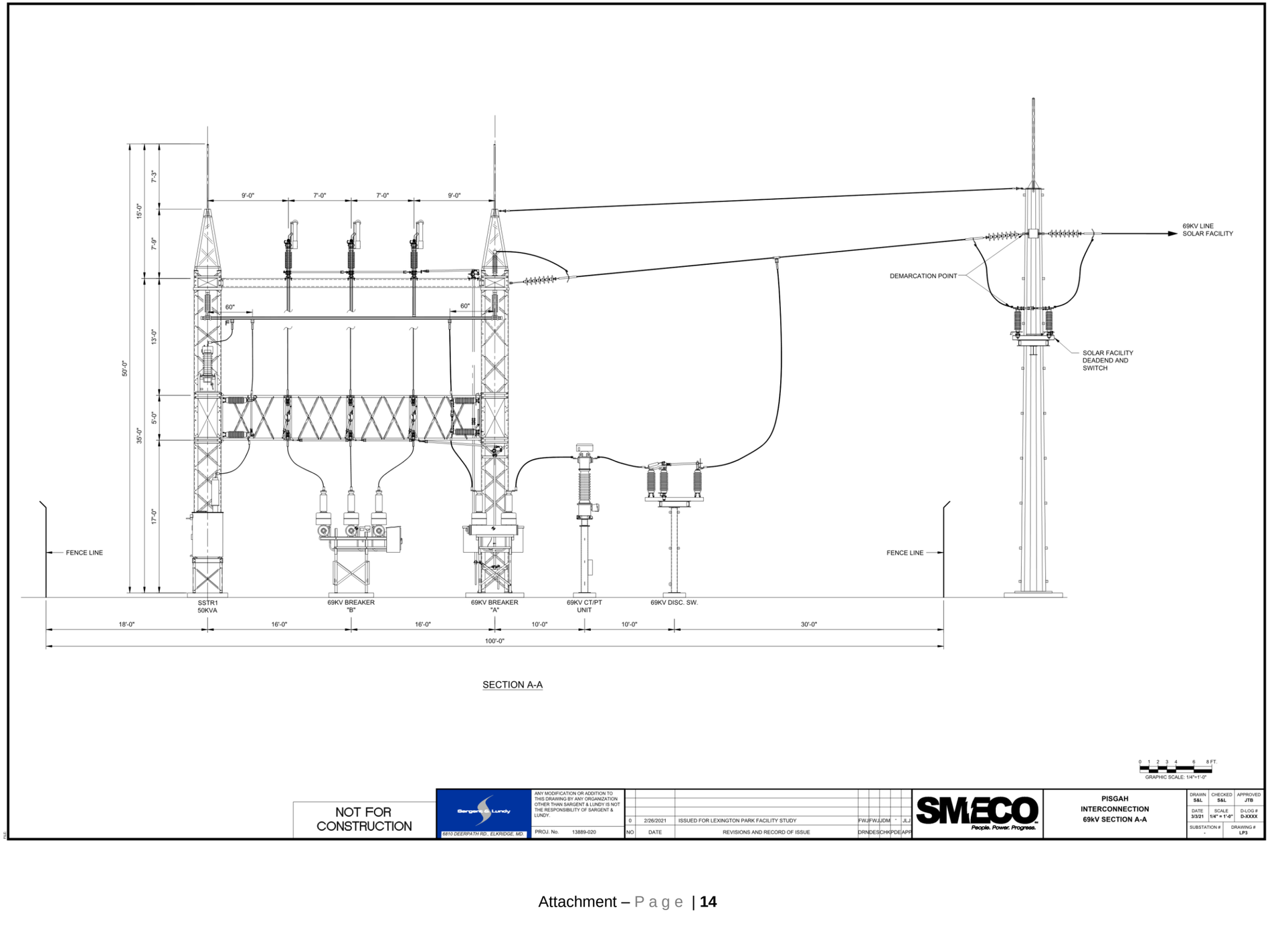
Attachment One

Figure Five – Proposed SMECO 69 kV Switching Station Plan View



Attachment One

Figure Six – Proposed SMECO 69 kV Switching Station Profile View



SECTION A-A

0 1 2 3 4 6 8 FT.
GRAPHIC SCALE: 1/4"=1'-0"

NOT FOR CONSTRUCTION

Sargent & Lundy
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NO	DATE	REVISIONS AND RECORD OF ISSUE	DRN	DES	CHK	PDE	APP
0	2/26/2021	ISSUED FOR LEXINGTON PARK FACILITY STUDY	FWJ	FWJ	JDM	"	JLJ

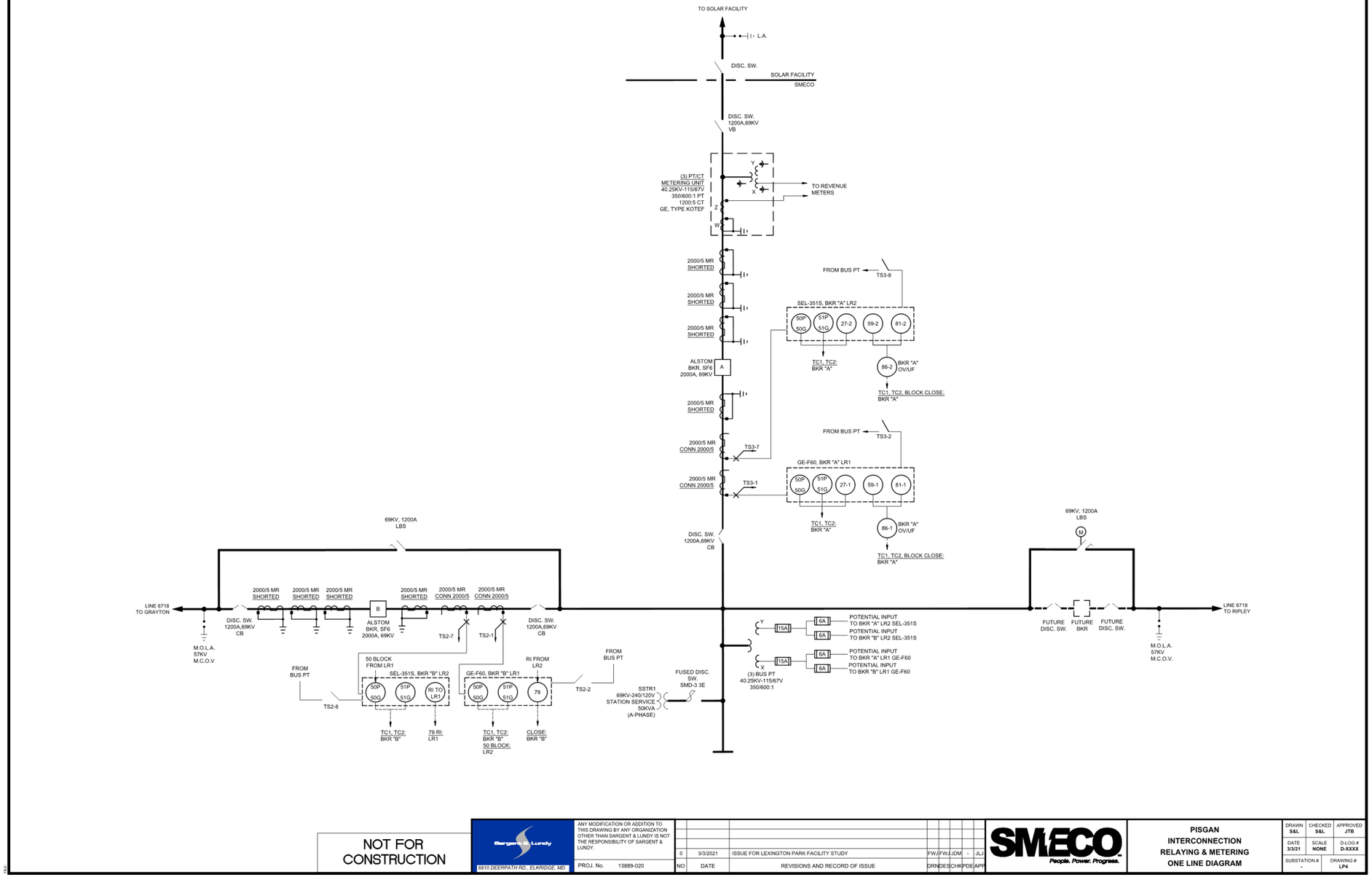
SMECO People. Power. Progress.

PISGAH
INTERCONNECTION
69kV SECTION A-A

DRAWN	CHECKED	APPROVED
S&L	S&L	JTB
DATE	SCALE	D-LOG #
3/3/21	1/4" = 1'-0"	D-XXXX
SUBSTATION #		DRAWING #
-		LP3

Attachment One

Figure Seven – Proposed SMECO 69 kV Functional Protection One-Line



Attachment One

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