APPENDIX 5-D

Main Power Transformer Specification Sheet

Project Specific Information

The transformer(s) covered under this technical datasheet will provide solar PV energy generation step-up service at the Somerset Substation. The overall project consists of 125MW of generation to the Point of Interconnection.

Being this transformer will operate in New York State, please comply with 94-C permitting requirements for lower sound units/noise.

General Conditions

- The supplier must verify, confirm, and complete all information in this datasheet.
- All operating ranges must be guaranteed, regardless of the position of the OLTC, to operate in the conditions of the transformer installation site.

Section	Description	Specified Data	Supplier Data
General			
	Equipment Tag(s):		
	Quantity:	1	
	One Line Diagram:		
	Project Location:	Somerset, NY	
	Delivery Location:	43.3569651, -78.6050195	
	Delivery Date:	Safe Harbor 2022	
Environmental and Service Conditions			
	Class:	Outdoor, Continuous Duty	
	Power System Characteristics:	Effectively Grounded	
	Approximate Altitude Above Sea Level:	290 ft. (Approx.)	
	Seismic Classification:	Zone 1	
	Maximum Ambient Site Temperature:	38° Celsius	
	Maximum average temperature of cooling air for any 24-hour period:	33° Celsius	
	Minimum Ambient Site Temperature:	-25° Celsius	
	Wind Speed (NESC):	90 MPH	
	Auxiliary A.C. power available:	120/240 Volts (single-phase)	
	Auxiliary D.C. power available:	125 Volts	

Section	Description	Specified Data	Supplier Data
General Specifications			
	Classification:	Class II, Category IV	
	Type:	Three Phase, Three-Winding, with Buried Tertiary	
	Insulating Oil:	Mineral Oil	
	Type of Cooling:	ONAN/ONAF/ONAF	
	Color:	ANSI 70 Gray	
Transformer Electrical Ratings			
	Frequency:	60Hz	
	Capacity Ratings		
	Primary to Secondary Winding:	84/112/140 MVA	
	Tertiary Winding:	TBD by Manufacturer	
	Cooling Class:	ONAN/ONAF/ONAF	
	Winding Temperature Rise:	65°C	
	Hottest point of windings:	80°C	
	Top oil temperature:	60°C	
	Voltage Ratings		
	Primary Winding:	345 Grd Y/ 199.2 kV	
	Secondary Winding:	34.5 Grd Y/ 19.92 kV	
	Tertiary Winding:	By Manufacturer	
	Maximum Service Voltages		
	Primary Winding:	+/- 5% of 361kV	
	Secondary Winding:	+/- 5% of Nominal	
	Tertiary Winding:	+/- 5% of Nominal	
	Impedance Information		

Section	Description	Specified Data	Supplier Data
	Primary - Secondary (ONAF):	10% (+/- allowed tolerance)	
	Primary - Tertiary (ONAF):	By Manufacturer	
	Secondary - Tertiary (ONAF):	By Manufacturer	
	Short Circuit Current		
	Primary Winding (kA):	TBD	
	Secondary Winding (kA):	TBD	
	Tertiary Winding (kA):	TBD	
	Short Circuit Duration (seconds):	TBD	
	Winding Material:	All Copper	
	Winding Design:	Circular Wound (all windings)	
	Polarity and Angular Displacement (Primary - Secondary):	0° (ANSI Standard)	
	High Voltage Winding Rating & Connection:	345 kV, 1050 kV BIL, Grounded-Wye connected	
	Low Voltage Winding Rating & Connection:	34.5 kV, 200 kV BIL, Grounded-Wye connected	
	High and Low Voltage Neutral Rating & Connection:	Fully insulated, 200 kV BIL, effectively grounded	
	Tertiary Winding:	Delta Connected Voltage TBD by Manufacturer BIL: ANSI Standard at selected Voltage	
	On-Load Tap Changer (OLTC)		
	Location:	High Voltage Winding, Neutral End	
	Range:	+/-10% of nominal voltage	
	Number of Steps:	33 total (16 steps above, 16 steps below nominal)	
	Step Size:	0.625%	
	OLTC Manufacturer & Model:	By Manufacturer	

Section	Description	Specified Data	Supplier Data
	Bushings		
	High Voltage (H):	345kV, 1050kV BIL, 600A continuous (minimum)	
	Low Voltage (X):	34.5kV, 200kV BIL, 3000A continuous (minimum)	
	HV Neutral (H0):	34.5kV, 200kV BIL, 3000A continuous (minimum)	
	LV Neutral (X0):	34.5kV, 200kV BIL, 3000A continuous (minimum)	
	Bushing CTs		
	On HV Bushings:	2 sets, MR 600:5A, C800, RF=2.0; 1 set, SR 200:5A, 0.15B1.8, RF=3.0	
	On LV Bushings:	3 sets, MR 3000:5A, C800, RF=2.0	
	On H0 Bushing:	2 each, MR 600:5A, C400, RF=2.0	
	On X0 Bushing:	2 each, MR 600:5A, C400, RF=2.0	
	On Tertiary Winding:	1 each, TBD by Manufacturer, C800, RF=2.0	
	Surge Arresters		
	High Voltage:	209kV MCOV	
	Low Voltage:	29kV MCOV	
	No-load Losses (NLL)		
	NLL at 95% of Nominal Voltage (kW):	By Manufacturer	
	NLL at 100% of Nominal Voltage (kW):	By Manufacturer	
	NLL at 105% of Nominal Voltage(kW):	By Manufacturer	
	Load Losses (LL)		
	LL at 95% of Nominal Voltage (kW):	By Manufacturer	

Section	Description	Specified Data	Supplier Data
	LL at 100% of Nominal Voltage (kW):	By Manufacturer	
	LL at 105% of Nominal Voltage (kW):	By Manufacturer	
	Auxiliary Equipment Losses		
	Aux Losses at ONAF (kW):	By Manufacturer	
	Aux Losses at ONAF2 (kW):	By Manufacturer	
	Magnetizing Current		
	HV winding magnetizing current at 95% rated voltage (Amps):	By Manufacturer	
	HV winding magnetizing current at 100% rated voltage (Amps):	By Manufacturer	
	HV winding magnetizing current at 105% rated voltage (Amps):	By Manufacturer	
Transformer Physical Data			
	Cooling Radiators		
	Number of Radiators:	By Manufacturer	
	Radiator Manufacturer:	By Manufacturer	
	Radiator Finish:	Galvanized	
	Weights (lb)		
	Active Part:	By Manufacturer	
	Tank and Accessories:	By Manufacturer	
	Mineral Oil:	By Manufacturer	
	Total:	By Manufacturer	
	Heaviest Part for Transport:	By Manufacturer	
	General Dimensions: Width-Depth-Height (in)		

Section	Description	Specified Data	Supplier Data
	Fully Assembled Transformer:	By Manufacturer	
	Major Parts for Shipping and Transportation:	By Manufacturer	
	Thickness of Metal Walls (in)		
	Tank Walls:	By Manufacturer	
	Base Plate:	By Manufacturer	
	Upper Plate:	By Manufacturer	
	Conservator:	By Manufacturer	
	Radiators:	By Manufacturer	
Manufacturer Sign Off			
	Name of Manufacturer:		
	Manufacturing Location:		
	Physical Address:		
	Contact Number:		
	Email Address:		
	Name of Person Responsible:		
	Designation:		
	Signature:		
	Date:		