PPL EU REQUIREMENTS FOR TRANSMISSION CONNECTED FACILITIES TO BE OWNED AND OPERATED BY PPL EU

Attachment 6

OPTION TO BUILD MAJOR EQUIPMENT

APPROVED VENDORS

Location Codes	S	0	6	0												Sorts	E			

Rev	Date	Sponsor	Reviewer	SUBSTATION ENGINEERING INSTRUCTION PPL ELECTRIC UTILITIES CORPORATION
0	7/14/2017	MGD	JP	
				Approved _____Yves Emmanuel Nembo_____ Mgr. Standards

Record of All Issued Revisions

Revision	Page(s)	Section(s)	Description	Issue Date
0	All	All	Initial Issue	7/14/2017

Distribution:
1. RC 0880 – T&S Standards
2. RC 0883 – Substation Engineering
3. RC 0601 – T&S Asset Management
4. RC 0878 – T&S System Engineering

This document shall be used by the project developer for obtaining major substation equipment that conforms to PPL Electric Utilities requirements for qualified source(s) of such equipment. Additional PPL equipment specifications will apply based on the nature and location of the project.

This list is confidential, for the specific development project it was issued for and shall not be disseminated to vendors or other third parties. This list is subject to change and shall not be used as a reference for any other development

POWER TRANSFORMERS (3-WINDING AUTO W/ LTC) – BULK POWER/REGIONAL SUBSTATIONS

VOLTAGE (KV)	CAPACITY ONAN/ONAF/ONAF (MVA)	UNIT CONFIG	APPROVED MANUFACTURERS (APPROVED PLANT)	NOTES
500-230	250 **	1Ø	SMIT (Nijmegen, NE) HYUNDAI (Ulsan, Korea) SIEMENS (Nuremberg, Germany)	
500-138	340 **	3Ø	SMIT (Nijmegen, NE) HYUNDAI (Ulsan, Korea) SIEMENS (Nuremberg, Germany)	
230-138	340 **	3Ø	SMIT (Nijmegen, NE or Regensburg, Germany) HYUNDAI (Montgomery, AL) ABB (St. Louis, MO) SIEMENS (Linz, Austria)	
230-69	170	3Ø	SMIT (Nijmegen, NE or Regensburg, Germany) HYUNDAI (Montgomery, AL) ABB (St. Louis, MO) SIEMENS (Linz, Austria)	
138-69	170	3Ø	SMIT (Nijmegen, NE or Regensburg, Germany) HYUNDAI (Montgomery, AL) ABB (St. Louis, MO) SIEMENS (Linz, Austria)	

** -- ONAN/ODAF/ODAF and ONAN/OFAF/OFAF are not permitted.

POWER CIRCUIT BREAKERS

VOLTAGE (KV)	CONTINUOUS CURRENT RATING (AMPS)	BIL (KV)	INTERRUPTING RATING (KAIC)[1]	INSULATION TYPE	APPROVED VENDORS	MODEL	NOTES
500	4000 3000[3]	1800	63 50	SF6	ABB [2]	550PM	
230	3000	900	63 50	SF6	MEPPI [2]	200-SFMT	
138	3000 2000	650	40	SF6	MEPPI [2]	120-SFMT	
69	3000	350	40	SF6	SIEMENS [2]	SPS2	
12	3000 2000 1200	110	25	VACUUM	MEPPI [2]	17VD25	

[1] – Interrupting rating requirements shall be determined by system location and future expansion planning. PPL will advise of the minimum KAIC requirements for a specific developer project.
[2] – Circuit breaker alliance partner; sole source.
[3] – For replacement of existing CB or within an existing built out bay only

METAL-OXIDE SURGE ARRESTERS

VOLTAGE (KV)	CLASS	DUTY CYCLE (KV)	MCOV (KV)	APPROVED VENDORS	NOTES
500	STATION	396	318	ABB	
230	STATION	180	144	ABB SIEMENS OHIO BRASS GE COOPER POWER	
138	STATION	132	108	ABB OHIO BRASS GE COOPER POWER	
69	STATION	60	48	ABB OHIO BRASS GE COOPER POWER	
12	STATION	18	15.3	ABB OHIO BRASS GE COOPER POWER	

AIR/DISCONNECT SWITCHES

VOLTAGE (KV)	CONTINUOUS CURRENT RATING (AMPS)	CLOSE &LATCH RATING [RMS ASYMMETRICAL MOMENTARY CURRENT] (KAIC)	BIL (KV)	PHYSICAL STYLE(S)[1]	APPROVED VENDORS	MODEL	NOTES
500	4000 3000[2]	100	1800 1550	3IVB-MO	PASCOR [3]	TTR-6	
230	3000 2000	100	1050 900	3IVB-MO	PASCOR [3]	TTR-8	
138	3000 2000 1200	120 100 61	650 550	3IVB-MO	CLEVELAND PRICE [3]	V2-CA	S1
69	2000 1200	100 61	350	3IVB-MO 3IVB-HO	CLEVELAND PRICE [3]	V2-CA	S1

[1] – Legend for Physical Styles:

3IVB-MO	3-insulator vertical break style, motorized
3IVB-HO	3-insulator vertical break style, hand operated (worm gear mechanism)

[2] – For replacement of existing CB or within an existing built out bay only

[3] – Switch alliance partner; sole source.

Switch Notes:

S1	All circuit breakers used in a “network line” application shall have motorized disconnect switches on both sides of the breaker for automatic isolation for a failed/stuck breaker event.

POTENTIAL TRANSFORMERS

VOLTAGE (KV)	BIL (KV)	APPROVED VENDORS	MODEL	NOTES
500	- - -	- - -	- - -	N/A
230	1050	ABB-KUHLMAN	UTF	
138	650	ABB-KUHLMAN	POF	
69	350	ABB-KUHLMAN ITEC	POF	

COUPLING CAPACITOR VOLTAGE TRANSFORMERS (with or without carrier accessories)

VOLTAGE (KV)	BIL (KV)	RATIO	ACCURACY CLASS	APPROVED VENDOR(S) [MODEL]	NOTES
500	1800	2500/4350:1 (288800-115/66.4V)	0.3ZZ METERING	TRENCH [TEMP] GE [OTCF]	
230	1050	1155/2000:1 (132800-115/66.4V)	0.3ZZ METERING	TRENCH [TEMP] GE [OTCF]	
138	650	700/1200:1 (80500-115/66.4v)	0.3ZZ METERING	TRENCH [TEVF] GE [OTCF]	
69	350	350/600:1 (132800-115/66.4V)	0.3ZZ METERING	TRENCH [TEVF] GE [OTCF]	

POWER VOLTAGE TRANSFORMERS

VOLTAGE (KV)	BIL (KV)	APPROVED VENDORS	MODEL	NOTES
230	1050	ABB-KUHLMAN	SSVT-1050	
138	650	ABB-KUHLMAN ITEC	SSVT-650 PA10650064499P00	
69	350	ABB-KUHLMAN ITEC	SSVT-350 PA10350032299P00	

REACTORS

APPROVED VENDORS SHUNT REACTORS	APPROVED VENDORS SERIES REACTORS
ABB HYUNDAI SMIT	GE TRENCH

CAPACITOR BANKS

APPROVED VENDORS CAPACITOR BANKS
ABB COOPER GE

WAVE TRAPS

APPROVED VENDORS WAVE TRAPS
GE
TRENCH

BACK UP GENERATORS

APPROVED VENDORS GENERATORS
HIPOWER

GIS/GIL

APPROVED VENDORS GIS	APPROVED VENDORS GIL
ABB	ABB
MEPPI	AZZ
	MEPPI