Network Impacts

The Queue Project #Y2-083 was studied as a 218.0MW (Capacity 198.0MW) injection at the Essex 138 kV substation in the PSEG area. Project #Y2-083 was evaluated for compliance with reliability criteria for summer peak conditions in 2016. Potential network impacts were as follows:

Potential network impacts were as follows:

Table 2 - Option 1	
Contingency Name	**Description**
01YUKON _01SOBEND _083	CONTINGENCY '01YUKON _01SOBEND _083' DISCONNECT BRANCH FROM BUS 235116 TO BUS 235118 CKT 1 /* 500/500KV, AREA 201/201. END
BG_CKT2339	CONTINGENCY 'BG_CKT2339' /* NORTHEAST TO RIVERSIDE CKT #2339 DISCONNECT BRANCH FROM BUS 220977 TO BUS 220965 CKT 1 /*CKT #2339 RIVERSIDE TO NORTHEAST DISCONNECT BRANCH FROM BUS 220965 TO BUS 221112 CKT 1 /* NORTHEAST 230-2 TRANSFORMER END
C2_PN115-SB-46A	CONTINGENCY 'C2_PN115-SB-46A' /* NORTH MESHOPPEN 115 KV STUCK CB - (N MESHOPPEN - BUS TIE CB) DISCONNECT BRANCH FROM BUS 200677 TO BUS 200699 CKT 1 DISCONNECT BRANCH FROM BUS 200677 TO BUS 200678 CKT 1 REDUCE BUS 200677 SHUNT BY 100 PERCENT DISCONNECT BRANCH FROM BUS 200677 TO BUS 200684 CKT 1 DISCONNECT BRANCH FROM BUS 200825 TO BUS 200706 CKT 3 DISCONNECT BRANCH FROM BUS 200677 TO BUS 200825 CKT 3 DISCONNECT BUS 200825 DISCONNECT BRANCH FROM BUS 200677 TO BUS 200698 CKT 2 DISCONNECT BRANCH FROM BUS 200677 TO BUS 200674 CKT 1 DISCONNECT BRANCH FROM BUS 200677 TO BUS 200687 CKT 2 DISCONNECT BRANCH FROM BUS 200677 TO BUS 200706 CKT 4 END

Table 2 - Option 1	
Contingency Name	**Description**
CNSTN_NWEST	CONTINGENCY 'CNSTN_NWEST' /* CONASTONE TO NORTHWEST CKTS #2310 & #2322 DISCONNECT BRANCH FROM BUS 220963 TO BUS 220962 CKT 1 /* CONASTONE TO NORTHWEST CKT#2310 DISCONNECT BRANCH FROM BUS 220963 TO BUS 220961 CKT 1 /* CONASTONE TO NORTHWEST CKT #2322 END
PJM17	CONTINGENCY 'PJM17' DISCONNECT BRANCH FROM BUS 200004 TO BUS 200013 CKT 1 /* CNASTONE PEACHBTM 500 500 END
PJM64	CONTINGENCY 'PJM64' OPEN LINE FROM BUS 200010 TO BUS 200027 CIRCUIT 1 /* KEENEY EHV - RED LION 500 END
PJM69	CONTINGENCY 'PJM69' DISCONNECT BRANCH FROM BUS 200021 TO BUS 200009 CKT 1 /* SUNBURY JUNIATA 500 500 DISCONNECT BRANCH FROM BUS 200021 TO BUS 200022 CKT 2 /* SUNBURY SUSQHANA 500 500 / CKT 1 -> 2 DISCONNECT BRANCH FROM BUS 200021 TO BUS 208109 CKT 24 /* SUNBURY SUNBURY 500 230 END
PJM8BG	CONTINGENCY 'PJM8BG' /* CONASTONE BREAKER B (TIE BREAKER) DISCONNECT BRANCH FROM BUS 200004 TO BUS 200013 CKT 1 /* CNASTONE PEACHBTM 500500 DISCONNECT BRANCH FROM BUS 200004 TO BUS 220963 CKT 2 /* CNASTONE CONASTNE 500230 END
PJM9BG	CONTINGENCY 'PJM9BG' /* CONASTONE BREAKER H DISCONNECT BRANCH FROM BUS 200004 TO BUS 200100 CKT 1 /* CNASTONE CAP DISCONNECT BRANCH FROM BUS 200004 TO BUS 220963 CKT 1 /* CNASTONE BRIGHTON 500230 DISCONNECT BRANCH FROM BUS 200004 TO BUS 220963 CKT 2 /* CNASTONE BRIGHTON 500230

Table 2 - Option 1	
Contingency Name	**Description**
	END
PL100571	CONTINGENCY 'PL100571' /*AT JUNIATA 500SUB SUNBURY 500KV N.CB FAILED DISCONNECT BRANCH FROM BUS 200009 TO BUS 208005 CKT 2 DISCONNECT BRANCH FROM BUS 200009 TO BUS 200021 CKT 1 END
PL100576	CONTINGENCY 'PL100576' /*AT JUNIATA 500SUB SUNBURY 500KV S.CB FAILED DISCONNECT BRANCH FROM BUS 200009 TO BUS 200021 CKT 1 DISCONNECT BRANCH FROM BUS 200009 TO BUS 200183 CKT 1 DISCONNECT BRANCH FROM BUS 200009 TO BUS 208004 CKT 1 END
PS58	CONTINGENCY 'PS58' DISCONNECT BRANCH FROM BUS 216943 TO BUS 217060 CKT 1 /* NJT MDW KRNY 230 230 DISCONNECT BRANCH FROM BUS 216943 TO BUS 216961 CKT 1 /* NJT MDWE 230 13 DISCONNECT BRANCH FROM BUS 217060 TO BUS 217079 CKT 1 /* KRNY ESSEX 230 230 DISCONNECT BRANCH FROM BUS 217060 TO BUS 217101 CKT 1 /* KRNY 230/*13 DISCONNECT BRANCH FROM BUS 217101 TO BUS 217146 CKT 1 /* KRNY CT1&2 DISCONNECT BRANCH FROM BUS 217101 TO BUS 217147 CKT 1 /* KRNY CT3&4 DISCONNECT BRANCH FROM BUS 217079 TO BUS 217045 CKT 2 /* ESSEX 220-2 230 138 REMOVE MACHINE 1 FROM BUS 217146 REMOVE MACHINE 2 FROM BUS 217146 REMOVE MACHINE 1 FROM BUS 217147 REMOVE MACHINE 2 FROM BUS 217147 MOVE 100 PERCENT LOAD FROM BUS 216960 TO BUS 216961 /* NJT MDW EAST WEST

Table 2 - Option 1	
Contingency Name	**Description**
	END
PS72	CONTINGENCY 'PS72' DISCONNECT BRANCH FROM BUS 217079 TO BUS 217000 CKT 1 /* ESSEX HUDSN1-6 230 230 END

Generator Deliverability

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

Table 3 below provides a summary of the impacts caused by Y2-083 on the PSE&G transmission system and other TO areas for generator deliverability:

Table 3a - Option 1												
~~Y2-083 Generator Deliverability~~												
~~-~~	~~Contingency~~			~~Bus~~			~~Loading~~		~~Rating~~		~~MW~~	~~FG~~
~~#~~	~~Type~~	~~Name~~	~~Facility Description~~	~~From~~	~~To~~	~~Cir.~~	~~Initial~~	~~Final~~	~~Type~~	~~MVA~~	~~Cont.~~	~~App.~~
~~1~~	~~Non~~	~~Non~~	~~HOBOKN R-BERGEN 230 kV line~~	~~217073~~	~~217100~~	~~1~~	~~93.59~~	~~102.39~~	~~NR~~	~~398~~	~~35.02~~	~~3~~

Multiple Facility Contingency

(Double Circuit Tower Line(DCTL), Line with Failed Breaker(LFFB) and Bus Fault(Bus) contingencies for the full energy output.)

Table 4 below provides a summary of the impacts caused by Y2-083on the PSE&G transmission system and other TO areas for multiple facility contingency:

Table 4a - Y2-083 Multiple Facility Contingency												
	Contingency			Bus			Loading		Rating		MW	FG
#	Type	Name	Facility Description	From	To	Cir.	Initial	Final	Type	MVA	Cont.	App.
1	LFFB	PL100571	CNYO&G-E.TWANDA 230 kV line	200924	200675	1F	93.49	93.82	ER	549	11.39	1

Table 4a - Y2-083 Multiple Facility Contingency												
	Contingency			Bus			Loading		Rating		MW	FG
#	Type	Name	Facility Description	From	To	Cir.	Initial	Final	Type	MVA	Cont.	App.
2	LFFB	PL100576	CNYO&G-E.TWANDA 230 kV line	200924	200675	1F	93.49	93.82	ER	549	11.39	2

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)

Table 5 below provides a summary of the impacts caused by Y1-070 on the ATSI transmission system and other TO areas for contribution to previously identified overloads:

Table 5a - Y2-083 Contribution to Previously Identified Overloads												
	Contingency		Facility	Bus			Loading		Rating		MW	FG
#	Type	Name	Description	From	To	Cir.	Initial	Final	Type	MVA	Cont.	App.
1	DCTL	CNSTN_NWEST	CNASTONE-BRIGHTON 500 kV line	200004	200003	1	106.23	106.25	ER	2815	43.37	4
2	N-1	01YUKON _01SOBEND _083	KEYSTONE-CABOT 500 kV line	200011	235104	1	107.31	107.33	ER	2598	38.35	5
3	N-1	01YUKON _01SOBEND _083	KEYSTONE-CABOT 500 kV line	200011	235104	1	107.31	107.33	ER	2598	38.35	6
4	LFFB	C2_PN115-SB-46A	N.MESHPN-CNYO&G 230 kV line	200706	200924	1F	103.67	103.97	ER	617	11.52	7
5	N-1	PS58	ESSEX-KRNY 4-6 230 kV line	217079	217061	1	106.09	115.57	ER	1000	94.83	8
6	N-1	BG_CKT2339	RAPHAEL-NEAST317 230 kV line	220980	220979	1	116.15	116.25	ER	739	9.94	9
7	LFFB	PJM9BG	CNASTONE-BRIGHTON 500 kV line	200004	200003	1	117.89	117.9	ER	2815	43.27	10
8	LFFB	C2_PN115-SB-46A	CNYO&G-E.TWANDA 230 kV line	200924	200675	1F	113.49	113.83	ER	549	11.52	11
9	N-1	PJM69	OXBOW-N.MESHPN 230 kV line	200708	200706	1	123.54	123.89	ER	608	13.12	12
10	Non	Non	ESSEX-KRNY 1-3 230 kV line	217079	217060	1	121.06	133.85	NR	732	93.63	13
11	N-1	PS72	ESSEX-KRNY 1-3	217079	217060	1	123.2	135.11	ER	887	105.7	14

Table 5a - Y2-083 Contribution to Previously Identified Overloads												
	Contingency		Facility	Bus			Loading		Rating		MW	FG
#	Type	Name	Description	From	To	Cir.	Initial	Final	Type	MVA	Cont.	App.
			230 kV line									
12	N-1	PJM69	LACK-OXBOW 230 kV line	208009	200708	1	128.44	128.79	ER	617	13.34	15
13	N-1	PJM17	BRIS-YORKANA 230 kV line	207922	204515	1	148.16	148.58	ER	617	10.06	16
14	N-1	PJM17	COOPER-GRACETON 230 kV line	214084	220964	1	148.8	148.91	ER	578	14.21	17
15	N-1	PJM17	PCHBTMTP-COOPER 230 kV line	213869	214084	1	151.83	151.94	ER	578	14.21	18
16	N-1	PJM17	NOTTREAC-PCHBTMTP 230 kV line	213846	213869	1	151.83	151.94	ER	578	14.21	19
17	N-1	PJM17	SAHA34TP-GRACETON 230 kV line	208071	220964	1	153.89	153.91	ER	485	11	20
18	N-1	PJM17	OTCR-CONASTON 230 kV line	208048	220963	1	154.26	154.27	ER	531	13.44	21
19	N-1	PJM17	NOTTNGHM-NOTTREAC 230 kV line	213844	213846	1	154.79	154.9	ER	567	14.21	22
20	LFFB	PJM8BG	COOPER-GRACETON 230 kV line	214084	220964	1	158.37	158.43	ER	578	15.41	23
21	Non	Non	OXBOW-N.MESHPN 230 kV line	200708	200706	1	149.48	149.87	NR	478	11.45	24
22	LFFB	PJM8BG	NOTTREAC-PCHBTMTP 230 kV line	213846	213869	1	160.59	160.65	ER	578	15.41	25
23	LFFB	PJM8BG	PCHBTMTP-COOPER 230 kV line	213869	214084	1	160.59	160.65	ER	578	15.41	26
24	Non	Non	LACK-OXBOW 230 kV line	208009	200708	1	152.69	153.08	NR	488	11.65	27
25	Non	Non	PEACHBTM-CNASTONE 500 kV line	200013	200004	1	162.94	162.98	NR	2490	56.89	28
26	LFFB	PJM8BG	NOTTNGHM-NOTTREAC 230 kV line	213844	213846	1	163.72	163.78	ER	567	15.41	29

Energy Portion of Interconnection Request

PJM also studied the delivery of the energy portion of the surrounding generation. Any potential 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 Transmission Interconnection request.

Note: Only the most severely overloaded conditions are listed. 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 Request, a subsequent analysis will be performed which analyzes all overload conditions associated with the overloaded element(s) identified. As a result of the aggregate energy resources in the area, the following violations were identified.

Table 6a - Y2-083 Delivery of Energy Portion of Interconnection Request

	Contingency		Facility	Bus			Loading		Rating		MW	FG
#	Type	Name	Description	From	To	Cir.	Initial	Final	Type	MVA	Cont.	App.
1	N-1	01YUKON _01SOBEND _083	KEYSTONE-CABOT 500 kV line	200011	235104	1	107.51	107.52	ER	2598	42.23	
2	N-1	01YUKON _01SOBEND _083	KEYSTONE-CABOT 500 kV line	200011	235104	1	107.51	107.52	ER	2598	42.23	
3	N-1	PJM64	RL_230-KEEN_230 230 kV line	231004	231003	1	112.61	112.68	ER	1036	11.33	
4	N-1	PJM17	BRIS-YORKANA 230 kV line	207922	204515	1	136.17	136.63	ER	617	11.08	
5	N-1	PJM69	OXBOW-N.MESHPN 230 kV line	200708	200706	1	140.2	140.58	ER	608	14.44	
6	N-1	PJM69	LACK-OXBOW 230 kV line	208009	200708	1	148.11	148.5	ER	617	14.69	
7	Non	Non	OXBOW-N.MESHPN 230 kV line	200708	200706	1	162.65	163.01	NR	478	12.61	
8	Non	Non	LACK-OXBOW 230 kV line	208009	200708	1	165.89	166.24	NR	488	12.83	

Short Circuit

(Summary of impacted circuit breakers)

PJM has completed the retool for short circuit analysis of the Y2-083 queue project Essex 138 kV which includes the reinforcements. Two options were considered during this study: the first option was a direct connection to Essex 138 kV substation while the second option was a direct connection to Essex 230 kV substation. We found **31** new breakers for **Option 1** and **27** new breakers for **Option 2**.

Option 1: Note the 138 kV Breakers will be replaced as part of the new ring bus construction.

BUS_NO	BUS	BREAKER	Rating Type	Duty Percent With Case	Duty Percent Without Case	Duty Percent Difference	Note	DUTY_P	DUTY_A	BKR_CAPA
5352	ESSEX34 138.kV	1PM	S	106.80%	97.80%	9.00%	New Over-duty			
5352	ESSEX34 138.kV	4LM	S	105.40%	96.10%	9.30%	New Over-duty			
5353	ESSEX31 138.kV	3PM	S	105.20%	96.40%	8.80%	New Over-duty			
4983	ESSEX 138.kV	3LM	S	104.40%	94.00%	10.40%	New Over-duty			
4992	KRNY 230.kV	Krny 11	S	104.30%	99.50%	4.80%	New Over-duty	104.3	83479.6	80000
5054	ESSEX 230.kV	Bkr 5	S	103.60%	98.70%	4.90%	New Over-duty	103.6	82892.1	80000
4992	KRNY 230.kV	Krny8	S	103.20%	98.40%	4.80%	New Over-duty	103.2	82568.3	80000
4992	KRNY 230.kV	Krny 14	S	103.00%	98.90%	4.10%	New Over-duty	103	82381.9	80000
4992	KRNY 230.kV	Krny5	S	102.40%	98.50%	3.90%	New Over-duty	102.4	81957.3	80000
4992	KRNY 230.kV	krny2	S	102.40%	98.40%	4.00%	New Over-duty	102.4	81939.6	80000
5043	NJT MDW 230.kV	SECT 1-2 TIE	T	101.00%	97.90%	3.10%	New Over-duty			

BUS_NO	BUS	BREAKER	Rating Type	Duty Percent With Case	Duty Percent Without Case	Duty Percent Difference	Note	DUTY_P	DUTY_A	BKR_CAPA
5050	ECRR 138.kV	903	S	108.80%	100.50%	8.30%	Over 100%, > 3% contribution			
5043	NJT MDW 230.kV	EAST	T	106.80%	103.70%	3.10%	Over 100%, > 3% contribution	106.8	80716.7	75597.7
5043	NJT MDW 230.kV	WEST	T	106.80%	103.70%	3.10%	Over 100%, > 3% contribution	106.8	80716.7	75597.7
5054	ESSEX 230.kV	Bkr 12	S	105.90%	101.80%	4.10%	Over 100%, > 3% contribution	105.9	84721.6	80000
5054	ESSEX 230.kV	Bkr 13	S	105.90%	101.80%	4.10%	Over 100%, > 3% contribution	105.9	84721.6	80000
5054	ESSEX 230.kV	Bkr 3	S	105.90%	101.80%	4.10%	Over 100%, > 3% contribution	105.9	84721.6	80000
5054	ESSEX 230.kV	Bkr 4	S	105.90%	101.80%	4.10%	Over 100%, > 3% contribution	105.9	84721.6	80000
5054	ESSEX 230.kV	Bkr 6	S	105.90%	101.80%	4.10%	Over 100%, > 3% contribution	105.9	84721.6	80000
5054	ESSEX 230.kV	Bkr 7	S	105.90%	101.80%	4.10%	Over 100%, > 3% contribution	105.9	84721.6	80000
5054	ESSEX 230.kV	Bkr 8	S	105.90%	101.80%	4.10%	Over 100%, > 3% contribution	105.9	84721.6	80000

BUS_NO	BUS	BREAKER	Rating Type	Duty Percent With Case	Duty Percent Without Case	Duty Percent Difference	Note	DUTY_P	DUTY_A	BKR_CAPA
5054	ESSEX 230.kV	Bkr 9	S	105.90%	101.80%	4.10%	Over 100%, > 3% contribution	105.9	84721.6	80000
4992	KRNY 230.kV	Krny 12	S	105.60%	101.70%	3.90%	Over 100%, > 3% contribution	105.6	84505.8	80000
4992	KRNY 230.kV	Krny 13	S	105.60%	101.70%	3.90%	Over 100%, > 3% contribution	105.6	84505.8	80000
4992	KRNY 230.kV	Krny 15	S	105.60%	101.70%	3.90%	Over 100%, > 3% contribution	105.6	84505.8	80000
4992	KRNY 230.kV	Krny1	S	105.60%	101.70%	3.90%	Over 100%, > 3% contribution	105.6	84505.8	80000
4992	KRNY 230.kV	Krny10	S	105.60%	101.70%	3.90%	Over 100%, > 3% contribution	105.6	84505.8	80000
4992	KRNY 230.kV	Krny3	S	105.60%	101.70%	3.90%	Over 100%, > 3% contribution	105.6	84505.8	80000
4992	KRNY 230.kV	Krny4	S	105.60%	101.70%	3.90%	Over 100%, > 3% contribution	105.6	84505.8	80000
4992	KRNY 230.kV	Krny6	S	105.60%	101.70%	3.90%	Over 100%, > 3% contribution	105.6	84505.8	80000
4992	KRNY 230.kV	Krny7	S	105.60%	101.70%	3.90%	Over 100%, > 3% contribution	105.6	84505.8	80000
4992	KRNY 230.kV	Krny9	S	105.60%	101.70%	3.90%	Over 100%, > 3% contribution	105.6	84505.8	80000

Option 2:

BUS_NO	BUS	BREAKER	Rating Type	Duty Percent With Case	Duty Percent Without Case	Duty Percent Difference	Note	DUTY_P	DUTY_A	BKR_CAPA
4992	KRNY 230.kV	Krny 11	S	106.00%	99.50%	6.50%	New Over-duty	106	84768.7	80000
5054	ESSEX 230.kV	Bkr 5	S	105.70%	98.70%	7.00%	New Over-duty	105.7	84547.9	80000
4992	KRNY 230.kV	Krny8	S	104.90%	98.40%	6.50%	New Over-duty	104.9	83947.2	80000
4992	KRNY 230.kV	Krny 14	S	104.70%	98.90%	5.80%	New Over-duty	104.7	83756.2	80000
4992	KRNY 230.kV	Krny5	S	104.20%	98.50%	5.70%	New Over-duty	104.2	83331.6	80000
4992	KRNY 230.kV	krny2	S	104.10%	98.40%	5.70%	New Over-duty	104.1	83314	80000
5043	NJT MDW 230.kV	SECT 1-2 TIE	T	102.30%	97.90%	4.40%	New Over-duty	102.3	77336.9	75597.7

BUS_NO	BUS	BREAKER	Rating Type	Duty Percent With Case	Duty Percent Without Case	Duty Percent Difference	Note	DUTY_P	DUTY_A	BKR_CAPA
5043	NJT MDW	EAST	T	108.10%	103.70%	4.40%	Over 100%, >	108.1	81718.8	75597.7

BUS_NO	BUS	BREAKER	Rating Type	Duty Percent With Case	Duty Percent Without Case	Duty Percent Difference	Note	DUTY_P	DUTY_A	BKR_CAPA
	230.kV						3% contribution			
5043	NJT MDW 230.kV	WEST	T	108.10%	103.70%	4.40%	Over 100%, > 3% contribution	108.1	81718.8	75597.7
5054	ESSEX 230.kV	Bkr 12	S	108.00%	101.80%	6.20%	Over 100%, > 3% contribution	108	86372.9	80000
5054	ESSEX 230.kV	Bkr 13	S	108.00%	101.80%	6.20%	Over 100%, > 3% contribution	108	86372.9	80000
5054	ESSEX 230.kV	Bkr 3	S	108.00%	101.80%	6.20%	Over 100%, > 3% contribution	108	86372.9	80000
5054	ESSEX 230.kV	Bkr 4	S	108.00%	101.80%	6.20%	Over 100%, > 3% contribution	108	86372.9	80000
5054	ESSEX 230.kV	Bkr 6	S	108.00%	101.80%	6.20%	Over 100%, > 3% contribution	108	86372.9	80000
5054	ESSEX 230.kV	Bkr 7	S	108.00%	101.80%	6.20%	Over 100%, > 3% contribution	108	86372.9	80000
5054	ESSEX 230.kV	Bkr 8	S	108.00%	101.80%	6.20%	Over 100%, > 3% contribution	108	86372.9	80000
5054	ESSEX 230.kV	Bkr 9	S	108.00%	101.80%	6.20%	Over 100%, > 3% contribution	108	86372.9	80000
4992	KRNY 230.kV	Krny 12	S	107.30%	101.70%	5.60%	Over 100%, > 3% contribution	107.3	85873.7	80000
4992	KRNY 230.kV	Krny 13	S	107.30%	101.70%	5.60%	Over 100%, > 3% contribution	107.3	85873.7	80000
4992	KRNY 230.kV	Krny 15	S	107.30%	101.70%	5.60%	Over 100%, > 3% contribution	107.3	85873.7	80000
4992	KRNY 230.kV	Krny1	S	107.30%	101.70%	5.60%	Over 100%, > 3% contribution	107.3	85873.7	80000
4992	KRNY 230.kV	Krny10	S	107.30%	101.70%	5.60%	Over 100%, > 3% contribution	107.3	85873.7	80000
4992	KRNY 230.kV	Krny3	S	107.30%	101.70%	5.60%	Over 100%, > 3% contribution	107.3	85873.7	80000
4992	KRNY 230.kV	Krny4	S	107.30%	101.70%	5.60%	Over 100%, > 3% contribution	107.3	85873.7	80000
4992	KRNY 230.kV	Krny6	S	107.30%	101.70%	5.60%	Over 100%, > 3% contribution	107.3	85873.7	80000
4992	KRNY 230.kV	Krny7	S	107.30%	101.70%	5.60%	Over 100%, > 3% contribution	107.3	85873.7	80000
4992	KRNY 230.kV	Krny9	S	107.30%	101.70%	5.60%	Over 100%, > 3% contribution	107.3	85873.7	80000